Language, Style and Format drivers
for Listings

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<div align="center">

2015/05/05   Version 1.6

</div>

Abstract

This article describes the implementation of the language drivers for the listings package.

Contents

1 Installation and configuration

```
1 %% The listings package is copyright 1996--2004 Carsten Heinz, and
2 %% continued maintenance on the package is copyright 2006--2007 Brooks
3 %% Moses. From 2013 on the maintenance is done by Jobst Hoffmann.
4 %% The drivers are copyright 1997/1998/1999/2000/2001/2002/2003/2004/2006/
5 %% 2007/2013 any individual author listed in this file.
6 %%
7 %% This file is distributed under the terms of the LaTeX Project Public
8 %% License from CTAN archives in directory  macros/latex/base/lppl.txt.
9 %% Either version 1.3 or, at your option, any later version.
10 %%
11 %% This file is completely free and comes without any warranty.
12 %%
13 %% Send comments and ideas on the package, error reports and additional
14 %% programming languages to Jobst Hoffmann at <j.hoffmann@fh-aachen.de>.
15 %%
16 ⟨∗install⟩
17 \input docstrip
18 \preamble
19 \endpreamble
20
21 \ifToplevel{
22 \usedir{tex/latex/listings}
23 \keepsilent
24 \askonceonly
25 }
26
27
28 \generate{
29     \file{lstlang1.sty}{\from{lstdrvrs.dtx}{lang1}}
30     \file{lstlang2.sty}{\from{lstdrvrs.dtx}{lang2}}
31     \file{lstlang3.sty}{\from{lstdrvrs.dtx}{lang3}}
32 }
33
34 \generate{
```

```
35    \file{listings-acm.prf}{\from{lstdrvrs.dtx}{acm-prf}}
36    \file{listings-bash.prf}{\from{lstdrvrs.dtx}{bash-prf}}
37    \file{listings-fortran.prf}{\from{lstdrvrs.dtx}{fortran-prf}}
38    \file{listings-lua.prf}{\from{lstdrvrs.dtx}{lua-prf}}
39    \file{listings-python.prf}{\from{lstdrvrs.dtx}{python-prf}}
40 }
41
42
43 \ifToplevel{
44 \Msg{*}
45 \Msg{* You probably need to move all created '.sty' and '.cfg'}
46 \Msg{* files into a directory searched by TeX.}
47 \Msg{*}
48 \Msg{* Run 'lstdrvrs.dtx' through LaTeX2e to get the documentation.}
49 \Msg{*}
50 }
51
52 \endbatchfile
53 ⟨/install⟩
54 ⟨*config⟩
```

We mainly define default dialects.

```
55 \ProvidesFile{listings.cfg}[2015/05/05 1.6 listings configuration]
56 \def\lstlanguagefiles
57     {lstlang0.sty,lstlang1.sty,lstlang2.sty,lstlang3.sty}
58 \lstset{defaultdialect=[R/3 6.10]ABAP,
59         defaultdialect=[2005]Ada,
60         defaultdialect=[68]Algol,
61         defaultdialect=[gnu]Awk,
62         defaultdialect=[ANSI]C,
63         defaultdialect=[light]Caml,
64         defaultdialect=[1985]Cobol,
65         defaultdialect=[WinXP]command.com,
66         defaultdialect=[ISO]C++,
67         defaultdialect=[95]Fortran,
68         defaultdialect=[5.2]Mathematica,
69         defaultdialect=[OMG]OCL,
70         defaultdialect=[Standard]Pascal,
71         defaultdialect=[67]Simula,
72         defaultdialect=[plain]TeX,
73         defaultdialect=[97]VRML}
74 \lstalias[]{TclTk}[tk]{tcl}
```

And now some shortcuts for the ABAP versions (provided by Knut Lickert). I
(Knut) think the leading R/2, R/3 is not necessary (The support for R/2 is fin-
ished). The version number with letter is important for the runtime-system, but
the programming language should be the same for each version.

```
75 \lstalias[6.1]{ABAP}[R/3 6.10]{ABAP}
76 \lstalias[3.1]{ABAP}[R/3 3.1C]{ABAP}
77 \lstalias[4.6]{ABAP}[R/3 4.6C]{ABAP}
```

78 ⟨/config⟩

79 ⟨+lang1⟩\ProvidesFile{lstlang1.sty}
80 ⟨+lang2⟩\ProvidesFile{lstlang2.sty}
81 ⟨+lang3⟩\ProvidesFile{lstlang3.sty}
82 ⟨+acm-prf⟩\ProvidesFile{listings-acm.prf}
83 ⟨+bash-prf⟩\ProvidesFile{listings-bash.prf}
84 ⟨+fortran-prf⟩\ProvidesFile{listings-fortran.prf}
85 ⟨+lua-prf⟩\ProvidesFile{listings-lua.prf}
86 ⟨+python-prf⟩\ProvidesFile{listings-python.prf}
87 ⟨-config⟩   [2015/05/05 1.6 listings language file]

2   Language drivers

2.1   Abap

Knut Lickert added support for Abap.[1]

88 ⟨∗lang2⟩

89 %%
90 %% Abap definition by Knut Lickert
91 %%

There are some other new commands in release 6.10. They will follow later, but up to now I don't work with 6.10.

92 \lst@definelanguage[R/3 6.10]{ABAP}[R/3 4.6C]{ABAP}%
93   {morekeywords={try,endtry},%
94   }[keywords,comments,strings]

95 \lst@definelanguage[R/3 4.6C]{ABAP}[R/3 3.1]{ABAP}%
96   {morekeywords={method,ref,class,create,object,%
97   methods,endmethod,private,protected,public,section,%
98   catch,system-exceptions,endcatch,%
99   },%
100   moreprocnamekeys={class},%
101 literate={->}{{$\rightarrow$}}1{=>}{{$\Rightarrow$}}1,%
102 }[keywords,comments,strings,procnames]

Yes there are also some more releases in R/3 (2.1...), but I know them not really. So let's start with R/3 3.1.

103 \lst@definelanguage[R/3 3.1]{ABAP}[R/2 5.0]{ABAP}{}%

As I remember all this commands exists in R/2. Many commands are new in R/2 5.0 (compared with R/2 4.3). But as I am not using R/2 4.3 any more, I start with R/2 5.0.

104 \lst@definelanguage[R/2 5.0]{ABAP}%
105   {sensitive=f,%
106   procnamekeys={report,program,form,function,module},%
107   morekeywords={*,add,after,alias,analyzer,and,append,appending,area,assign,at,%

---

[1] In this section 'I' is Knut Lickert.

```
108        authority-check,before,binary,blank,break-point,calendar,call,%
109        case,change,changing,check,clear,cnt,co,collect,commit,common,%
110        component,compute,condense,corresponding,cos,cp,cs,currency-conversion,%
111        cursor,data,database,dataset,decimals,define,delete,deleting,dequeue,%
112        describe,detail,dialog,directory,div,divide,do,documentation,%
113        during,dynpro,else,end-of-page,end-of-selection,endat,endcase,%
114        enddo,endfor,endform,endif,endloop,endmodule,endselect,%
115        endwhile,enqueue,exceptions,exit,exp,export,exporting,extract,%
116        field,fields,field-groups,field-symbols,find,for,form,format,free,%
117        from,function,generating,get,giving,hide,id,if,import,%
118        importing,in,incl,include,initial,initialization,input,insert,%
119        interrupt,into,is,language,leave,leading,left-justified,like,line,lines,line-count,
120        line-selection,list-processing,load,local,log,logfile,loop,%
121        margin,mark,mask,memory,menue,message,mod,modify,module,move,%
122        move-text,multiply,na,new,new-line,new-page,no-gaps,np,ns,%
123        number,obligatory,occurs,of,on,or,others,output,parameter,%
124        parameters,parts,perform,pf-status,places,position,process,%
125        raise,raising,ranges,read,refresh,refresh-dynpro,reject,remote,%
126        replace,report,reserve,reset,restart,right-justified,run,screen,scroll,search,%
127        segments,select,select-options,selection-screen,set,shift,sin,%
128        single,sqrt,start-of-selection,statement,structure,submit,%
129        subtract,summary,summing,suppress,system,table,tables,task,%
130        text,time,to,top-of-page,trace,transaction,transfer,%
131        transfer-dynpro,translate,type,unpack,update,user-command,%
132        using,value,when,where,while,window,with,workfile,write,},%
133    morecomment=[l]",%
134    morecomment=[f][commentstyle][0]*,%
135    morestring=[d]'%
136    }[keywords,comments,strings,procnames]
```

This section for R/2 4.3 is not really maintained. It is just what I remember of the past.

```
137 \lst@definelanguage[R/2 4.3]{ABAP}[R/2 5.0]{ABAP}%
138    {deletekeywords={function,importing,exporting,changing,exceptions,%
139        raise,raising}%
140    }[keywords,comments,strings]

141 ⟨/lang2⟩
```

2.2 ACM

ACM is the language of the Aspen Custom Modeler (http://www.aspentech.com/products/aspen-custom-modeler.aspx), the language definition was provided by Stefan Pinnow. It is intended for writing models. Maximilian Dammann pointed out the missing keyword "Description".

```
142 ⟨*lang2⟩

143 %%
144 %% ACM and ACMscript definition
145 %% (c) 2013 Stefan Pinnow
```

```
146 %%
147 \lst@definelanguage{ACM}{
148   morekeywords={
149     abs,After,acos,And,As,asin,atan,At,Call,Compatibility,Connect,cos,cosh,%
150     Create,Delay,Description,Difference,Do,Else,ElseIf,End,EndFor,EndIf,%
151     EndParallel,EndState,EndSwitch,EndText,EndWith,exp,External,Fixed,For,%
152     ForEach,Free,Global,Hidden,If,Implementation,In,Initial,Input,InterSection,%
153     IntegerSet,Invoke,Is,Language,Library,Link,Log10,LogE,Max,Min,Model,Of,%
154     Once,Options,Output,Parallel,Parameter,Pause,Port,Print,Private,%
155     Procedure,Product,Ramp,Repeat,Restart,Return,Round,Runs,Sigma,sin,sinh,%
156     Size,SnapShot,sqr,sqrt,SRamp,State,Stream,StringSet,Structure,Switch,%
157     SubRoutine,SymDiff,tan,tanh,Task,Text,Time,Then,Truncate,Union,Until,%
158     Uses,Variable,Wait,When,With,WithIn,WorkSpace%
159   },%
160   sensitive=false,%
161   morecomment=[l]{//},%
162   morecomment=[s]{/*}{*/},%
163   string=[b]{"},%
164 }[keywords,comments,strings]%

165 ⟨/lang2⟩
```

In addition to writing models there is a language ACMscript, which is similar to VBScript. According to Stefan Pinnow this language is used for writing scripts for the models.

```
166 ⟨*lang2⟩

167 \lst@definelanguage{ACMscript}[]{VBScript}{%
168   morekeywords={%
169     ElseIf,False,In,Resume,True%
170   },%
171   deletekeywords={%
172     Abs,Array,Clear,CreateObject,CStr,Err,ForReading,ForWriting,%
173     OpenTextFile,Replace,WriteLine%
174   }%
175 }[keywords,comments,strings]%

176 ⟨/lang2⟩
```

Stefan Pinnow also supplied a definition of a style for printing ACM code:

```
177 ⟨*acm-prf⟩

178 \usepackage[rgb, x11names]{xcolor}
179
180 \definecolor{Comments}{rgb}{0.00,0.50,0.00}
181 \definecolor{KeyWords}{rgb}{0.00,0.00,0.63}
182 \definecolor{Strings}{rgb}{0.84,0.00,0.00}
183
184 \lstdefinestyle{ACM}{%
185   basicstyle=\scriptsize\ttfamily,%
186   keywordstyle=\color{KeyWords},%
187   showstringspaces=false,%
```

```
188    identifierstyle=\color{black},%
189    commentstyle=\color{Comments},%
190    stringstyle=\color{Strings},%
191    frame=shadowbox,%              % for ACM-Code scrartcl commented out
192 %    frame=l,%                    % line on the left side
193    rulesepcolor=\color{black},%
194    numbers=left,%                 % left
195    firstnumber=1,%
196    stepnumber=5,%
197    columns=fixed,%                % to prevent inserting spaces
198    fontadjust=true,%
199    basewidth=0.5em,%
200    captionpos=t,%
201    abovecaptionskip=\smallskipamount,% same amount as default
202    belowcaptionskip=\smallskipamount,% in caption package
203 }%
```

This code is provided in the file `listings-acm.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
204 ⟨/acm-prf⟩
```

2.3 ACSL

This language was provided by Andreas Matthias. I'm sorry for forgetting to add this language for a long time.

```
205 ⟨*lang1⟩

206 %%
207 %% ACSL definition (c) 2000 by Andreas Matthias
208 %%
209 \lst@definelanguage{ACSL}[90]{Fortran}%
210    {morekeywords={algorithm,cinterval,constant,derivative,discrete,%
211         dynamic,errtag,initial,interval,maxterval,minterval,%
212         merror,xerror,nsteps,procedural,save,schedule,sort,%
213         table,terminal,termt,variable},%
214      sensitive=false,%
215      morecomment=[l]!%
216    }[keywords, comments]%

217 ⟨/lang1⟩
```

2.4 Ada

Data come from

- BARNES, JOHN GILBERT PRESSLIE: **Programming in Ada plus language reference manual**; © 1991 Addison-Wesley Publishing Company, Inc.; ISBN 0-201-56539-0.

Torsten Neuer added support for Ada 95. I changed the definition to reduce the required string memory.

```
218 ⟨∗lang1⟩

219 %%
220 %% Ada 95 definition (c) Torsten Neuer
221 %%
222 %% Ada 2005 definition (c) 2006 Santiago Urue\~{n}a Pascual
223 %%                                 <Santiago.Uruena@upm.es>
224 %%
225 \lst@definelanguage[2005]{Ada}[95]{Ada}%
226   {morekeywords={interface,overriding,synchronized}}%

227 \lst@definelanguage[95]{Ada}[83]{Ada}%
228   {morekeywords={abstract,aliased,protected,requeue,tagged,until}}%

229 \lst@definelanguage[83]{Ada}%
230   {morekeywords={abort,abs,accept,access,all,and,array,at,begin,body,%
231       case,constant,declare,delay,delta,digits,do,else,elsif,end,entry,%
232       exception,exit,for,function,generic,goto,if,in,is,limited,loop,%
233       mod,new,not,null,of,or,others,out,package,pragma,private,%
234       procedure,raise,range,record,rem,renames,return,reverse,select,%
235       separate,subtype,task,terminate,then,type,use,when,while,with,%
236       xor},%
237    sensitive=f,%
238    morecomment=[l]--,%
239    morestring=[m]",% percent not defined as stringizer so far
240    morestring=[m]'%
241   }[keywords,comments,strings]%

242 ⟨/lang1⟩
```

2.5 Algol

Data come from

- UWE PAPE: **Programmieren in ALGOL 60**; © 1973 Carl Hanser Verlag München; ISBN 3-446-11605-2

- FRANK G. PAGAN: **A practical guide to ALGOL 68**; © 1976 by John Wiley & Sohn Ltd.; ISBN 0-471-65746-8 (Cloth); ISBN 0-471-65747-6 (Pbk).

The definition of Algol 68 doesn't support comments enclosed by ¢.

```
243 ⟨∗lang3⟩

244 \lst@definelanguage[68]{Algol}%
245 % ??? should 'i' be a keyword
246   {morekeywords={abs,and,arg,begin,bin,bits,bool,by,bytes,case,channel,%
247       char,co,comment,compl,conj,divab,do,down,elem,elif,else,empty,%
248       end,entier,eq,esac,exit,false,fi,file,flex,for,format,from,ge,%
249       goto,gt,heap,if,im,in,int,is,isnt,le,leng,level,loc,long,lt,lwb,%
250       minusab,mod,modab,mode,ne,nil,not,od,odd,of,op,or,ouse,out,over,%
251       overab,par,plusab,plusto,pr,pragmat,prio,proc,re,real,ref,repr,%
252       round,sema,shl,short,shorten,shr,sign,skip,string,struct,then,%
253       timesab,to,true,union,up,upb,void,while},%
```

```
254    sensitive=f,% ???
255    morecomment=[s]{\#}{\#},%
256    keywordcomment={co,comment}%
257    }[keywords,comments,keywordcomments]%

258 \lst@definelanguage[60]{Algol}%
259    {morekeywords={array,begin,Boolean,code,comment,div,do,else,end,%
260        false,for,goto,if,integer,label,own,power,procedure,real,step,%
261        string,switch,then,true,until,value,while},%
262    sensitive=f,% ???
263    keywordcommentsemicolon={end}{else,end}{comment}%
264    }[keywords,keywordcomments]%
265 ⟨/lang3⟩
```

2.6 Assembler

Credits go to Michael Franke.

```
266 ⟨*lang3⟩
267 %%
268 %% Motorola 68K definition (c) 2006 Michael Franke
269 %%
270 \lst@definelanguage[Motorola68k]{Assembler}%
271    {morekeywords={ABCD,ADD,%
272 ADDA,ADDI,ADDQ,ADDX,AND,ANDI,ASL,ASR,BCC,BLS,BCS,BLT,BEQ,BMI,BF,BNE,BGE,BPL,%
273 BGT,BT,BHI,BVC,BLE,BVS,BCHG,BCLR,BRA,BSET,BSR,BTST,CHK,CLR,CMP,CMPA,CMPI,CMPM,%
274 DBCC,DBLS,DBCS,DBLT,DBEQ,DBMI,DBF,DBNE,DBGE,DBPL,DBGT,DBT,DBHI,DBVC,DBLE,DBVS,DIVS,%
275 DIVU,EOR,EORI,EXG,EXT,ILLEGAL,JMP,JSR,LEA,LINK,LSL,LSR,MOVE,MOVEA,MOVEM,MOVEP,MOVEQ,%
276 MULS,MULU,NBCD,NEG,NEGX,NOP,NOT,OR,ORI,PEA,RESET,ROL,ROR,ROXL,ROXR,RTE,RTR,RTS,SBCD,%
277 SCC,SLS,SCS,SLT,SEQ,SMI,SF,SNE,SGE,SPL,SGT,ST,SHI,SVC,SLE,SVS,STOP,SUB,SUBA,SUBI,SUBQ,%
278 SUBX,SWAP,TAS,TRAP,TRAPV,TST,UNLK},%
279    sensitive=false,%
280    morecomment=[l]*,%
281    morecomment=[l];%
282    }[keywords,comments,strings]
283 ⟨/lang3⟩
```

Credits go to Andrew Zabolotny.

```
284 ⟨*lang3⟩
285 %%
286 %% x86masm definition (c) 2002 Andrew Zabolotny
287 %%
288 \lst@definelanguage[x86masm]{Assembler}%
289    {morekeywords={al,ah,ax,eax,bl,bh,bx,ebx,cl,ch,cx,ecx,dl,dh,dx,edx,%
290        si,esi,di,edi,bp,ebp,sp,esp,cs,ds,es,ss,fs,gs,cr0,cr1,cr2,cr3,%
291        db0,db1,db2,db3,db4,db5,db6,db7,tr0,tr1,tr2,tr3,tr4,tr5,tr6,tr7,%
292        st,aaa,aad,aam,aas,adc,add,and,arpl,bound,bsf,bsr,bswap,bt,btc,%
293        btr,bts,call,cbw,cdq,clc,cld,cli,clts,cmc,cmp,cmps,cmpsb,cmpsw,%
294        cmpsd,cmpxchg,cwd,cwde,daa,das,dec,div,enter,hlt,idiv,imul,in,%
295        inc,ins,int,into,invd,invlpg,iret,ja,jae,jb,jbe,jc,jcxz,jecxz,%
296        je,jg,jge,jl,jle,jna,jnae,jnb,jnbe,jnc,jne,jng,jnge,jnl,jnle,%
```

```
297        jno,jnp,jns,jnz,jo,jp,jpe,jpo,js,jz,jmp,lahf,lar,lea,leave,lgdt,%
298        lidt,lldt,lmsw,lock,lods,lodsb,lodsw,lodsd,loop,loopz,loopnz,%
299        loope,loopne,lds,les,lfs,lgs,lss,lsl,ltr,mov,movs,movsb,movsw,%
300        movsd,movsx,movzx,mul,neg,nop,not,or,out,outs,pop,popa,popad,%
301        popf,popfd,push,pusha,pushad,pushf,pushfd,rcl,rcr,rep,repe,%
302        repne,repz,repnz,ret,retf,rol,ror,sahf,sal,sar,sbb,scas,seta,%
303        setae,setb,setbe,setc,sete,setg,setge,setl,setle,setna,setnae,%
304        setnb,setnbe,setnc,setne,setng,setnge,setnl,setnle,setno,setnp,%
305        setns,setnz,seto,setp,setpe,setpo,sets,setz,sgdt,shl,shld,shr,%
306        shrd,sidt,sldt,smsw,stc,std,sti,stos,stosb,stosw,stosd,str,sub,%
307        test,verr,verw,wait,wbinvd,xadd,xchg,xlatb,xor,fabs,fadd,fbld,%
308        fbstp,fchs,fclex,fcom,fcos,fdecstp,fdiv,fdivr,ffree,fiadd,ficom,%
309        fidiv,fidivr,fild,fimul,fincstp,finit,fist,fisub,fisubr,fld,fld1,%
310        fldl2e,fldl2t,fldlg2,fldln2,fldpi,fldz,fldcw,fldenv,fmul,fnop,%
311        fpatan,fprem,fprem1,fptan,frndint,frstor,fsave,fscale,fsetpm,%
312        fsin,fsincos,fsqrt,fst,fstcw,fstenv,fstsw,fsub,fsubr,ftst,fucom,%
313        fwait,fxam,fxch,fxtract,fyl2x,fyl2xp1,f2xm1},%
314     morekeywords=[2]{.align,.alpha,assume,byte,code,comm,comment,.const,%
315        .cref,.data,.data?,db,dd,df,dosseg,dq,dt,dw,dword,else,end,endif,%
316        endm,endp,ends,eq,equ,.err,.err1,.err2,.errb,.errdef,.errdif,%
317        .erre,.erridn,.errnb,.errndef,.errnz,event,exitm,extrn,far,%
318        .fardata,.fardata?,fword,ge,group,gt,high,if,if1,if2,ifb,ifdef,%
319        ifdif,ife,ifidn,ifnb,ifndef,include,includelib,irp,irpc,label,%
320        .lall,le,length,.lfcond,.list,local,low,lt,macro,mask,mod,.model,%
321        name,ne,near,offset,org,out,page,proc,ptr,public,purge,qword,.%
322        radix,record,rept,.sall,seg,segment,.seq,.sfcond,short,size,%
323        .stack,struc,subttl,tbyte,.tfcond,this,title,type,.type,width,%
324        word,.xall,.xcref,.xlist},%
325     alsoletter=.,alsodigit=?,%
326     sensitive=f,%
327     morestring=[b]",%
328     morestring=[b]',%
329     morecomment=[l];%
330     }[keywords,comments,strings]
331 ⟨/lang3⟩
```

2.7 Awk

Thanks to Dr. Christoph Giess for providing these definitions.

```
332 ⟨*lang1⟩
333 %%
334 %% awk definitions (c) Christoph Giess
335 %%
336 \lst@definelanguage[gnu]{Awk}[POSIX]{Awk}%
337    {morekeywords={and,asort,bindtextdomain,compl,dcgettext,gensub,%
338        lshift,mktime,or,rshift,strftime,strtonum,systime,xor,extension}%
339    }%

340 \lst@definelanguage[POSIX]{Awk}%
341    {keywords={BEGIN,END,close,getline,next,nextfile,print,printf,%
```

```
342        system,fflush,atan2,cos,exp,int,log,rand,sin,sqrt,srand,gsub,%
343        index,length,match,split,sprintf,strtonum,sub,substr,tolower,%
344        toupper,if,while,do,for,break,continue,delete,exit,function,%
345        return},%
346      sensitive,%
347      morecomment=[l]\#,%
348      morecomment=[l]//,%
349      morecomment=[s]{/*}{*/},%
350      morestring=[b]"%
351    }[keywords,comments,strings]%
352 ⟨/lang1⟩
```

2.8 Basic

Credits go to Robert Frank.

```
353 ⟨*lang1⟩
354 %%
355 %% Visual Basic definition (c) 2002 Robert Frank
356 %%
357 \lst@definelanguage[Visual]{Basic}
358    {morekeywords={Abs,Array,Asc,AscB,AscW,Atn,Avg,CBool,CByte,CCur,%
359        CDate,CDbl,Cdec,Choose,Chr,ChrB,ChrW,CInt,CLng,Command,Cos,%
360        Count,CreateObject,CSng,CStr,CurDir,CVar,CVDate,CVErr,Date,%
361        DateAdd,DateDiff,DatePart,DateSerial,DateValue,Day,DDB,Dir,%
362        DoEvents,Environ,EOF,Error,Exp,FileAttr,FileDateTime,FileLen,%
363        Fix,Format,FreeFile,FV,GetAllStrings,GetAttr,%
364        GetAutoServerSettings,GetObject,GetSetting,Hex,Hour,IIf,%
365        IMEStatus,Input,InputB,InputBox,InStr,InstB,Int,Integer,IPmt,%
366        IsArray,IsDate,IsEmpty,IsError,IsMissing,IsNull,IsNumeric,%
367        IsObject,LBound,LCase,Left,LeftB,Len,LenB,LoadPicture,Loc,LOF,%
368        Log,Ltrim,Max,Mid,MidB,Min,Minute,MIRR,Month,MsgBox,Now,NPer,%
369        NPV,Oct,Partition,Pmt,PPmt,PV,QBColor,Rate,RGB,Right,RightB,Rnd,%
370        Rtrim,Second,Seek,Sgn,Shell,Sin,SLN,Space,Spc,Sqr,StDev,StDevP,%
371        Str,StrComp,StrConv,String,Switch,Sum,SYD,Tab,Tan,Time,Timer,%
372        TimeSerial,TimeValue,Trim,TypeName,UBound,Ucase,Val,Var,VarP,%
373        VarType,Weekday,Year},% functions
374      morekeywords=[2]{Accept,Activate,Add,AddCustom,AddFile,AddFromFile,%
375        AddFromTemplate,AddItem,AddNew,AddToAddInToolbar,%
376        AddToolboxProgID,Append,AppendChunk,Arrange,Assert,AsyncRead,%
377        BatchUpdate,BeginTrans,Bind,Cancel,CancelAsyncRead,CancelBatch,%
378        CancelUpdate,CanPropertyChange,CaptureImage,CellText,CellValue,%
379        Circle,Clear,ClearFields,ClearSel,ClearSelCols,Clone,Close,Cls,%
380        ColContaining,ColumnSize,CommitTrans,CompactDatabase,Compose,%
381        Connect,Copy,CopyQueryDef,CreateDatabase,CreateDragImage,%
382        CreateEmbed,CreateField,CreateGroup,CreateIndex,CreateLink,%
383        CreatePreparedStatement,CreatePropery,CreateQuery,%
384        CreateQueryDef,CreateRelation,CreateTableDef,CreateUser,%
385        CreateWorkspace,Customize,Delete,DeleteColumnLabels,%
386        DeleteColumns,DeleteRowLabels,DeleteRows,DoVerb,Drag,Draw,Edit,%
```

12

```
387      EditCopy,EditPaste,EndDoc,EnsureVisible,EstablishConnection,%
388      Execute,ExtractIcon,Fetch,FetchVerbs,Files,FillCache,Find,%
389      FindFirst,FindItem,FindLast,FindNext,FindPrevious,Forward,%
390      GetBookmark,GetChunk,GetClipString,GetData,GetFirstVisible,%
391      GetFormat,GetHeader,GetLineFromChar,GetNumTicks,GetRows,%
392      GetSelectedPart,GetText,GetVisibleCount,GoBack,GoForward,Hide,%
393      HitTest,HoldFields,Idle,InitializeLabels,InsertColumnLabels,%
394      InsertColumns,InsertObjDlg,InsertRowLabels,InsertRows,Item,%
395      KillDoc,Layout,Line,LinkExecute,LinkPoke,LinkRequest,LinkSend,%
396      Listen,LoadFile,LoadResData,LoadResPicture,LoadResString,%
397      LogEvent,MakeCompileFile,MakeReplica,MoreResults,Move,MoveData,%
398      MoveFirst,MoveLast,MoveNext,MovePrevious,NavigateTo,NewPage,%
399      NewPassword,NextRecordset,OLEDrag,OnAddinsUpdate,OnConnection,%
400      OnDisconnection,OnStartupComplete,Open,OpenConnection,%
401      OpenDatabase,OpenQueryDef,OpenRecordset,OpenResultset,OpenURL,%
402      Overlay,PaintPicture,Paste,PastSpecialDlg,PeekData,Play,Point,%
403      PopulatePartial,PopupMenu,Print,PrintForm,PropertyChanged,Pset,%
404      Quit,Raise,RandomDataFill,RandomFillColumns,RandomFillRows,%
405      rdoCreateEnvironment,rdoRegisterDataSource,ReadFromFile,%
406      ReadProperty,Rebind,ReFill,Refresh,RefreshLink,RegisterDatabase,%
407      Reload,Remove,RemoveAddInFromToolbar,RemoveItem,Render,%
408      RepairDatabase,Reply,ReplyAll,Requery,ResetCustom,%
409      ResetCustomLabel,ResolveName,RestoreToolbar,Resync,Rollback,%
410      RollbackTrans,RowBookmark,RowContaining,RowTop,Save,SaveAs,%
411      SaveFile,SaveToFile,SaveToolbar,SaveToOle1File,Scale,ScaleX,%
412      ScaleY,Scroll,Select,SelectAll,SelectPart,SelPrint,Send,%
413      SendData,Set,SetAutoServerSettings,SetData,SetFocus,SetOption,%
414      SetSize,SetText,SetViewport,Show,ShowColor,ShowFont,ShowHelp,%
415      ShowOpen,ShowPrinter,ShowSave,ShowWhatsThis,SignOff,SignOn,Size,%
416      Span,SplitContaining,StartLabelEdit,StartLogging,Stop,%
417      Synchronize,TextHeight,TextWidth,ToDefaults,TwipsToChartPart,%
418      TypeByChartType,Update,UpdateControls,UpdateRecord,UpdateRow,%
419      Upto,WhatsThisMode,WriteProperty,ZOrder},% methods
420   morekeywords=[3]{AccessKeyPress,AfterAddFile,AfterChangeFileName,%
421      AfterCloseFile,AfterColEdit,AfterColUpdate,AfterDelete,%
422      AfterInsert,AfterLabelEdit,AfterRemoveFile,AfterUpdate,%
423      AfterWriteFile,AmbienChanged,ApplyChanges,Associate,%
424      AsyncReadComplete,AxisActivated,AxisLabelActivated,%
425      AxisLabelSelected,AxisLabelUpdated,AxisSelected,%
426      AxisTitleActivated,AxisTitleSelected,AxisTitleUpdated,%
427      AxisUpdated,BeforeClick,BeforeColEdit,BeforeColUpdate,%
428      BeforeConnect,BeforeDelete,BeforeInsert,BeforeLabelEdit,%
429      BeforeLoadFile,BeforeUpdate,ButtonClick,ButtonCompleted,%
430      ButtonGotFocus,ButtonLostFocus,Change,ChartActivated,%
431      ChartSelected,ChartUpdated,Click,ColEdit,Collapse,ColResize,%
432      ColumnClick,Compare,ConfigChageCancelled,ConfigChanged,%
433      ConnectionRequest,DataArrival,DataChanged,DataUpdated,DblClick,%
434      Deactivate,DeviceArrival,DeviceOtherEvent,DeviceQueryRemove,%
435      DeviceQueryRemoveFailed,DeviceRemoveComplete,DeviceRemovePending,%
436      DevModeChange,Disconnect,DisplayChanged,Dissociate,%
```

```
437        DoGetNewFileName,Done,DonePainting,DownClick,DragDrop,DragOver,%
438        DropDown,EditProperty,EnterCell,EnterFocus,Event,ExitFocus,%
439        Expand,FootnoteActivated,FootnoteSelected,FootnoteUpdated,%
440        GotFocus,HeadClick,InfoMessage,Initialize,IniProperties,%
441        ItemActivated,ItemAdded,ItemCheck,ItemClick,ItemReloaded,%
442        ItemRemoved,ItemRenamed,ItemSeletected,KeyDown,KeyPress,KeyUp,%
443        LeaveCell,LegendActivated,LegendSelected,LegendUpdated,%
444        LinkClose,LinkError,LinkNotify,LinkOpen,Load,LostFocus,%
445        MouseDown,MouseMove,MouseUp,NodeClick,ObjectMove,%
446        OLECompleteDrag,OLEDragDrop,OLEDragOver,OLEGiveFeedback,%
447        OLESetData,OLEStartDrag,OnAddNew,OnComm,Paint,PanelClick,%
448        PanelDblClick,PathChange,PatternChange,PlotActivated,%
449        PlotSelected,PlotUpdated,PointActivated,PointLabelActivated,%
450        PointLabelSelected,PointLabelUpdated,PointSelected,%
451        PointUpdated,PowerQuerySuspend,PowerResume,PowerStatusChanged,%
452        PowerSuspend,QueryChangeConfig,QueryComplete,QueryCompleted,%
453        QueryTimeout,QueryUnload,ReadProperties,Reposition,%
454        RequestChangeFileName,RequestWriteFile,Resize,ResultsChanged,%
455        RowColChange,RowCurrencyChange,RowResize,RowStatusChanged,%
456        SelChange,SelectionChanged,SendComplete,SendProgress,%
457        SeriesActivated,SeriesSelected,SeriesUpdated,SettingChanged,%
458        SplitChange,StateChanged,StatusUpdate,SysColorsChanged,%
459        Terminate,TimeChanged,TitleActivated,TitleSelected,%
460        TitleActivated,UnboundAddData,UnboundDeleteRow,%
461        UnboundGetRelativeBookmark,UnboundReadData,UnboundWriteData,%
462        Unload,UpClick,Updated,Validate,ValidationError,WillAssociate,%
463        WillChangeData,WillDissociate,WillExecute,WillUpdateRows,%
464        WithEvents,WriteProperties},% VB-events
465    morekeywords=[4]{AppActivate,Base,Beep,Call,Case,ChDir,ChDrive,%
466        Const,Declare,DefBool,DefByte,DefCur,DefDate,DefDbl,DefDec,%
467        DefInt,DefLng,DefObj,DefSng,DefStr,Deftype,DefVar,DeleteSetting,%
468        Dim,Do,Else,ElseIf,End,Enum,Erase,Event,Exit,Explicit,FileCopy,%
469        For,ForEach,Friend,Function,Get,GoSub,GoTo,If,Implements,Kill,%
470        Let,LineInput,Lock,Lset,MkDir,Name,Next,OnError,On,Option,%
471        Private,Property,Public,Put,RaiseEvent,Randomize,ReDim,Rem,%
472        Reset,Resume,Return,RmDir,Rset,SavePicture,SaveSetting,%
473        SendKeys,SetAttr,Static,Sub,Then,Type,Unlock,Wend,While,Width,%
474        With,Write},% statements
475    sensitive=false,%
476    keywordcomment=rem,%
477    MoreSelectCharTable=\def\lst@BeginKC@{% chmod
478        \lst@ResetToken
479        \lst@BeginComment\lst@GPmode{{\lst@commentstyle}%
480                         \lst@Lmodetrue\lst@modetrue}\@empty},%
481    morecomment=[l]{'},%
482    morecomment=[s]{/*}{*/},%
483    morestring=[b]",%
484    }[keywords,comments,strings,keywordcomments]
485 ⟨/lang1⟩
```

Thanks to Jonathan de Halleux for reporting a missing comma after `MoreSelectCharTable`, which was the cause of a problem reported by Robert Frank. Martina Hansel also found the bug and the fix.

2.9 Clean

Thanks to José Romildo Malaquias. Markus Pahlow found a missing comma

```
486 ⟨*lang3⟩
487 %%
488 %% Clean definition (c) 1999 Jos\'e Romildo Malaquias
489 %%
490 %% Clean 1.3 :  some standard functional language: pure, lazy,
491 %%             polymorphic type system, modules, type classes,
492 %%             garbage collection, functions as first class citizens
493 %%
494 \lst@definelanguage{Clean}%
495   {otherkeywords={:,::,=,:==,=:,=>,->,<-,<-:,\{,\},\{|,|\},\#,\#!,|,\&,%
496       [,],!,.,\\\\,;,_},%
497   morekeywords={from,definition,implementation,import,module,system,%
498       case,code,if,in,let,let!,of,where,with,infix,infixl,infixr},%
499   morendkeywords={True,False,Start,Int,Real,Char,Bool,String,World,%
500       File,ProcId},%
501   sensitive,%
502   morecomment=[l]//,% missing comma: Markus Pahlow
503   morecomment=[n]{/*}{*/},%
504   morestring=[b]"%
505   }[keywords,comments,strings]%
506 ⟨/lang3⟩
```

2.10   Corba IDL

This language definition is due to Jens T. Berger Thielemann.

```
507 ⟨*lang2⟩
508 %%
509 %% Corba IDL definition (c) 1999 Jens T. Berger Thielemann
510 %%
511 \lst@definelanguage[CORBA]{IDL}%
512   {morekeywords={any,attribute,boolean,case,char,const,context,default,%
513       double,enum,exception,fixed,float,in,inout,interface,long,module,%
514       native,Object,octet,oneway,out,raises,readonly,sequence,short,%
515       string,struct,switch,typedef,union,unsigned,void,wchar,wstring,%
516       FALSE,TRUE},%
517   sensitive,%
518   moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
519       include,pragma,undef,warning},%
520   moredelim=*[directive]\#,%
521   morecomment=[l]//,%
522   morecomment=[s]{/*}{*/},%
523   morestring=[b]"%
```

```
524    }[keywords,comments,strings,directives]%
```
525 ⟨/lang2⟩

2.11   C, C++, et al

526 ⟨∗lang1⟩

Michael Fiedler provided the following list of new introduced keywords for C++11.
```
527 \lst@definelanguage[11]{C++}[ISO]{C++}%
528    {morekeywords={alignas,alignof,char16_t,char32_t,constexpr,%
529        decltype,noexcept,nullptr,static_assert,thread_local},%
530    }%
```

Michael Piefel suggested some more changes and added GNU C++. For compatibility the 'ANSI' language is defined in terms of ISO.
```
531 \lst@definelanguage[ANSI]{C++}[ISO]{C++}{}%
```

Michael Piefel suggested some more changes and added GNU C++.
```
532 \lst@definelanguage[GNU]{C++}[ISO]{C++}%
533    {morekeywords={__attribute__,__extension__,__restrict,__restrict__,%
534        typeof,__typeof__},%
535    }%
536 \lst@definelanguage[Visual]{C++}[ISO]{C++}%
537    {morekeywords={__asm,__based,__cdecl,__declspec,dllexport,%
538        dllimport,__except,__fastcall,__finally,__inline,__int8,__int16,%
539        __int32,__int64,naked,__stdcall,thread,__try,__leave},%
540    }%
541 \lst@definelanguage[ISO]{C++}[ANSI]{C}%
542    {morekeywords={and,and_eq,asm,bad_cast,bad_typeid,bitand,bitor,bool,%
543        catch,class,compl,const_cast,delete,dynamic_cast,explicit,export,%
544        false,friend,inline,mutable,namespace,new,not,not_eq,operator,or,%
545        or_eq,private,protected,public,reinterpret_cast,static_cast,%
546        template,this,throw,true,try,typeid,type_info,typename,using,%
547        virtual,wchar_t,xor,xor_eq},%
548    }%
```
549 ⟨/lang1⟩

Objective-C is due to Detlev Dröge.

550 ⟨∗lang1⟩
```
551 %%
552 %% Objective-C definition (c) 1997 Detlev Droege
553 %%
554 \lst@definelanguage[Objective]{C}[ANSI]{C}
555    {morekeywords={bycopy,id,in,inout,oneway,out,self,super,%
556        @class,@defs,@encode,@end,@implementation,@interface,@private,%
557        @protected,@protocol,@public,@selector},%
558     moredirectives={import}%
559    }%
```
560 ⟨/lang1⟩

Jörg Viermann provided the keywords for Handel-C.

561 ⟨∗lang1⟩

562 %%
563 %% Handel-C definition, refer http://www.celoxica.com
564 %%
565 \lst@definelanguage[Handel]{C}[ANSI]{C}
566   {morekeywords={assert,chan,chanin,chanout,clock,delay,expr,external,%
567   external_divide,family,ifselect,in,inline,interface,internal,%
568   internal_divid,intwidth,let,macro,mpram,par,part,prialt,proc,ram,%
569   releasesema,reset,rom,select,sema,set,seq,shared,signal,try,%
570   reset,trysema,typeof,undefined,width,with,wom},%
571   }%

572 ⟨/lang1⟩

573 ⟨∗lang1⟩

574 \lst@definelanguage[ANSI]{C}%
575   {morekeywords={auto,break,case,char,const,continue,default,do,double,%
576   else,enum,extern,float,for,goto,if,int,long,register,return,%
577   short,signed,sizeof,static,struct,switch,typedef,union,unsigned,%
578   void,volatile,while},%
579   sensitive,%
580   morecomment=[s]{/*}{*/},%
581   morecomment=[l]//,% nonstandard
582   morestring=[b]",%
583   morestring=[b]',%
584   moredelim=*[directive]\#,%
585   moredirectives={define,elif,else,endif,error,if,ifdef,ifndef,line,%
586   include,pragma,undef,warning}%
587   }[keywords,comments,strings,directives]%

588 ⟨/lang1⟩

589 ⟨∗lang1⟩

 Thanks go to Martin Brodbeck.

590 %%
591 %% C-Sharp definition (c) 2002 Martin Brodbeck
592 %%
593 \lst@definelanguage[Sharp]{C}%
594   {morekeywords={abstract,base,bool,break,byte,case,catch,char,checked,%
595   class,const,continue,decimal,default,delegate,do,double,else,%
596   enum,event,explicit,extern,false,finally,fixed,float,for,foreach,%
597   goto,if,implicit,in,int,interface,internal,is,lock,long,%
598   namespace,new,null,object,operator,out,override,params,private,%
599   protected,public,readonly,ref,return,sbyte,sealed,short,sizeof,%
600   static,string,struct,switch,this,throw,true,try,typeof,uint,%
601   ulong,unchecked,unsafe,ushort,using,virtual,void,while,%
602   as,volatile,stackalloc},% Kai K\"ohne
603   sensitive,%
604   morecomment=[s]{/*}{*/},%

```
605    morecomment=[l]//,%
606    morestring=[b]"
607  }[keywords,comments,strings]%
```

608 ⟨/lang1⟩

2.12 Caml and Objective Caml

Patrick Cousot mailed me the definition. Tom Hirschowitz added two keywords.

609 ⟨∗lang2⟩

```
610 %%
611 %% (Objective) Caml definition (c) 1999 Patrick Cousot
612 %%
613 %% Objective CAML and Caml light are freely available, together with a
614 %% reference manual, at URL ftp.inria.fr/lang/caml-light for the Unix,
615 %% Windows and Macintosh OS operating systems.
616 %%
617 \lst@definelanguage[Objective]{Caml}[light]{Caml}
618   {deletekeywords={not,prefix,value,where},%
619    morekeywords={assert,asr,class,closed,constraint,external,false,%
620        functor,include,inherit,land,lazy,lor,lsl,lsr,lxor,method,mod,%
621        module,new,open,parser,private,sig,struct,true,val,virtual,when,%
622        object,ref},% TH
623   }%
624 \lst@definelanguage[light]{Caml}
625   {morekeywords={and,as,begin,do,done,downto,else,end,exception,for,%
626        fun,function,if,in,let,match,mutable,not,of,or,prefix,rec,then,%
627        to,try,type,value,where,while,with},%
628    sensitive,%
629    morecomment=[n]{(*}{*)},%
630    morestring=[b]",%
631    moredelim=*[directive]\#,%
632    moredirectives={open,close,include}%
633   }[keywords,comments,strings,directives]%
```

634 ⟨/lang2⟩

2.13 Common Intermediate Language

This language definition for CIL (Common Intermediate Language, part of Microsoft's .NET interface) was provided by Olaf Conradi Akim Demaille pointed out that the support for Algol was broken, but that came from a long missing '@' in the following lst@definelanguage.

635 ⟨∗lang3⟩

```
636 \lst@definelanguage{CIL}%
637   {morekeywords=[1]{assembly,beforefieldinit,class,default,cdecl,cil,corflags,%
638                  culture,custom,data,entrypoint,fastcall,field,file,%
639                  hidebysig,hash,il,imagebase,locals,managed,marshall,%
```

```
640                         maxstack,mresource,method,module,namespace,publickey,%
641                         stdcall,subsystem,thiscall,unmanaged,vararg,ver,vtfixup,%
642                       % types
643                         bool,char,float32,float64,int,int8,int16,int32,%
644                         int64,method,native,object,string,modopt,modreq,pinned,%
645                         typedref,valuetype,unsigned,void,%
646                       % defining types
647                         abstract,ansi,auto,autochar,beforefieldinit,boxed,class,%
648                         explicit,extends,implements,interface,famandassem,family,%
649                         famorassem,inherits,nested,override,pack,private,property,%
650                         public,rtspecialname,sealed,sequential,serializable,size,%
651                         specialname,static,unicode,%
652                       % postfix
653                         algorithm,alignment,extern,init,from,nometadata,with},%
654    morekeywords=[2]{add,and,arglist,beq,bge,bgt,ble,blt,bne,br,break,brfalse,%
655                         brtrue,call,calli,ceq,cgt,ckfinite,clt,conv,cpblk,div,%
656                         dup,endfilter,endfinally,initblk,jmp,ldarg,ldarga,ldc,%
657                         ldftn,ldind,ldloc,ldloca,ldnull,leave,localloc,mul,neg,%
658                         nop,not,or,pop,rem,ret,shl,shr,starg,stind,stloc,sub,%
659                         switch,xor,%
660                       % prefix
661                         tail,unaligned,volatile,%
662                       % postfix
663                         un,s,ovf,%
664                       % object
665                         box,callvirt,castclass,cpobj,cctor,ctor,initobj,isinst,%
666                         ldelem,ldelema,ldfld,ldflda,ldlen,ldobj,ldsfld,ldsflda,%
667                         ldstr,ldtoken,ldvirtftn,mkrefany,newarr,newobj,refanytype,%
668                         refanyval,rethrow,sizeof,stelem,stfld,stobj,stsfld,throw,%
669                         unbox},%
670    sensitive=true,%
671    morecomment=[l]{//},%
672    morestring=[b]"%
673 }[keywords,comments,strings]%

674 ⟨/lang3⟩
```

2.14 Cobol

Keywords are not marked if their names are broken by EOL, for example DEBUG-CONTENTS. Sometimes portions of a string are not printed as a string. This happens if the double quote is not doubled to insert a quote, e.g. `""bad" cobol"` won't be printed correctly.

```
675 ⟨*lang2⟩

676 \lst@definelanguage[ibm]{Cobol}[1985]{Cobol}%
677    {morekeywords={ADDRESS,BEGINNING,COMP-3,COMP-4,COMPUTATIONAL,%
678        COMPUTATIONAL-3,COMPUTATIONAL-4,DISPLAY-1,EGCS,EJECT,ENDING,%
679        ENTRY,GOBACK,ID,MORE-LABELS,NULL,NULLS,PASSWORD,RECORDING,%
680        RETURN-CODE,SERVICE,SKIP1,SKIP2,SKIP3,SORT-CONTROL,SORT-RETURN,%
```

19

```
681        SUPPRESS,TITLE,WHEN-COMPILED},%
682    }%
683  \lst@definelanguage[1985]{Cobol}[1974]{Cobol}%
684    {morekeywords={ALPHABET,ALPHABETIC-LOWER,ALPHABETIC-UPPER,%
685        ALPHANUMERIC,ALPHANUMERIC-EDITED,ANY,CLASS,COMMON,CONTENT,%
686        CONTINUE,DAY-OF-WEEK,END-ADD,END-CALL,END-COMPUTE,END-DELETE,%
687        END-DIVIDE,END-EVALUATE,END-IF,END-MULTIPLY,END-PERFORM,END-READ,%
688        END-RECEIVE,END-RETURN,END-REWRITE,END-SEARCH,END-START,%
689        END-STRING,END-SUBTRACT,END-UNSTRING,END-WRITE,EVALUATE,EXTERNAL,%
690        FALSE,GLOBAL,INITIALIZE,NUMERIC-EDITED,ORDER,OTHER,%
691        PACKED-DECIMAL,PADDING,PURGE,REFERENCE,RELOAD,REPLACE,STANDARD-1,%
692        STANDARD-2,TEST,THEN,TRUE},%
693    }%
694  \lst@definelanguage[1974]{Cobol}%
695    {morekeywords={ACCEPT,ACCESS,ADD,ADVANCING,AFTER,ALL,ALPHABETIC,ALSO,%
696        ALTER,ALTERNATE,AND,ARE,AREA,AREAS,ASCENDING,ASSIGN,AT,AUTHOR,%
697        BEFORE,BINARY,BLANK,BLOCK,BOTTOM,BY,CALL,CANCEL,CD,CF,CH,%
698        CHARACTER,CHARACTERS,CLOCK-UNITS,CLOSE,COBOL,CODE,CODE-SET,%
699        COLLATING,COLUMN,COMMA,COMMUNICATION,COMP,COMPUTE,CONFIGURATION,%
700        CONTAINS,CONTROL,CONTROLS,CONVERTING,COPY,CORR,CORRESPONDING,%
701        COUNT,CURRENCY,DATA,DATE,DATE-COMPILED,DATE-WRITTEN,DAY,DE,%
702        DEBUG-CONTENTS,DEGUB-ITEM,DEBUG-LINE,DEBUG-NAME,DEBUG-SUB1,%
703        DEBUG-SUB2,DEBUG-SUB3,DEBUGGING,DECIMAL-POINT,DECLARATIVES,%
704        DELETE,DELIMITED,DELIMITER,DEPENDING,DESCENDING,DESTINATION,%
705        DETAIL,DISABLE,DISPLAY,DIVIDE,DIVISION,DOWN,DUPLICATES,DYNAMIC,%
706        EGI,ELSE,EMI,ENABLE,END,END-OF-PAGE,ENTER,ENVIRONMENT,EOP,EQUAL,%
707        ERROR,ESI,EVERY,EXCEPTION,EXIT,EXTEND,FD,FILE,FILE-CONTROL,%
708        FILLER,FINAL,FIRST,FOOTING,FOR,FROM,GENERATE,GIVING,GO,GREATER,%
709        GROUP,HEADING,HIGH-VALUE,HIGH-VALUES,I-O,I-O-CONTROL,%
710        IDENTIFICATION,IF,IN,INDEX,INDEXED,INDICATE,INITIAL,INITIATE,%
711        INPUT,INPUT-OUTPUT,INSPECT,INSTALLATION,INTO,INVALID,IS,JUST,%
712        JUSTIFIED,KEY,LABEL,LAST,LEADING,LEFT,LENGTH,LESS,LIMIT,LIMITS,%
713        LINAGE,LINAGE-COUNTER,LINE,LINE-COUNTER,LINES,LINKAGE,LOCK,%
714        LOW-VALUE,LOW-VALUES,MEMORY,MERGE,MESSAGE,MODE,MODULES,MOVE,%
715        MULTIPLE,MULTIPLY,NATIVE,NEGATIVE,NEXT,NO,NOT,NUMBER,NUMERIC,%
716        OBJECT-COMPUTER,OCCURS,OF,OFF,OMITTED,ON,OPEN,OPTIONAL,OR,%
717        ORGANIZATION,OUTPUT,OVERFLOW,PAGE,PAGE-COUNTER,PERFORM,PF,PH,PIC,%
718        PICTURE,PLUS,POINTER,POSITION,PRINTING,POSITIVE,PRINTING,%
719        PROCEDURE,PROCEDURES,PROCEED,PROGRAM,PROGRAM-ID,QUEUE,QUOTE,%
720        QUOTES,RANDOM,RD,READ,RECEIVE,RECORD,RECORDING,RECORDS,REDEFINES,%
721        REEL,REFERENCES,RELATIVE,RELEASE,REMAINDER,REMOVAL,RENAMES,%
722        REPLACING,REPORT,REPORTING,REPORTS,RERUN,RESERVE,RESET,RETURN,%
723        REVERSED,REWIND,REWRITE,RF,RH,RIGHT,ROUNDED,RUN,SAME,SD,SEARCH,%
724        SECTION,SECURITY,SEGMENT,SEGMENT-LIMIT,SELECT,SEND,SENTENCE,%
725        SEPARATE,SEQUENCE,SEQUENTIAL,SET,SIGN,SIZE,SORT,SORT-MERGE,%
726        SOURCE,SOURCE-COMPUTER,SPACE,SPACES,SPECIAL-NAMES,STANDARD,START,%
727        STATUS,STOP,STRING,SUB-QUEUE-1,SUB-QUEUE-2,SUB-QUEUE-3,SUBTRACT,%
728        SUM,SYMBOLIC,SYNC,SYNCHRONIZED,TABLE,TALLYING,TAPE,TERMINAL,%
729        TERMINATE,TEXT,THAN,THROUGH,THRU,TIME,TIMES,TO,TOP,TRAILING,TYPE,%
```

```
730      UNIT,UNSTRING,UNTIL,UP,UPON,USAGE,USE,USING,VALUE,VALUES,VARYING,%
731      WHEN,WITH,WORDS,WORKING-STORAGE,WRITE,ZERO,ZEROES,ZEROS},%
732    alsodigit=-,%
733    sensitive=f,% ???
734    morecomment=[f][commentstyle][6]*,%
735    morestring=[d]"% ??? doubled
736    }[keywords,comments,strings]%
```

`commentstyle` (not the surrounding brackets) have been added after a bug report by Stephen Reindl.

```
737 ⟨/lang2⟩
```

2.15   Comal 80

The data is from

- BORGE R. CHRISTENSEN: **Strukturierte Programmierung mit CO-MAL 80** [aus dem Dänischen übertragen und bearbeitet von Margarete Kragh]; 2., verb. Auflage – München; Wien: Oldenburg, 1985; ISBN 3-486-26902-X.

```
738 ⟨*lang3⟩
```

```
739 \lst@definelanguage{Comal 80}%
740   {morekeywords={AND,AUTO,CASE,DATA,DEL,DIM,DIV,DO,ELSE,ENDCASE,ENDIF,%
741      ENDPROC,ENDWHILE,EOD,EXEC,FALSE,FOR,GOTO,IF,INPUT,INT,LIST,LOAD,%
742      MOD,NEW,NEXT,NOT,OF,OR,PRINT,PROC,RANDOM,RENUM,REPEAT,RND,RUN,%
743      SAVE,SELECT,STOP,TAB,THEN,TRUE,UNTIL,WHILE,ZONE},%
744    sensitive=f,% ???
745    morecomment=[l]//,%
746    morestring=[d]"%
747    }[keywords,comments,strings]%
```

```
748 ⟨/lang3⟩
```

2.16   COMMAND.COM Batch Files

This definition for DOS and Windows batch files is from Stephan Hennig.

```
749 ⟨*lang3⟩
```

```
750 \lst@definelanguage[WinXP]{command.com}%
751   {morekeywords={assoc,at,attrib,bootcfg,break,cacls,call,cd,chcp,chdir,%
752      chkdsk,chkntfs,cls,cmd,cmdextversion,color,comp,compact,convert,copy,%
753      date,defined,del,dir,diskcomp,diskcopy,do,doskey,echo,else,endlocal,%
754      erase,errorlevel,exist,exit,fc,find,findstr,for,format,ftype,goto,%
755      graftabl,help,if,in,label,md,mkdir,mode,more,move,not,off,path,%
756      pause,popd,print,prompt,pushd,rd,recover,ren,rename,replace,rmdir,%
757      set,setlocal,shift,sort,start,subst,time,title,tree,type,ver,%
758      verify,vol,xcopy},%
759    sensitive=false,%
760    alsoother={@},%
```

```
761    alsoletter={\%~:-/},%
762    morecomment=[l]{rem},%
763    morecomment=[l]{reM},%
764    morecomment=[l]{rEm},%
765    morecomment=[l]{rEM},%
766    morecomment=[l]{Rem},%
767    morecomment=[l]{ReM},%
768    morecomment=[l]{REm},%
769    morecomment=[l]{REM},%
770    morestring=[d]"%
771 }[keywords,comments,strings]%

772 ⟨/lang3⟩
```

2.17   Comsol Multiphysics

Comsol Multiphysics (Prior to version 3.2 known as Femlab) can be used standalone or as an extension to MatLab. This definition is due to Martin Heller.

Unfortunately, there is a conflict in that Comsol is case-insensitive, whereas Matlab is case-sensitive; listings does not currently support different case-sensitivities in the same listing.

```
773 ⟨∗lang3⟩

774 \lst@definelanguage{Comsol}%
775    {morekeywords={%
776        adaption,arc1,arc2,arrayr,assemble,asseminit,beziercurve2,block2,%
777        block3,bsplinecurve2,bsplinecurve3,bsplinesurf3,bypassplot,cardg,%
778        ccoeffgroup,chamfer,checkgeom,circ1,circ2,coeff2cell,comsol,%
779        cone2,cone3,Contents,createhexes,createprisms,createquads,csgbl2,%
780        csgbl3,csgcmpbz,csgimplbz,csginitaux,csginitnr,csgproputil,%
781        csgrbconv,csgunique3,csguniquep,csgversion,csgvvovl,curve2,%
782        curve3,cylinder2,cylinder3,dat2str,defastget,display,drawgetobj,%
783        drawreobj,drawsetobj,dst,duplicate,dxflayers,dxfread,dxfwrite,%
784        econe2,econe3,eigloop,elcconstr,elcplbnd,elcplextr,elcplproj,%
785        elcplscalar,elempty,elemreobj,eleqc,eleqw,elevate,elgeom,ellip1,%
786        ellip2,ellipsoid2,ellipsoid3,ellipsoidgen_fl23,elmat,elovar,%
787        elpconstr,elshape,elvar,elvarm,embed,extrude,face3,faceprim3,%
788        fastsetop,fem2jxfem,femblocksu,femdiff,femeig,femexport,femgui,%
789        femimport,femiter,femlab,femlin,femmesh,femmeshexp,femnlin,%
790        femplot,femsfun,femsim,femsimlowlevel,femsimserver,femsol,%
791        femsolver,femstate,femstruct,femtime,femwave,festyle,fieldnames,%
792        fillet,fl1d,fl2d,fl3d,flaction,flafun,flappconvert,flappobj,%
793        flaxisequal,flbase,flbinary,flc1hs,flc2hs,flcanpnt,flcell2draw,%
794        flclear,flcolorbar,flcompact,flconeplot,flcontour2mesh,%
795        flcontour2meshaux,flconvreact,flconvreact1d,flconvreact2d,%
796        flconvreact3d,flcyl,fldc1hs,fldc2hs,fldegree,fldegreer3,%
797        fldegreet3,fldimvarsget,fldisp,fldraw2cell,fldrawnow,fldsmhs,%
798        fldsmsign,flevalmat,flexch,flexchprop,flfastgeom,flform,flgc,%
799        flgcbo,flgdconv,flgeom2cellstr,flgeomadj,flgeomarcize,flgeomec,%
800        flgeomed,flgeomepol,flgeomes,flgeomfc,flgeomfd,flgeomfdp,%
```

```
801        flgeomff1,flgeomff2,flgeomfn,flgeomfs,flgeomgetlocalsys,%
802        flgeominit,flgeominitprop,flgeomitransform,flgeomloft,flgeommesh,%
803        flgeomnbs,flgeomnes,flgeomnmr,flgeomnv,flgeompsinv,flgeomrmsing,%
804        flgeomrotp,flgeomsd,flgeomsdim,flgeomse,flgeomsf2,flgeomspm,%
805        flgeomtransform,flgeomud,flgeomvtx,flgetdraw,flheat,flheat1d,%
806        flheat2d,flheat3d,flhelmholtz,flhelmholtz1d,flhelmholtz2d,%
807        flhelmholtz3d,flim2curve,flinterp1,fliscont,flismember,%
808        flisnumeric,fljaction,fllaplace,fllaplace1d,fllaplace2d,%
809        fllaplace3d,flload,flloadfl,flloadmatfile,flloadmfile,%
810        fllobj2cellstr,flmakeevalstr,flmapsoljac,flmat2str,flmatch,%
811        flmesh2spline,flmesh2splineaux,flml65setup,flngdof,flnull,%
812        flnullorth,flpde,flpdeac,flpdec,flpdec1d,flpdec2d,flpdec3d,%
813        flpdedc,flpdedc2d,flpdedc3d,flpdedf,flpdedf1d,flpdedf2d,%
814        flpdedf3d,flpdees,flpdees2d,flpdees3d,flpdeg,flpdeg1d,flpdeg2d,%
815        flpdeg3d,flpdeht,flpdeht1d,flpdeht2d,flpdeht3d,flpdems,flpdems2d,%
816        flpdems3d,flpdens,flpdens2d,flpdens3d,flpdepn,flpdeps,flpdesm3d,%
817        flpdew,flpdew1d,flpdew2d,flpdew3d,flpdewb,flpdewb1d,flpdewb2d,%
818        flpdewb3d,flpdewc,flpdewc1d,flpdewc2d,flpdewc3d,flpdewe,%
819        flpdewe3d,flpdewp,flpdewp2d,flpdewp3d,flplot,flpoisson,%
820        flpoisson1d,flpoisson2d,flpoisson3d,flpric2,flpric3,flreobj,%
821        flreport,flresolvepath,flsave,flschrodinger,flschrodinger1d,%
822        flschrodinger2d,flschrodinger3d,flsde,flsdp,flsdt,flsetalpha,%
823        flsetdraw,flsmhs,flsmsign,flspnull,fltherm_cond1,fltrg,flversion,%
824        flversions,flverver,flwave,flwave1d,flwave2d,flwave3d,%
825        flwriteghist,formstr,gdsread,gencyl2,gencyl3,genextrude,%
826        genextrudeaux,geom,geom0,geom0get,geom1,geom1get,geom2,geom2get,%
827        geom3,geom3get,geom3j2m,geom3m2j,geomaddlblmargin,geomanalyze,%
828        geomarrayr,geomassign,geomcoerce,geomcomp,geomconnect,geomcopy,%
829        geomcsg,geomdel,geomedit,geomexport,geomfile,geomget,%
830        geomgetlabels,geomgetwrkpln,geomimport,geominfo,geominfoaux,%
831        geomlblplot,geomload,geomnumparse,geomobject,geomparse,geomplot,%
832        geomplot1,geomplot2,geomplot3,geomposition,geomproputil,%
833        geomreconstruct,geomreobj,geomserver,geomspline,geomsurf,%
834        geomupdate,get,getfemgeom,getisocurve,getjptr,getmesh,getsdim,%
835        getvmatrixexch,handlesolnumstr,helix1,helix2,helix3,hexahedron2,%
836        hexahedron3,histfrommat,idst,igesread,importplotdata,isempty,%
837        isfield,isfunc,isscript,javaclass,jproputil,jptr2geom,jptrgeom1,%
838        jptrgeom1_fl23,jptrgeom2,jptrgeom2_fl23,jptrgeom3,jptrgeom3_fl23,%
839        keiter,line1,line2,loadobj,loft,matlabinterpdata,mesh2geom,%
840        meshassign,meshcaseadd,meshcasedel,meshcaseutil,meshcheck,%
841        meshembed,meshenrich,meshenrich1,meshenrich2,meshenrich3,%
842        meshexport,meshextend,meshextrude,meshget,meshimport,meshinit,%
843        meshintegrate,meshmap,meshoptim,meshparse,meshplot,meshplot1,%
844        meshplot2,meshplot3,meshplotproputil,meshpoi,meshproputil,%
845        meshptplot,meshqual,meshrefine,meshrevolve,meshsmooth,%
846        meshsmooth2,meshsweep,meshvolume,minus,mirror,mkreflparams,%
847        mmsolve,modetype,move,moveglobalfields,mphproputil,mtimes,%
848        multiphysics,mypostinterp,notscript,onlyelsconstr,outassign,%
849        paramgeom,pde2draw,pde2equ,pde2fem,pde2geom,pdeblxpd,plus,point1,%
850        point2,point3,poisson,poly1,poly2,postanim,postapplysettings,%
```

```
851        postarrow,postarrowbnd,postcolorbar,postcont,postcontdomind,%
852        postcoord,postcopyprop,postcrossplot,postdistrprops,posteval,%
853        postflow,postfnd,postgeomplot,postgetfem,postgetstylecolor,%
854        postglobaleval,postglobalplot,postgp,postinit,postint,postinterp,%
855        postiso,postlin,postmakecontcol,postmax,postmaxmin,postmin,%
856        postmkcontbar,postmknormexpr,postmovie,postnewplot,%
857        postoldmaxminprops,postpd2pm,postplot,postplotconstants,%
858        postpm2pd,postprinc,postprincbnd,postprocgui,postproputil,%
859        postslice,postsurf,posttet,posttitle,print2file,pyramid2,%
860        pyramid3,rect1,rect2,restorefields,revolve,rmfield,rotate,%
861        rotmatrix,scale,serialize,set,setmesh,sh2str,sharg_2_5,shbub,%
862        shdisc,shdiv,shherm,shlag,shvec,simplecoerce,simreobj,slblocks,%
863        solassign,solid0,solid1,solid2,solid3,solidprim3,solproputil,%
864        solsize,solveraddcases,sphere2,sphere3,spiceimport,splineaux,%
865        split,splittoprim,square1,square2,stlread,submode,submodes,%
866        subsasgn,subsref,tangent,taucs,tetrahedron2,tetrahedron3,%
867        tobsplines,torus2,torus3,transform,update,updateassoc,%
868        updateassocinfo,updatefem,updateguistruct,updateobj,vrmlread,%
869        xmeshinfo,xmeshinit},%
870     sensitive=false,%
871     morecomment=[l]\%,%
872     morestring=[m]'%
873     }[keywords,comments,strings]%

874 ⟨/lang3⟩
```

2.18   bash, csh, and sh

csh is from Kai Below, but he pointed out that some keywords are probably missing.

```
875 ⟨*lang1⟩

876 %%
877 %% csh definition (c) 1998 Kai Below
878 %%
879 \lst@definelanguage{csh}
880    {morekeywords={alias,awk,cat,echo,else,end,endif,endsw,exec,exit,%
881        foreach,glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
882        set,setenv,shift,source,switch,then,time,while,umask,unalias,%
883        unset,wait,while,@,env,argv,child,home,ignoreeof,noclobber,%
884        noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
885        sqrt,BEGIN,END},%
886     morecomment=[l]\#,%
887     morestring=[d]"%
888     }[keywords,comments,strings]%
```

Thanks to Riccardo Murri for the following two definitions. Scott Pakin pointed out some missing keywords (`elif`, `in` for `sh`, `caller`, `compopt`, `coproc`, `dirs`, `help`, `mapfile`, `readarray` for `bash`) to the current maintainer. The `sh` list of keywords was checkead against the "Manual of the Bourne Shell on Version 7", found

at http://www.in-ulm.de/~mascheck/bourne/v7/, last visited on 2014/09/06.

```
889 %%
890 %% bash,sh definition (c) 2003 Riccardo Murri <riccardo.murri@gmx.it>
891 %%
892 \lst@definelanguage{bash}[]{sh}%
893   {morekeywords={alias,bg,bind,builtin,caller,command,compgen,compopt,%
894       complete,coproc,declare,disown,dirs,enable,fc,fg,help,history,%
895       jobs,let,local,logout,mapfile,printf,pushd,popd,readarray,select,%
896       set,suspend,shopt,source,times,type,typeset,ulimit,unalias,wait},%
897   }%
898 \lst@definelanguage{sh}%
899   {morekeywords={awk,break,case,cat,cd,continue,do,done,echo,elif,else,%
900       env,esac,eval,exec,exit,export,expr,false,fi,for,function,getopts,%
901       hash,history,if,in,kill,login,newgrp,nice,nohup,ps,pwd,read,%
902       readonly,return,set,sed,shift,test,then,times,trap,true,type,%
903       ulimit,umask,unset,until,wait,while},%
904   morecomment=[l]\#,%
905   morestring=[d]"%
906   }[keywords,comments,strings]%
907 ⟨/lang1⟩
```

Jobst Hoffmann copied the definition of a style for printing Fortran code to a style for printing shell programs:

```
908 ⟨*bash-prf⟩

909 \usepackage[rgb, x11names]{xcolor}
910
911 % common settings
912 \lstset{%
913   frame=tlb,%        the frame is open on the right side
914   resetmargins=false,%
915   rulesepcolor=\color{black},%
916   numbers=left,%              % left
917   numberstyle=\tiny,%
918   numbersep=5pt,%
919   firstnumber=1,%
920   stepnumber=5,%
921   columns=fixed,%             % to prevent inserting spaces
922   fontadjust=true,%
923   keepspaces=true,%
924   basewidth=0.5em,%
925   captionpos=t,%
926   abovecaptionskip=\smallskipamount,% same amount as default
927   belowcaptionskip=\smallskipamount,% in caption package
928 }
929 % settings for colored printing
930 \lstdefinestyle{bash}{%
931   backgroundcolor=\color{yellow!10},%
932   basicstyle=\small\ttfamily,%
933   identifierstyle=\color{black},%
```

```
934  keywordstyle=\color{blue},%
935  keywordstyle={[2]\color{cyan}},%
936  keywordstyle={[3]\color{olive}},%
937  stringstyle=\color{teal},%
938  commentstyle=\itshape\color{orange},%
939 }%
940 % settings for back and white printing
941 \lstdefinestyle{bashbw}{%
942  backgroundcolor={},%
943  basicstyle=\small\ttfamily,%
944  identifierstyle={},%
945  keywordstyle=\bfseries,%
946  stringstyle=\itshape,%
947  commentstyle=\slshape,%
948  rulesepcolor=\color{black},%
949 }%
```

This code is provided in the file `listings-bash.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
950 ⟨/bash-prf⟩
```

2.19 Delphi

I took the data from Delphi 1.0 (?) online help. Christian Gudrian provided the 'double slash' comment.

```
951 ⟨*lang2⟩
```

```
952 \lst@definelanguage{Delphi}%
953   {morekeywords={and,as,asm,array,begin,case,class,const,constructor,%
954       destructor,div,do,downto,else,end,except,exports,file,finally,%
955       for,function,goto,if,implementation,in,inherited,inline,%
956       initialization,interface,is,label,library,mod,nil,not,object,of,%
957       or,packed,procedure,program,property,raise,record,repeat,set,%
958       shl,shr,string,then,to,try,type,unit,until,uses,var,while,with,%
959       xor,%
960       absolute,abstract,assembler,at,cdecl,default,dynamic,export,%
961       external,far,forward,index,name,near,nodefault,on,override,%
962       private,protected,public,published,read,resident,storedDir,%
963       virtual,write},%
964    morendkeywords={Abs,AddExitProc,Addr,AllocMem,AnsiCompareStr,%
965       AnsiCompareText,AnsiLowerCase,AnsiUpperCase,Append,AppendStr,%
966       ArcTan,AssignCrt,Assigned,AssignFile,BlockRead,BlockWrite,Break,%
967       ChangeFileExt,ChDir,Chr,CloseFile,ClrEol,ClrScr,Concat,Continue,%
968       Copy,Cos,CSeg,CursorTo,Date,DateTimeToFileDate,DateTimeToStr,%
969       DateTimeToString,DateToStr,DayOfWeek,Dec,DecodeDate,DecodeTime,%
970       Delete,DeleteFile,DiskFree,DiskSize,Dispose,DisposeStr,%
971       DoneWinCrt,DSeg,EncodeDate,EncodeTime,Eof,Eoln,Erase,Exclude,%
972       Exit,Exp,ExpandFileName,ExtractFileExt,ExtractFileName,%
973       ExtractFilePath,FileAge,FileClose,FileDateToDateTime,FileExists,%
974       FileGetAttr,FileGetDate,FileOpen,FilePos,FileRead,FileSearch,%
```

```
975    FileSeek,FileSetAttr,FileSetDate,FileSize,FillChar,FindClose,%
976    FindFirst,FindNext,FloatToDecimal,FloatToStrF,FloatToStr,%
977    FloatToText,FloatToTextFmt,Flush,FmtLoadStr,FmtStr,Format,%
978    FormatBuf,FormatDateTime,FormatFloat,Frac,Free,FreeMem,GetDir,%
979    GetMem,GotoXY,Halt,Hi,High,Inc,Include,InitWinCrt,Insert,Int,%
980    IntToHex,IntToStr,IOResult,IsValidIdent,KeyPressed,Length,Ln,Lo,%
981    LoadStr,Low,LowerCase,MaxAvail,MemAvail,MkDir,Move,New,NewStr,%
982    Now,Odd,Ofs,Ord,ParamCount,ParamStr,Pi,Pos,Pred,Ptr,Random,%
983    Randomize,Read,ReadBuf,ReadKey,Readln,ReAllocMem,Rename,%
984    RenameFile,Reset,Rewrite,RmDir,Round,RunError,ScrollTo,Seek,%
985    SeekEof,SeekEoln,Seg,SetTextBuf,Sin,SizeOf,SPtr,Sqr,Sqrt,SSeg,%
986    Str,StrCat,StrComp,StrCopy,StrDispose,StrECopy,StrEnd,StrFmt,%
987    StrLCat,StrIComp,StrLComp,StrLCopy,StrLen,StrLFmt,StrLIComp,%
988    StrLower,StrMove,StrNew,StrPas,StrPCopy,StrPos,StrScan,StrRScan,%
989    StrToDate,StrToDateTime,StrToFloat,StrToInt,StrToIntDef,%
990    StrToTime,StrUpper,Succ,Swap,TextToFloat,Time,TimeToStr,%
991    TrackCursor,Trunc,Truncate,TypeOf,UpCase,UpperCase,Val,WhereX,%
992    WhereY,Write,WriteBuf,WriteChar,Writeln},%
993    sensitive=f,%
994    morecomment=[s]{(*}{*)},%
995    morecomment=[s]{\{}{\}},%
996    morecomment=[l]{//},% 2001 Christian Gudrian
997    morestring=[d]'%
998  }[keywords,comments,strings]%
999 ⟨/lang2⟩
```

2.20 Eiffel

Data is from

- BERTRAND MEYER: **Eiffel: the language**; Prentice Hall International (UK) Ldt, 1992; ISBN 0-13-247925-7.

```
1000 ⟨*lang2⟩
1001 \lst@definelanguage{Eiffel}%
1002   {morekeywords={alias,all,and,as,BIT,BOOLEAN,CHARACTER,check,class,%
1003       creation,Current,debug,deferred,do,DOUBLE,else,elseif,end,%
1004       ensure,expanded,export,external,false,feature,from,frozen,if,%
1005       implies,indexing,infix,inherit,inspect,INTEGER,invariant,is,%
1006       like,local,loop,NONE,not,obsolete,old,once,or,POINTER,prefix,%
1007       REAL,redefine,rename,require,rescue,Result,retry,select,%
1008       separate,STRING,strip,then,true,undefine,unique,until,variant,%
1009       when,xor},%
1010   sensitive,%
1011   morecomment=[l]--,%
1012   morestring=[d]",%
1013   }[keywords,comments,strings]%
```

The key=value `stringtest=false` has been removed after a bug report from Xavier Crégut.

1014 ⟨/lang2⟩

2.21   Elan

The data come from

- LEO H. KLINGEN, JOCHEN LIEDTKE: **Programmieren mit ELAN**; B.G. Teubner, Stuttgart 1983; ISBN 3-519-02507-8.

1015 ⟨∗lang3⟩

```
1016 \lst@definelanguage{Elan}%
1017   {morekeywords={ABS,AND,BOOL,CAND,CASE,CAT,COLUMNS,CONCR,CONJ,CONST,%
1018       COR,DECR,DEFINES,DET,DIV,DOWNTO,ELIF,ELSE,END,ENDIF,ENDOP,%
1019       ENDPACKET,ENDPROC,ENDREP,ENDSELECT,FALSE,FI,FILE,FOR,FROM,IF,%
1020       INCR,INT,INV,LEAVE,LENGTH,LET,MOD,NOT,OF,OP,OR,OTHERWISE,PACKET,%
1021       PROC,REAL,REP,REPEAT,ROW,ROWS,SELECT,SIGN,STRUCT,SUB,TEXT,THEN,%
1022       TRANSP,TRUE,TYPE,UNTIL,UPTO,VAR,WHILE,WITH,XOR,%
1023       maxint,sign,abs,min,max,random,initializerandom,subtext,code,%
1024       replace,text,laenge,pos,compress,change,maxreal,smallreal,floor,%
1025       pi,e,ln,log2,log10,sqrt,exp,tan,tand,sin,sind,cos,cosd,arctan,%
1026       arctand,int,real,lastconversionok,put,putline,line,page,get,%
1027       getline,input,output,sequentialfile,maxlinelaenge,reset,eof,%
1028       close,complexzero,complexone,complexi,complex,realpart,imagpart,%
1029       dphi,phi,vector,norm,replace,matrix,idn,row,column,sub,%
1030       replacerow,replacecolumn,replaceelement,transp,errorsstop,stop},%
1031     sensitive,%
1032     morestring=[d]"%
1033   }[keywords,strings]%
```

1034 ⟨/lang3⟩

2.22   Erlang

Thanks to Daniel Gazard.

1035 ⟨∗lang3⟩

```
1036 %%
1037 %% Erlang definition (c) 2003 Daniel Gazard
1038 %%
1039 \lst@definelanguage{erlang}%
1040   {morekeywords={abs,after,and,apply,atom,atom_to_list,band,binary,%
1041       binary_to_list,binary_to_term,bor,bsl,bsr,bxor,case,catch,%
1042       date,div,element,erase,end,exit,export,float,float_to_list,%
1043       get,halt,hash,hd,if,info,import,integer,integer_to_list,%
1044       length,link,list,list_to_atom,list_to_float,list_to_integer,%
1045       list_to_tuple,module,node,nodes,now,of,or,pid,port,ports,%
1046       processes,put,receive,reference,register,registered,rem,%
1047       round,self,setelement,size,spawn,throw,time,tl,trace,trunc,%
1048       tuple,tuple_to_list,unlink,unregister,whereis,error,false,%
1049       infinity,nil,ok,true,undefined,when},%
```

```
1050    otherkeywords={->,!,[,],\{,\}},%
1051    morecomment=[l]\%,%
1052    morestring=[b]",%
1053    morestring=[b]'%
1054  }[keywords,comments,strings]%
```

1055 ⟨/lang3⟩

2.23 Euphoria

Detlef Reimers sent me the language definition.

1056 ⟨*lang2⟩

```
1057 %%
1058 %% Euphoria definition (c) 1998 Detlef Reimers
1059 %%
1060 \lst@definelanguage{Euphoria}%
1061 % for Euphoria 2.0, Rapid Deployment Software, Kanada
1062  {morekeywords={abort,and,and_bits,append,arctan,atom,by,call,%
1063      call_proc,call_func,c_proc,c_func,clear_screen,close,%
1064      command_line,compare,constant,cos,do,date,else,elsif,end,exit,%
1065      find,floor,for,function,getc,getenv,get_key,gets,global,%
1066      get_pixel,if,include,integer,length,log,match,machine_func,%
1067      machine_proc,mem_copy,mem_set,not,not_bits,or,object,open,%
1068      or_bits,procedure,puts,position,prepend,print,printf,power,peek,%
1069      poke,pixel,poke4,peek4s,peek4u,return,rand,repeat,remainder,%
1070      routine_id,sequence,sqrt,sin,system,sprintf,then,type,to,time,%
1071      trace,tan,while,with,without,xor,xor_bits},%
1072    sensitive,%
1073    morecomment=[l]--,%
1074    morestring=[d]',%
1075    morestring=[d]"%
1076  }[keywords,comments,strings]%
```

1077 ⟨/lang2⟩

2.24 Fortran

Took things from

- KARL HANS MÜLLER: **Fortran 77: Programmierungsanleitung**; 3., völlig neu bearb. Aufl. – Mannheim; Wien; Zürich: Bibliographisches Institut, 1984; ISBN 3-411-05804-8

- THOMAS MICHEL: **Fortran 90: Lehr– und Handbuch**; Mannheim; Leipzig; Wien; Zürich: BI-Wiss.-Verlag, 1994; ISBN 3-411-16861-7.

Another source for Fortran keywords is http://fortranwiki.org/fortran/show/Keywords where the keywords for Fortran 2003 and 2008 are taken from.

1078 ⟨*lang1⟩

The current version of Fortran (Fortran 2008) is defined by ISO/IEC 1539-1:2010. It contains nine new keywords, four of them consisting of two words: `ERROR STOP`, `SYNC ALL`, `SYNC IMAGES`, `SYNC MEMORY`, so the list of keywords contains the single parts `ALL`, `ERROR`, `IMAGES`, `MEMORY`, and `SYNC`.

```
1079 \lst@definelanguage[08]{Fortran}[03]{Fortran}{%
1080   morekeywords={ALL, BLOCK, CODIMENSION, CONCURRENT, CONTIGUOUS, CRITICAL,%
1081     ERROR, LOCK, SUBMODULE, SYNC, UNLOCK},%
```

New procedures in Fortran 2008:

```
1082     morekeywords=[3]{ACOSH,ASINH,ATANH,ATOMIC_DEFINE,ATOMIC_REF,BESSEL_J0,%
1083       BESSEL_J1,BESSEL_JN,BESSEL_Y0,BESSEL_Y1,BESSEL_YN,BGE,BGT,BLE,BLT,%
1084       C_SIZEOF,COMPILER_OPTIONS,COMPILER_VERSION,DSHIFTL,DSHIFTR,ERF,ERFC,%
1085       ERFC_SCALED,EXECUTE_COMMAND_LINE,GAMMA,HYPOT,IALL,IANY,IMAGE_INDEX,%
1086       IPARITY,LCOBOUND,LEADZ,LOG_GAMMA,MASKL,MASKR,MERGE_BITS,NORM2,%
1087       NUM_IMAGES,PARITY,POPCNT,POPPAR,SHIFTA,SHIFTL,SHIFTR,STORAGE_SIZE,%
1088       THIS_IMAGE,TRAILZ,UCOBOUND}%
1089 }%
```

Fortran 2003 introduces the following keywords:

```
1090 \lst@definelanguage[03]{Fortran}[95]{Fortran}{%
1091   morekeywords={ABSTRACT, ASSOCIATE, ASYNCHRONOUS, BIND, CLASS, DEFERRED,%
1092     ENUM, ENUMERATOR, EXTENDS, FINAL, FLUSH, GENERIC, IMPORT,%
1093     NON_OVERRIDABLE, NOPASS, PASS, PROTECTED, VALUE, VOLATILE, WAIT},%
```

These are new options/specifiers:

```
1094     morekeywords=[2]{DECIMAL,ENCODING,IOMSG,ROUND},
```

And also some new procedures:

```
1095     morekeywords=[3]{C_ASSOCIATED,C_F_POINTER,C_F_PROCPOINTER,C_FUNLOC,%
1096     C_LOC,COMMAND_ARGUMENT_COUNT,EXTENDS_TYPE_OF,GET_COMMAND,GET_COMMAND_ARGUMENT,%
1097     GET_ENVIRONMENT_VARIABLE,IS_IOSTAT_END,MOVE_ALLOC,NEW_LINE,SAME_TYPE_AS,%
1098     SELECTED_CHAR_KIND}%
1099 }%
```

Denis Girou proposed to have Fortran 95 and Fortran 90 to be equivalent.

```
1100 \lst@definelanguage[90]{Fortran}[95]{Fortran}{}
```

There is no `morecomment=[f]` in Fortran 90 since otherwise `CONTAINS` could start a comment. This problem was reported by Magne Rudshaug. Moreover the keyword `INCLUDE` is due to him.

```
1101 \lst@definelanguage[95]{Fortran}[77]{Fortran}%
1102   {deletekeywords=SAVE,%
1103    morekeywords={ALLOCATABLE,ALLOCATE,ASSIGNMENT,CASE,%
1104      CONTAINS,CYCLE,DEALLOCATE,DEFAULT,EXIT,INCLUDE,IN,NONE,%
1105      OUT,INTENT,INTERFACE,MODULE,NAMELIST,%
1106      NULLIFY,ONLY,OPERATOR,OPTIONAL,OUT,POINTER,PRIVATE,%
1107      PUBLIC,RECURSIVE,RESULT,SELECT,SEQUENCE,%
1108      TARGET,USE,WHERE,WHILE,BLOCKDATA,DOUBLEPRECISION,%
1109      ENDBLOCKDATA,ENDFILE,ENDFUNCTION,ENDINTERFACE,%
1110      ENDMODULE,ENDPROGRAM,ENDSELECT,ENDSUBROUTINE,ENDTYPE,ENDWHERE,%
1111      INOUT,SELECTCASE,%
```

Theses keys were missing from the 1.4 version of listings:

```
1112      ELEMENTAL, ELSEWHERE, FORALL, PURE,%
```

This is another key missing from the 1.4 version of listings:

```
1113      PROCEDURE},%
```

The list of option keywords/specifiers new in Fortran 90 and 95:

```
1114    morekeywords=[2]{ACTION,ADVANCE,DELIM,IOLENGTH,LEN,NAME,%
1115      NML,PAD,POSITION,READWRITE,SIZE,STAT},% corrected NML from NMT
```

and the list of intrinsic procedures new in Fortran 90 and 95:

```
1116    morekeywords=[3]{ADJUSTL,ADJUSTR,ALL,ALLOCATED,ANY,ASSOCIATED,BIT_SIZE,%
1117      BTEST,CEILING,COUNT,CPU_TIME,CSHIFT,DATE_AND_TIME,DIGITS,DOT_PRODUCT,%
1118      EOSHIFT,EPSILON,EXPONENT,FLOOR,FRACTION,HUGE,IACHAR,IAND,IBCLR,
1119      IBITS,IBSET,ICHAR,IEOR,IOR,ISHFT,ISHFTC,KIND,LBOUND,LEN_TRIM,% left out LOGICAL
1120      MATMUL,MAXEXPONENT,MAXLOC,MAXVAL,MERGE,MINEXPONENT,MINLOC,MINVAL,%
1121      MODULO,MVBITS,NEAREST,NOT,NULL,PACK,PRECISION,PRESENT,PRODUCT,%
1122      RADIX,RANDOM_NUMBER,RANDOM_SEED,RANGE,RANK,REPEAT,RESHAPE,RRSPACING,%
1123      SCALE,SCAN,SELECTED_INT_KIND,SELECTED_REAL_KIND,SET_EXPONENT,SHAPE,%
1124      SINH,SIZE,SPACING,SPREAD,SUM,SYSTEM_CLOCK,TINY,TRANSFER,TRANSPOSE,%
1125      TRIM,UBOUND,UNPACK,VERIFY},%
1126    deletecomment=[f],% no fixed comment line: 1998 Magne Rudshaug
1127    morecomment=[l]!%
1128    }%
```

As proposed by Jörn Wilms keywords are *not* case sensitive. Also, note that Fortran 77 (and fixed-format source in later versions) allows space in keywords; thus, this list contains some of the more common variants (e.g., 'GO TO' and 'GOTO').

```
1129 \lst@definelanguage[77]{Fortran}%
```

Jobst Hoffmann divided the list of keywords into two lists. The first list contains the statement keywords, the second list contains the option keywords/specifiers and values. This makes the different meanings of the keywords distinguishable.

```
1130    {morekeywords={ASSIGN,BACKSPACE,CALL,CHARACTER,%
1131      CLOSE,COMMON,COMPLEX,CONTINUE,DATA,DIMENSION,DO,DOUBLE,%
1132      ELSE,ELSEIF,END,ENDIF,ENDDO,ENTRY,EQUIVALENCE,EXTERNAL,%
1133      FILE,FORMAT,FUNCTION,GO,TO,GOTO,IF,IMPLICIT,%
1134      INQUIRE,INTEGER,INTRINSIC,LOGICAL,%
1135      OPEN,PARAMETER,PAUSE,PRECISION,PRINT,PROGRAM,READ,REAL,%
1136      RETURN,REWIND,STOP,SUBROUTINE,THEN,%
1137      WRITE,SAVE},%
1138    morekeywords=[2]{ACCESS,BLANK,BLOCK,DIRECT,EOF,ERR,EXIST,%
1139      FMT,FORM,FORMATTED,IOSTAT,NAMED,NEXTREC,NUMBER,OPENED,%
1140      REC,RECL,SEQUENTIAL,STATUS,TYPE,UNFORMATTED,UNIT},%
```

And here is another list: the list of intrinsic procedures (remember: all functions belong to the Fortran language specification!)

```
1141    morekeywords=[3]{INT,DBLE,CMPLX,ICHAR,CHAR,AINT,ANINT,% left out real
1142      NINT,ABS,MOD,SIGN,DIM,DPROD,MAX,MIN,AIMAG,CONJG,SQRT,EXP,LOG,%
1143      LOG10,SIN,COS,TAN,ASIN,ACOS,ATAN,ATAN2,SINH,COSH,TANH,LGE,LLE,LLT,%
1144      LEN,INDEX},%
```

And here is the last list: fortran operators:

```
1145     morekeywords=[4]{AND,EQ,EQV,FALSE,GE,GT,OR,LE,LT,NE,NEQV,NOT,TRUE},%
1146     sensitive=f,%% not Fortran-77 standard, but allowed in Fortran-95 %%
1147     morecomment=[f]*,%
1148     morecomment=[f]C,%
1149     morecomment=[f]c,%
1150     morestring=[d]",%% not Fortran-77 standard, but allowed in Fortran-95 %%
1151     morestring=[d]'%
1152   }[keywords,comments,strings]%
```

1153 ⟨/lang1⟩

Jobst Hoffmann supplied a definition of a style for printing Fortran code:

1154 ⟨∗fortran-prf⟩

```
1155 \usepackage[rgb, x11names]{xcolor}
1156
1157 % common settings
1158 \lstset{%
1159   frame=tlb,%        the frame is open on the right side
1160   resetmargins=false,%
1161   rulesepcolor=\color{black},%
1162   numbers=left,%              % left
1163   numberstyle=\tiny,%
1164   numbersep=5pt,%
1165   firstnumber=1,%
1166   stepnumber=5,%
1167   columns=fixed,%             % to prevent inserting spaces
1168   fontadjust=true,%
1169   keepspaces=true,%
1170   basewidth=0.5em,%
1171   captionpos=t,%
1172   abovecaptionskip=\smallskipamount,% same amount as default
1173   belowcaptionskip=\smallskipamount,% in caption package
1174 }
1175 % settings for colored printing
1176 \lstdefinestyle{fortran}{%
1177   backgroundcolor=\color{yellow!10},%
1178   basicstyle=\small\ttfamily,%
1179   identifierstyle=\color{black},%
1180   keywordstyle=\color{blue},%
1181   keywordstyle={[2]\color{cyan}},%
1182   keywordstyle={[3]\color{olive}},%
1183   stringstyle=\color{teal},%
1184   commentstyle=\itshape\color{orange},%
1185 }%
1186 % settings for back and white printing
1187 \lstdefinestyle{fortranbw}{%
1188   backgroundcolor={},%
1189   basicstyle=\small\ttfamily,%
1190   identifierstyle={},%
```

```
1191   keywordstyle=\bfseries,%
1192   stringstyle=\itshape,%
1193   commentstyle=\slshape,%
1194   rulesepcolor=\color{black},%
1195 }%
```

This code is provided in the file `listings-fortran.prf`, see section 2.4.1 (Preferences) of the listings documentation.

1196 ⟨/fortran-prf⟩

2.25   GAP—Groups, Algorithms, Programming

GAP is a System for Computational Discrete Algebra, a description can be found at http://www.gap-system.org/. Heiko Oberdiek provided a language definition without knowing this language, so any error should be announced to the current maintainer of the listings package.

1197 ⟨*lang2⟩

```
1198 %%
1199 %% GAP definition
1200 %% (c) 2013 Heiko Oberdiek
1201 %%
1202 \lst@definelanguage{GAP}{%
1203   morekeywords={%
1204     Assert,Info,IsBound,QUIT,%
1205     TryNextMethod,Unbind,and,break,%
1206     continue,do,elif,%
1207     else,end,false,fi,for,%
1208     function,if,in,local,%
1209     mod,not,od,or,%
1210     quit,rec,repeat,return,%
1211     then,true,until,while%
1212   },%
1213   sensitive,%
1214   morecomment=[l]\#,%
1215   morestring=[b]",%
1216   morestring=[b]',%
1217 }[keywords,comments,strings]
```

1218 ⟨/lang2⟩

2.26   Guarded Command Language (GCL)

As you can read below, Mark van Eijk provided this language definition.

1219 ⟨*lang2⟩

```
1220 %%
1221 %% Guarded Command Language (GCL)  definition
1222 %% (c) 2002 Mark van Eijk
1223 %%
```

```
1224 \lst@definelanguage{GCL}%
1225   {morekeywords={const,con,var,array,of,skip,if,fi,do,od,div,mod},%
1226   literate={|[}{\ensuremath{|\hskip -0.1em[}}2%
1227           {]|}{\ensuremath{]\hskip -0.1em|}}2%
1228   {[]}{\ensuremath{[\hskip -0.1em]}}2%
1229   {->}{\ensuremath{\rightarrow}~}2%
1230   {==}{\ensuremath{\equiv}~}2%
1231   {>=}{\ensuremath{\geq}~}2%
1232   {<=}{\ensuremath{\leq}~}2%
1233   {/\\}{\ensuremath{\land}~}2%
1234   {\\/}{\ensuremath{\lor}~}2%
1235   {!}{\ensuremath{\lnot}}1%
1236   {!=}{\ensuremath{\neq}~}2%
1237   {max}{\ensuremath{\uparrow}}1%
1238   {min}{\ensuremath{\downarrow}}1,%
1239   sensitive=f,%
1240   morecomment=[s]{\{}{\}},%
1241   morestring=[d]'%
1242   }[keywords,comments,strings]%
1243 ⟨/lang2⟩
```

2.27 Gnuplot

Thanks to Dr. Christoph Giess for providing this definition.

```
1244 ⟨*lang2⟩
1245 %%
1246 %% gnuplot definition (c) Christoph Giess
1247 %%
1248 \lst@definelanguage{Gnuplot}%
1249   {keywords={abs,acos,acosh,arg,asin,asinh,atan,atan2,atanh,besj0,%
1250       besj1,besy0,besy1,ceil,cos,cosh,erf,erfc,exp,floor,gamma,ibeta,%
1251       inverf,igamma,imag,invnorm,int,lgamma,log,log10,norm,rand,real,%
1252       sgn,sin,sinh,sqrt,tan,tanh,column,tm_hour,tm_mday,tm_min,tm_mon,%
1253       tm_sec,tm_wday,tm_yday,tm_year,valid,cd,call,clear,exit,fit,%
1254       help,if,load,pause,plot,print,pwd,quit,replot,reread,reset,save,%
1255       set,show,shell,splot,test,update,angles,arrow,autoscale,border,%
1256       boxwidth,clabel,clip,cntrparam,contour,data,dgrid3d,dummy,%
1257       format,function,functions,grid,hidden3d,isosamples,key,keytitle,%
1258       label,logscale,mapping,offsets,output,parametric,pointsize,%
1259       polar,rrange,samples,size,style,surface,terminal,tics,time,%
1260       timefmt,title,trange,urange,variables,view,vrange,xdata,xlabel,%
1261       xmargin,xrange,xtics,mxtics,mytics,xdtics,xmtics,xzeroaxis,%
1262       ydata,ylabel,yrange,ytics,ydtics,ymtics,yzeroaxis,zdata,zero,%
1263       zeroaxis,zlabel,zrange,ztics,zdtics,zmtics,timefm,using,title,%
1264       with,index,every,thru,smooth},%
1265   sensitive,%
1266   comment=[l]\#,%
1267   morestring=[b]",%
1268   morestring=[b]',%
```

```
1269    }[keywords,comments,strings]%
1270 ⟨/lang2⟩
```

2.28   Hansl/Gretl

Thanks to Ignacio Díaz-Emparanza for providing the definition of hansl. Hansl is
the gretl scripting language (see http://gretl.sourceforge.net).

```
1271 ⟨*lang2⟩

1272 %%
1273 %% http://gretl.sourceforge.net/gretl-help/cmdref.html
1274 %% (c) 2013 Ignacio D\'iaz-Emparanza
1275 %%
1276 \lst@definelanguage{hansl}{%
1277   % $-variables are internal functions in hansl
1278   keywordsprefix ={\$},
1279   morekeywords={ % hansl commands:
1280     add,adf,anova,append,ar,ar1,%
1281     arbond,arch,arima,biprobit,boxplot,break,%
1282     catch,chow,clear,coeffsum,coint,coint2,%
1283     corr,corrgm,cusum,data,dataset,debug,%
1284     delete,diff,difftest,discrete,dpanel,dummify,%
1285     duration,elif,else,end,endif,endloop,%
1286     eqnprint,equation,estimate,fcast,foreign,fractint,%
1287     freq,function,garch,genr,gmm,gnuplot,%
1288     graphpg,hausman,heckit,help,hsk,hurst,%
1289     if,include,info,intreg,join,kalman,%
1290     kpss,labels,lad,lags,ldiff,leverage,%
1291     levinlin,logistic,logit,logs,loop,mahal,%
1292     makepkg,markers,meantest,mle,modeltab,modprint,%
1293     modtest,mpols,negbin,nls,normtest,nulldata,%
1294     ols,omit,open,orthdev,outfile,panel,%
1295     pca,pergm,poisson,print,printf,probit,%
1296     pvalue,qlrtest,qqplot,quantreg,quit,rename,%
1297     reset,restrict,rmplot,run,runs,scatters,%
1298     sdiff,set,setinfo,setobs,setmiss,shell,%
1299     smpl,spearman,sprintf,square,sscanf,store,%
1300     summary,system,tabprint,textplot,tobit,tsls,%
1301     var,varlist,vartest,vecm,vif,wls,%
1302     xcorrgm,xtab,scalar,series,matrix,string},%
1303   morekeywords=[2]{ %  Functions
1304     abs,acos,acosh,aggregate,argname,%
1305     asin,asinh,atan,atanh,atof,%
1306     bessel,BFGSmax,bkfilt,boxcox,bwfilt,%
1307     cdemean,cdf,cdiv,ceil,cholesky,%
1308     chowlin,cmult,cnorm,colname,colnames,%
1309     cols,corr,corrgm,cos,cosh,%
1310     cov,critical,cum,deseas,det,%
1311     diag,diagcat,diff,digamma,dnorm,%
1312     dsort,dummify,eigengen,eigensym,eigsolve,%
```

```
1313    epochday,errmsg,exp,fcstats,fdjac,%
1314    fft,ffti,filter,firstobs,fixname,%
1315    floor,fracdiff,gammafun,getenv,getline,%
1316    ghk,gini,ginv,halton,hdprod,%
1317    hpfilt,I,imaxc,imaxr,imhof,%
1318    iminc,iminr,inbundle,infnorm,inlist,%
1319    int,inv,invcdf,invmills,invpd,%
1320    irf,irr,isconst,isnan,isnull,%
1321    isodate,iwishart,kdensity,kfilter,ksimul,%
1322    ksmooth,kurtosis,lags,lastobs,ldet,%
1323    ldiff,lincomb,ljungbox,lngamma,log,%
1324    log10,log2,loess,logistic,lower,%
1325    lrvar,max,maxc,maxr,mcorr,%
1326    mcov,mcovg,mean,meanc,meanr,%
1327    median,mexp,min,minc,minr,%
1328    missing,misszero,mlag,mnormal,mols,%
1329    monthlen,movavg,mpols,mrandgen,mread,%
1330    mreverse,mrls,mshape,msortby,muniform,%
1331    mwrite,mxtab,nadarwat,nelem,ngetenv,%
1332    nobs,normal,npv,NRmax,nullspace,%
1333    obs,obslabel,obsnum,ok,onenorm,%
1334    ones,orthdev,pdf,pergm,pmax,%
1335    pmean,pmin,pnobs,polroots,polyfit,%
1336    princomp,prodc,prodr,psd,psdroot,%
1337    pshrink,psum,pvalue,pxsum,qform,%
1338    qnorm,qrdecomp,quadtable,quantile,randgen,%
1339    randgen1,randint,rank,ranking,rcond,%
1340    readfile,regsub,remove,replace,resample,%
1341    round,rownames,rows,sd,sdc,%
1342    sdiff,selifc,selifr,seq,setnote,%
1343    simann,sin,sinh,skewness,sort,%
1344    sortby,sqrt,sscanf,sst,strlen,%
1345    strncmp,strsplit,strstr,strstrip,strsub,%
1346    sum,sumall,sumc,sumr,svd,%
1347    tan,tanh,toepsolv,tolower,toupper,%
1348    tr,transp,trimr,typestr,uniform,%
1349    uniq,unvech,upper,urcpval,values,%
1350    var,varname,varnum,varsimul,vec,%
1351    vech,weekday,wmean,wsd,wvar,%
1352    xmax,xmin,xpx,zeromiss,zeros,%
1353  },%
1354  sensitive=t,%
1355  morecomment=[l]{\#},%
1356  morecomment=[s]{/*}{*/},%
1357  morestring=[b]{"}}%
1358 \lstalias{gretl}{hansl}

1359 ⟨/lang2⟩
```

2.29   Haskell

Thanks to Peter Bartke for providing the new definition.

```
1360 ⟨∗lang2⟩

1361 %%
1362 %% Haskell98 as implemented in Hugs98. See http://www.haskell.org
1363 %% All keywords from Prelude and Standard Libraries
1364 %% (c) 1999 Peter Bartke
1365 %%
1366 \lst@definelanguage{Haskell}%
1367   {otherkeywords={=>},%
1368    morekeywords={abstype,if,then,else,case,class,data,default,deriving,%
1369        hiding,if,in,infix,infixl,infixr,import,instance,let,module,%
1370        newtype,of,qualified,type,where,do,AbsoluteSeek,AppendMode,%
1371        Array,BlockBuffering,Bool,BufferMode,Char,Complex,Double,Either,%
1372        FilePath,Float,Int,Integer,IO,IOError,Ix,LineBuffering,Maybe,%
1373        Ordering,NoBuffering,ReadMode,ReadWriteMode,ReadS,RelativeSeek,%
1374        SeekFromEnd,SeekMode,ShowS,StdGen,String,Void,Bounded,Enum,Eq,%
1375        Eval,ExitCode,exitFailure,exitSuccess,Floating,Fractional,%
1376        Functor,Handle,HandlePosn,IOMode,Integral,List,Monad,MonadPlus,%
1377        MonadZero,Num,Numeric,Ord,Random,RandomGen,Ratio,Rational,Read,%
1378        Real,RealFloat,RealFrac,Show,System,Prelude,EQ,False,GT,Just,%
1379        Left,LT,Nothing,Right,WriteMode,True,abs,accum,accumArray,%
1380        accumulate,acos,acosh,all,and,any,ap,appendFile,applyM,%
1381        approxRational,array,asTypeOf,asin,asinh,assocs,atan,atan2,atanh,%
1382        bounds,bracket,bracket_,break,catch,catMaybes,ceiling,chr,cis,%
1383        compare,concat,concatMap,conjugate,const,cos,cosh,curry,cycle,%
1384        decodeFloat,delete,deleteBy,deleteFirstsBy,denominator,%
1385        digitToInt,div,divMod,drop,dropWhile,either,elem,elems,elemIndex,%
1386        elemIndices,encodeFloat,enumFrom,enumFromThen,enumFromThenTo,%
1387        enumFromTo,error,even,exitFailure,exitWith,exp,exponent,fail,%
1388        filter,filterM,find,findIndex,findIndices,flip,floatDigits,%
1389        floatRadix,floatRange,floatToDigits,floor,foldl,foldM,foldl1,%
1390        foldr,foldr1,fromDouble,fromEnum,fromInt,fromInteger,%
1391        fromIntegral,fromJust,fromMaybe,fromRat,fromRational,%
1392        fromRealFrac,fst,gcd,genericLength,genericTake,genericDrop,%
1393        genericSplitAt,genericIndex,genericReplicate,getArgs,getChar,%
1394        getContents,getEnv,getLine,getProgName,getStdGen,getStdRandom,%
1395        group,groupBy,guard,hClose,hFileSize,hFlush,hGetBuffering,%
1396        hGetChar,hGetContents,hGetLine,hGetPosn,hIsClosed,hIsEOF,hIsOpen,%
1397        hIsReadable,hIsSeekable,hIsWritable,hLookAhead,hPutChar,hPutStr,%
1398        hPutStrLn,hPrint,hReady,hSeek,hSetBuffering,hSetPosn,head,%
1399        hugsIsEOF,hugsHIsEOF,hugsIsSearchErr,hugsIsNameErr,%
1400        hugsIsWriteErr,id,ioError,imagPart,index,indices,init,inits,%
1401        inRange,insert,insertBy,interact,intersect,intersectBy,%
1402        intersperse,intToDigit,ioeGetErrorString,ioeGetFileName,%
1403        ioeGetHandle,isAlreadyExistsError,isAlreadyInUseError,isAlpha,%
1404        isAlphaNum,isAscii,isControl,isDenormalized,isDoesNotExistError,%
1405        isDigit,isEOF,isEOFError,isFullError,isHexDigit,isIEEE,%
```

```
1406        isIllegalOperation,isInfinite,isJust,isLower,isNaN,%
1407        isNegativeZero,isNothing,isOctDigit,isPermissionError,isPrefixOf,%
1408        isPrint,isSpace,isSuffixOf,isUpper,isUserError,iterate,ixmap,%
1409        join,last,lcm,length,lex,lexDigits,lexLitChar,liftM,liftM2,%
1410        liftM3,liftM4,liftM5,lines,listArray,listToMaybe,log,logBase,%
1411        lookup,magnitude,makePolar,map,mapAccumL,mapAccumR,mapAndUnzipM,%
1412        mapM,mapM_,mapMaybe,max,maxBound,maximum,maximumBy,maybe,%
1413        maybeToList,min,minBound,minimum,minimumBy,mkPolar,mkStdGen,%
1414        mplus,mod,msum,mzero,negate,next,newStdGen,not,notElem,nub,nubBy,%
1415        null,numerator,odd,openFile,or,ord,otherwise,partition,phase,pi,%
1416        polar,pred,print,product,properFraction,putChar,putStr,putStrLn,%
1417        quot,quotRem,random,randomIO,randomR,randomRIO,randomRs,randoms,%
1418        rangeSize,read,readDec,readFile,readFloat,readHex,readInt,readIO,%
1419        readList,readLitChar,readLn,readParen,readOct,readSigned,reads,%
1420        readsPrec,realPart,realToFrac,recip,rem,repeat,replicate,return,%
1421        reverse,round,scaleFloat,scanl,scanl1,scanr,scanr1,seq,sequence,%
1422        sequence_,setStdGen,show,showChar,showEFloat,showFFloat,%
1423        showFloat,showGFloat,showInt,showList,showLitChar,showParen,%
1424        showSigned,showString,shows,showsPrec,significand,signum,sin,%
1425        sinh,snd,sort,sortBy,span,split,splitAt,sqrt,stderr,stdin,stdout,%
1426        strict,subtract,succ,sum,system,tail,tails,take,takeWhile,tan,%
1427        tanh,toEnum,toInt,toInteger,toLower,toRational,toUpper,transpose,%
1428        truncate,try,uncurry,undefined,unfoldr,union,unionBy,unless,%
1429        unlines,until,unwords,unzip,unzip3,unzip4,unzip5,unzip6,unzip7,%
1430        userError,when,words,writeFile,zero,zip,zip3,zip4,zip5,zip6,zip7,%
1431        zipWith,zipWithM,zipWithM_,zipWith3,zipWith4,zipWith5,zipWith6,%
1432        zipWith7},%
1433      sensitive,%
1434      morecomment=[l]--,%
1435      morecomment=[n]{\{-}{-\}},%
1436      morestring=[b]"%
1437    }[keywords,comments,strings]%

1438 ⟨/lang2⟩
```

2.30 HTML

I'm quite the opposite of a HTML wizard. In particular this is true for the defined keywords. Matthias Bethke helped me out and extended the list.

```
1439 ⟨*lang1⟩

1440 \lst@definelanguage{HTML}%
1441    {morekeywords={A,ABBR,ACRONYM,ADDRESS,APPLET,AREA,B,BASE,BASEFONT,%
1442        BDO,BIG,BLOCKQUOTE,BODY,BR,BUTTON,CAPTION,CENTER,CITE,CODE,COL,%
1443        COLGROUP,DD,DEL,DFN,DIR,DIV,DL,DOCTYPE,DT,EM,FIELDSET,FONT,FORM,%
1444        FRAME,FRAMESET,HEAD,HR,H1,H2,H3,H4,H5,H6,HTML,I,IFRAME,IMG,INPUT,%
1445        INS,ISINDEX,KBD,LABEL,LEGEND,LH,LI,LINK,LISTING,MAP,META,MENU,%
1446        NOFRAMES,NOSCRIPT,OBJECT,OPTGROUP,OPTION,P,PARAM,PLAINTEXT,PRE,%
1447        OL,Q,S,SAMP,SCRIPT,SELECT,SMALL,SPAN,STRIKE,STRING,STRONG,STYLE,%
1448        SUB,SUP,TABLE,TBODY,TD,TEXTAREA,TFOOT,TH,THEAD,TITLE,TR,TT,U,UL,%
```

```
1449        VAR,XMP,%
1450        accesskey,action,align,alink,alt,archive,axis,background,bgcolor,%
1451        border,cellpadding,cellspacing,charset,checked,cite,class,classid,%
1452        code,codebase,codetype,color,cols,colspan,content,coords,data,%
1453        datetime,defer,disabled,dir,event,error,for,frameborder,headers,%
1454        height,href,hreflang,hspace,http-equiv,id,ismap,label,lang,link,%
1455        longdesc,marginwidth,marginheight,maxlength,media,method,multiple,%
1456        name,nohref,noresize,noshade,nowrap,onblur,onchange,onclick,%
1457        ondblclick,onfocus,onkeydown,onkeypress,onkeyup,onload,onmousedown,%
1458        profile,readonly,onmousemove,onmouseout,onmouseover,onmouseup,%
1459        onselect,onunload,rel,rev,rows,rowspan,scheme,scope,scrolling,%
1460        selected,shape,size,src,standby,style,tabindex,text,title,type,%
1461        units,usemap,valign,value,valuetype,vlink,vspace,width,xmlns},%
1462    tag=**[s]<>,%
1463    sensitive=f,%
1464    morestring=[d]",% ??? doubled
```

Now we take care of comments. We don't enter comment mode if we aren't inside <>.

```
1465    MoreSelectCharTable=%
1466        \lst@CArgX--\relax\lst@DefDelimB{}{}%
1467            {\ifnum\lst@mode=\lst@tagmode\else
1468                \expandafter\@gobblethree
1469             \fi}%
1470            \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
1471        \lst@CArgX--\relax\lst@DefDelimE{}{}{}%
1472            \lst@EndComment\lst@commentmode
1473    }[keywords,comments,strings,html]%
```

Peter Biechele reported a problem which was due to missing `\@empty` in value of `SelectCharTable`. And after receiving a bug report from Jochen Schneider I converted the version 0.21 contents of `MoreSelectCharTable` to version 1.0.

```
1474 ⟨/lang1⟩
```

2.31   IDL

The definition is from Jürgen Heim.

```
1475 ⟨*lang2⟩

1476 %%
1477 %% IDL definition (c) 1998 Juergen Heim
1478 %%
1479 \lst@definelanguage{IDL}%
1480    {morekeywords={and,begin,case,common,do,else,end,endcase,endelse,%
1481        endfor,endif,endrep,endwhile,eq,for,function,ge,goto,gt,if,le,lt,%
1482        mod,ne,not,of,on_ioerror,or,pro,repeat,return,then,until,while,%
1483        xor,on_error,openw,openr,openu,print,printf,printu,plot,read,%
1484        readf,readu,writeu,stop},%
1485    sensitive=f,%
1486    morecomment=[l];,%
```

```
1487    morestring=[d]'%
1488    }[keywords,comments,strings]%
```

1489 ⟨/lang2⟩

2.32   Inform

Thanks to Jonathan Sauer for this language definition. Ulrike Fischer pointed out
that \lstdefinelanguage should be \lst@definelanguage.

1490 ⟨*lang2⟩

```
1491 %%
1492 %% Inform definition (c) 2003 Jonathan Sauer
1493 %%
1494 \lst@definelanguage{inform}{%
1495     % Language keywords
1496     morekeywords={breakdo,else,false,for,has,hasnt,if,%
1497                  in,indirect,jump,notin,nothing,NULL,objectloop,ofclass,%
1498                  private,property,provides,return,rfalse,rtrue,self,string,%
1499                  switch,to,true,until,while,with,%
1500                  creature,held,multiexcept,multiheld,multiinside,noun,number,%
1501                  scope,topic},%
1502     %
1503     % Inform functions
1504     morekeywords=[2]{box,child,children,font,give,inversion,metaclass,move,%
1505                  new_line,parent,print,print_ret,read,remove,restore,sibling,%
1506                  save,spaces,quit,style,bold,underline,reverse,roman remaining,%
1507                  create,destroy,recreate,copy},%
1508     %
1509     % Inform definitions
1510     morekeywords=[3]{Attribute,Array,Class,Constant,Default,End,Endif,Extend,%
1511                  Global,Ifdef,Iffalse,Ifndef,Ifnot,Iftrue,Include,Object,%
1512                  Property,Verb,Release,Serial,Statusline},%
1513     %
1514     % Library attributes
1515     morekeywords=[4]{absent,animate,clothing,concealed,container,door,edible,%
1516                  enterable,female,general,light,lockable locked,male,moved,%
1517                  neuter,on,open,openable,pluralname,proper,scenery,scored,%
1518                  static,supporter,switchable,talkable,transparent,visited,%
1519                  workflag,worn},%
1520     %
1521     % Library properties
1522     morekeywords=[5]{n_to,s_to,e_to,w_to,ne_to,nw_to,se_to,sw_to,in_to,%
1523                  out_to,u_to,d_to,add_to_scope,after,article,articles,before,%
1524                  cant_go,capacity,daemon,describe,description,door_dir,door_to,%
1525                  each_turn,found_in,grammar,initial,inside_description,invent,%
1526                  life,list_together,name number,orders,parse_name,plural,%
1527                  react_after,react_before,short_name,short_name_indef,time_left,%
1528                  time_out,when_closed,when_open,when_on,when_off,%
1529                  with_key},%
```

```
1530    %
1531    % Library routines
1532    morekeywords=[6]{Achieved,AfterRoutines,AllowPushDir,Banner,ChangePlayer,%
1533            CommonAncestor,DictionaryLookup,GetGNAOfObject,HasLightSource,%
1534            IndirectlyContains,IsSeeThrough,Locale,LoopOverScope,LTI_Insert,%
1535            MoveFloatingObjects,NextWord,NextWordStopped,NounDomain,%
1536            ObjectIsUntouchable OffersLight,ParseToken,PlaceInScope,PlayerTo,%
1537            PronounNotice,PronounValue,ScopeWithin,SetPronoun,SetTime,%
1538            StartDaemon,StartTimer,StopDaemon,StopTimer,TestScope,TryNumber,%
1539            UnsignedCompare,WordAddress,WordInProperty,WordLength,%
1540            WriteListFrom,YesOrNo},%
1541    %
1542    % Library,entry points
1543    morekeywords=[7]{AfterLife,AfterPrompt,Amusing,BeforeParsing,ChooseObjects,%
1544            DarkToDark,DeathMessage,GamePostRoutine GamePreRoutine,%
1545            Initialise,InScope,LookRoutine,NewRoom,ParseNoun,ParseNumber,%
1546            ParserError,PrintRank,PrintTaskName,PrintVerb,TimePasses,%
1547            UnknownVerb},%
1548    %
1549    % Library constants
1550    morekeywords=[8]{NEWLINE_BIT,INDENT_BIT,FULLINV_BIT,ENGLISH_BIT,RECURSE_BIT,%
1551            ALWAYS_BIT,TERSE_BIT,PARTINV_BIT,DEFART_BIT,WORKFLAG_BIT,%
1552            ISARE_BIT,CONCEAL_BIT},%
1553    %
1554    % Library,meta actions
1555    morekeywords=[9]{Pronouns,Quit,Restart,Restore,Save,Verify,ScriptOn,ScriptOff,%
1556            NotifyOn,NotifyOff,Places,Objects,Score,FullScore,Version,LMode1,%
1557            LMode2,Lmode3},%
1558    %
1559    % Library,main actions
1560    morekeywords=[10]{Close,Disrobe,Drop,Eat,Empty,EmptyT,Enter,Examine,Exit,GetOff,%
1561            Give,Go,GoIn,Insert,Inv,InvTall,InvWide,Lock,Look,Open,PutOn,Remove,%
1562            Search,Show,SwitchOff,SwitchOn,Take,Transfer,Unlock VagueGo,%
1563            Wear},%
1564    %
1565    % Library,stub actions
1566    morekeywords=[11]{Answer,Ask,AskFor,Attack,Blow,Burn,Buy,Climb,Consult,Cut,Dig,%
1567            Drink,Fill,Jump,JumpOver,Kiss,Listen,LookUnder,Mild,No,Pray,Pull,%
1568            Push,PushDir,Rub,Set,SetTo,Sing,Sleep,Smell,,Sleep,Smell,Sorry,%
1569            Squeeze,Strong,Swim,Swing,Taste,Tell,Think,ThrowAt,Tie,Touch,Turn,%
1570            Wait,Wake,WakeOther,Wave,WaveHands,Yes},%
1571    %
1572    otherkeywords={->,-->},%
1573    sensitive=false,%
1574    morestring=[d]{"},%
1575    morecomment=[l]{!}%
1576  }[keywords,comments,strings]%

1577 ⟨/lang2⟩
```

2.33 Java and other JVM based languages

Robert Wenner sent in the first of the following two definitions.

1578 ⟨∗lang1⟩

1579 %%
1580 %% AspectJ definition (c) Robert Wenner
1581 %%
1582 \lst@definelanguage[AspectJ]{Java}[]{Java}%
1583   {morekeywords={%
1584   adviceexecution,after,args,around,aspect,aspectOf,before,%
1585   call,cflow,cflowbelow,%
1586 % declare error,declare parents,declare precedence,
1587 % declare soft,declare warning,
1588   execution,get,handler,if,initialization,issingleton,pointcut,%
1589   percflow,percflowbelow,perthis,pertarget,preinitialization,%
1590   privileged,proceed,returning,set,staticinitialization,strictfp,%
1591   target,this,thisEnclosingJoinPoint,thisJoinPoint,throwing,%
1592   within,withincode},%
1593   MoreSelectCharTable=%
1594   \lst@DefSaveDef{`.}\lst@umdot{\lst@umdot\global\let\lst@derefop\@empty}%
1595   \ifx\lst@derefinstalled\@empty\else
1596   \global\let\lst@derefinstalled\@empty
1597 \lst@AddToHook{Output}%
1598 {\lst@ifkeywords
1599   \ifx\lst@derefop\@empty
1600   \global\let\lst@derefop\relax
1601   \ifx\lst@thestyle\lst@gkeywords@sty
1602   \ifx\lst@currstyle\relax
1603   \let\lst@thestyle\lst@identifierstyle
1604   \else
1605   \let\lst@thestyle\lst@currstyle
1606   \fi
1607   \fi
1608   \fi
1609 \fi}
1610 \lst@AddToHook{BOL}{\global\let\lst@derefop\relax}%
1611 \lst@AddTo\lst@ProcessSpace{\global\let\lst@derefop\relax}%
1612   \fi
1613   }%

1614 ⟨/lang1⟩

Got data from http://java.sun.com.

1615 ⟨∗lang1⟩

1616 \lst@definelanguage{Java}%
1617   {morekeywords={abstract,boolean,break,byte,case,catch,char,class,%
1618   const,continue,default,do,double,else,extends,false,final,%
1619   finally,float,for,goto,if,implements,import,instanceof,int,%
1620   interface,label,long,native,new,null,package,private,protected,%
1621   public,return,short,static,super,switch,synchronized,this,throw,%

```
1622        throws,transient,true,try,void,volatile,while},%
1623     sensitive,%
1624     morecomment=[l]//,%
1625     morecomment=[s]{/*}{*/},%
1626     morestring=[b]",%
1627     morestring=[b]',%
1628   }[keywords,comments,strings]%
```

Herbert Voss added the keyword `label`.

```
1629 ⟨/lang1⟩
```

Martine Gautier made the following contribution.

```
1630 ⟨∗lang1⟩

1631 %%
1632 %% ByteCodeJava definition (c) 2004 Martine Gautier
1633 %%
1634 \lst@definelanguage{JVMIS}%
1635   {morekeywords={aaload,astore,aconst_null,aload,aload_0,aload_1,%
1636       aload_2,aload_3,anewarray,areturn,arraylength,astore,astore_0,%
1637       astore_1,astore_2,astore_3,athrow,baload,bastore,bipush,caload,%
1638       castore,checkcast,d2f,d2i,d2l,dadd,daload,dastore,dcmpg,dcmpl,%
1639       dconst_0,dconst_1,ddiv,dload,dload_0,dload_1,dload_2,dload_3,%
1640       dmul,dneg,drem,dreturn,dstore,dstore_0,dstore_1,dstore_2,%
1641       dstore_3,dsub,dup,dup_x1,dup_x2,dup2,dup2_x1,dup2_x2,f2d,%
1642       f2i,f2l,fadd,faload,fastore,fcmpg,fcmpl,fconst_0,fconst_1,%
1643       fconst_2,fdiv,fload,fload_0,fload_1,fload_2,fload_3,fmul,%
1644       fneg,frem,freturn,fstore,fstore_0,fstore_1,fstore_2,fstore_3,%
1645       fsub,getfield,getstatic,goto,goto_w,i2b,i2c,i2d,i2f,i2l,i2s,%
1646       iadd,iaload,iand,iastore,iconst_0,iconst_1,iconst_2,iconst_3,%
1647       iconst_4,iconst_5,idiv,if_acmpeq,if_acmpne,if_icmpeq,if_icmpne,%
1648       if_icmplt,if_cmpge,if_cmpgt,if_cmple,ifeq,ifne,iflt,ifge,ifgt,%
1649       ifle,ifnonnull,ifnull,iinc,iload,iload_0,iload_1,iload_2,%
1650       iload_3,imul,ineg,instanceof,invokeinterface,invokespecial,%
1651       invokestatic,invokevirtual,ior,irem,ireturn,ishl,ishr,istore,%
1652       istore_0,istore_1,istore_2,istore_3,isub,iushr,ixor,jsr,jsr_w,%
1653       l2d,l2f,l2i,ladd,laload,land,lastore,lcmp,lconst_0,lconst_1,%
1654       ldc,ldc_w,ldc2_w,ldiv,lload,lload_0,lload_1,lload_2,lload_3,%
1655       lmul,lneg,lookupswitch,lor,lrem,lreturn,lshl,lshr,lstore,%
1656       lstore_0,lstore_1,lstore_2,lstore_3,lsub,lushr,lxor,%
1657       monitorenter,monitorexit,multianewarray,new,newarray,nop,pop,%
1658       pop2,putfield,putstatic,ret,return,saload,sastore,sipush,swap,%
1659       tableswitch,wide,limit,locals,stack},%
1660   }[keywords]%

1661 ⟨/lang1⟩
```

2.33.1   Scala

Bastian Germann asked to include the Scala definition provided by Frank Teubler (2009). Here it is:

```
1662 ⟨∗lang3⟩
```

```
1663 \lst@definelanguage{Scala}%
1664   {morekeywords={abstract,case,catch,class,def,%
1665     do,else,extends,false,final,finally,%
1666     for,if,implicit,import,lazy,match,mixin,%
1667     new,null,object,override,package,%
1668     private,protected,requires,return,sealed,%
1669     super,this,trait,true,try,%
1670     type,val,var,while,with,yield},%+
1671 % otherkeywords={_,:,=,=>,<<:,<\%,>:,\#,@},%
1672 otherkeywords={=,=>,<-,<\%,<:,>:,\#,@},%
1673     sensitive,%
1674     morecomment=[l]//,%
1675     morecomment=[n]{/*}{*/},%
1676     morestring=[b]",%
1677     morestring=[b]',%
1678     morestring=[b]""",%
1679   }[keywords,comments,strings]%

1680 ⟨/lang3⟩
```

2.34 ksh

Thanks to Jeffrey Ratcliffe for this language definition.

```
1681 ⟨*lang3⟩
```

```
1682 \lst@definelanguage{ksh}
1683   {morekeywords={alias,awk,cat,echo,else,elif,fi,exec,exit,%
1684     for,in,do,done,select,case,esac,while,until,function,%
1685     time,export,cd,eval,fc,fg,kill,let,pwd,read,return,rm,%
1686     glob,goto,history,if,logout,nice,nohup,onintr,repeat,sed,%
1687     set,setenv,shift,source,switch,then,umask,unalias,%
1688     unset,wait,@,env,argv,child,home,ignoreeof,noclobber,%
1689     noglob,nomatch,path,prompt,shell,status,verbose,print,printf,%
1690     sqrt,BEGIN,END},%
1691   morecomment=[l]\#,%
1692   morestring=[d]",%
1693   morestring=[d]',%
1694   morestring=[d]`%
1695   }[keywords,comments,strings]%
1696 %    \begin{macrocode}
1697 ⟨/lang3⟩
```

Herbert Voss suggested to add the string delimiter '.

2.35 Lingo

Thanks to Mark Schade for this language definition.

```
1698 ⟨*lang3⟩
```

```
1699 \lst@definelanguage{Lingo}
1700   {morekeywords={abort,after,and,before,do,down,halt,me,new,not,of,%
```

```
1701    on,or,otherwise,pass,put,result,return,set,tell,the,then,to,with,%
1702    repeat,while,case,if,else,true,false,global,property,\_global,\_key,%
1703    \_mouse,\_movie,\_player,\_sound,\_system,abbr,abbrev,abbreviated,abs,%
1704    actionsenabled,activateapplication,activatewindow,active3drenderer,%
1705    activecastlib,activewindow,actorlist,add,addat,addbackdrop,addcamera,%
1706    addchild,addmodifier,addoverlay,addprop,addtoworld,addvertex,alert,%
1707    alerthook,alignment,allowcustomcaching,allowgraphicmenu,allowsavelocal,%
1708    allowtransportcontrol,allowvolumecontrol,allowzooming,alphathreshold,%
1709    ambient,ambientcolor,ancestor,angle,anglebetween,animationenabled,%
1710    antialias,antialiasthreshold,append,applicationname,applicationpath,%
1711    appminimize,atan,attenuation,attributevalue,auto,autoblend,automask,%
1712    autotab,axisangle,back,backcolor,backdrop,backgroundcolor,backspace,%
1713    beep,beepon,beginrecording,beginsprite,beveldepth,beveltype,bgcolor,%
1714    bias,bitand,bitmap,bitmapsizes,bitnot,bitor,bitrate,bitspersample,%
1715    bitxor,blend,blendconstant,blendconstantlist,blendfactor,blendfunction,%
1716    blendfunctionlist,blendlevel,blendrange,blendsource,blendsourcelist,%
1717    blendtime,bone,bonesplayer,border,both,bottom,bottomcap,bottomradius,%
1718    bottomspacing,boundary,boundingsphere,box,boxdropshadow,boxtype,%
1719    breakconnection,breakloop,brightness,broadcastprops,browsername,%
1720    buffersize,build,buttonsenabled,buttonstyle,buttontype,bytesstreamed,%
1721    boolean,cachedocverify,cachesize,call,callancestor,camera,cameracount,%
1722    cameraposition,camerarotation,cancelidleload,castlib,castlibnum,%
1723    castmemberlist,center,centerregpoint,centerstage,changearea,channelcount,%
1724    char,characterset,charpostoloc,chars,charspacing,chartonum,%
1725    checkboxaccess,checkboxtype,checkmark,checknetmessages,child,chunksize,%
1726    clearatrender,clearcache,clearerror,clearframe,clearglobals,clearvalue,%
1727    clickloc,clickmode,clickon,clone,clonedeep,clonemodelfromcastmember,%
1728    clonemotionfromcastmember,close,closed,closewindow,closexlib,collision,%
1729    collisiondata,collisionnormal,color,world,colorbuffer,colorbufferdepth,%
1730    colordepth,colorlist,colorrange,colors,colorsteps,commanddown,comments,%
1731    compressed,connecttonetserver,constrainh,constraint,constrainv,,%
1732    continue,controldown,controller,copypixels,copyrightinfo,copyto,%
1733    copytoclipboard,cos,count,cpuhogticks,creaseangle,creases,[contains],%
1734    createfolder,createmask,creatematte,creationdate,creator,crop,cross,%
1735    crossproduct,cuepassed,cuepointnames,cuepointtimes,currentloopstate,%
1736    currentspritenum,currenttime,cursor,cursorsize,curve,cylinder,ate,day,%
1737    deactivateapplication,deactivatewindow,debug,debugplaybackenabled,%
1738    decaymode,defaultrect,defaultrectmode,delay,delete,deleteall,deleteat,%
1739    deletecamera,deletefolder,deleteframe,deletegroup,deletelight,%
1740    deletemodel,deletemodelresource,deletemotion,deleteone,deleteprop,%
1741    deleteshader,deletetexture,deletevertex,density,depth,depthbufferdepth,%
1742    desktoprectlist,diffuse,diffusecolor,diffuselightmap,%
1743    digitalvideotimescale,digitalvideotype,direction,directionalcolor,%
1744    directionalpreset,directtostage,disableimagingtransformation,displayface,%
1745    displaymode,distanceto,distribution,dither,done,doneparsing,dot,%
1746    dotproduct,doubleclick,downloadnetthing,drag,draw,drawrect,dropshadow,%
1747    duplicate,duplicateframe,duration,editable,editshortcutsenabled,%
1748    elapsedtime,emissive,emitter,empty,emulatemultibuttonmouse,enabled,%
1749    enablehotspot,end,endangle,endcolor,endframe,endrecording,endsprite,%
1750    endtime,enter,enterframe,environment,erase,error,eventpassmode,%
```

```
1751    exchange,exists,exit,exitframe,exitlock,exp,externalevent,%
1752    externalparamcount,externalparamname,externalparamvalue,extractalpha,%
1753    extrude3d,face,fadein,fadeout,fadeto,far,field,fieldofview,filename,%
1754    fill,fillcolor,fillcycles,filldirection,filled,fillmode,filloffset,%
1755    fillscale,findempty,findlabel,findpos,findposnear,finishidleload,%
1756    firstindent,fixedlinespace,fixedrate,fixstagesize,flashrect,flashtostage,%
1757    flat,fliph,flipv,float,floatp,floatprecision,flush,flushinputevents,%
1758    fog,folderchar,font,fontsize,fontstyle,forecolor,forget,frame,%
1759    framecount,framelabel,framepalette,framerate,frameready,framescript,%
1760    framesound1,framesound2,framestohms,frametempo,frametransition,freeblock,%
1761    freebytes,fromcastmember,fromimageobject,front,frontwindow,%
1762    generatenormals,getaprop,getat,getbehaviordescription,getbehaviortooltip,%
1763    getboneid,geterror,geterrorstring,gethardwareinfo,gethotspotrect,getlast,%
1764    getlatestnetid,getnetaddresscookie,getneterrorstring,getnetmessage,%
1765    getnetoutgoingbytes,getnettext,getnormalized,getnthfilenameinfolder,%
1766    getnumberwaitingnetmessages,getone,getpeerconnectionlist,getpixel,%
1767    getplaylist,getpos,getpref,getprop,getpropat,getpropertydescriptionlist,%
1768    getrendererservices,getstreamstatus,gettemppath,getworldtransform,globals,%
1769    glossmap,go,gotoframe,gotonetmovie,gotonetpage,gradienttype,gravity,%
1770    group,handler,handlers,height,heightvertices,high,highlightpercentage,%
1771    highlightstrength,hilite,hither,hittest,hmstoframes,hold,hotspot,html,%
1772    hyperlink,hyperlinkclicked,hyperlinkrange,hyperlinks,hyperlinkstate,%
1773    id3tags,identity,idle,idlehandlerperiod,idleloaddone,idleloadmode,%
1774    idleloadperiod,idleloadtag,idlereadchunksize,ilk,image,imagecompression,%
1775    imageenabled,imagequality,immovable,importfileinto,inflate,ink,inker,%
1776    inlineimeenabled,insertbackdrop,insertframe,insertoverlay,inside,%
1777    installmenu,instance,integer,integerp,interface,interpolate,%
1778    interpolateto,intersect,index,interval,inverse,invert,invertmask,%
1779    isbusy,isinworld,isoktoattach,ispastcuepoint,item,itemdelimiter,kerning,%
1780    kerningthreshold,key,keyboardfocussprite,keycode,keydown,keydownscript,%
1781    keyframeplayer,keypressed,keyup,keyupscript,label,labellist,last,%
1782    lastchannel,lastclick,lastevent,lastframe,lastkey,lastroll,left,%
1783    leftindent,length,lengthvertices,level,lifetime,light,line,linearlist,%
1784    linecolor,linecount,linedirection,lineheight,lineoffset,linepostolocv,%
1785    linesize,linkas,linked,list,listp,loaded,loadfile,loc,loch,locked,%
1786    locktranslation,loctocharpos,locv,locvtolinepos,locz,lod,log,long,%
1787    loop,loopcount,loopendtime,loopsremaining,loopstarttime,machinetype,%
1788    magnitude,map,mapImageToStage,mapmembertostage,mapstagetomember,margin,%
1789    marker,markerlist,mask,max,maxinteger,maxspeed,mci,media,mediaready,%
1790    member,membernum,members,memorysize,menu,mesh,meshdeform,milliseconds,%
1791    min,minspeed,modal,mode,model,modela,modelb,modelresource,%
1792    modelsunderloc,modelsunderray,modelunderloc,modified,modifiedby,%
1793    modifieddate,modifier,modifiers,month,mostrecentcuepoint,motion,%
1794    mousechar,mousedown,mousedownscript,mouseenter,mouseh,mouseitem,%
1795    mouseleave,mouselevel,mouseline,mouseloc,mousemember,mouseoverbutton,%
1796    mouseup,mouseupoutside,mouseupscript,mousev,mousewithin,mouseword,move,%
1797    moveablesprite,movetoback,movetofront,movevertex,movevertexhandle,%
1798    movewindow,movie,movieaboutinfo,moviecopyrightinfo,moviefilefreesize,%
1799    moviefilesize,moviefileversion,movieimagecompression,movieimagequality,%
1800    moviename,moviepath,movierate,movietime,moviextralist,mpeglayer,%
```

```
1801    multiply,multisound,name,near,nearfiltering,neighbor,netabort,netdone,%
1802    neterror,netlastmoddate,netmime,netpresent,netstatus,nettextresult,%
1803    netthrottleticks,newcamera,newcurve,newgroup,newlight,newmesh,newmodel,%
1804    newmodelresource,newmotion,newshader,newtexture,next,none,normalize,%
1805    normallist,normals,nothing,notify,nudge,number,numchannels,%
1806    numparticles,numsegments,numtochar,objectp,offset,open,openresfile,%
1807    openwindow,openxlib,optiondown,organizationname,originalfont,originh,%
1808    originmode,originpoint,originv,orthoheight,overlay,pageheight,palette,%
1809    palettemapping,paletteref,paletteindex,pan,paragraph,param,paramcount,%
1810    parent,parsestring,particle,pasteclipboardinto,path,pathname,%
1811    pathstrength,pattern,pause,pausedatstart,pausestate,percentplayed,%
1812    percentstreamed,period,perpendicularto,persistent,pi,picture,picturep,%
1813    plane,platform,play,playbackmode,playfile,playing,playlist,playnext,%
1814    playrate,point,pointat,pointatorientation,pointinhyperlink,%
1815    pointofcontact,pointtochar,pointtoitem,pointtoline,pointtoparagraph,%
1816    pointtoword,position,positionreset,posterframe,postnettext,power,%
1817    preferred3drenderer,preload,preloadbuffer,preloadeventabort,preloadmember,%
1818    preloadmode,preloadmovie,preloadnetthing,preloadram,preloadtime,%
1819    premultiply,prepareframe,preparemovie,prerotate,prescale,pretranslate,%
1820    previous,primitives,printfrom,productversion,projection,projectionangle,%
1821    propList,proxyserver,pttohotspotid,puppet,puppetpalette,puppetsound,%
1822    puppetsprite,puppettempo,puppettransition,purgepriority,%
1823    qtregisteraccesskey,qtunregisteraccesskey,quad,quality,queue,quit,quote,%
1824    radius,ramneeded,random,randomseed,randomvector,rateshift,rawnew,read,%
1825    readvalue,recordfont,rect,ref,reflectionmap,reflectivity,region,%
1826    registerforevent,registerscript,regpoint,regpointvertex,removebackdrop,%
1827    removefromworld,removelast,removemodifier,removeoverlay,rename,renderer,%
1828    rendererdevicelist,renderformat,renderstyle,resetworld,resizewindow,%
1829    resolution,resolve,resolvea,resolveb,resource,restart,resume,%
1830    reverttoworlddefaults,rewind,rgb,rgba4444,rgba5550,rgba5551,rgba5650,%
1831    rgba8880,rgba8888,right,rightindent,rightmousedown,rightmouseup,%
1832    rollover,romanlingo,rootlock,rootnode,rotate,rotation,rotationreset,%
1833    rtf,runmode,runpropertydialog,safeplayer,samplecount,samplerate,%
1834    samplesize,save,savedlocal,savemovie,scale,scalemode,score,scorecolor,%
1835    scoreselection,script,scriptexecutionstyle,scriptinstancelist,scriptlist,%
1836    scriptnum,scriptsenabled,scripttext,scripttype,scrollbyline,scrollbypage,%
1837    scrolltop,sds,searchcurrentfolder,searchpath,searchpaths,seconds,%
1838    selectedtext,selection,selend,selstart,sendallsprites,sendevent,%
1839    sendnetmessage,sendsprite,serialnumber,setalpha,setaprop,setat,%
1840    setcollisioncallback,setflashproperty,setnetbufferlimits,%
1841    setnetmessagehandler,setpixel,setplaylist,setpref,setprop,setscriptlist,%
1842    settrackenabled,setvariable,shader,shaderlist,shadowpercentage,%
1843    shadowstrength,shapetype,shiftdown,shininess,shockwave3d,short,%
1844    showglobals,showlocals,showprops,showresfile,showxlib,shutdown,%
1845    silhouettes,sin,size,sizerange,skew,sleep,smoothness,sort,sound,%
1846    soundbusy,soundchannel,sounddevice,sounddevicelist,soundenabled,%
1847    soundkeepdevice,soundlevel,soundmixmedia,source,sourcerect,space,%
1848    specular,specularcolor,specularlightmap,sphere,spotangle,spotdecay,%
1849    sprite,spritenum,spritespacetoworldspace,sqrt,stage,stagebottom,%
1850    stagecolor,stageleft,stageright,stagetoflash,stagetop,standard,%
```

```
1851        startangle,startframe,startmovie,starttime,starttimer,state,static,%
1852        status,stepframe,stilldown,stop,stopevent,stopmovie,stoptime,stream,%
1853        streammode,streamname,streamsize,streamstatus,string,stringp,%
1854        strokecolor,strokewidth,style,subdivision,sweep,swing,switchcolordepth,%
1855        symbol,symbolp,systemdate,tab,tabcount,tabs,tan,target,%
1856        tellstreamstatus,tension,text,texture,texturecoordinatelist,%
1857        texturecoordinates,texturelayer,texturelist,texturemember,texturemode,%
1858        texturemodelist,texturerenderformat,texturerepeat,texturerepeatlist,%
1859        texturetransform,texturetransformlist,texturetype,thumbnail,ticks,tilt,%
1860        time,timeout,timeouthandler,timeoutkeydown,timeoutlapsed,timeoutlength,%
1861        timeoutlist,timeoutmouse,timeoutplay,timeoutscript,timer,timescale,%
1862        title,titlevisible,toon,top,topcap,topradius,topspacing,trace,%
1863        traceload,tracelogfile,trackcount,trackenabled,tracknextkeytime,%
1864        tracknextsampletime,trackpreviouskeytime,trackprevioussampletime,%
1865        trackstarttime,trackstoptime,tracktext,tracktype,trails,transform,%
1866        transitiontype,translate,triggercallback,trimwhitespace,tunneldepth,%
1867        tweened,tweenmode,type,[transparent],union,unload,unloadmember,%
1868        unloadmovie,unregisterallevents,update,updateframe,updatelock,%
1869        updatemovieenabled,updatestage,url,usealpha,usediffusewithtexture,%
1870        usefastquads,usehypertextstyles,uselineoffset,userdata,username,value,%
1871        vector,version,vertex,vertexlist,vertices,video,videoforwindowspresent,%
1872        viewh,viewpoint,viewscale,viewv,visibility,visible,void,voidp,volume,%
1873        volumeinfo,wait,waitfornetconnection,warpmode,width,widthvertices,wind,%
1874        window,windowlist,windowpresent,windowtype,word,wordwrap,world,%
1875        worldposition,worldspacetospritespace,worldtransform,wraptransform,%
1876        wraptransformlist,write,writevalue,,xaxis,xtra,xtralist,xtras,,yaxis,%
1877        year,yon,zaxis,zoombox,zoomwindow,repeat,Conditional,Boolean,TypeDef,%
1878        Statement,Operator,String,Comment,Identifier,Special,x,y,z}
1879     sensitive=false,
1880     morecomment=[l]{--},
1881     morestring=[b]",
1882   }[keywords,comments,strings]%
1883 %     \begin{macrocode}
1884 ⟨/lang3⟩
```

2.36   Lisp, AutoLisp

Most data are from

- GUY STEELE: **Common Lisp**; Copyright 1990 by Digital Equipment Corporation; ISBN 1-55558-042-4.

Thanks to Aslak Raanes for the 'single comment' delimiters. The keywords are the 'one-word' functions and macros of Common Lisp, i.e. words not containing a minus. But I left out the caaaar, ... functions. If anyone types them in, I'd like to get them.

```
1885 ⟨*lang2⟩

1886 \lst@definelanguage{Lisp}%
1887   {morekeywords={abort,abs,acons,acos,acosh,adjoin,alphanumericp,alter,%
```

```
1888        append,apply,apropos,aref,arrayp,ash,asin,asinh,assoc,atan,atanh,%
1889        atom,bit,boole,boundp,break,butlast,byte,catenate,ceiling,cerror,%
1890        char,character,characterp,choose,chunk,cis,close,clrhash,coerce,%
1891        collect,commonp,compile,complement,complex,complexp,concatenate,%
1892        conjugate,cons,consp,constantp,continue,cos,cosh,cotruncate,%
1893        count,delete,denominator,describe,directory,disassemble,%
1894        documentation,dpb,dribble,ed,eighth,elt,enclose,endp,eq,eql,%
1895        equal,equalp,error,eval,evalhook,evenp,every,exp,expand,export,%
1896        expt,fboundp,fceiling,fdefinition,ffloor,fifth,fill,find,first,%
1897        float,floatp,floor,fmakunbound,format,fourth,fround,ftruncate,%
1898        funcall,functionp,gatherer,gcd,generator,gensym,gentemp,get,getf,%
1899        gethash,identity,imagpart,import,inspect,integerp,intern,%
1900        intersection,tively,isqrt,keywordp,last,latch,lcm,ldb,ldiff,%
1901        length,list,listen,listp,load,log,logand,logbitp,logcount,logeqv,%
1902        logior,lognand,lognor,lognot,logtest,logxor,macroexpand,%
1903        makunbound,map,mapc,mapcan,mapcar,mapcon,maphash,mapl,maplist,%
1904        mask,max,member,merge,min,mingle,minusp,mismatch,mod,namestring,%
1905        nbutlast,nconc,nintersection,ninth,not,notany,notevery,nreconc,%
1906        nreverse,nsublis,nsubst,nth,nthcdr,null,numberp,numerator,nunion,%
1907        oddp,open,packagep,pairlis,pathname,pathnamep,phase,plusp,%
1908        position,positions,pprint,previous,princ,print,proclaim,provide,%
1909        random,rassoc,rational,rationalize,rationalp,read,readtablep,%
1910        realp,realpart,reduce,rem,remhash,remove,remprop,replace,require,%
1911        rest,revappend,reverse,room,round,rplaca,rplacd,sbit,scan,schar,%
1912        search,second,series,set,seventh,shadow,signal,signum,sin,sinh,%
1913        sixth,sleep,some,sort,split,sqrt,streamp,string,stringp,sublis,%
1914        subseq,subseries,subsetp,subst,substitute,subtypep,svref,sxhash,%
1915        symbolp,tailp,tan,tanh,tenth,terpri,third,truename,truncate,%
1916        typep,unexport,unintern,union,until,values,vector,vectorp,warn,%
1917        write,zerop,and,assert,case,ccase,cond,ctypecase,decf,declaim,%
1918        defclass,defconstant,defgeneric,defmacro,defmethod,defpackage,%
1919        defparameter,defsetf,defstruct,deftype,defun,defvar,do,dolist,%
1920        dotimes,ecase,encapsulated,etypecase,flet,formatter,gathering,%
1921        incf,iterate,labels,let,locally,loop,macrolet,mapping,or,pop,%
1922        producing,prog,psetf,psetq,push,pushnew,remf,return,rotatef,%
1923        setf,shiftf,step,time,trace,typecase,unless,untrace,when},%
1924     sensitive,% ???
1925     alsodigit=-,%
1926     morecomment=[l];,%
1927     morecomment=[s]{\#|}{|\#},% 1997 Aslak Raanes
1928     morestring=[b]"%
1929   }[keywords,comments,strings]%
```

1930 ⟨/lang2⟩

1931 ⟨∗lang2⟩

Stefan Lagotzki warned me to define this as a lisp dialect …

```
1932 %%
1933 %% AutoLISP/VisualLISP - Stefan Lagotzki, info@lagotzki.de
1934 %%
```

```
1935 \lst@definelanguage[Auto]{Lisp}%
1936   {morekeywords={abs,acad_colordlg,acad_helpdlg,acad_strlsort,%
1937       action_tile,add_list,alert,alloc,and,angle,angtof,angtos,append,%
1938       apply,arx,arxload,arxunload,ascii,assoc,atan,atof,atoi,atom,%
1939       atoms-family,autoarxload,autoload,Boole,boundp,caddr,cadr,car,%
1940       cdr,chr,client_data_tile,close,command,cond,cons,cos,cvunit,%
1941       defun,defun-q,defun-q-list-ref,defun-q-list-set,dictadd,dictnext,%
1942       dictremove,dictrename,dictsearch,dimx_tile,dimy_tile,distance,%
1943       distof,done_dialog,end_image,end_list,entdel,entget,entlast,%
1944       entmake,entmakex,entmod,entnext,entsel,entupd,eq,equal,*error*,%
1945       eval,exit,exp,expand,expt,fill_image,findfile,fix,float,foreach,%
1946       function,gc,gcd,get_attr,get_tile,getangle,getcfg,getcname,%
1947       getcorner,getdist,getenv,getfiled,getint,getkword,getorient,%
1948       getpoint,getreal,getstring,getvar,graphscr,grclear,grdraw,grread,%
1949       grtext,grvecs,handent,help,if,initdia,initget,inters,itoa,lambda,%
1950       last,layoutlist,length,list,listp,load,load_dialog,log,logand,%
1951       logior,lsh,mapcar,max,mem,member,menucmd,menugroup,min,minusp,%
1952       mode_tile,namedobjdict,nentsel,nentselp,new_dialog,not,nth,%
1953       null,numberp,open,or,osnap,polar,prin1,princ,print,progn,prompt,%
1954       quit,quote,read,read-char,read-line,redraw,regapp,rem,repeat,%
1955       reverse,rtos,set,set_tile,setcfg,setenv,setfunhelp,setq,%
1956       setvar,setview,sin,slide_image,snvalid,sqrt,ssadd,ssdel,ssget,%
1957       ssgetfirst,sslength,ssmemb,ssname,ssnamex,sssetfirst,startapp,%
1958       start_dialog,start_image,start_list,strcase,strcat,strlen,subst,%
1959       substr,tablet,tblnext,tblobjname,tblsearch,term_dialog,terpri,%
1960       textbox,textpage,textscr,trace,trans,type,unload_dialog,untrace,%
1961       vector_image,ver,vl-acad-defun,vl-acad-undefun,vl-arx-import,%
1962       vl-bb-ref,vl-bb-set,vl-catch-all-apply,%
1963       vl-catch-all-error-message,vl-catch-all-error-p,vl-cmdf,vl-consp,%
1964       vl-directory-files,vl-doc-export,vl-doc-import,vl-doc-ref,%
1965       vl-doc-set,vl-every,vl-exit-with-error,vl-exit-with-value,%
1966       vl-file-copy,vl-file-delete,vl-file-directory-p,vl-file-rename,%
1967       vl-file-size,vl-file-systime,vl-filename-base,%
1968       vl-filename-directory,vl-filename-extension,vl-filename-mktemp,%
1969       vl-get-resource,vl-list*,vl-list->string,%
1970       vl-list-exported-functions,vl-list-length,vl-list-loaded-vlx,%
1971       vl-load-all,vl-load-com,vl-load-reactors,vl-member-if,%
1972       vl-member-if-not,vl-position,vl-prin1-to-string,%
1973       vl-princ-to-string,vl-propagate,vl-registry-delete,%
1974       vl-registry-descendents,vl-registry-read,vl-registry-write,%
1975       vl-remove,vl-remove-if,vl-remove-if-not,vl-some,vl-sort,%
1976       vl-sort-i,vl-string->list,vl-string-elt,vl-string-left-trim,%
1977       vl-string-mismatch,vl-string-position,vl-string-right-trim,%
1978       vl-string-search,vl-string-subst,vl-string-translate,%
1979       vl-string-trim,vl-symbol-name,vl-symbol-value,vl-symbolp,%
1980       vl-unload-vlx,vl-vbaload,vl-vbarun,vl-vlx-loaded-p,vlax-3D-point,%
1981       vlax-add-cmd,vlax-create-object,vlax-curve-getArea,%
1982       vlax-curve-getDistAtParam,vlax-curve-getDistAtPoint,%
1983       vlax-curve-getEndParam,vlax-curve-getEndPoint,%
1984       vlax-curve-getParamAtDist,vlax-curve-getParamAtPoint,%
```

```
1985        vlax-curve-getPointAtDist,vlax-curve-getPointAtParam,%
1986        vlax-curve-getStartParam,vlax-curve-getStartPoint,%
1987        vlax-curve-isClosed,vlax-curve-isPeriodic,vlax-curve-isPlanar,%
1988        vlax-curve-getClosestPointTo,%
1989        vlax-curve-getClosestPointToProjection,vlax-curve-getFirstDeriv,%
1990        vlax-curve-getSecondDeriv,vlax-dump-object,%
1991        vlax-ename->vla-object,vlax-erased-p,vlax-for,%
1992        vlax-get-acad-object,vlax-get-object,vlax-get-or-create-object,%
1993        vlax-get-property,vlax-import-type-library,vlax-invoke-method,%
1994        vlax-ldata-delete,vlax-ldata-get,vlax-ldata-list,vlax-ldata-put,%
1995        vlax-ldata-test,vlax-make-safearray,vlax-make-variant,%
1996        vlax-map-collection,vlax-method-applicable-p,%
1997        vlax-object-released-p,vlax-product-key,%
1998        vlax-property-available-p,vlax-put-property,vlax-read-enabled-p,%
1999        vlax-release-object,vlax-remove-cmd,vlax-safearray-fill,%
2000        vlax-safearray-get-dim,vlax-safearray-get-element,%
2001        vlax-safearray-get-l-bound,vlax-safearray-get-u-bound,%
2002        vlax-safearray-put-element,vlax-safearray-type,%
2003        vlax-safearray->list,vlax-tmatrix,vlax-typeinfo-available-p,%
2004        vlax-variant-change-type,vlax-variant-type,vlax-variant-value,%
2005        vlax-vla-object->ename,vlax-write-enabled-p,vlisp-compile,%
2006        vlr-acdb-reactor,vlr-add,vlr-added-p,vlr-beep-reaction,%
2007        vlr-command-reactor,vlr-current-reaction-name,vlr-data,%
2008        vlr-data-set,vlr-deepclone-reactor,vlr-docmanager-reactor,%
2009        vlr-dwg-reactor,vlr-dxf-reactor,vlr-editor-reactor,%
2010        vlr-insert-reactor,vlr-linker-reactor,vlr-lisp-reactor,%
2011        vlr-miscellaneous-reactor,vlr-mouse-reactor,vlr-notification,%
2012        vlr-object-reactor,vlr-owner-add,vlr-owner-remove,vlr-owners,%
2013        vlr-pers,vlr-pers-list,vlr-pers-p,vlr-pers-release,%
2014        vlr-reaction-names,vlr-reaction-set,vlr-reactions,vlr-reactors,%
2015        vlr-remove,vlr-remove-all,vlr-set-notification,%
2016        vlr-sysvar-reactor,vlr-toolbar-reactor,vlr-trace-reaction,%
2017        vlr-type,vlr-types,vlr-undo-reactor,vlr-wblock-reactor,%
2018        vlr-window-reactor,vlr-xref-reactor,vports,wcmatch,while,%
2019        write-char,write-line,xdroom,xdsize,zerop},%
2020      alsodigit=->,%
2021      otherkeywords={1+,1-},%
2022      sensitive=false,%
2023      morecomment=[l];,%
2024      morecomment=[l];;,%
2025      morestring=[b]"%
2026    }[keywords,comments,strings]%
2027 ⟨/lang2⟩
```

2.37   LLVM

LLVM provides a collection of modular and reusable compiler and toolchain tech-
nologies, all further information can be found at its home page http://llvm.org/.
Scott Pakin provided a language definition for the LLVM intermediate presenta-

tion according to http://llvm.org/docs/.[2] The language provides

2028 ⟨∗lang3⟩

2029 \lst@definelanguage{LLVM}{%
2030   morekeywords={%

- Instructions

2031   ret,br,switch,indirectbr,invoke,resume,unreachable,%
2032   add,fadd,sub,fsub,mul,fmul,udiv,sdiv,fdiv,urem,srem,frem,%
2033   shl,lshr,ashr,and,or,xor,%
2034   extractelement,insertelement,shufflevector,%
2035   extractvalue,insertvalue,%
2036   alloca,load,store,fence,cmpxchg,atomicrmw,getelementptr,%
2037   trunc,zext,sext,fptrunc,fpext,fptoui,fptosi,uitofp,sitofp,ptrtoint,%
2038   inttoptr,bitcast,to,%
2039   icmp,fcmp,phi,select,call,va_arg,landingpad,%

- Atomic operations – some duplication with the above

2040   xchg,add,sub,and,nand,or,xor,max,min,umax,umin,%

- Comparisons

2041   eq,ne,ugt,uge,ult,ule,sgt,sge,slt,sle,%
2042   false,oeq,ogt,oge,olt,ole,one,ord,ueq,ugt,uge,ult,ule,une,uno,true,%

- Linkage types

2043   private,linker_private,linker_private_weak,linker_private_weak_def_auto,%
2044   internal,available_externally,linkonce,common,weak,appending,extern_weak,%
2045   linkonce_odr,weak_odr,external,dllimport,dllexport,%

- Function headers

2046   define,declare,%

- Parameter attributes

2047   zeroext,signext,inreg,byval,sret,noalias,nocapture,next,%

- Garbage collector names

2048   gc,%

- Function attributes

2049   address_safety,alignstack,alwaysinline,nonlazybind,inlinehint,naked,%
2050   noimplicitfloat,noinline,noredzone,noreturn,nounwind,optsize,readnone,%
2051   readonly,returns_twice,ssp,sspreq,uwtable,%

- Module-level inline assembly

2052   module,asm,%

---

[2]In this section 'I' is Scott Pakin.

- Data layout

```
2053        target,datalayout,%
```

- Inline assembler expressions

```
2054        sideeffect,alignstack,%
```

- Other keywords – I'm probably missing some here.

```
2055        nuw,nsw,exact,inbounds,unnamed_addr},%
2056      morekeywords=[2]{%
```

- Types

```
2057        i1,i2,i4,i8,i16,i32,i64,i128,i256,i512,i1024,% <-- Most common integers
2058        half,float,double,x86_fp80,fp128,ppc_fp128,x86mmx,%
2059        void,label,metadata},%
2060      alsoletter=.,%
2061      sensitive=false,%
2062      morecomment=[l];,%
2063      morestring=[b]"%
2064    }
```

```
2065 ⟨/lang3⟩
```

2.38   Logo

I don't know where the keywords are from and what kind of Logo it is. Help me!

```
2066 ⟨*lang3⟩
```

```
2067 \lst@definelanguage{Logo}%
2068 % ??? {end,unix} also keywords
2069   {morekeywords={and,atan,arctan,both,break,bf,bl,butfirst,butlast,%
2070       cbreak, close,co,continue,cos,count,clearscreen,cs,debquit,%
2071       describe,diff,difference,ed,edit,either,emptyp,equalp,er,erase,%
2072       errpause,errquit,fifp,filefprint,fifty,fileftype,fip,fileprint,%
2073       fird,fileread,fity,filetype,fiwd,fileword,f,first,or,fp,fprint,%
2074       fput,fty,ftype,full,fullscreen,go,bye,goodbye,gprop,greaterp,%
2075       help,if,iff,iffalse,ift,iftrue,nth,item,keyp,llast,lessp,list,%
2076       local,lput,make,max,maximum,memberp,memtrace,min,minimum,namep,%
2077       not,numberp,oflush,openr,openread,openw,openwrite,op,output,%
2078       pause,plist,pots,pow,pprop,pps,pr,print,product,quotient,random,%
2079       rc,readchar,rl,readlist,remprop,repcount,repeat,request,rnd,run,%
2080       se,sentence,sentencep,setc,setcolor,setipause,setqpause,po,show,%
2081       sin,split,splitscreen,sqrt,stop,sum,test,text,textscreen,thing,%
2082       to,tone,top,toplevel,type,untrace,wait,word,wordp,yaccdebug,is,%
2083       mod,remainder,trace,zerop,back,bk,bto,btouch,fd,forward,fto,%
2084       ftouch,getpen,heading,hit,hitoot,ht,hideturtle,loff,lampoff,lon,%
2085       lampon,lt,left,lot,lotoot,lto,ltouch,penc,pencolor,pd,pendown,pe,%
2086       penerase,penmode,pu,penup,px,penreverse,rt,right,rto,rtouch,%
2087       scrunch,seth,setheading,setscrun,setscrunch,setxy,shownp,st,%
```

```
2088        showturtle,towardsxy,clean,wipeclean,xcor,ycor,tur,turtle,%
2089        display,dpy},%
2090    sensitive=f% ???
2091   }[keywords]%
```

2092 ⟨/lang3⟩

2.39   Lua

Stephan Hennig contributed the Lua keywords.

2093 ⟨∗lang2⟩

We begin with the keywords for Lua 5.0:

```
2094 %%
2095 %% Lua definitions (c) 2013 Stephan Hennig
2096 %%
2097 \lst@definelanguage[5.0]{Lua}{%
```

To enable highlighting of library keywords, the dot needs to be a letter.

```
2098   alsoletter={.},%
```

The language definition knows

- language keywords

```
2099        morekeywords=[1]{%
2100          and, break, do, else, elseif, end, false, for, function, if, in,%
2101          local, nil, not, or, repeat, return, then, true, until, while,%
2102        },%
```

- the standard library identifiers

```
2103        morekeywords=[2]{%
```

  - coming from the base library

```
2104            _G, _LOADED, _REQUIREDNAME, _VERSION, LUA_PATH,%
2105            assert, collectgarbage, dofile, error, gcinfo, getfenv,%
2106            getmetatable, ipairs, loadfile, loadlib, loadstring, newproxy,%
2107            next, pairs, pcall, print, rawequal, rawget, rawset, require,%
2108            setfenv, setmetatable, tonumber, tostring, type, unpack, xpcall,%
```

  - coming from the coroutine library

```
2109            coroutine, coroutine.create, coroutine.resume,%
2110            coroutine.status, coroutine.wrap, coroutine.yield,%
```

  - the debug library

```
2111            _TRACEBACK, debug, debug.debug, debug.gethook, debug.getinfo,%
2112            debug.getlocal, debug.getupvalue, debug.sethook, debug.setlocal,%
2113            debug.setupvalue,debug.traceback,%
```

  - the io library

```
2114            io, io.close, io.flush, io.input, io.lines, io.open, io.output,%
2115            io.popen, io.read, io.stderr, io.stdin, io.stdout, io.tmpfile,%
2116            io.type, io.write,%
```

– the mathematical library

```
2117                 __pow, math, math.abs, math.acos, math.asin, math.atan, math.atan2,%
2118                 math.ceil, math.cos, math.deg, math.exp, math.floor, math.frexp,%
2119                 math.ldexp, math.log, math.log10, math.max, math.min, math.mod,%
2120                 math.pi, math.pow, math.rad, math.random, math.randomseed, math.sin,%
2121                 math.sqrt, math.tan,%
```

– the os library

```
2122                 os, os.clock, os.date, os.difftime, os.execute, os.exit, os.getenv,%
2123                 os.remove, os.rename, os.setlocale, os.time, os.tmpname,%
```

– the string library

```
2124                 string, string.byte, string.char, string.dump, string.find,%
2125                 string.format, string.gfind, string.gsub, string.len, string.lower,%
2126                 string.rep, string.sub, string.upper,%
```

– the table library

```
2127                 table, table.concat, table.foreach, table.foreachi, table.getn,%
2128                 table.insert, table.remove, table.setn, table.sort,%
2129               },%
```

and some additional identifiers

```
2130   morekeywords=[2]{%
2131     _PROMPT, _PROMPT2, arg,%
2132   },%
```

These are the common language settings

```
2133   sensitive=true,%
2134   % single line comments
2135   morecomment=[l]{--},%
2136   % multi line comments
2137   morecomment=[s]{--[[}{]]},%
2138   % backslash escaped strings
2139   morestring=[b]",%
2140   morestring=[b]',%
2141   % multi line strings
2142   morestring=[s]{[[}{]]},%
2143 }[keywords,comments,strings]%
```

And here are the new definitions for Lua 5.1:

```
2144 \lst@definelanguage[5.1]{Lua}[5.0]{Lua}{%
```

There are some deletions

```
2145   deletekeywords=[2]{%
```

concerning

- the base library

```
2146                 _LOADED, _REQUIREDNAME, LUA_PATH, gcinfo, loadlib,%
```

55

- the debug library

```
2147        _TRACEBACK,%
```

- the mathematical library

```
2148        __pow, math.mod,%
```

- the string library

```
2149        string.gfind,%
```

- the table library

```
2150        table.foreach, table.foreachi, table.getn, table.setn,%
2151      },%
```

and some new identifiers in standard libraries like

```
2152   morekeywords=[2]{%
```

- the base library

```
2153        load, select,%
```

- coroutine library

```
2154        coroutine.running,%
```

- debug library

```
2155        debug.getfenv, debug.getmetatable, debug.getregistry, debug.setfenv,%
2156        debug.setmetatable,%
```

- the mathematical library

```
2157        math.cosh, math.fmod, math.huge, math.modf, math.sinh, math.tanh,%
```

- the package library which itself is new in Lua 5.1

```
2158        module, package, package.config, package.cpath, package.loaded,%
2159        package.loaders, package.loadlib, package.path, package.preload,%
2160        package.seeall,%
```

- the string library and

```
2161        string.gmatch, string.match, string.reverse,%
```

- the table library

```
2162        table.maxn,%
2163      },%
```

In Lua 5.1 long bracket comments were introduced also

```
2164    morecomment=[s]{--[}{]=]},%
2165    morecomment=[s]{--[==[}{]==]},%
2166    morecomment=[s]{--[===[}{]===]},%
2167    morecomment=[s]{--[====[}{]====]},%
2168    morecomment=[s]{--[=====[}{]=====]},%
2169    morecomment=[s]{--[======[}{]======]},%
2170    morecomment=[s]{--[=======[}{]=======]},%
2171    morecomment=[s]{--[========[}{]========]},%
2172    morecomment=[s]{--[=========[}{]=========]},%
2173    morecomment=[s]{--[==========[}{]==========]},%
```

as well as long bracket strings

```
2174    morestring=[s]{[}{]=]},%
2175    morestring=[s]{[==[}{]==]},%
2176    morestring=[s]{[===[}{]===]},%
2177    morestring=[s]{[====[}{]====]},%
2178    morestring=[s]{[=====[}{]=====]},%
2179    morestring=[s]{[======[}{]======]},%
2180    morestring=[s]{[=======[}{]=======]},%
2181    morestring=[s]{[========[}{]========]},%
2182    morestring=[s]{[=========[}{]=========]},%
2183    morestring=[s]{[==========[}{]==========]},%
2184 }[keywords,comments,strings]%
```

Lua 5.2 again has some changed features. These are

```
2185 \lst@definelanguage[5.2]{Lua}[5.1]{Lua}{%
```

- new language keywords

```
2186        morekeywords=[1]{%
2187          goto,%
2188        },%
```

- deleted identifiers from the standard libraries like

```
2189        deletekeywords=[2]{%
```

  - the base library

```
2190            getfenv, loadstring, module, newproxy, setfenv, unpack,%
```

  - the debug library

```
2191            debug.getfenv, debug.setfenv,%
```

  - the mathematical library

```
2192            math.log10,%
```

  - the package library and

```
2193            package.loaders, package.seeall,%
```

57

– the table library

```
2194                table.maxn,%
2195              },%
```

Again there are some new identifiers in the standard libraries

```
2196   morekeywords=[2]{%
```

like

- the base library

```
2197            rawlen,%
```

- the bit library

```
2198            bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%
2199            bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%
2200            bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%
```

- the debug library

```
2201            debug.getuservalue, debug.setuservalue, debug.upvalueid,%
2202            debug.upvaluejoin,%
```

- the package library

```
2203            package.searchers, package.searchpath,%
```

- the table library

```
2204            table.pack, table.unpack,%
2205          },%
```

There is a new additional identifier

```
2206   morekeywords=[2]{%
2207     _ENV,%
2208   },%
```

and labels are also new in Lua 5.2

```
2209   moredelim=[s][keywordstyle3]{::}{::},%
2210 }[keywords,comments,strings]%
```

In January 2015 Lua 5.3 was released, Stephan Hennig again contributed the Lua keywords.

```
2211 \lst@definelanguage[5.3]{Lua}[5.2]{Lua}{%
```

- some libraries are deprecated, so the following identifiers are deleted

```
2212      deletekeywords=[2]{%
```

– the bit32 library

```
2213                bit32, bit32.arshift, bit32.band, bit32.bnot, bit32.bor,%
2214                bit32.btest, bit32.bxor, bit32.extract, bit32.lrotate,%
2215                bit32.lshift, bit32.replace, bit32.rrotate, bit32.rshift,%
```

– the mathematical library

```
2216              math.atan2, math.cosh, math.frexp, math.ldexp, math.pow,%
2217              math.sinh, math.tanh,%
2218            },%
```

Again there are some new identifiers in the standard libraries

```
2219   morekeywords=[2]{%
```

like

- the coroutine library

```
2220          coroutine.isyieldable,%
```

- the mathematical library

```
2221          math.maxinteger, math.mininteger, math.tointeger, math.type,%
2222          math.ult,%
```

- the string library

```
2223          string.pack, string.packsize, string.unpack,%
```

- the table library

```
2224          table.move,%
```

- the utf-8 library

```
2225          utf8, utf8.char, utf8.charpattern, utf8.codepoint, utf8.codes,%
2226          utf8.len, utf8.offset,%
2227        },%
2228      }[keywords,comments,strings]%
```

```
2229      ⟨/lang2⟩
```

Stephan Hennig also supplied a definition of a style for printing Lua code:

```
2230 ⟨∗lua-prf⟩
```

```
2231 \usepackage[rgb, x11names]{xcolor}
2232 \lstdefinestyle{Lua}{%
2233   language=[5.2]Lua,
2234   basicstyle=\ttfamily,
2235   columns=spaceflexible,
2236   keywordstyle=\bfseries\color{Blue4},% language keywords
2237   keywordstyle=[2]\bfseries\color{RoyalBlue3},% std. library identifiers
2238   keywordstyle=[3]\bfseries\color{Purple3},% labels
2239   stringstyle=\bfseries\color{Coral4},% strings
2240   commentstyle=\itshape\color{Green4},% comments
2241 }
```

This code is provided in the file `listings-lua.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
2242 ⟨/lua-prf⟩
```

2.40 Make

Rolf Niepraschk sent me the new definitions. Markus Pahlow found a missing comma and added some keywords, which improve the highlighting with `makemacrouse=true` (but I haven't tested this).

```
2243 ⟨*lang2⟩

2244 %%
2245 %% Make definitions (c) 2000 Rolf Niepraschk
2246 %%
2247 \lst@definelanguage[gnu]{make}%
2248   {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,$<,$?,$^,$+,$*,%
2249       @,^,<,\%,+,?,*,% Markus Pahlow
2250       export,unexport,include,override,define,ifdef,ifneq,ifeq,else,%
2251       endif,vpath,subst,patsubst,strip,findstring,filter,filter-out,%
2252       sort,dir,notdir,suffix,basename,addsuffix,addprefix,join,word,%
2253       words,firstword,wildcard,shell,origin,foreach,%
2254       @D,@F,*D,*F,\%D,\%F,<D,<F,^D,^F,+D,+F,?D,?F,%
2255       AR,AS,CC,CXX,CO,CPP,FC,GET,LEX,PC,YACC,YACCR,MAKEINFO,TEXI2DVI,%
2256       WEAVE,CWEAVE,TANGLE,CTANGLE,RM,M2C,LINT,COMPILE,LINK,PREPROCESS,%
2257       CHECKOUT,%
2258       ARFLAGS,ASFLAGS,CFLAGS,CXXFLAGS,COFLAGS,CPPFLAGS,FFLAGS,GFLAGS,%
2259       LDFLAGS,LOADLIBES,LFLAGS,PFLAGS,RFLAGS,YFLAGS,M2FLAGS,MODFLAGS,%
2260       LINTFLAGS,MAKEINFO_FLAGS,TEXI2DVI_FLAGS,COFLAGS,GFLAGS,%
2261       OUTPUT_OPTION,SCCS_OUTPUT_OPTION,% missing comma: Markus Pahlow
2262       .PHONY,.SUFFIXES,.DEFAULT,.PRECIOUS,.INTERMEDIATE,.SECONDARY,%
2263       .IGNORE,.SILENT,.EXPORT_ALL_VARIABLES,MAKEFILES,VPATH,MAKESHELL,%
2264       MAKELEVEL,MAKECMDGOALS,SUFFIXES},%
2265     sensitive=true,
2266     morecomment=[l]\#,%
2267     morestring=[b]"%
2268   }[keywords,comments,strings,make]%

2269 \lst@definelanguage{make}
2270   {morekeywords={SHELL,MAKE,MAKEFLAGS,$@,$\%,$<,$?,$^,$+,$*},%
2271     sensitive=true,%
2272     morecomment=[l]\#,%
2273     morestring=[b]"%
2274   }[keywords,comments,strings,make]%
```

The two [b]-arguments have been added after a bug report by Dr. Jobst Hoffmann

```
2275 ⟨/lang2⟩
```

2.41 Matlab

I took the keywords from `http://www.utexas.edu/math/Matlab/Manual`, but I removed the keywords `i`, `j` and `tmp`—the change was proposed by Kai Below.

```
2276 ⟨*lang1⟩

2277 \lst@definelanguage{Matlab}%
2278   {morekeywords={gt,lt,gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
```

```
2279        all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
2280        auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
2281        betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
2282        cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
2283        clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
2284        comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
2285        contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
2286        cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
2287        csvwrite,cumprod,cumsum,cylinder,date,dbclear,dbcont,dbdown,%
2288        dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
2289        ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
2290        del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
2291        dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
2292        end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
2293        engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
2294        engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,error,%
2295        errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
2296        feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
2297        fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%
2298        flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
2299        fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
2300        gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
2301        getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
2302        gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
2303        hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
2304        imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
2305        invhilb,isempty,isglobal,ishold,isieee,isinf,isletter,isnan,%
2306        isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
2307        legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
2308        loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
2309        matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
2310        matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
2311        matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
2312        meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
2313        mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
2314        mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
2315        min,more,movie,moviein,mu2lin,mxCalloc,mxCopyCharacterToPtr,%
2316        mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
2317        mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
2318        mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
2319        mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
2320        mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
2321        mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
2322        mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
2323        mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nnls,nnz,%
2324        nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
2325        pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
2326        pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
2327        pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
2328        quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
```

```
2329        rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
2330        return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
2331        round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
2332        semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
2333        spalloc,sparse,spaugment,spconvert,spdiags,specular,speye,spfun,%
2334        sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
2335        sprank,sprintf,spy,sqrt,sqrtm,sscanf,stairs,startup,std,stem,%
2336        str2mat,str2num,strcmp,strings,strrep,strtok,subplot,subscribe,%
2337        subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
2338        symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
2339        toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
2340        uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
2341        viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
2342        whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
2343        wk1write,xlabel,xor,ylabel,zeros,zlabel,zoom},%
2344    sensitive,%
2345    morecomment=[l]\%,%
2346    morestring=[m]'%
2347  }[keywords,comments,strings]%

2348 ⟨/lang1⟩
```

2.42 Mathematica

Michael Wiese typed in all the keywords for the 1.0 and 3.0 versions. Oliver Ruebenkoenig wrote a script to generate the lists for the 5.2 version.

```
2349 ⟨*lang1⟩

2350 \lst@definelanguage[5.2]{Mathematica}[3.0]{Mathematica}%%
2351   {morekeywords={Above,AbsoluteOptions,AbsoluteTiming,AccountingForm,%
2352        AccuracyGoal,Active,ActiveItem,AddOnHelpPath,%
2353        AdjustmentBox,AdjustmentBoxOptions,After,AiryAiPrime,%
2354        AlgebraicRulesData,Algebraics,Alias,AlignmentMarker,%
2355        AllowInlineCells,AllowScriptLevelChange,Analytic,AnimationCycleOffset,%
2356        AnimationCycleRepetitions,AnimationDirection,AnimationDisplayTime,ApartSquareFree,%
2357        AppellF1,ArgumentCountQ,ArrayDepth,ArrayPlot,%
2358        ArrayQ,ArrayRules,AspectRatioFixed,Assuming,%
2359        Assumptions,AutoDelete,AutoEvaluateEvents,AutoGeneratedPackage,%
2360        AutoIndent,AutoIndentSpacings,AutoItalicWords,AutoloadPath,%
2361        AutoOpenNotebooks,AutoOpenPalettes,AutoScroll,AutoSpacing,%
2362        AutoStyleOptions,Axis,BackgroundTasksSettings,Backsubstitution,%
2363        Backward,Baseline,Before,BeginDialogPacket,%
2364        BeginFrontEndInteractionPacket,Below,BezoutMatrix,BinaryFormat,%
2365        BinaryGet,BinaryRead,BinaryReadList,BinaryWrite,%
2366        BitAnd,BitNot,BitOr,BitXor,%
2367        Black,BlankForm,Blue,Boole,%
2368        Booleans,Bottom,Bounds,Box,%
2369        BoxBaselineShift,BoxData,BoxDimensions,BoxFormFormatTypes,%
2370        BoxFrame,BoxMargins,BoxRegion,Brown,%
2371        Buchberger,Button,ButtonBox,ButtonBoxOptions,%
```

```
2372        ButtonCell,ButtonContents,ButtonData,ButtonEvaluator,%
2373        ButtonExpandable,ButtonFrame,ButtonFunction,ButtonMargins,%
2374        ButtonMinHeight,ButtonNote,ButtonNotebook,ButtonSource,%
2375        ButtonStyle,ButtonStyleMenuListing,ByteOrdering,CallPacket,%
2376        CarmichaelLambda,Cell,CellAutoOverwrite,CellBaseline,%
2377        CellBoundingBox,CellBracketOptions,CellContents,CellDingbat,%
2378        CellEditDuplicate,CellElementsBoundingBox,CellElementSpacings,CellEvaluationDuplicate,%
2379        CellFrame,CellFrameColor,CellFrameLabelMargins,CellFrameLabels,%
2380        CellFrameMargins,CellGroup,CellGroupData,CellGrouping,%
2381        CellGroupingRules,CellHorizontalScrolling,CellLabel,CellLabelAutoDelete,%
2382        CellLabelMargins,CellLabelPositioning,CellMargins,CellObject,%
2383        CellOpen,CellPasswords,CellPrint,CellSize,%
2384        CellStyle,CellTags,CellularAutomaton,Center,%
2385        CharacterEncoding,CharacterEncodingsPath,CharacteristicPolynomial,CharacterRange,%
2386        CheckAll,CholeskyDecomposition,Clip,ClipboardNotebook,%
2387        Closed,ClosingAutoSave,CoefficientArrays,CoefficientDomain,%
2388        CofactorExpansion,ColonForm,ColorFunctionScaling,ColorRules,%
2389        ColorSelectorSettings,Column,ColumnAlignments,ColumnLines,%
2390        ColumnsEqual,ColumnSpacings,ColumnWidths,CommonDefaultFormatTypes,%
2391        CompileOptimizations,CompletionsListPacket,Complexes,ComplexityFunction,%
2392        Compose,ComposeSeries,ConfigurationPath,ConjugateTranspose,%
2393        Connect,ConsoleMessage,ConsoleMessagePacket,ConsolePrint,%
2394        ContentsBoundingBox,ContextToFileName,ContinuedFraction,ConversionOptions,%
2395        ConversionRules,ConvertToBitmapPacket,ConvertToPostScript,ConvertToPostScriptPacket,%
2396        Copyable,CoshIntegral,CounterAssignments,CounterBox,%
2397        CounterBoxOptions,CounterEvaluator,CounterFunction,CounterIncrements,%
2398        CounterStyle,CounterStyleMenuListing,CreatePalettePacket,Cross,%
2399        CurrentlySpeakingPacket,Cyan,CylindricalDecomposition,DampingFactor,%
2400        DataRange,Debug,DebugTag,Decimal,%
2401        DedekindEta,DefaultDuplicateCellStyle,DefaultFontProperties,DefaultFormatType,%
2402        DefaultFormatTypeForStyle,DefaultInlineFormatType,DefaultInputFormatType,
2403        DefaultNaturalLanguage,%
2404        DefaultNewCellStyle,DefaultNewInlineCellStyle,DefaultNotebook,DefaultOutputFormatType,%
2405        DefaultStyleDefinitions,DefaultTextFormatType,DefaultTextInlineFormatType,DefaultValues,%
2406        DefineExternal,DegreeLexicographic,DegreeReverseLexicographic,Deletable,%
2407        DeleteContents,DeletionWarning,DelimiterFlashTime,DelimiterMatching,%
2408        Delimiters,DependentVariables,DiacriticalPositioning,DialogLevel,%
2409        DifferenceOrder,DigitCharacter,DigitCount,DiracDelta,%
2410        Direction,DirectoryName,DisableConsolePrintPacket,DiscreteDelta,%
2411        DisplayAnimation,DisplayEndPacket,DisplayFlushImagePacket,DisplayForm,%
2412        DisplayPacket,DisplayRules,DisplaySetSizePacket,DisplayString,%
2413        DivisionFreeRowReduction,DOSTextFormat,DoubleExponential,DoublyInfinite,%
2414        Down,DragAndDrop,DrawHighlighted,DualLinearProgramming,%
2415        DumpGet,DumpSave,Edit,Editable,%
2416        EditButtonSettings,EditCellTagsSettings,EditDefinition,EditIn,%
2417        Element,EliminationOrder,EllipticExpPrime,EllipticNomeQ,%
2418        EllipticReducedHalfPeriods,EllipticThetaPrime,Empty,EnableConsolePrintPacket,%
2419        Encoding,EndAdd,EndDialogPacket,EndFrontEndInteractionPacket,%
2420        EndOfLine,EndOfString,Enter,EnterExpressionPacket,%
2421        EnterTextPacket,EqualColumns,EqualRows,EquatedTo,%
```

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2422        Erfi,ErrorBox,ErrorBoxOptions,ErrorNorm,%
2423        ErrorPacket,ErrorsDialogSettings,Evaluatable,EvaluatePacket,%
2424        EvaluationCell,EvaluationCompletionAction,EvaluationMonitor,EvaluationNotebook,%
2425        Evaluator,EvaluatorNames,EventEvaluator,ExactNumberQ,%
2426        ExactRootIsolation,Except,ExcludedForms,Exists,%
2427        ExitDialog,ExponentPosition,ExponentStep,Export,%
2428        ExportAutoReplacements,ExportPacket,ExportString,ExpressionPacket,%
2429        ExpToTrig,Extension,ExternalCall,ExternalDataCharacterEncoding,%
2430        Extract,Fail,FEDisableConsolePrintPacket,FEEnableConsolePrintPacket,%
2431        Fibonacci,File,FileFormat,FileInformation,%
2432        FileName,FileNameDialogSettings,FindFit,FindInstance,%
2433        FindMaximum,FindSettings,FitAll,FlushPrintOutputPacket,%
2434        Font,FontColor,FontFamily,FontName,%
2435        FontPostScriptName,FontProperties,FontReencoding,FontSize,%
2436        FontSlant,FontSubstitutions,FontTracking,FontVariations,%
2437        FontWeight,ForAll,FormatRules,FormatTypeAutoConvert,%
2438        FormatValues,FormBox,FormBoxOptions,Forward,%
2439        ForwardBackward,FourierCosTransform,FourierParameters,FourierSinTransform,%
2440        FourierTransform,FractionalPart,FractionBox,FractionBoxOptions,%
2441        FractionLine,FrameBox,FrameBoxOptions,FresnelC,%
2442        FresnelS,FromContinuedFraction,FromDigits,FrontEndExecute,%
2443        FrontEndObject,FrontEndStackSize,FrontEndToken,FrontEndTokenExecute,%
2444        FrontEndVersion,Full,FullAxes,FullSimplify,%
2445        FunctionExpand,FunctionInterpolation,GaussKronrod,GaussPoints,%
2446        GenerateBitmapCaches,GenerateConditions,GeneratedCell,GeneratedParameters,%
2447        Generic,GetBoundingBoxSizePacket,GetContext,GetFileName,%
2448        GetFrontEndOptionsDataPacket,GetLinebreakInformationPacket,%
2449        GetMenusPacket,GetPageBreakInformationPacket,%
2450        Glaisher,GlobalPreferences,GlobalSession,Gradient,%
2451        GraphicsData,GraphicsGrouping,Gray,Green,%
2452        Grid,GridBaseline,GridBox,GridBoxOptions,%
2453        GridCreationSettings,GridDefaultElement,GridFrame,GridFrameMargins,%
2454        GroupPageBreakWithin,HarmonicNumber,Hash,HashTable,%
2455        HeadCompose,HelpBrowserLookup,HelpBrowserNotebook,HelpBrowserSettings,%
2456        HessenbergDecomposition,Hessian,HoldAllComplete,HoldComplete,%
2457        HoldPattern,Horizontal,HorizontalForm,HorizontalScrollPosition,%
2458        HTMLSave,Hypergeometric0F1Regularized,Hypergeometric1F1Regularized,%
2459        Hypergeometric2F1Regularized,%
2460        HypergeometricPFQ,HypergeometricPFQRegularized,HyperlinkCreationSettings,Hyphenation,%
2461        HyphenationOptions,IgnoreCase,ImageCache,ImageCacheValid,%
2462        ImageMargins,ImageOffset,ImageRangeCache,ImageRegion,%
2463        ImageResolution,ImageRotated,ImageSize,Import,%
2464        ImportAutoReplacements,ImportString,IncludeFileExtension,IncludeSingularTerm,%
2465        IndentingNewlineSpacings,IndentMaxFraction,IndexCreationOptions,Inequality,%
2466        InexactNumberQ,InexactNumbers,Inherited,InitializationCell,%
2467        InitializationCellEvaluation,InitializationCellWarning,%
2468        InlineCounterAssignments,InlineCounterIncrements,%
2469        InlineRules,InputAliases,InputAutoFormat,InputAutoReplacements,%
2470        InputGrouping,InputNamePacket,InputNotebook,InputPacket,%
2471        InputSettings,InputStringPacket,InputToBoxFormPacket,InputToInputForm,%
```

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2472        InputToStandardForm,InsertionPointObject,IntegerExponent,IntegerPart,%
2473        Integers,Interactive,Interlaced,InterpolationOrder,%
2474        InterpolationPoints,InterpolationPrecision,InterpretationBox,%
2475        InterpretationBoxOptions,%
2476        InterpretTemplate,InterruptSettings,Interval,IntervalIntersection,%
2477        IntervalMemberQ,IntervalUnion,InverseBetaRegularized,InverseEllipticNomeQ,%
2478        InverseErf,InverseErfc,InverseFourierCosTransform,
2479        InverseFourierSinTransform,%
2480        InverseFourierTransform,InverseGammaRegularized,InverseJacobiCD,%
2481        InverseJacobiCN,%
2482        InverseJacobiCS,InverseJacobiDC,InverseJacobiDN,InverseJacobiDS,%
2483        InverseJacobiNC,InverseJacobiND,InverseJacobiNS,InverseJacobiSC,%
2484        InverseJacobiSD,InverseLaplaceTransform,InverseWeierstrassP,InverseZTransform,%
2485        Jacobian,JacobiCD,JacobiCN,JacobiCS,%
2486        JacobiDC,JacobiDN,JacobiDS,JacobiNC,%
2487        JacobiND,JacobiNS,JacobiSC,JacobiSD,%
2488        JordanDecomposition,K,Khinchin,KleinInvariantJ,%
2489        KroneckerDelta,Language,LanguageCategory,LaplaceTransform,%
2490        Larger,Launch,LayoutInformation,Left,%
2491        LetterCharacter,Lexicographic,LicenseID,LimitsPositioning,%
2492        LimitsPositioningTokens,LinearSolveFunction,LinebreakAdjustments,LineBreakWithin,%
2493        LineForm,LineIndent,LineSpacing,LineWrapParts,%
2494        LinkActivate,LinkClose,LinkConnect,LinkConnectedQ,%
2495        LinkCreate,LinkError,LinkFlush,LinkHost,%
2496        LinkInterrupt,LinkLaunch,LinkMode,LinkObject,%
2497        LinkOpen,LinkOptions,LinkPatterns,LinkProtocol,%
2498        LinkRead,LinkReadHeld,LinkReadyQ,Links,%
2499        LinkWrite,LinkWriteHeld,ListConvolve,ListCorrelate,%
2500        Listen,ListInterpolation,ListQ,LiteralSearch,%
2501        LongestMatch,LongForm,Loopback,LUBackSubstitution,%
2502        LUDecomposition,MachineID,MachineName,MachinePrecision,%
2503        MacintoshSystemPageSetup,Magenta,Magnification,MakeBoxes,%
2504        MakeExpression,MakeRules,Manual,MatchLocalNameQ,%
2505        MathematicaNotation,MathieuC,MathieuCharacteristicA,MathieuCharacteristicB,%
2506        MathieuCharacteristicExponent,MathieuCPrime,MathieuS,MathieuSPrime,%
2507        MathMLForm,MathMLText,MatrixRank,Maximize,%
2508        MaxIterations,MaxPlotPoints,MaxPoints,MaxRecursion,%
2509        MaxStepFraction,MaxSteps,MaxStepSize,Mean,%
2510        Median,MeijerG,MenuPacket,MessageOptions,%
2511        MessagePacket,MessagesNotebook,MetaCharacters,Method,%
2512        MethodOptions,Minimize,MinRecursion,MinSize,%
2513        Mode,ModularLambda,MonomialOrder,MonteCarlo,%
2514        Most,MousePointerNote,MultiDimensional,MultilaunchWarning,%
2515        MultilineFunction,MultiplicativeOrder,Multiplicity,Nand,%
2516        NeedCurrentFrontEndPackagePacket,NeedCurrentFrontEndSymbolsPacket,%
2517        NestedScriptRules,NestWhile,%
2518        NestWhileList,NevilleThetaC,NevilleThetaD,NevilleThetaN,%
2519        NevilleThetaS,Newton,Next,NHoldAll,%
2520        NHoldFirst,NHoldRest,NMaximize,NMinimize,%
2521        NonAssociative,NonPositive,Nor,Norm,%
```

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2522          NormalGrouping,NormalSelection,NormFunction,Notebook,%
2523          NotebookApply,NotebookAutoSave,NotebookClose,NotebookConvert,%
2524          NotebookConvertSettings,NotebookCreate,NotebookCreateReturnObject,NotebookDefault,%
2525          NotebookDelete,NotebookDirectory,NotebookFind,NotebookFindReturnObject,%
2526          NotebookGet,NotebookGetLayoutInformationPacket,NotebookGetMisspellingsPacket,%
2527          NotebookInformation,%
2528          NotebookLocate,NotebookObject,NotebookOpen,NotebookOpenReturnObject,%
2529          NotebookPath,NotebookPrint,NotebookPut,NotebookPutReturnObject,%
2530          NotebookRead,NotebookResetGeneratedCells,Notebooks,NotebookSave,%
2531          NotebookSaveAs,NotebookSelection,NotebookSetupLayoutInformationPacket,%
2532          NotebooksMenu,%
2533          NotebookWrite,NotElement,NProductExtraFactors,NProductFactors,%
2534          NRoots,NSumExtraTerms,NSumTerms,NumberMarks,%
2535          NumberMultiplier,NumberString,NumericFunction,NumericQ,%
2536          NValues,Offset,OLEData,OneStepRowReduction,%
2537          Open,OpenFunctionInspectorPacket,OpenSpecialOptions,OptimizationLevel,%
2538          OptionInspectorSettings,OptionQ,OptionsPacket,OptionValueBox,%
2539          OptionValueBoxOptions,Orange,Ordering,Oscillatory,%
2540          OutputAutoOverwrite,OutputFormData,OutputGrouping,OutputMathEditExpression,%
2541          OutputNamePacket,OutputToOutputForm,OutputToStandardForm,Over,%
2542          Overflow,Overlaps,Overscript,OverscriptBox,%
2543          OverscriptBoxOptions,OwnValues,PadLeft,PadRight,%
2544          PageBreakAbove,PageBreakBelow,PageBreakWithin,PageFooterLines,%
2545          PageFooters,PageHeaderLines,PageHeaders,PalettePath,%
2546          PaperWidth,ParagraphIndent,ParagraphSpacing,ParameterVariables,%
2547          ParentConnect,ParentForm,Parenthesize,PasteBoxFormInlineCells,%
2548          Path,PatternTest,PeriodicInterpolation,Pick,%
2549          Piecewise,PiecewiseExpand,Pink,Pivoting,%
2550          PixelConstrained,Placeholder,Plain,Plot3Matrix,%
2551          PointForm,PolynomialForm,PolynomialReduce,Polynomials,%
2552          PowerModList,Precedence,PreferencesPath,PreserveStyleSheet,%
2553          Previous,PrimaryPlaceholder,Primes,PrincipalValue,%
2554          PrintAction,PrintingCopies,PrintingOptions,PrintingPageRange,%
2555          PrintingStartingPageNumber,PrintingStyleEnvironment,PrintPrecision,%
2556          PrivateCellOptions,%
2557          PrivateEvaluationOptions,PrivateFontOptions,PrivateNotebookOptions,PrivatePaths,%
2558          ProductLog,PromptForm,Purple,Quantile,%
2559          QuasiMonteCarlo,QuasiNewton,RadicalBox,RadicalBoxOptions,%
2560          RandomSeed,RationalFunctions,Rationals,RawData,%
2561          RawMedium,RealBlockForm,Reals,Reap,%
2562          Red,Refine,Refresh,RegularExpression,%
2563          Reinstall,Release,Removed,RenderingOptions,%
2564          RepeatedString,ReplaceList,Rescale,ResetMenusPacket,%
2565          Resolve,ResumePacket,ReturnExpressionPacket,ReturnInputFormPacket,%
2566          ReturnPacket,ReturnTextPacket,Right,Root,%
2567          RootReduce,RootSum,Row,RowAlignments,%
2568          RowBox,RowLines,RowMinHeight,RowsEqual,%
2569          RowSpacings,RSolve,RuleCondition,RuleForm,%
2570          RulerUnits,Saveable,SaveAutoDelete,ScreenRectangle,%
2571          ScreenStyleEnvironment,ScriptBaselineShifts,ScriptLevel,ScriptMinSize,%
```

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2572        ScriptRules,ScriptSizeMultipliers,ScrollingOptions,ScrollPosition,%
2573        Second,SectionGrouping,Selectable,SelectedNotebook,%
2574        Selection,SelectionAnimate,SelectionCell,SelectionCellCreateCell,%
2575        SelectionCellDefaultStyle,SelectionCellParentStyle,SelectionCreateCell,%
2576        SelectionDuplicateCell,%
2577        SelectionEvaluate,SelectionEvaluateCreateCell,SelectionMove,SelectionSetStyle,%
2578        SelectionStrategy,SendFontInformationToKernel,SequenceHold,SequenceLimit,%
2579        SeriesCoefficient,SetBoxFormNamesPacket,SetEvaluationNotebook,%
2580        SetFileLoadingContext,%
2581        SetNotebookStatusLine,SetOptionsPacket,SetSelectedNotebook,%
2582        SetSpeechParametersPacket,%
2583        SetValue,ShortestMatch,ShowAutoStyles,ShowCellBracket,%
2584        ShowCellLabel,ShowCellTags,ShowClosedCellArea,ShowContents,%
2585        ShowCursorTracker,ShowGroupOpenCloseIcon,ShowPageBreaks,ShowSelection,%
2586        ShowShortBoxForm,ShowSpecialCharacters,ShowStringCharacters,%
2587        ShrinkWrapBoundingBox,%
2588        SingleLetterItalics,SingularityDepth,SingularValueDecomposition,%
2589        SingularValueList,%
2590        SinhIntegral,Smaller,Socket,SolveDelayed,%
2591        SoundAndGraphics,Sow,Space,SpaceForm,%
2592        SpanAdjustments,SpanCharacterRounding,SpanLineThickness,SpanMaxSize,%
2593        SpanMinSize,SpanningCharacters,SpanSymmetric,Sparse,%
2594        SparseArray,SpeakTextPacket,SpellingDictionaries,SpellingDictionariesPath,%
2595        SpellingOptions,SpellingSuggestionsPacket,Spherical,Split,%
2596        SqrtBox,SqrtBoxOptions,StandardDeviation,StandardForm,%
2597        StartingStepSize,StartOfLine,StartOfString,StartupSound,%
2598        StepMonitor,StieltjesGamma,StoppingTest,StringCases,%
2599        StringCount,StringExpression,StringFreeQ,StringQ,%
2600        StringReplaceList,StringReplacePart,StringSplit,StripBoxes,%
2601        StripWrapperBoxes,StructuredSelection,StruveH,StruveL,%
2602        StyleBox,StyleBoxAutoDelete,StyleBoxOptions,StyleData,%
2603        StyleDefinitions,StyleForm,StyleMenuListing,StyleNameDialogSettings,%
2604        StylePrint,StyleSheetPath,Subresultants,SubscriptBox,%
2605        SubscriptBoxOptions,Subsets,Subsuperscript,SubsuperscriptBox,%
2606        SubsuperscriptBoxOptions,SubtractFrom,SubValues,SugarCube,%
2607        SuperscriptBox,SuperscriptBoxOptions,SuspendPacket,SylvesterMatrix,%
2608        SymbolName,Syntax,SyntaxForm,SyntaxPacket,%
2609        SystemException,SystemHelpPath,SystemStub,Tab,%
2610        TabFilling,TabSpacings,TagBox,TagBoxOptions,%
2611        TaggingRules,TagStyle,TargetFunctions,TemporaryVariable,%
2612        TensorQ,TeXSave,TextAlignment,TextBoundingBox,%
2613        TextData,TextJustification,TextLine,TextPacket,%
2614        TextParagraph,TextRendering,TextStyle,ThisLink,%
2615        TimeConstraint,TimeVariable,TitleGrouping,ToBoxes,%
2616        ToColor,ToFileName,Toggle,ToggleFalse,%
2617        Tolerance,TooBig,Top,ToRadicals,%
2618        Total,Tr,TraceAction,TraceInternal,%
2619        TraceLevel,TraditionalForm,TraditionalFunctionNotation,TraditionalNotation,%
2620        TraditionalOrder,TransformationFunctions,TransparentColor,Trapezoidal,%
2621        TrigExpand,TrigFactor,TrigFactorList,TrigReduce,%
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2622        TrigToExp,Tuples,UnAlias,Underflow,%
2623        Underoverscript,UnderoverscriptBox,UnderoverscriptBoxOptions,Underscript,%
2624        UnderscriptBox,UnderscriptBoxOptions,UndocumentedTestFEParserPacket,%
2625        UndocumentedTestGetSelectionPacket,%
2626        UnitStep,Up,URL,Using,%
2627        V2Get,Value,ValueBox,ValueBoxOptions,%
2628        ValueForm,Variance,Verbatim,Verbose,%
2629        VerboseConvertToPostScriptPacket,VerifyConvergence,VerifySolutions,Version,%
2630        VersionNumber,Vertical,VerticalForm,ViewPointSelectorSettings,%
2631        Visible,VisibleCell,WeierstrassHalfPeriods,WeierstrassInvariants,%
2632        WeierstrassSigma,WeierstrassZeta,White,Whitespace,%
2633        WhitespaceCharacter,WindowClickSelect,WindowElements,WindowFloating,%
2634        WindowFrame,WindowFrameElements,WindowMargins,WindowMovable,%
2635        WindowSize,WindowTitle,WindowToolbars,WindowWidth,%
2636        WordBoundary,WordCharacter,WynnDegree,XMLElement},%
2637     morendkeywords={$,$AddOnsDirectory,$AnimationDisplayFunction,%
2638        $AnimationFunction,%
2639        $Assumptions,$BaseDirectory,$BoxForms,$ByteOrdering,%
2640        $CharacterEncoding,$ConditionHold,$CurrentLink,$DefaultPath,%
2641        $ExportEncodings,$ExportFormats,$FormatType,$FrontEnd,%
2642        $HistoryLength,$HomeDirectory,$ImportEncodings,$ImportFormats,%
2643        $InitialDirectory,$InstallationDate,$InstallationDirectory,%
2644        $InterfaceEnvironment,%
2645        $LaunchDirectory,$LicenseExpirationDate,$LicenseID,$LicenseProcesses,%
2646        $LicenseServer,$MachineDomain,$MaxExtraPrecision,$MaxLicenseProcesses,%
2647        $MaxNumber,$MaxPiecewiseCases,$MaxPrecision,$MaxRootDegree,%
2648        $MinNumber,$MinPrecision,$NetworkLicense,$NumberMarks,%
2649        $Off,$OutputForms,$ParentLink,$ParentProcessID,%
2650        $PasswordFile,$PathnameSeparator,$PreferencesDirectory,$PrintForms,%
2651        $PrintLiteral,$ProcessID,$ProcessorType,$ProductInformation,%
2652        $ProgramName,$PSDirectDisplay,$RandomState,$RasterFunction,%
2653        $RootDirectory,$SetParentLink,$SoundDisplay,$SuppressInputFormHeads,%
2654        $SystemCharacterEncoding,$SystemID,$TemporaryPrefix,$TextStyle,%
2655        $TopDirectory,$TraceOff,$TraceOn,$TracePattern,%
2656        $TracePostAction,$TracePreAction,$UserAddOnsDirectory,$UserBaseDirectory,%
2657        $UserName,Constant,Flat,HoldAll,%
2658        HoldAllComplete,HoldFirst,HoldRest,Listable,%
2659        Locked,NHoldAll,NHoldFirst,NHoldRest,%
2660        NumericFunction,OneIdentity,Orderless,Protected,%
2661        ReadProtected,SequenceHold},%
2662     }%

2663 %%
2664 %% Mathematica definitions (c) 1999 Michael Wiese
2665 %%
2666 \lst@definelanguage[3.0]{Mathematica}[1.0]{Mathematica}%
2667     {morekeywords={Abort,AbortProtect,AbsoluteDashing,AbsolutePointSize,%
2668        AbsoluteThickness,AbsoluteTime,AccountingFormAiry,AiPrime,AiryBi,%
2669        AiryBiPrime,Alternatives,AnchoredSearch,AxesEdge,AxesOrigin,%
2670        AxesStyle,Background,BetaRegularized,BoxStyle,C,CheckAbort,%
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2671        Circle,ClebschGordan,CMYKColor,ColorFunction,ColorOutput,Compile,%
2672        Compiled,CompiledFunction,ComplexExpand,ComposeList,Composition,%
2673        ConstrainedMax,ConstrainedMin,Contexts,ContextToFilename,%
2674        ContourLines,Contours,ContourShading,ContourSmoothing,%
2675        ContourStyle,CopyDirectory,CopyFile,CosIntegral,CreateDirectory,%
2676        Cuboid,Date,DeclarePackage,DefaultColor,DefaultFont,Delete,%
2677        DeleteCases,DeleteDirectory,DeleteFile,Dialog,DialogIndent,%
2678        DialogProlog,DialogSymbols,DigitQ,Directory,DirectoryStack,Disk,%
2679        Dispatch,DownValues,DSolve,Encode,Epilog,Erfc,Evaluate,%
2680        ExponentFunction,FaceGrids,FileByteCount,FileDate,FileNames,%
2681        FileType,Find,FindList,FixedPointList,FlattenAt,Fold,FoldList,%
2682        Frame,FrameLabel,FrameStyle,FrameTicks,FromCharacterCode,%
2683        FromDate,FullGraphics,FullOptions,GammaRegularized,%
2684        GaussianIntegers,GraphicsArray,GraphicsSpacing,GridLines,%
2685        GroebnerBasis,Heads,HeldPart,HomeDirectory,Hue,IgnoreCases,%
2686        InputStream,Install,InString,IntegerDigits,InterpolatingFunction,%
2687        InterpolatingPolynomial,Interpolation,Interrupt,InverseFunction,%
2688        InverseFunctions,JacobiZeta,LetterQ,LinearProgramming,ListPlay,%
2689        LogGamma,LowerCaseQ,MachineNumberQ,MantissaExponent,MapIndexed,%
2690        MapThread,MatchLocalNames,MatrixExp,MatrixPower,MeshRange,%
2691        MeshStyle,MessageList,Module,NDSolve,NSolve,NullRecords,%
2692        NullWords,NumberFormat,NumberPadding,NumberSigns,OutputStream,%
2693        PaddedForm,ParentDirectory,Pause,Play,PlayRange,PlotRegion,%
2694        PolygonIntersections,PolynomialGCD,PolynomialLCM,PolynomialMod,%
2695        PostScript,PowerExpand,PrecisionGoal,PrimePi,Prolog,%
2696        QRDecomposition,Raster,RasterArray,RealDigits,Record,RecordLists,%
2697        RecordSeparators,ReleaseHold,RenameDirectory,RenameFile,%
2698        ReplaceHeldPart,ReplacePart,ResetDirectory,Residue,%
2699        RiemannSiegelTheta,RiemannSiegelZ,RotateLabel,SameTest,%
2700        SampleDepth,SampledSoundFunction,SampledSoundList,SampleRate,%
2701        SchurDecomposition,SessionTime,SetAccuracy,SetDirectory,%
2702        SetFileDate,SetPrecision,SetStreamPosition,Shallow,SignPadding,%
2703        SinIntegral,SixJSymbol,Skip,Sound,SpellingCorrection,%
2704        SphericalRegion,Stack,StackBegin,StackComplete,StackInhibit,%
2705        StreamPosition,Streams,StringByteCount,StringConversion,%
2706        StringDrop,StringInsert,StringPosition,StringReplace,%
2707        StringReverse,StringTake,StringToStream,SurfaceColor,%
2708        SyntaxLength,SyntaxQ,TableAlignments,TableDepth,%
2709        TableDirections,TableHeadings,TableSpacing,ThreeJSymbol,TimeUsed,%
2710        TimeZone,ToCharacterCode,ToDate,ToHeldExpression,TokenWords,%
2711        ToLowerCase,ToUpperCase,Trace,TraceAbove,TraceBackward,%
2712        TraceDepth,TraceDialog,TraceForward,TraceOff,TraceOn,%
2713        TraceOriginal,TracePrint,TraceScan,Trig,Unevaluated,Uninstall,%
2714        UnsameQ,UpperCaseQ,UpValues,ViewCenter,ViewVertical,With,Word,%
2715        WordSearch,WordSeparators},%
2716     morendkeywords={Stub,Temporary,$Aborted,$BatchInput,$BatchOutput,%
2717        $CreationDate,$DefaultFont,$DumpDates,$DumpSupported,$Failed,%
2718        $Input,$Inspector,$IterationLimit,$Language,$Letters,$Linked,%
2719        $LinkSupported,$MachineEpsilon,$MachineID,$MachineName,%
2720        $MachinePrecision,$MachineType,$MaxMachineNumber,$MessageList,%
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2721        $MessagePrePrint,$MinMachineNumber,$ModuleNumber,$NewMessage,%
2722        $NewSymbol,$Notebooks,$OperatingSystem,$Packages,$PipeSupported,%
2723        $PreRead,$ReleaseNumber,$SessionID,$SoundDisplayFunction,%
2724        $StringConversion,$StringOrder,$SyntaxHandler,$TimeUnit,%
2725        $VersionNumber}%
2726   }%
2727 \lst@definelanguage[1.0]{Mathematica}%
2728   {morekeywords={Abs,Accuracy,AccurayGoal,AddTo,AiryAi,AlgebraicRules,%
2729        AmbientLight,And,Apart,Append,AppendTo,Apply,ArcCos,ArcCosh,%
2730        ArcCot,ArcCoth,ArcCsc,ArcCsch,ArcSec,ArcSech,ArcSin,ArcSinh,%
2731        ArcTan,ArcTanh,Arg,ArithmeticGeometricMean,Array,AspectRatio,%
2732        AtomQ,Attributes,Axes,AxesLabel,BaseForm,Begin,BeginPackage,%
2733        BernoulliB,BesselI,BesselJ,BesselK,BesselY,Beta,Binomial,Blank,%
2734        BlankNullSequence,BlankSequence,Block,Boxed,BoxRatios,Break,Byte,%
2735        ByteCount,Cancel,Cases,Catch,Ceiling,CForm,Character,Characters,%
2736        ChebyshevT,ChebyshevU,Check,Chop,Clear,ClearAll,ClearAttributes,%
2737        ClipFill,Close,Coefficient,CoefficientList,Collect,ColumnForm,%
2738        Complement,Complex,CompoundExpression,Condition,Conjugate,%
2739        Constants,Context,Continuation,Continue,ContourGraphics,%
2740        ContourPlot,Cos,Cosh,Cot,Coth,Count,Csc,Csch,Cubics,Cyclotomic,%
2741        D,Dashing,Decompose,Decrement,Default,Definition,Denominator,%
2742        DensityGraphics,DensityPlot,Depth,Derivative,Det,DiagonalMatrix,%
2743        DigitBlock,Dimensions,DirectedInfinity,Display,DisplayFunction,%
2744        Distribute,Divide,DivideBy,Divisors,DivisorSigma,Do,Dot,Drop,Dt,%
2745        Dump,EdgeForm,Eigensystem,Eigenvalues,Eigenvectors,Eliminate,%
2746        EllipticE,EllipticExp,EllipticF,EllipticK,EllipticLog,EllipticPi,%
2747        EllipticTheta,End,EndPackage,EngineeringForm,Environment,Equal,%
2748        Erf,EulerE,EulerPhi,EvenQ,Exit,Exp,Expand,ExpandAll,%
2749        ExpandDenominator,ExpandNumerator,ExpIntegralE,ExpIntegralEi,%
2750        Exponent,Expression,ExtendedGCD,FaceForm,Factor,FactorComplete,%
2751        Factorial,Factorial2,FactorInteger,FactorList,FactorSquareFree,%
2752        FactorSquareFreeList,FactorTerms,FactorTermsList,FindMinimum,%
2753        FindRoot,First,Fit,FixedPoint,Flatten,Floor,FontForm,For,Format,%
2754        FormatType,FortranForm,Fourier,FreeQ,FullDefinition,FullForm,%
2755        Function,Gamma,GCD,GegenbauerC,General,Get,Goto,Graphics,%
2756        Graphics3D,GrayLevel,Greater,GreaterEqual,Head,HermiteH,%
2757        HiddenSurface,Hold,HoldForm,Hypergeometric0F1,Hypergeometric1F1,%
2758        Hypergeometric2F1,HypergeometricU,Identity,IdentityMatrix,If,Im,%
2759        Implies,In,Increment,Indent,Infix,Information,Inner,Input,%
2760        InputForm,InputString,Insert,Integer,IntegerQ,Integrate,%
2761        Intersection,Inverse,InverseFourier,InverseJacobiSN,%
2762        InverseSeries,JacobiAmplitude,JacobiP,JacobiSN,JacobiSymbol,Join,%
2763        Label,LaguerreL,Last,LatticeReduce,LCM,LeafCount,LegendreP,%
2764        LegendreQ,LegendreType,Length,LerchPhi,Less,LessEqual,Level,%
2765        Lighting,LightSources,Limit,Line,LinearSolve,LineBreak,List,%
2766        ListContourPlot,ListDensityPlot,ListPlot,ListPlot3D,Literal,Log,%
2767        LogicalExpand,LogIntegral,MainSolve,Map,MapAll,MapAt,MatchQ,%
2768        MatrixForm,MatrixQ,Max,MaxBend,MaxMemoryUsed,MemberQ,%
2769        MemoryConstrained,MemoryInUse,Mesh,Message,MessageName,Messages,%
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2770      Min,Minors,Minus,Mod,Modulus,MoebiusMu,Multinomial,N,NameQ,Names,%
2771      NBernoulliB,Needs,Negative,Nest,NestList,NIntegrate,%
2772      NonCommutativeMultiply,NonConstants,NonNegative,Normal,Not,%
2773      NProduct,NSum,NullSpace,Number,NumberForm,NumberPoint,NumberQ,%
2774      NumberSeparator,Numerator,O,OddQ,Off,On,OpenAppend,OpenRead,%
2775      OpenTemporary,OpenWrite,Operate,Optional,Options,Or,Order,%
2776      OrderedQ,Out,Outer,OutputForm,PageHeight,PageWidth,%
2777      ParametricPlot,ParametricPlot3D,Part,Partition,PartitionsP,%
2778      PartitionsQ,Pattern,Permutations,Plot,Plot3D,PlotDivision,%
2779      PlotJoined,PlotLabel,PlotPoints,PlotRange,PlotStyle,Pochhammer,%
2780      Plus,Point,PointSize,PolyGamma,Polygon,PolyLog,PolynomialQ,%
2781      PolynomialQuotient,PolynomialRemainder,Position,Positive,Postfix,%
2782      Power,PowerMod,PrecedenceForm,Precision,PreDecrement,Prefix,%
2783      PreIncrement,Prepend,PrependTo,Prime,PrimeQ,Print,PrintForm,%
2784      Product,Protect,PseudoInverse,Put,PutAppend,Quartics,Quit,%
2785      Quotient,Random,Range,Rational,Rationalize,Raw,Re,Read,ReadList,%
2786      Real,Rectangle,Reduce,Remove,RenderAll,Repeated,RepeatedNull,%
2787      Replace,ReplaceAll,ReplaceRepeated,Rest,Resultant,Return,Reverse,%
2788      RGBColor,Roots,RotateLeft,RotateRight,Round,RowReduce,Rule,%
2789      RuleDelayed,Run,RunThrough,SameQ,Save,Scaled,Scan,ScientificForm,%
2790      Sec,Sech,SeedRandom,Select,Sequence,SequenceForm,Series,%
2791      SeriesData,Set,SetAttributes,SetDelayed,SetOptions,Shading,Share,%
2792      Short,Show,Sign,Signature,Simplify,Sin,SingularValues,Sinh,%
2793      Skeleton,Slot,SlotSequence,Solve,SolveAlways,Sort,%
2794      SphericalHarmonicY,Splice,Sqrt,StirlingS1,StirlingS2,String,%
2795      StringBreak,StringForm,StringJoin,StringLength,StringMatchQ,%
2796      StringSkeleton,Subscript,Subscripted,Subtract,SubtractForm,Sum,%
2797      Superscript,SurfaceGraphics,Switch,Symbol,Table,TableForm,TagSet,%
2798      TagSetDelayed,TagUnset,Take,Tan,Tanh,ToString,TensorRank,TeXForm,%
2799      Text,TextForm,Thickness,Thread,Through,Throw,Ticks,%
2800      TimeConstrained,Times,TimesBy,Timing,ToExpression,Together,%
2801      ToRules,ToString,TotalHeight,TotalWidth,Transpose,TreeForm,TrueQ,%
2802      Unequal,Union,Unique,Unprotect,Unset,Update,UpSet,UpSetDelayed,%
2803      ValueQ,Variables,VectorQ,ViewPoint,WeierstrassP,%
2804      WeierstrassPPrime,Which,While,WorkingPrecision,Write,WriteString,%
2805      Xor,ZeroTest,Zeta},%
2806    morendkeywords={All,Automatic,Catalan,ComplexInfinity,Constant,%
2807      Degree,E,EndOfFile,EulerGamma,False,Flat,GoldenRatio,HoldAll,%
2808      HoldFirst,HoldRest,I,Indeterminate,Infinity,Listable,Locked,%
2809      Modular,None,Null,OneIdentity,Orderless,Pi,Protected,%
2810      ReadProtected,True,$CommandLine,$Context,$ContextPath,$Display,%
2811      $DisplayFunction,$Echo,$Epilog,$IgnoreEOF,$Line,$Messages,%
2812      $Output,$Path,$Post,$Pre,$PrePrint,$RecursionLimit,$System,%
2813      $Urgent,$Version},%
2814    sensitive,%
2815    morecomment=[s]{(*}{*)},%
2816    morestring=[d]"%
2817  }[keywords,comments,strings]%

2818 ⟨/lang1⟩
```

2.43   Mercury

Dominique de Waleffe mailed me the data and Ralph Becket extended the definition.

2819 ⟨*lang2⟩

```
2820 %%
2821 %% Mercury definition (c) 1997 Dominique de Waleffe
2822 %% Extended (c) 2001 Ralph Becket
2823 %%
2824 \lst@definelanguage{Mercury}%
2825   {otherkeywords={::,->,-->,--->,:-,==,=>,<=,<=>},%
2826    morekeywords={module,include_module,import_module,interface,%
2827        end_module,implementation,mode,is,failure,semidet,nondet,det,%
2828        multi,erroneous,inst,in,out,di,uo,ui,type,typeclass,instance,%
2829        where,with_type,pred,func,lambda,impure,semipure,if,then,else,%
2830        some,all,not,true,fail,pragma,memo,no_inline,inline,loop_check,%
2831        minimal_model,fact_table,type_spec,terminates,does_not_terminate,%
2832        check_termination,promise_only_solution,unsafe_promise_unique,%
2833        source_file,obsolete,import,export,c_header_code,c_code,%
2834        foreign_code,foreign_proc,may_call_mercury,will_not_call_mercury,%
2835        thread_safe,not_thread_safe},%
2836    sensitive=t,%
2837    morecomment=[l]\%,%
2838    morecomment=[s]{/*}{*/},%
2839    morestring=[bd]",%
2840    morestring=[bd]'%
2841   }[keywords,comments,strings]%
```

2842 ⟨/lang2⟩

2.44   MetaPost

Uwe Siart provided the keywords for a previous version. The current language definition comes from Brooks Moses.

2843 ⟨*lang3⟩

```
2844 %%
2845 %% MetaPost definition (c) 2004 Brooks Moses
2846 %%    This definition is based on the language specifications
2847 %%    contained in the _User's Manual for Metapost_, with the core
2848 %%    language enhancements that are described in the _Drawing
2849 %%    Graphs with MetaPost_ documentation.
2850 %%
2851 \lst@definelanguage{MetaPost}%
2852   {% keywords[1] = MetaPost primitives (not found in following tables)
2853    morekeywords={end,begingroup,endgroup,beginfig,endfig,def,vardef,%
2854        primary,secondary,tertiary,primarydef,secondarydef,tertiarydef,%
2855        expr,suffix,text,enddef,if,fi,else,elseif,for,forsuffixes,%
2856        forever,endfor,upto,downto,stop,until,tension,controls,on,off,%
2857        btex,etex,within,input},
```

```
2858    % keywords[2] = Operators (Tables 6-9 in MetaPost User's manual)
2859    morekeywords=[2]{abs,and,angle,arclength,arctime,ASCII,bbox,bluepart,%
2860        boolean,bot,ceiling,center,char,color,cosd,cutafter,cutbefore,%
2861        cycle,decimal,dir,direction,directionpoint,directiontime,div,%
2862        dotprod,floor,fontsize,greenpart,hex,infont,intersectionpoint,%
2863        intersectiontimes,inverse,known,length,lft,llcorner,lrcorner,%
2864        makepath,makepen,mexp,mlog,mod,normaldeviate,not,numeric,oct,%
2865        odd,or,pair,path,pen,penoffset,picture,point,postcontrol,%
2866        precontrol,redpart,reverse,rotated,round,rt,scaled,shifted,%
2867        sind,slanted,sqrt,str,string,subpath,substring,top,transform,%
2868        transformed,ulcorner,uniformdeviate,unitvector,unknown,%
2869        urcorner,whatever,xpart,xscaled,xxpart,xypart,ypart,yscaled,%
2870        yxpart,yypart,zscaled,of,reflectedabout,rotatedaround,ulft,urt,%
2871        llft,lrt,readfrom,write,stroked,filled,textual,clipped,bounded,%
2872        pathpart,penpart,dashpart,textpart,fontpart},%
2873    % keywords[3] = Commands (Table 10)
2874    morekeywords=[3]{addto,clip,cutdraw,draw,drawarrow,drawdblarrow,%
2875        fill,filldraw,interim,let,loggingall,newinternal,pickup,%
2876        save,setbounds,shipout,show,showdependencies,showtoken,%
2877        showvariable,special,tracingall,tracingnone,undraw,unfill,%
2878        unfilldraw,to,also,contour,doublepath,withcolor,withpen,%
2879        dashed,randomseed},%
2880    % keywords[4] = Function-Like Macros (Table 11)
2881    morekeywords=[4]{boxit,boxjoin,bpath,buildcycle,circleit,dashpattern,%
2882        decr,dotlabel,dotlabels,drawboxed,drawboxes,drawoptions,%
2883        drawunboxed,fixpos,fixsize,incr,interpath,label,labels,max,min,pic,%
2884        thelabel,z,image},%
2885    % keywords[5] = Internal and Predefined Variables (Tables 3, 4)
2886    morekeywords=[5]{ahangle,ahlength,bboxmargin,charcode,circmargin,%
2887        day,defaultdx,defaultdy,defaultpen,defaultscale,labeloffset,%
2888        linecap,linejoin,miterlimit,month,pausing,prologues,showstopping,%
2889        time,tracingcapsules,tracingchoices,tracingcommands,%
2890        tracingequations,tracinglostchars,tracingmacros,tracingonline,%
2891        tracingoutput,tracingrestores,tracingspecs,tracingstats,%
2892        tracingtitles,truecorners,warningcheck,year},
2893    morekeywords=[5]{background,currentpen,currentpicture,cuttings,%
2894        defaultfont},%
2895    % keywords[6] = Predefined Constants (Table 5)
2896    morekeywords=[6]{beveled,black,blue,bp,butt,cc,cm,dd,ditto,down,%
2897        epsilon,evenly,false,fullcircle,green,halfcircle,identity,%
2898        in,infinity,left,mitered,mm,nullpicture,origin,pc,pencircle,%
2899        pt,quartercircle,red,right,rounded,squared,true,unitsquare,%
2900        up,white,withdots},
2901    sensitive=false,%
2902    alsoother={0123456789$},%
2903    morecomment=[l]\%,%
2904    morestring=[mf]{input\ },%
2905    morestring=[b]"%
2906    }[keywords,comments,strings,mf]%
```

2.45   Miranda

Thanks to Peter Bartke for providing the definition.

2908 ⟨∗lang2⟩

```
2909 %%
2910 %% Miranda definition (c) 1998 Peter Bartke
2911 %%
2912 %% Miranda: pure lazy functional language with polymorphic type system,
2913 %%          garbage collection and functions as first class citizens
2914 %%
2915 \lst@definelanguage{Miranda}%
2916   {morekeywords={abstype,div,if,mod,otherwise,readvals,show,type,where,%
2917      with,bool,char,num,sys_message,False,True,Appendfile,Closefile,%
2918      Exit,Stderr,Stdout,System,Tofile,\%include,\%export,\%free,%
2919      \%insert,abs,and,arctan,cjustify,code,concat,const,converse,cos,%
2920      decode,digit,drop,dropwhile,entier,error,exp,filemode,filter,%
2921      foldl,foldl1,foldr,foldr1,force,fst,getenv,hd,hugenum,id,index,%
2922      init,integer,iterate,last,lay,layn,letter,limit,lines,ljustify,%
2923      log,log10,map,map2,max,max2,member,merge,min,min2,mkset,neg,%
2924      numval,or,pi,postfix,product,read,rep,repeat,reverse,rjustify,%
2925      scan,seq,showfloat,shownum,showscaled,sin,snd,sort,spaces,sqrt,%
2926      subtract,sum,system,take,takewhile,tinynum,tl,transpose,undef,%
2927      until,zip2,zip3,zip4,zip5,zip6,zip},%
2928    sensitive,%
2929    morecomment=[l]||,%
2930    morestring=[b]"%
2931    }[keywords,comments,strings]%
```

2932 ⟨/lang2⟩

2.46   Mizar

As you can read below, Adam Grabowski provided this language definition.

2933 ⟨∗lang3⟩

```
2934 %%
2935 %% Mizar definition (c) 2003 Adam Grabowski
2936 %%
2937 %% Mizar is freely available at URL www.mizar.org for the Linux x86,
2938 %% Solaris x86, and Windows operating systems.
2939 %%
2940 \lst@definelanguage{Mizar}%
2941   {otherkeywords={->,(\#,\#),.=),\&},%
2942    morekeywords={vocabulary,constructors,$1,$1,$2,$3,$4,$5,$6,$7,$8,%
2943      @proof,according,aggregate,and,antonym,as,associativity,assume,%
2944      asymmetry,attr,be,begin,being,by,canceled,case,cases,cluster,%
2945      clusters,coherence,commutativity,compatibility,connectedness,%
2946      consider,consistency,constructors,contradiction,correctness,def,%
```

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```
2947      deffunc,define,definition,definitions,defpred,end,environ,equals,%
2948      ex,exactly,existence,for,from,func,given,hence,hereby,holds,%
2949      idempotence,if,iff,implies,involutiveness,irreflexivity,is,it,%
2950      let,means,mode,non,not,notation,now,of,or,otherwise,over,per,%
2951      pred,prefix,projectivity,proof,provided,qua,reconsider,redefine,%
2952      reflexivity,requirements,reserve,scheme,schemes,section,selector,%
2953      set,st,struct,such,suppose,symmetry,synonym,take,that,the,then,%
2954      theorem,theorems,thesis,thus,to,transitivity,uniqueness,%
2955      vocabulary,where},%
2956    sensitive=t,%
2957    morecomment=[l]::%
2958    }[keywords,comments]%
```

2959 ⟨/lang3⟩

2.47   ML

Thanks to Torben Hoffmann for providing the definition.

2960 ⟨∗lang2⟩

```
2961 %%
2962 %% ML definition (c) 1999 Torben Hoffmann
2963 %%
2964 \lst@definelanguage{ML}%
2965    {morekeywords={abstype,and,andalso,as,case,do,datatype,else,end,%
2966        eqtype,exception,fn,fun,functor,handle,if,in,include,infix,%
2967        infixr,let,local,nonfix,of,op,open,orelse,raise,rec,sharing,sig,%
2968        signature,struct,structure,then,type,val,with,withtype,while},%
2969    sensitive,%
2970    morecomment=[n]{(*}{*)},%
2971    morestring=[d]"%
2972    }[keywords,comments,strings]%
```

2973 ⟨/lang2⟩

2.48   Modula-2

Took data from

- NIKLAUS WIRTH: **Programmieren in Modula-2**, Übers. Guido Pfeiffer; 2. Auflage – Berlin; Heidelberg; New York; London; Paris; Tokyo; Hong Kong: Springer, 1991; ISBN 3-540-51689-1.

2974 ⟨∗lang3⟩

```
2975 \lst@definelanguage{Modula-2}%
2976    {morekeywords={AND,ARRAY,BEGIN,BY,CASE,CONST,DIV,DO,ELSE,ELSIF,END,%
2977        EXIT,EXPORT,FOR,FROM,IF,IMPLEMENTATION,IMPORT,IN,MOD,MODULE,NOT,%
2978        OF,OR,POINTER,PROCEDURE,QUALIFIED,RECORD,REPEAT,RETURN,SET,THEN,%
2979        TYPE,UNTIL,VAR,WHILE,WITH,ABS,BITSET,BOOLEAN,CAP,CARDINAL,CHAR,%
2980        CHR,DEC,EXCL,FALSE,FLOAT,HALT,HIGH,INC,INCL,INTEGER,LONGCARD,%
2981        LONGINT,LONGREAL,MAX,MIN,NIL,ODD,ORD,PROC,REAL,SIZE,TRUE,TRUNC,%
```

```
2982      VAL,DEFINITION,LOOP},% added keywords due to Peter Bartke 99/07/22
2983    sensitive,%
2984    morecomment=[n]{(*}{*)},%
2985    morestring=[d]',%
2986    morestring=[d]"%
2987  }[keywords,comments,strings]%
```

2988 ⟨/lang3⟩

2.49   MuPAD

This definition was provided by Christopher Creutzig. Again thanks to Ulrike Fischer for pointing to a missing @ in \lstdefinelanguage.

2989 ⟨∗lang3⟩

```
2990 \lst@definelanguage{MuPAD}{%
2991    morekeywords={end,next,break,if,then,elif,else,end_if,case,end_case,%
2992        otherwise,for,from,to,step,downto,in,end_for,while,end_while,%
2993        repeat,until,end_repeat,or,and,not,xor,div,mod,union,minus,%
2994        intersect,subset,proc,begin,end_proc,domain,end_domain,category,%
2995        end_category,axiom,end_axiom,quit,delete,frame},%
2996    morekeywords=[2]{NIL,FAIL,TRUE,FALSE,UNKNOWN,I,RD_INF,RD_NINF,%
2997        RD_NAN,name,local,option,save,inherits,of,do},%
2998    otherkeywords={\%if,?,!,:=,<,>,=,<=,<>,>=,==>,<=>,::,..,...,->,%
2999        @,@@,\$},%
3000    sensitive=true,%
3001    morecomment=[l]{//},%
3002    morecomment=[n]{/*}{*/},%
3003    morestring=[b]",%
3004    morestring=[d]{'}%
3005  }[keywords,comments,strings]
```

3006 ⟨/lang3⟩

2.50   NASTRAN

3007 ⟨∗lang3⟩

The definition is from Jeffrey Ratcliffe—except the `MoreSelectCharTable` part which simulates the keyword `BEGIN BULK`.

```
3008 \lst@definelanguage{NASTRAN}
3009    {morekeywords={ENDDATA},%
3010    morecomment=[l]$,%
3011    MoreSelectCharTable=%
3012        \lst@CArgX BEGIN\ BULK\relax\lst@CDef{}%
3013        {\lst@ifmode\else \ifnum\lst@length=\z@
3014            \lst@EnterMode{\lst@GPmode}{\lst@modetrue
3015                \let\lst@currstyle\lst@gkeywords@sty}%
3016        \fi \fi}%
3017        {\ifnum\lst@mode=\lst@GPmode
3018            \lst@XPrintToken \lst@LeaveMode
```

```
3019          \fi}%
3020    }[keywords,comments]%
```

3021 ⟨/lang3⟩

2.51   Oberon-2

3022 ⟨∗lang3⟩

```
3023 \lst@definelanguage{Oberon-2}%
3024    {morekeywords={ARRAY,BEGIN,BOOLEAN,BY,CASE,CHAR,CONST,DIV,DO,ELSE,%
3025        ELSIF,END,EXIT,FALSE,FOR,IF,IMPORT,IN,INTEGER,IS,LONGINT,%
3026        LONGREAL,LOOP,MOD,MODULE,NIL,OF,OR,POINTER,PROCEDURE,REAL,RECORD,%
3027        REPEAT,RETURN,SET,SHORTINT,THEN,TO,TRUE,TYPE,UNTIL,VAR,WHILE,%
3028        WITH,ABS,ASH,CAP,CHR,COPY,DEC,ENTIER,EXCL,HALT,INC,INCL,LEN,LONG,%
3029        MAX,MIN,NEW,ODD,ORD,SHORT,SIZE},%
3030    sensitive,%
3031    morecomment=[n]{(*}{*)},%
3032    morestring=[d]',%
3033    morestring=[d]"%
3034    }[keywords,comments,strings]%
```

3035 ⟨/lang3⟩

2.52   OCL

This definition is based on chapter 7 of the OMG UML standard version 1.3:

- OMG: **OMG Unified Modeling Language Specification**; © 1999 OMG; Available at `ftp://ftp.omg.org/pub/docs/ad/99-06-08.pdf`.

This language is due to Achim D. Brucker.

3036 ⟨∗lang3⟩

```
3037 %%
3038 %% OCL definition (c) 2000 Achim D. Brucker
3039 %%
3040 %% You are allowed to use, modify and distribute this code either under
3041 %% the terms of the LPPL (version 1.0 or later) or the GPL (version 2.0
3042 %% or later).
3043 %%
```

First we define are very decorative style. In the OMG standard only the boolean (infix (?)) operations are highlighted, but I think all OCL-defined operations should be highlighted, because they are *guaranteed* to be side-effect-free (in OCL only side effect free evaluations or path expressions are allowed).

```
3044 \lst@definelanguage[decorative]{OCL}[OMG]{OCL}
3045    {otherkeywords={@pre},%
3046    morendkeywords={name,attributes,associatoinEnds,operations,%
3047        supertypes,allSupertypes,allInstances,oclIsKindOf,oclIsTypeOf,%
3048        oclAsType,oclInState,oclIsNew,evaluationType,abs,floor,round,max,%
3049        min,div,mod,size,concat,toUpper,toLower,substring,includes,%
3050        excludes,count,includesAll,exludesAll,isEmpty,notEmpty,sum,%
3051        exists,forAll,isUnique,sortedBy,iterate,union,intersection,%
```

```
3052        including,excluding,symmetricDifference,select,reject,collect,%
3053        asSequence,asBag,asSequence,asSet,append,prepend,subSequence,at,%
3054        first,last,true,false,isQuery}%
3055    }%
```

Remark: "isQuery" is not real OCL, but a important attribute of the underlying UML model.

The dialect called `OMG` is a very spare version. If you use this variant with bold style for first and second order keywords you get the look and feel of the OMG standard. First order keywords are the OCL context declarations (see section 7.3 of the OMG standard):

```
3056 \lst@definelanguage[OMG]{OCL}%
3057     {morekeywords={context,pre,inv,post},%
```

Second order keywords are the operation which are defined for type Boolean (see pages 7-34/35 of the OMG standard) and the let-operation (in principle these are the infix operations):

```
3058     ndkeywords={or,xor,and,not,implies,if,then,else,endif},%
```

Third order keywords are the basic data types as declared in section 7.4 of the OMG standard:

```
3059     morekeywords=[3]{Boolean,Integer,Real,String,Set,Sequence,Bag,%
3060        OclType,OclAny,OclExpression,Enumeration,Collection,},%
3061     sensitive=t,%
3062     morecomment=[l]--,%
3063     morestring=[d]'%
3064    }[keywords,comments,strings]%
```

After a bug report by Martin Süßkraut `morerdkeywords` has been changed to the correct optional argument `[3]`.

```
3065 ⟨/lang3⟩
```

2.53 Octave

```
3066 ⟨∗lang1⟩
```

As you can read below the definition is due to Ulrich G. Wortmann. Additions due to Sebastian Schubert.

```
3067 %%
3068 %% Octave definition (c) 2001,2002 Ulrich G. Wortmann
3069 %%
3070 \lst@definelanguage{Octave}%
3071   {morekeywords={gt,lt,amp,abs,acos,acosh,acot,acoth,acsc,acsch,%
3072        all,angle,ans,any,asec,asech,asin,asinh,atan,atan2,atanh,auread,%
3073        auwrite,axes,axis,balance,bar,bessel,besselk,bessely,beta,%
3074        betainc,betaln,blanks,bone,break,brighten,capture,cart2pol,%
3075        cart2sph,caxis,cd,cdf2rdf,cedit,ceil,chol,cla,clabel,clc,clear,%
3076        clf,clock,close,colmmd,Colon,colorbar,colormap,ColorSpec,colperm,%
3077        comet,comet3,compan,compass,computer,cond,condest,conj,contour,%
3078        contour3,contourc,contrast,conv,conv2,cool,copper,corrcoef,cos,%
3079        cosh,cot,coth,cov,cplxpair,cputime,cross,csc,csch,csvread,%
```

```
3080    csvwrite,cumprod,cumsum,cylinder,date,dbclear,dbcont,dbdown,%
3081    dbquit,dbstack,dbstatus,dbstep,dbstop,dbtype,dbup,ddeadv,ddeexec,%
3082    ddeinit,ddepoke,ddereq,ddeterm,ddeunadv,deblank,dec2hex,deconv,%
3083    del2,delete,demo,det,diag,diary,diff,diffuse,dir,disp,dlmread,%
3084    dlmwrite,dmperm,dot,drawnow,echo,eig,ellipj,ellipke,else,elseif,%
3085    end,engClose,engEvalString,engGetFull,engGetMatrix,engOpen,%
3086    engOutputBuffer,engPutFull,engPutMatrix,engSetEvalCallback,%
3087    engSetEvalTimeout,engWinInit,eps,erf,erfc,erfcx,erfinv,%
3088    errorbar,etime,etree,eval,exist,exp,expint,expm,expo,eye,fclose,%
3089    feather,feof,ferror,feval,fft,fft2,fftshift,fgetl,fgets,figure,%
3090    fill,fill3,filter,filter2,find,findstr,finite,fix,flag,fliplr,%
3091    flipud,floor,flops,fmin,fmins,fopen,for,format,fplot,fprintf,%
3092    fread,frewind,fscanf,fseek,ftell,full,function,funm,fwrite,fzero,%
3093    gallery,gamma,gammainc,gammaln,gca,gcd,gcf,gco,get,getenv,%
3094    getframe,ginput,global,gplot,gradient,gray,graymon,grid,griddata,%
3095    gtext,hadamard,hankel,help,hess,hex2dec,hex2num,hidden,hilb,hist,%
3096    hold,home,hostid,hot,hsv,hsv2rgb,if,ifft,ifft2,imag,image,%
3097    imagesc,Inf,info,input,int2str,interp1,interp2,interpft,inv,%
3098    invhilb,isempty,isglobal,ishold,isieee,isinf,isletter,isnan,%
3099    isreal,isspace,issparse,isstr,jet,keyboard,kron,lasterr,lcm,%
3100    legend,legendre,length,lin2mu,line,linspace,load,log,log10,log2,%
3101    loglog,logm,logspace,lookfor,lower,ls,lscov,lu,magic,matClose,%
3102    matDeleteMatrix,matGetDir,matGetFp,matGetFull,matGetMatrix,%
3103    matGetNextMatrix,matGetString,matlabrc,matlabroot,matOpen,%
3104    matPutFull,matPutMatrix,matPutString,max,mean,median,menu,mesh,%
3105    meshc,meshgrid,meshz,mexAtExit,mexCallMATLAB,mexdebug,%
3106    mexErrMsgTxt,mexEvalString,mexFunction,mexGetFull,mexGetMatrix,%
3107    mexGetMatrixPtr,mexPrintf,mexPutFull,mexPutMatrix,mexSetTrapFlag,%
3108    min,more,movie,moviein,mu2lin,mxCalloc,mxCopyCharacterToPtr,%
3109    mxCopyComplex16ToPtr,mxCopyInteger4ToPtr,mxCopyPtrToCharacter,%
3110    mxCopyPtrToComplex16,mxCopyPtrToInteger4,mxCopyPtrToReal8,%
3111    mxCopyReal8ToPtr,mxCreateFull,mxCreateSparse,mxCreateString,%
3112    mxFree,mxFreeMatrix,mxGetIr,mxGetJc,mxGetM,mxGetN,mxGetName,%
3113    mxGetNzmax,mxGetPi,mxGetPr,mxGetScalar,mxGetString,mxIsComplex,%
3114    mxIsFull,mxIsNumeric,mxIsSparse,mxIsString,mxIsTypeDouble,%
3115    mxSetIr,mxSetJc,mxSetM,mxSetN,mxSetName,mxSetNzmax,mxSetPi,%
3116    mxSetPr,NaN,nargchk,nargin,nargout,newplot,nextpow2,nnls,nnz,%
3117    nonzeros,norm,normest,null,num2str,nzmax,ode23,ode45,orient,orth,%
3118    pack,pascal,patch,path,pause,pcolor,pi,pink,pinv,plot,plot3,%
3119    pol2cart,polar,poly,polyder,polyeig,polyfit,polyval,polyvalm,%
3120    pow2,print,printopt,prism,prod,pwd,qr,qrdelete,qrinsert,quad,%
3121    quad8,quit,quiver,qz,rand,randn,randperm,rank,rat,rats,rbbox,%
3122    rcond,real,realmax,realmin,refresh,rem,reset,reshape,residue,%
3123    return,rgb2hsv,rgbplot,rootobject,roots,rose,rosser,rot90,rotate,%
3124    round,rref,rrefmovie,rsf2csf,save,saxis,schur,sec,sech,semilogx,%
3125    semilogy,set,setstr,shading,sign,sin,sinh,size,slice,sort,sound,%
3126    spalloc,sparse,spaugment,spconvert,spdiags,specular,speye,spfun,%
3127    sph2cart,sphere,spinmap,spline,spones,spparms,sprandn,sprandsym,%
3128    sprank,sprintf,spy,sqrt,sqrtm,sscanf,stairs,startup,std,stem,%
3129    str2mat,str2num,strcmp,strings,strrep,strtok,subplot,subscribe,%
```

```
3130         subspace,sum,surf,surface,surfc,surfl,surfnorm,svd,symbfact,%
3131         symmmd,symrcm,tan,tanh,tempdir,tempname,terminal,text,tic,title,%
3132         toc,toeplitz,trace,trapz,tril,triu,type,uicontrol,uigetfile,%
3133         uimenu,uiputfile,unix,unwrap,upper,vander,ver,version,view,%
3134         viewmtx,waitforbuttonpress,waterfall,wavread,wavwrite,what,%
3135         whatsnew,which,while,white,whitebg,who,whos,wilkinson,wk1read,%
3136         stderr,stdout,plot,set,endif,wk1write,xlabel,xor,ylabel,zeros,%
3137         zlabel,zoom,endwhile,endfunction,printf,case,switch,otherwise,%
3138         system,lsode,endfor,error,ones,oneplot,__gnuplot_set__,do,until},%
3139     sensitive=t,%
3140     morecomment=[l]\#,%
3141     morecomment=[l]\#\#,%
3142     morecomment=[l]\%,%
3143     morestring=[m]',%
3144     morestring=[m]"%
3145   }[keywords,comments,strings]%
3146 ⟨/lang1⟩
```

2.54   Oz

```
3147 ⟨∗lang2⟩
```

Thanks to Andres Becerra Sandoval for providing this language definition.

```
3148 %%
3149 %% Oz definition (c) Andres Becerra Sandoval
3150 %%
3151 \lst@definelanguage{Oz}%
3152   {morekeywords={andthen,at,attr,case,catch,choice,class,%
3153         cond,declare,define,dis,div,else,elsecase,%
3154         elseif,end,export,fail,false,feat,finally,%
3155         from,fun,functor,if,import,in,local,%
3156         lock,meth,mod,not,of,or,orelse,%
3157         prepare,proc,prop,raise,require,self,skip,%
3158         then,thread,true,try,unit},%
3159     sensitive=true,%
3160     morecomment=[l]{\%},%
3161     morecomment=[s]{/*}{*/},%
3162     morestring=[b]",%
3163     morestring=[d]'%
3164   }[keywords,comments,strings]%
3165 ⟨/lang2⟩
```

2.55   Pascal

```
3166 ⟨∗lang1⟩
```

Thanks to Andreas Stephan for reporting non-keywords alpha, byte, pack and
unpack.

```
3167 \lst@definelanguage[XSC]{Pascal}[Standard]{Pascal}
3168   {deletekeywords={alfa,byte,pack,unpack},% 1998 Andreas Stephan
3169   morekeywords={dynamic,external,forward,global,module,nil,operator,%
3170         priority,sum,type,use,dispose,mark,page,release,cimatrix,%
```

```
3171        cinterval,civector,cmatrix,complex,cvector,dotprecision,imatrix,%
3172        interval,ivector,rmatrix,rvector,string,im,inf,re,sup,chr,comp,%
3173        eof,eoln,expo,image,ival,lb,lbound,length,loc,mant,maxlength,odd,%
3174        ord,pos,pred,round,rval,sign,substring,succ,trunc,ub,ubound}%
3175    }%
3176 \lst@definelanguage[Borland6]{Pascal}[Standard]{Pascal}
3177    {morekeywords={asm,constructor,destructor,implementation,inline,%
3178        interface,nil,object,shl,shr,string,unit,uses,xor},%
3179     morendkeywords={Abs,Addr,ArcTan,Chr,Concat,Copy,Cos,CSeg,DiskFree,%
3180        DiskSize,DosExitCode,DosVersion,DSeg,EnvCount,EnvStr,Eof,Eoln,%
3181        Exp,FExpand,FilePos,FileSize,Frac,FSearch,GetBkColor,GetColor,%
3182        GetDefaultPalette,GetDriverName,GetEnv,GetGraphMode,GetMaxMode,%
3183        GetMaxX,GetMaxY,GetModeName,GetPaletteSize,GetPixel,GetX,GetY,%
3184        GraphErrorMsg,GraphResult,Hi,ImageSize,InstallUserDriver,%
3185        InstallUserFont,Int,IOResult,KeyPressed,Length,Lo,MaxAvail,%
3186        MemAvail,MsDos,Odd,Ofs,Ord,OvrGetBuf,OvrGetRetry,ParamCount,%
3187        ParamStr,Pi,Pos,Pred,Ptr,Random,ReadKey,Round,SeekEof,SeekEoln,%
3188        Seg,SetAspectRatio,Sin,SizeOf,Sound,SPtr,Sqr,Sqrt,SSeg,Succ,%
3189        Swap,TextHeight,TextWidth,Trunc,TypeOf,UpCase,WhereX,WhereY,%
3190        Append,Arc,Assign,AssignCrt,Bar,Bar3D,BlockRead,BlockWrite,ChDir,%
3191        Circle,ClearDevice,ClearViewPort,Close,CloseGraph,ClrEol,ClrScr,%
3192        Dec,Delay,Delete,DelLine,DetectGraph,Dispose,DrawPoly,Ellipse,%
3193        Erase,Exec,Exit,FillChar,FillEllipse,FillPoly,FindFirst,FindNext,%
3194        FloodFill,Flush,FreeMem,FSplit,GetArcCoords,GetAspectRatio,%
3195        GetDate,GetDefaultPalette,GetDir,GetCBreak,GetFAttr,%
3196        GetFillSettings,GetFTime,GetImage,GetIntVec,GetLineSettings,%
3197        GetMem,GetPalette,GetTextSettings,GetTime,GetVerify,%
3198        GetViewSettings,GoToXY,Halt,HighVideo,Inc,InitGraph,Insert,%
3199        InsLine,Intr,Keep,Line,LineRel,LineTo,LowVideo,Mark,MkDir,Move,%
3200        MoveRel,MoveTo,MsDos,New,NormVideo,NoSound,OutText,OutTextXY,%
3201        OvrClearBuf,OvrInit,OvrInitEMS,OvrSetBuf,PackTime,PieSlice,%
3202        PutImage,PutPixel,Randomize,Rectangle,Release,Rename,%
3203        RestoreCrtMode,RmDir,RunError,Sector,Seek,SetActivePage,%
3204        SetAllPalette,SetBkColor,SetCBreak,SetColor,SetDate,SetFAttr,%
3205        SetFillPattern,SetFillStyle,SetFTime,SetGraphBufSize,%
3206        SetGraphMode,SetIntVec,SetLineStyle,SetPalette,SetRGBPalette,%
3207        SetTextBuf,SetTextJustify,SetTextStyle,SetTime,SetUserCharSize,%
3208        SetVerify,SetViewPort,SetVisualPage,SetWriteMode,Sound,Str,%
3209        SwapVectors,TextBackground,TextColor,TextMode,Truncate,%
3210        UnpackTime,Val,Window}%
3211    }%
3212 \lst@definelanguage[Standard]{Pascal}%
3213    {morekeywords={alfa,and,array,begin,boolean,byte,case,char,const,div,%
3214        do,downto,else,end,false,file,for,function,get,goto,if,in,%
3215        integer,label,maxint,mod,new,not,of,or,pack,packed,page,program,%
3216        put,procedure,read,readln,real,record,repeat,reset,rewrite,set,%
3217        text,then,to,true,type,unpack,until,var,while,with,write,%
3218        writeln},%
3219     sensitive=f,%
```

```
3220    morecomment=[s]{(*}{*)},%
3221    morecomment=[s]{\{}{\}},%
3222    morestring=[d]'%
3223   }[keywords,comments,strings]%
```

3224 ⟨/lang1⟩

2.56 Perl

I got the data from `http://www.perl.com`. But I wish to thank Herbert Weinhandl for the book 'Learning Perl'.

3225 ⟨∗lang1⟩

```
3226 \lst@definelanguage{Perl}%
3227   {morekeywords={abs,accept,alarm,atan2,bind,binmode,bless,caller,%
3228       chdir,chmod,chomp,chop,chown,chr,chroot,close,closedir,connect,%
3229       continue,cos,crypt,dbmclose,dbmopen,defined,delete,die,do,dump,%
3230       each,else,elsif,endgrent,endhostent,endnetent,endprotoent,%
3231       endpwent,endservent,eof,eval,exec,exists,exit,exp,fcntl,fileno,%
3232       flock,for,foreach,fork,format,formline,getc,getgrent,getgrgid,%
3233       getgrnam,gethostbyaddr,gethostbyname,gethostent,getlogin,%
3234       getnetbyaddr,getnetbyname,getnetent,getpeername,getpgrp,%
3235       getppid,getpriority,getprotobyname,getprotobynumber,getprotoent,%
3236       getpwent,getpwnam,getpwuid,getservbyname,getservbyport,%
3237       getservent,getsockname,getsockopt,glob,gmtime,goto,grep,hex,if,%
3238       import,index,int,ioctl,join,keys,kill,last,lc,lcfirst,length,%
3239       link,listen,local,localtime,log,lstat,m,map,mkdir,msgctl,msgget,%
3240       msgrcv,msgsnd,my,next,no,oct,open,opendir,ord,pack,package,pipe,%
3241       pop,pos,print,printf,prototype,push,q,qq,quotemeta,qw,qx,rand,%
3242       read,readdir,readlink,recv,redo,ref,rename,require,reset,return,%
3243       reverse,rewinddir,rindex,rmdir,s,scalar,seek,seekdir,select,%
3244       semctl,semget,semop,send,setgrent,sethostent,setnetent,setpgrp,%
3245       setpriority,setprotoent,setpwent,setservent,setsockopt,shift,%
3246       shmctl,shmget,shmread,shmwrite,shutdown,sin,sleep,socket,%
3247       socketpair,sort,splice,split,sprintf,sqrt,srand,stat,study,sub,%
3248       substr,symlink,syscall,sysopen,sysread,system,syswrite,tell,%
3249       telldir,tie,tied,time,times,tr,truncate,uc,ucfirst,umask,undef,%
3250       unless,unlink,unpack,unshift,untie,until,use,utime,values,vec,%
3251       wait,waitpid,wantarray,warn,while,write,y},%
3252   sensitive,%
3253   morecomment=[l]\#,%
3254   morestring=[b]",%
3255   morestring=[b]',%
3256   MoreSelectCharTable=%
3257       \lst@ReplaceInput{\$\#}{\lst@ProcessOther\$\lst@ProcessOther\#}%
3258   }[keywords,comments,strings]%
```

3259 ⟨/lang1⟩

2.57 PHP

Luca Balzerani sent me this language definition.

```
3260 ⟨*lang2⟩

3261 %%
3262 %% PHP definition by Luca Balzerani
3263 %%
3264 \lst@definelanguage{PHP}%
3265   {morekeywords={%
3266   %--- core language
3267     <?,?>,::,break,case,continue,default,do,else,%
3268     elseif,for,foreach,if,include,require,phpinfo,%
3269     switch,while,false,FALSE,true,TRUE,%
3270   %--- apache functions
3271     apache_lookup_uri,apache_note,ascii2ebcdic,ebcdic2ascii,%
3272     virtual,apache_child_terminate,apache_setenv,%
3273   %--- array functions
3274     array,array_change_key_case,array_chunk,array_count_values,%
3275     array_filter,array_flip,array_fill,array_intersect,%
3276     array_keys,array_map,array_merge,array_merge_recursive,%
3277     array_pad,array_pop,array_push,array_rand,array_reverse,%
3278     array_shift,array_slice,array_splice,array_sum,array_unique,%
3279     array_values,array_walk,arsort,asort,compact,count,current,each,%
3280     extract,in_array,array_search,key,krsort,ksort,list,natsort,%
3281     next,pos,prev,range,reset,rsort,shuffle,sizeof,sort,uasort,%
3282     usort,%
3283   %--- aspell functions
3284     aspell_new,aspell_check,aspell_check_raw,aspell_suggest,%
3285   %--- bc functions
3286     bcadd,bccomp,bcdiv,bcmod,bcmul,bcpow,bcscale,bcsqrt,bcsub,%
3287   %--- bzip2 functions
3288     bzclose,bzcompress,bzdecompress,bzerrno,bzerror,bzerrstr,%
3289     bzopen,bzread,bzwrite,%
3290   %--- calendar functions
3291     JDToGregorian,GregorianToJD,JDToJulian,JulianToJD,JDToJewish,%
3292     JDToFrench,FrenchToJD,JDMonthName,JDDayOfWeek,easter_date,%
3293     unixtojd,jdtounix,cal_days_in_month,cal_to_jd,cal_from_jd,%
3294   %--- ccvs functions
3295     ccvs_init,ccvs_done,ccvs_new,ccvs_add,ccvs_delete,ccvs_auth,%
3296     ccvs_reverse,ccvs_sale,ccvs_void,ccvs_status,ccvs_count,%
3297     ccvs_report,ccvs_command,ccvs_textvalue,%
3298   %--- classobj functions
3299     call_user_method,call_user_method_array,class_exists,get_class,%
3300     get_class_vars,get_declared_classes,get_object_vars,%
3301     is_a,is_subclass_of,method_exists,%
3302   %--- com functions
3303     COM,VARIANT,com_load,com_invoke,com_propget,com_get,com_propput,%
3304     com_set,com_addref,com_release,com_isenum,com_load_typelib,%
3305   %--- cpdf functions
3306     cpdf_add_annotation,cpdf_add_outline,cpdf_arc,cpdf_begin_text,%
3307     cpdf_clip,cpdf_close,cpdf_closepath,cpdf_closepath_fill_stroke,%
3308     cpdf_continue_text,cpdf_curveto,cpdf_end_text,cpdf_fill,%
```

```
3309     cpdf_finalize,cpdf_finalize_page,%
3310     cpdf_import_jpeg,cpdf_lineto,cpdf_moveto,cpdf_newpath,cpdf_open,%
3311     cpdf_page_init,cpdf_place_inline_image,cpdf_rect,cpdf_restore,%
3312     cpdf_rmoveto,cpdf_rotate,cpdf_rotate_text,cpdf_save,%
3313     cpdf_scale,cpdf_set_char_spacing,cpdf_set_creator,%
3314     cpdf_set_font,cpdf_set_horiz_scaling,cpdf_set_keywords,%
3315     cpdf_set_page_animation,cpdf_set_subject,cpdf_set_text_matrix,%
3316     cpdf_set_text_rendering,cpdf_set_text_rise,cpdf_set_title,%
3317     cpdf_setdash,cpdf_setflat,cpdf_setgray,cpdf_setgray_fill,%
3318     cpdf_setlinecap,cpdf_setlinejoin,cpdf_setlinewidth,%
3319     cpdf_setrgbcolor,cpdf_setrgbcolor_fill,cpdf_setrgbcolor_stroke,%
3320     cpdf_show_xy,cpdf_stringwidth,cpdf_set_font_directories,%
3321     cpdf_set_viewer_preferences,cpdf_stroke,cpdf_text,%
3322     cpdf_set_action_url,%
3323   %--- crack functions
3324     crack_opendict,crack_closedict,crack_check,crack_getlastmessage,%
3325   %--- ctype functions
3326     ctype_alnum,ctype_alpha,ctype_cntrl,ctype_digit,ctype_lower,%
3327     ctype_print,ctype_punct,ctype_space,ctype_upper,ctype_xdigit,%
3328   %--- curl functions
3329     curl_init,curl_setopt,curl_exec,curl_close,curl_version,%
3330     curl_error,curl_getinfo,%
3331   %--- cybercash functions
3332     cybercash_encr,cybercash_decr,cybercash_base64_encode,%
3333   %--- cybermut functions
3334     cybermut_creerformulairecm,cybermut_testmac,%
3335   %--- cyrus functions
3336     cyrus_connect,cyrus_authenticate,cyrus_bind,cyrus_unbind,%
3337     cyrus_close,%
3338   %--- datetime functions
3339     checkdate,date,getdate,gettimeofday,gmdate,gmmktime,gmstrftime,%
3340     microtime,mktime,strftime,time,strtotime,%
3341   %--- dbase functions
3342     dbase_create,dbase_open,dbase_close,dbase_pack,dbase_add_record,%
3343     dbase_delete_record,dbase_get_record,%
3344     dbase_numfields,dbase_numrecords,%
3345   %--- dba functions
3346     dba_close,dba_delete,dba_exists,dba_fetch,dba_firstkey,%
3347     dba_nextkey,dba_popen,dba_open,dba_optimize,dba_replace,%
3348   %--- dbm functions
3349     dbmopen,dbmclose,dbmexists,dbmfetch,dbminsert,dbmreplace,%
3350     dbmfirstkey,dbmnextkey,dblist,%
3351   %--- dbx functions
3352     dbx_close,dbx_connect,dbx_error,dbx_query,dbx_sort,dbx_compare,%
3353   %--- dio functions
3354     dio_open,dio_read,dio_write,dio_truncate,dio_stat,dio_seek,%
3355     dio_close,%
3356   %--- dir functions
3357     chroot,chdir,dir,closedir,getcwd,opendir,readdir,rewinddir,%
3358   %--- dotnet functions
```

```
3359      dotnet_load,%
3360   %--- errorfunc functions
3361      error_log,error_reporting,restore_error_handler,%
3362      trigger_error,user_error,%
3363   %--- exec functions
3364      escapeshellarg,escapeshellcmd,exec,passthru,system,shell_exec,%
3365   %--- fbsql functions
3366      fbsql_affected_rows,fbsql_autocommit,fbsql_change_user,%
3367      fbsql_commit,fbsql_connect,fbsql_create_db,fbsql_create_blob,%
3368      fbsql_database_password,fbsql_data_seek,fbsql_db_query,%
3369      fbsql_drop_db,fbsql_errno,fbsql_error,fbsql_fetch_array,%
3370      fbsql_fetch_field,fbsql_fetch_lengths,fbsql_fetch_object,%
3371      fbsql_field_flags,fbsql_field_name,fbsql_field_len,%
3372      fbsql_field_table,fbsql_field_type,fbsql_free_result,%
3373      fbsql_list_dbs,fbsql_list_fields,fbsql_list_tables,%
3374      fbsql_num_fields,fbsql_num_rows,fbsql_pconnect,fbsql_query,%
3375      fbsql_read_clob,fbsql_result,fbsql_rollback,fbsql_set_lob_mode,%
3376      fbsql_start_db,fbsql_stop_db,fbsql_tablename,fbsql_warnings,%
3377      fbsql_get_autostart_info,fbsql_hostname,fbsql_password,%
3378      fbsql_username,%
3379   %--- fdf functions
3380      fdf_open,fdf_close,fdf_create,fdf_save,fdf_get_value,%
3381      fdf_next_field_name,fdf_set_ap,fdf_set_status,fdf_get_status,%
3382      fdf_get_file,fdf_set_flags,fdf_set_opt,%
3383      fdf_set_javascript_action,fdf_set_encoding,fdf_add_template,%
3384   %--- filepro functions
3385      filepro,filepro_fieldname,filepro_fieldtype,filepro_fieldwidth,%
3386      filepro_fieldcount,filepro_rowcount,%
3387   %--- filesystem functions
3388      basename,chgrp,chmod,chown,clearstatcache,copy,delete,dirname,%
3389      diskfreespace,disk_total_space,fclose,feof,fflush,fgetc,fgetcsv,%
3390      fgetss,file_get_contents,file,file_exists,fileatime,filectime,%
3391      fileinode,filemtime,fileowner,fileperms,filesize,filetype,flock,%
3392      fopen,fpassthru,fputs,fread,fscanf,fseek,fstat,ftell,ftruncate,%
3393      set_file_buffer,is_dir,is_executable,is_file,is_link,%
3394      is_writable,is_writeable,is_uploaded_file,link,linkinfo,mkdir,%
3395      parse_ini_file,pathinfo,pclose,popen,readfile,readlink,rename,%
3396      rmdir,stat,lstat,realpath,symlink,tempnam,tmpfile,touch,umask,%
3397   %--- fribidi functions
3398      fribidi_log2vis,%
3399   %--- ftp functions
3400      ftp_connect,ftp_login,ftp_pwd,ftp_cdup,ftp_chdir,ftp_mkdir,%
3401      ftp_nlist,ftp_rawlist,ftp_systype,ftp_pasv,ftp_get,ftp_fget,%
3402      ftp_fput,ftp_size,ftp_mdtm,ftp_rename,ftp_delete,ftp_site,%
3403      ftp_quit,ftp_exec,ftp_set_option,ftp_get_option,%
3404   %--- funchand functions
3405      call_user_func_array,call_user_func,create_function,%
3406      func_get_args,func_num_args,function_exists,%
3407      register_shutdown_function,register_tick_function,%
3408   %--- gettext functions
```

```
3409     bindtextdomain,bind_textdomain_codeset,dcgettext,dcngettext,%
3410     dngettext,gettext,ngettext,textdomain,%
3411 %--- gmp functions
3412     gmp_init,gmp_intval,gmp_strval,gmp_add,gmp_sub,gmp_mul,%
3413     gmp_div_r,gmp_div_qr,gmp_div,gmp_mod,gmp_divexact,gmp_cmp,%
3414     gmp_com,gmp_abs,gmp_sign,gmp_fact,gmp_sqrt,gmp_sqrtrm,%
3415     gmp_pow,gmp_powm,gmp_prob_prime,gmp_gcd,gmp_gcdext,gmp_invert,%
3416     gmp_jacobi,gmp_random,gmp_and,gmp_or,gmp_xor,gmp_setbit,%
3417     gmp_scan0,gmp_scan1,gmp_popcount,gmp_hamdist,%
3418 %--- http functions
3419     header,headers_sent,setcookie,%
3420 %--- hw functions
3421     hw_Array2Objrec,hw_Children,hw_ChildrenObj,hw_Close,hw_Connect,%
3422     hw_Deleteobject,hw_DocByAnchor,hw_DocByAnchorObj,%
3423     hw_Document_BodyTag,hw_Document_Content,hw_Document_SetContent,%
3424     hw_ErrorMsg,hw_EditText,hw_Error,hw_Free_Document,hw_GetParents,%
3425     hw_GetChildColl,hw_GetChildCollObj,hw_GetRemote,%
3426     hw_GetSrcByDestObj,hw_GetObject,hw_GetAndLock,hw_GetText,%
3427     hw_GetObjectByQueryObj,hw_GetObjectByQueryColl,%
3428     hw_GetChildDocColl,hw_GetChildDocCollObj,hw_GetAnchors,%
3429     hw_Mv,hw_Identify,hw_InCollections,hw_Info,hw_InsColl,hw_InsDoc,%
3430     hw_InsertObject,hw_mapid,hw_Modifyobject,hw_New_Document,%
3431     hw_Output_Document,hw_pConnect,hw_PipeDocument,hw_Root,%
3432     hw_Who,hw_getusername,hw_stat,hw_setlinkroot,hw_connection_info,%
3433     hw_insertanchors,hw_getrellink,hw_changeobject,%
3434 %--- ibase functions
3435     ibase_connect,ibase_pconnect,ibase_close,ibase_query,%
3436     ibase_fetch_row,ibase_fetch_object,ibase_field_info,%
3437     ibase_free_result,ibase_prepare,ibase_execute,ibase_trans,%
3438     ibase_rollback,ibase_timefmt,ibase_num_fields,ibase_blob_add,%
3439     ibase_blob_close,ibase_blob_create,ibase_blob_echo,%
3440     ibase_blob_import,ibase_blob_info,ibase_blob_open,%
3441 %--- icap functions
3442     icap_open,icap_close,icap_fetch_event,icap_list_events,%
3443     icap_delete_event,icap_snooze,icap_list_alarms,%
3444     icap_rename_calendar,icap_delete_calendar,icap_reopen,%
3445 %--- iconv functions
3446     iconv,iconv_get_encoding,iconv_set_encoding,ob_iconv_handler,%
3447 %--- ifx functions
3448     ifx_connect,ifx_pconnect,ifx_close,ifx_query,ifx_prepare,ifx_do,%
3449     ifx_errormsg,ifx_affected_rows,ifx_getsqlca,ifx_fetch_row,%
3450     ifx_fieldtypes,ifx_fieldproperties,ifx_num_fields,ifx_num_rows,%
3451     ifx_create_char,ifx_free_char,ifx_update_char,ifx_get_char,%
3452     ifx_copy_blob,ifx_free_blob,ifx_get_blob,ifx_update_blob,%
3453     ifx_textasvarchar,ifx_byteasvarchar,ifx_nullformat,%
3454     ifxus_free_slob,ifxus_close_slob,ifxus_open_slob,%
3455     ifxus_seek_slob,ifxus_read_slob,ifxus_write_slob,%
3456 %--- iisfunc functions
3457     iis_get_server_by_path,iis_get_server_by_comment,iis_add_server,%
3458     iis_set_dir_security,iis_get_dir_security,iis_set_server_rights,%
```

```
3459     iis_set_script_map,iis_get_script_map,iis_set_app_settings,%
3460     iis_stop_server,iis_stop_service,iis_start_service,%
3461  %--- image functions
3462     exif_imagetype,exif_read_data,exif_thumbnail,getimagesize,%
3463     imagealphablending,imagearc,imagefilledarc,imageellipse,%
3464     imagechar,imagecharup,imagecolorallocate,imagecolordeallocate,%
3465     imagecolorclosest,imagecolorclosestalpha,imagecolorclosestthwb,%
3466     imagecolorexactalpha,imagecolorresolve,imagecolorresolvealpha,%
3467     imagecolorset,imagecolorsforindex,imagecolorstotal,%
3468     imagecopy,imagecopymerge,imagecopymergegray,imagecopyresized,%
3469     imagecreate,imagecreatetruecolor,imagetruecolortopalette,%
3470     imagecreatefromgd2,imagecreatefromgd2part,imagecreatefromgif,%
3471     imagecreatefrompng,imagecreatefromwbmp,imagecreatefromstring,%
3472     imagecreatefromxpm,imagedashedline,imagedestroy,imagefill,%
3473     imagefilledrectangle,imagefilltoborder,imagefontheight,%
3474     imagegd,imagegd2,imagegif,imagepng,imagejpeg,imagewbmp,%
3475     imageline,imageloadfont,imagepalettecopy,imagepolygon,%
3476     imagepsencodefont,imagepsfreefont,imagepsloadfont,%
3477     imagepsslantfont,imagepstext,imagerectangle,imagesetpixel,%
3478     imagesetstyle,imagesettile,imagesetthickness,imagestring,%
3479     imagesx,imagesy,imagettfbbox,imageftbbox,imagettftext,%
3480     imagetypes,jpeg2wbmp,png2wbmp,iptcembed,read_exif_data,%
3481  %--- imap functions
3482     imap_8bit,imap_alerts,imap_append,imap_base64,imap_binary,%
3483     imap_bodystruct,imap_check,imap_clearflag_full,imap_close,%
3484     imap_delete,imap_deletemailbox,imap_errors,imap_expunge,%
3485     imap_fetchbody,imap_fetchheader,imap_fetchstructure,%
3486     imap_getmailboxes,imap_getsubscribed,imap_header,%
3487     imap_headers,imap_last_error,imap_listmailbox,%
3488     imap_mail,imap_mail_compose,imap_mail_copy,imap_mail_move,%
3489     imap_mime_header_decode,imap_msgno,imap_num_msg,imap_num_recent,%
3490     imap_ping,imap_popen,imap_qprint,imap_renamemailbox,imap_reopen,%
3491     imap_rfc822_parse_headers,imap_rfc822_write_address,%
3492     imap_search,imap_setacl,imap_set_quota,imap_setflag_full,%
3493     imap_status,imap_subscribe,imap_uid,imap_undelete,%
3494     imap_utf7_decode,imap_utf7_encode,imap_utf8,imap_thread,%
3495  %--- info functions
3496     assert,assert_options,extension_loaded,dl,getenv,get_cfg_var,%
3497     get_defined_constants,get_extension_funcs,getmygid,%
3498     get_loaded_extensions,get_magic_quotes_gpc,%
3499     getlastmod,getmyinode,getmypid,getmyuid,get_required_files,%
3500     ini_alter,ini_get,ini_get_all,ini_restore,ini_set,phpcredits,%
3501     phpversion,php_logo_guid,php_sapi_name,php_uname,putenv,%
3502     set_time_limit,version_compare,zend_logo_guid,zend_version,%
3503  %--- ircg functions
3504     ircg_pconnect,ircg_fetch_error_msg,ircg_set_current,ircg_join,%
3505     ircg_msg,ircg_notice,ircg_nick,ircg_topic,ircg_channel_mode,%
3506     ircg_whois,ircg_kick,ircg_ignore_add,ircg_ignore_del,%
3507     ircg_is_conn_alive,ircg_lookup_format_messages,%
3508     ircg_set_on_die,ircg_set_file,ircg_get_username,%
```

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3509        ircg_nickname_unescape,%
3510    %--- java functions
3511        java_last_exception_clear,java_last_exception_get,%
3512    %--- ldap functions
3513      ldap_add,ldap_bind,ldap_close,ldap_compare,ldap_connect,%
3514      ldap_delete,ldap_dn2ufn,ldap_err2str,ldap_errno,ldap_error,%
3515      ldap_first_attribute,ldap_first_entry,ldap_free_result,%
3516      ldap_get_dn,ldap_get_entries,ldap_get_option,ldap_get_values,%
3517      ldap_list,ldap_modify,ldap_mod_add,ldap_mod_del,%
3518      ldap_next_attribute,ldap_next_entry,ldap_read,ldap_rename,%
3519      ldap_set_option,ldap_unbind,ldap_8859_to_t61,%
3520      ldap_next_reference,ldap_parse_reference,ldap_parse_result,%
3521      ldap_sort,ldap_start_tls,ldap_t61_to_8859,%
3522    %--- mail functions
3523      mail,ezmlm_hash,%
3524    %--- math functions
3525      abs,acos,acosh,asin,asinh,atan,atanh,atan2,base_convert,bindec,%
3526      cos,cosh,decbin,dechex,decoct,deg2rad,exp,expm1,floor,%
3527      hexdec,hypot,is_finite,is_infinite,is_nan,lcg_value,log,log10,%
3528      max,min,mt_rand,mt_srand,mt_getrandmax,number_format,octdec,pi,%
3529      rad2deg,rand,round,sin,sinh,sqrt,srand,tan,tanh,%
3530    %--- mbstring functions
3531      mb_language,mb_parse_str,mb_internal_encoding,mb_http_input,%
3532      mb_detect_order,mb_substitute_character,mb_output_handler,%
3533      mb_strlen,mb_strpos,mb_strrpos,mb_substr,mb_strcut,mb_strwidth,%
3534      mb_convert_encoding,mb_detect_encoding,mb_convert_kana,%
3535      mb_decode_mimeheader,mb_convert_variables,%
3536      mb_decode_numericentity,mb_send_mail,mb_get_info,%
3537      mb_ereg,mb_eregi,mb_ereg_replace,mb_eregi_replace,mb_split,%
3538      mb_ereg_search,mb_ereg_search_pos,mb_ereg_search_regs,%
3539      mb_ereg_search_getregs,mb_ereg_search_getpos,%
3540    %--- mcal functions
3541      mcal_open,mcal_popen,mcal_reopen,mcal_close,%
3542      mcal_rename_calendar,mcal_delete_calendar,mcal_fetch_event,%
3543      mcal_append_event,mcal_store_event,mcal_delete_event,%
3544      mcal_list_alarms,mcal_event_init,mcal_event_set_category,%
3545      mcal_event_set_description,mcal_event_set_start,%
3546      mcal_event_set_alarm,mcal_event_set_class,mcal_is_leap_year,%
3547      mcal_date_valid,mcal_time_valid,mcal_day_of_week,%
3548      mcal_date_compare,mcal_next_recurrence,%
3549      mcal_event_set_recur_daily,mcal_event_set_recur_weekly,%
3550      mcal_event_set_recur_monthly_wday,mcal_event_set_recur_yearly,%
3551      mcal_event_add_attribute,mcal_expunge,mcal_week_of_year,%
3552    %--- mcrypt functions
3553      mcrypt_get_cipher_name,mcrypt_get_block_size,%
3554      mcrypt_create_iv,mcrypt_cbc,mcrypt_cfb,mcrypt_ecb,mcrypt_ofb,%
3555      mcrypt_list_modes,mcrypt_get_iv_size,mcrypt_encrypt,%
3556      mcrypt_module_open,mcrypt_module_close,mcrypt_generic_deinit,%
3557      mcrypt_generic,mdecrypt_generic,mcrypt_generic_end,%
3558      mcrypt_enc_is_block_algorithm_mode,%
```

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3559    mcrypt_enc_is_block_mode,mcrypt_enc_get_block_size,%
3560    mcrypt_enc_get_supported_key_sizes,mcrypt_enc_get_iv_size,%
3561    mcrypt_enc_get_modes_name,mcrypt_module_self_test,%
3562    mcrypt_module_is_block_algorithm,mcrypt_module_is_block_mode,%
3563    mcrypt_module_get_algo_key_size,%
3564 %--- mhash functions
3565    mhash_get_hash_name,mhash_get_block_size,mhash_count,mhash,%
3566 %--- misc functions
3567    connection_aborted,connection_status,connection_timeout,%
3568    define,defined,die,eval,exit,get_browser,highlight_file,%
3569    ignore_user_abort,iptcparse,leak,pack,show_source,sleep,uniqid,%
3570    usleep,%
3571 %--- mnogosearch functions
3572    udm_add_search_limit,udm_alloc_agent,udm_api_version,%
3573    udm_cat_list,udm_clear_search_limits,udm_errno,udm_error,%
3574    udm_free_agent,udm_free_ispell_data,udm_free_res,%
3575    udm_get_res_field,udm_get_res_param,udm_load_ispell_data,%
3576    udm_check_charset,udm_check_stored,udm_close_stored,udm_crc32,%
3577 %--- msession functions
3578    msession_connect,msession_disconnect,msession_count,%
3579    msession_destroy,msession_lock,msession_unlock,msession_set,%
3580    msession_uniq,msession_randstr,msession_find,msession_list,%
3581    msession_set_array,msession_listvar,msession_timeout,%
3582    msession_getdata,msession_setdata,msession_plugin,%
3583 %--- msql functions
3584    msql,msql_affected_rows,msql_close,msql_connect,msql_create_db,%
3585    msql_data_seek,msql_dbname,msql_drop_db,msql_dropdb,msql_error,%
3586    msql_fetch_field,msql_fetch_object,msql_fetch_row,%
3587    msql_field_seek,msql_fieldtable,msql_fieldtype,msql_fieldflags,%
3588    msql_free_result,msql_freeresult,msql_list_fields,%
3589    msql_list_dbs,msql_listdbs,msql_list_tables,msql_listtables,%
3590    msql_num_rows,msql_numfields,msql_numrows,msql_pconnect,%
3591    msql_regcase,msql_result,msql_select_db,msql_selectdb,%
3592 %--- mssql functions
3593    mssql_close,mssql_connect,mssql_data_seek,mssql_fetch_array,%
3594    mssql_fetch_object,mssql_fetch_row,mssql_field_length,%
3595    mssql_field_seek,mssql_field_type,mssql_free_result,%
3596    mssql_min_error_severity,mssql_min_message_severity,%
3597    mssql_num_fields,mssql_num_rows,mssql_pconnect,mssql_query,%
3598    mssql_select_db,mssql_bind,mssql_execute,mssql_fetch_assoc,%
3599    mssql_guid_string,mssql_init,mssql_rows_affected,%
3600 %--- muscat functions
3601    muscat_setup,muscat_setup_net,muscat_give,muscat_get,%
3602 %--- mysql functions
3603    mysql_affected_rows,mysql_change_user,mysql_character_set_name,%
3604    mysql_connect,mysql_create_db,mysql_data_seek,mysql_db_name,%
3605    mysql_drop_db,mysql_errno,mysql_error,mysql_escape_string,%
3606    mysql_fetch_assoc,mysql_fetch_field,mysql_fetch_lengths,%
3607    mysql_fetch_row,mysql_field_flags,mysql_field_name,%
3608    mysql_field_seek,mysql_field_table,mysql_field_type,%
```

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3609     mysql_info,mysql_insert_id,mysql_list_dbs,mysql_list_fields,%
3610     mysql_list_tables,mysql_num_fields,mysql_num_rows,%
3611     mysql_ping,mysql_query,mysql_unbuffered_query,%
3612     mysql_result,mysql_select_db,mysql_tablename,mysql_thread_id,%
3613     mysql_get_host_info,mysql_get_proto_info,mysql_get_server_info,%
3614   %--- network functions
3615     checkdnsrr,closelog,debugger_off,debugger_on,%
3616     fsockopen,gethostbyaddr,gethostbyname,gethostbynamel,getmxrr,%
3617     getprotobynumber,getservbyname,getservbyport,ip2long,long2ip,%
3618     pfsockopen,socket_get_status,socket_set_blocking,%
3619     syslog,%
3620   %--- nis functions
3621     yp_get_default_domain,yp_order,yp_master,yp_match,yp_first,%
3622     yp_errno,yp_err_string,yp_all,yp_cat,%
3623   %--- oci8 functions
3624     OCIDefineByName,OCIBindByName,OCILogon,OCIPLogon,OCINLogon,%
3625     OCIExecute,OCICommit,OCIRollback,OCINewDescriptor,OCIRowCount,%
3626     OCIResult,OCIFetch,OCIFetchInto,OCIFetchStatement,%
3627     OCIColumnName,OCIColumnSize,OCIColumnType,OCIServerVersion,%
3628     OCINewCursor,OCIFreeStatement,OCIFreeCursor,OCIFreeDesc,%
3629     OCIError,OCIInternalDebug,OCICancel,OCISetPrefetch,%
3630     OCISaveLobFile,OCISaveLob,OCILoadLob,OCIColumnScale,%
3631     OCIColumnTypeRaw,OCINewCollection,OCIFreeCollection,%
3632     OCICollAppend,OCICollAssignElem,OCICollGetElem,OCICollMax,%
3633     OCICollTrim,%
3634   %--- oracle functions
3635     Ora_Bind,Ora_Close,Ora_ColumnName,Ora_ColumnSize,Ora_ColumnType,%
3636     Ora_CommitOff,Ora_CommitOn,Ora_Do,Ora_Error,Ora_ErrorCode,%
3637     Ora_Fetch,Ora_Fetch_Into,Ora_GetColumn,Ora_Logoff,Ora_Logon,%
3638     Ora_Numcols,Ora_Numrows,Ora_Open,Ora_Parse,Ora_Rollback,%
3639   %--- outcontrol functions
3640     flush,ob_start,ob_get_contents,ob_get_length,ob_get_level,%
3641     ob_flush,ob_clean,ob_end_flush,ob_end_clean,ob_implicit_flush,%
3642   %--- ovrimos functions
3643     ovrimos_connect,ovrimos_close,ovrimos_longreadlen,%
3644     ovrimos_execute,ovrimos_cursor,ovrimos_exec,ovrimos_fetch_into,%
3645     ovrimos_result,ovrimos_result_all,ovrimos_num_rows,%
3646     ovrimos_field_name,ovrimos_field_type,ovrimos_field_len,%
3647     ovrimos_free_result,ovrimos_commit,ovrimos_rollback,%
3648   %--- pcntl functions
3649     pcntl_fork,pcntl_signal,pcntl_waitpid,pcntl_wexitstatus,%
3650     pcntl_wifsignaled,pcntl_wifstopped,pcntl_wstopsig,%
3651     pcntl_exec,%
3652   %--- pcre functions
3653     preg_match,preg_match_all,preg_replace,preg_replace_callback,%
3654     preg_quote,preg_grep,Pattern Modifiers,Pattern Syntax,%
3655   %--- pdf functions
3656     pdf_add_annotation,pdf_add_bookmark,pdf_add_launchlink,%
3657     pdf_add_note,pdf_add_outline,pdf_add_pdflink,pdf_add_thumbnail,%
3658     pdf_arc,pdf_arcn,pdf_attach_file,pdf_begin_page,%
```

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3659      pdf_begin_template,pdf_circle,pdf_clip,pdf_close,pdf_closepath,%
3660      pdf_closepath_stroke,pdf_close_image,pdf_close_pdi,%
3661      pdf_concat,pdf_continue_text,pdf_curveto,pdf_delete,%
3662      pdf_endpath,pdf_end_pattern,pdf_end_template,pdf_fill,%
3663      pdf_findfont,pdf_get_buffer,pdf_get_font,pdf_get_fontname,%
3664      pdf_get_image_height,pdf_get_image_width,pdf_get_parameter,%
3665      pdf_get_pdi_value,pdf_get_majorversion,pdf_get_minorversion,%
3666      pdf_initgraphics,pdf_lineto,pdf_makespotcolor,pdf_moveto,%
3667      pdf_open,pdf_open_CCITT,pdf_open_file,pdf_open_gif,%
3668      pdf_open_image_file,pdf_open_jpeg,pdf_open_memory_image,%
3669      pdf_open_pdi_page,pdf_open_png,pdf_open_tiff,pdf_place_image,%
3670      pdf_rect,pdf_restore,pdf_rotate,pdf_save,pdf_scale,pdf_setcolor,%
3671      pdf_setflat,pdf_setfont,pdf_setgray,pdf_setgray_fill,%
3672      pdf_setlinecap,pdf_setlinejoin,pdf_setlinewidth,pdf_setmatrix,%
3673      pdf_setpolydash,pdf_setrgbcolor,pdf_setrgbcolor_fill,%
3674      pdf_set_border_color,pdf_set_border_dash,pdf_set_border_style,%
3675      pdf_set_duration,pdf_set_font,pdf_set_horiz_scaling,%
3676      pdf_set_info_author,pdf_set_info_creator,pdf_set_info_keywords,%
3677      pdf_set_info_title,pdf_set_leading,pdf_set_parameter,%
3678      pdf_set_text_rendering,pdf_set_text_rise,pdf_set_text_matrix,%
3679      pdf_set_word_spacing,pdf_show,pdf_show_boxed,pdf_show_xy,%
3680      pdf_stringwidth,pdf_stroke,pdf_translate,%
3681    %--- pfpro functions
3682      pfpro_init,pfpro_cleanup,pfpro_process,pfpro_process_raw,%
3683    %--- pgsql functions
3684      pg_close,pg_affected_rows,pg_connect,pg_dbname,pg_end_copy,%
3685      pg_query,pg_fetch_array,pg_fetch_object,pg_fetch_row,%
3686      pg_field_name,pg_field_num,pg_field_prtlen,pg_field_size,%
3687      pg_free_result,pg_last_oid,pg_host,pg_last_notice,pg_lo_close,%
3688      pg_lo_export,pg_lo_import,pg_lo_open,pg_lo_read,pg_lo_seek,%
3689      pg_lo_read_all,pg_lo_unlink,pg_lo_write,pg_num_fields,%
3690      pg_options,pg_pconnect,pg_port,pg_put_line,pg_fetch_result,%
3691      pg_client_encoding,pg_trace,pg_tty,pg_untrace,pg_get_result,%
3692      pg_send_query,pg_cancel_query,pg_connection_busy,%
3693      pg_connection_status,pg_copy_from,pg_copy_to,pg_escape_bytea,%
3694      pg_result_error,%
3695    %--- posix functions
3696      posix_kill,posix_getpid,posix_getppid,posix_getuid,%
3697      posix_getgid,posix_getegid,posix_setuid,posix_seteuid,%
3698      posix_setegid,posix_getgroups,posix_getlogin,posix_getpgrp,%
3699      posix_setpgid,posix_getpgid,posix_getsid,posix_uname,%
3700      posix_ctermid,posix_ttyname,posix_isatty,posix_getcwd,%
3701      posix_getgrnam,posix_getgrgid,posix_getpwnam,posix_getpwuid,%
3702    %--- printer functions
3703      printer_open,printer_abort,printer_close,printer_write,%
3704      printer_set_option,printer_get_option,printer_create_dc,%
3705      printer_start_doc,printer_end_doc,printer_start_page,%
3706      printer_create_pen,printer_delete_pen,printer_select_pen,%
3707      printer_delete_brush,printer_select_brush,printer_create_font,%
3708      printer_select_font,printer_logical_fontheight,%
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3709     printer_draw_rectangle,printer_draw_elipse,printer_draw_text,%
3710     printer_draw_chord,printer_draw_pie,printer_draw_bmp,%
3711  %--- pspell functions
3712     pspell_add_to_personal,pspell_add_to_session,pspell_check,%
3713     pspell_config_create,pspell_config_ignore,pspell_config_mode,%
3714     pspell_config_repl,pspell_config_runtogether,%
3715     pspell_new,pspell_new_config,pspell_new_personal,%
3716     pspell_store_replacement,pspell_suggest,%
3717  %--- qtdom functions
3718     qdom_tree,qdom_error,%
3719  %--- readline functions
3720     readline,readline_add_history,readline_clear_history,%
3721     readline_info,readline_list_history,readline_read_history,%
3722  %--- recode functions
3723     recode_string,recode,recode_file,%
3724  %--- regex functions
3725     ereg,ereg_replace,eregi,eregi_replace,split,spliti,sql_regcase,%
3726  %--- sem functions
3727     sem_get,sem_acquire,sem_release,sem_remove,shm_attach,%
3728     shm_remove,shm_put_var,shm_get_var,shm_remove_var,ftok,%
3729  %--- sesam functions
3730     sesam_connect,sesam_disconnect,sesam_settransaction,%
3731     sesam_rollback,sesam_execimm,sesam_query,sesam_num_fields,%
3732     sesam_diagnostic,sesam_fetch_result,sesam_affected_rows,%
3733     sesam_field_array,sesam_fetch_row,sesam_fetch_array,%
3734     sesam_free_result,%
3735  %--- session functions
3736     session_start,session_destroy,session_name,session_module_name,%
3737     session_id,session_register,session_unregister,session_unset,%
3738     session_get_cookie_params,session_set_cookie_params,%
3739     session_encode,session_set_save_handler,session_cache_limiter,%
3740     session_write_close,%
3741  %--- shmop functions
3742     shmop_open,shmop_read,shmop_write,shmop_size,shmop_delete,%
3743  %--- snmp functions
3744     snmpget,snmpset,snmpwalk,snmpwalkoid,snmp_get_quick_print,%
3745     snmprealwalk,%
3746  %--- strings functions
3747     addcslashes,addslashes,bin2hex,chop,chr,chunk_split,%
3748     count_chars,crc32,crypt,echo,explode,get_html_translation_table,%
3749     hebrev,hebrevc,htmlentities,htmlspecialchars,implode,join,%
3750     localeconv,ltrim,md5,md5_file,metaphone,nl_langinfo,nl2br,ord,%
3751     print,printf,quoted_printable_decode,quotemeta,str_rot13,rtrim,%
3752     setlocale,similar_text,soundex,sprintf,strncasecmp,strcasecmp,%
3753     strcmp,strcoll,strcspn,strip_tags,stripcslashes,stripslashes,%
3754     strlen,strnatcmp,strnatcasecmp,strncmp,str_pad,strpos,strrchr,%
3755     strrev,strrpos,strspn,strstr,strtok,strtolower,strtoupper,%
3756     strtr,substr,substr_count,substr_replace,trim,ucfirst,ucwords,%
3757     vsprintf,wordwrap,%
3758  %--- swf functions
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3759    swf_openfile,swf_closefile,swf_labelframe,swf_showframe,%
3760    swf_getframe,swf_mulcolor,swf_addcolor,swf_placeobject,%
3761    swf_removeobject,swf_nextid,swf_startdoaction,%
3762    swf_actiongeturl,swf_actionnextframe,swf_actionprevframe,%
3763    swf_actionstop,swf_actiontogglequality,swf_actionwaitforframe,%
3764    swf_actiongotolabel,swf_enddoaction,swf_defineline,%
3765    swf_definepoly,swf_startshape,swf_shapelinesolid,%
3766    swf_shapefillsolid,swf_shapefillbitmapclip,%
3767    swf_shapemoveto,swf_shapelineto,swf_shapecurveto,%
3768    swf_shapearc,swf_endshape,swf_definefont,swf_setfont,%
3769    swf_fontslant,swf_fonttracking,swf_getfontinfo,swf_definetext,%
3770    swf_definebitmap,swf_getbitmapinfo,swf_startsymbol,%
3771    swf_startbutton,swf_addbuttonrecord,swf_oncondition,%
3772    swf_viewport,swf_ortho,swf_ortho2,swf_perspective,swf_polarview,%
3773    swf_pushmatrix,swf_popmatrix,swf_scale,swf_translate,swf_rotate,%
3774  %--- sybase functions
3775    sybase_affected_rows,sybase_close,sybase_connect,%
3776    sybase_fetch_array,sybase_fetch_field,sybase_fetch_object,%
3777    sybase_field_seek,sybase_free_result,sybase_get_last_message,%
3778    sybase_min_error_severity,sybase_min_message_severity,%
3779    sybase_num_fields,sybase_num_rows,sybase_pconnect,sybase_query,%
3780    sybase_select_db,%
3781  %--- uodbc functions
3782    odbc_autocommit,odbc_binmode,odbc_close,odbc_close_all,%
3783    odbc_connect,odbc_cursor,odbc_do,odbc_error,odbc_errormsg,%
3784    odbc_execute,odbc_fetch_into,odbc_fetch_row,odbc_fetch_array,%
3785    odbc_fetch_object,odbc_field_name,odbc_field_num,%
3786    odbc_field_len,odbc_field_precision,odbc_field_scale,%
3787    odbc_longreadlen,odbc_num_fields,odbc_pconnect,odbc_prepare,%
3788    odbc_result,odbc_result_all,odbc_rollback,odbc_setoption,%
3789    odbc_tableprivileges,odbc_columns,odbc_columnprivileges,%
3790    odbc_primarykeys,odbc_foreignkeys,odbc_procedures,%
3791    odbc_specialcolumns,odbc_statistics,%
3792  %--- url functions
3793    base64_decode,base64_encode,parse_url,rawurldecode,rawurlencode,%
3794    urlencode,%
3795  %--- var functions
3796    doubleval,empty,floatval,gettype,get_defined_vars,%
3797    import_request_variables,intval,is_array,is_bool,is_double,%
3798    is_int,is_integer,is_long,is_null,is_numeric,is_object,is_real,%
3799    is_scalar,is_string,isset,print_r,serialize,settype,strval,%
3800    unset,var_dump,var_export,is_callable,%
3801  %--- vpopmail functions
3802    vpopmail_add_domain,vpopmail_del_domain,%
3803    vpopmail_add_domain_ex,vpopmail_del_domain_ex,%
3804    vpopmail_add_user,vpopmail_del_user,vpopmail_passwd,%
3805    vpopmail_auth_user,vpopmail_alias_add,vpopmail_alias_del,%
3806    vpopmail_alias_get,vpopmail_alias_get_all,vpopmail_error,%
3807  %--- w32api functions
3808    w32api_set_call_method,w32api_register_function,%
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3809    w32api_deftype,w32api_init_dtype,%
3810  %--- wddx functions
3811    wddx_serialize_value,wddx_serialize_vars,wddx_packet_start,%
3812    wddx_add_vars,wddx_deserialize,%
3813  %--- xml functions
3814    xml_parser_create,xml_set_object,xml_set_element_handler,%
3815    xml_set_processing_instruction_handler,xml_set_default_handler,%
3816    xml_set_notation_decl_handler,%
3817    xml_parse,xml_get_error_code,xml_error_string,%
3818    xml_get_current_column_number,xml_get_current_byte_index,%
3819    xml_parser_free,xml_parser_set_option,xml_parser_get_option,%
3820    utf8_encode,xml_parser_create_ns,%
3821    xml_set_start_namespace_decl_handler,%
3822  %--- xslt functions
3823    xslt_set_log,xslt_create,xslt_errno,xslt_error,xslt_free,%
3824    xslt_set_sax_handler,xslt_set_scheme_handler,%
3825    xslt_set_base,xslt_set_encoding,xslt_set_sax_handlers,%
3826  %--- yaz functions
3827    yaz_addinfo,yaz_close,yaz_connect,yaz_errno,yaz_error,yaz_hits,%
3828    yaz_database,yaz_range,yaz_record,yaz_search,yaz_present,%
3829    yaz_scan,yaz_scan_result,yaz_ccl_conf,yaz_ccl_parse,%
3830    yaz_wait,yaz_sort,%
3831  %--- zip functions
3832    zip_close,zip_entry_close,zip_entry_compressedsize,%
3833    zip_entry_filesize,zip_entry_name,zip_entry_open,zip_entry_read,%
3834    zip_read,%
3835  %--- zlib functions
3836    gzclose,gzeof,gzfile,gzgetc,gzgets,gzgetss,gzopen,gzpassthru,%
3837    gzread,gzrewind,gzseek,gztell,gzwrite,readgzfile,gzcompress,%
3838    gzdeflate,gzinflate,gzencode,},%
3839    sensitive,%
3840    morecomment=[l]\#,%
3841    morecomment=[l]//,%
3842    morecomment=[s]{/*}{*/},%
3843    morestring=[b]",%
3844    morestring=[b]'%
3845  }[keywords,comments,strings]%

3846 ⟨/lang2⟩
```

2.58   Plasm

Alessio Pace provided the following definition.

```
3847 ⟨*lang3⟩

3848 \lst@definelanguage{Plasm}%
3849   {sensitive=false,%
3850   morekeywords={aa,abs,ac,acolor,acos,actor,al,alias,align,and,%
3851     animation,animation,appearance,apply,ar,arc,as,asin,assoc,atan,%
3852     axialcamera,axialcameras,basehermite,bbox,bbox,bernstein,%
```

```
3853        bernsteinbasis,bezier,beziercurve,beziermanifold,bezierstripe,%
3854        beziersurface,bigger,biggest,bilinearsurface,binormal,%
3855        biquadraticsurface,black,blend,blue,bottom,box,brown,bspize,%
3856        bspline,bsplinebasis,c,cabinet,camera,cart,case,cat,catch,ceil,%
3857        centeredcameras,centralcavalier,char,charseq,choose,circle,%
3858        circumference,class,cmap,color,comp,computecoords,cone,%
3859        conicalsurface,cons,control,convexcoords,convexhull,coonspatch,%
3860        copy,cos,cosh,crease,crosspolytope,cube,cubiccardinal,%
3861        cubiccardinalbasis,cubichermite,cubicubspline,cubicubsplinebasis,%
3862        cuboid,curl,curvature,curve2cspath,curve2mapvect,cyan,cylinder,%
3863        cylindricalsurface,d,deboor,def,depol,depth_sort,depth_test,%
3864        derbernstein,derbernsteinbase,derbezier,determinant,difference,%
3865        differencepr,dim,dimetric,dirproject,displaygraph,displaynubspline,%
3866        displaynurbspline,distl,distr,div,divergence,dodecahedron,dot,down,%
3867        dp,drawedges,drawforks,drawtree,ds,dsphere,dump,dumprep,ellipse,%
3868        embed,end,eq,ex,exp,explode,export,extract_bodies,extract_polygons,%
3869        extract_wires,extrude,extrusion,fact,false,feature,ff,fillcolor,%
3870        filter,finitecone,first,flash,flashani,floor,fontcolor,fontheight,%
3871        fontspacing,fontwidth,fractalsimplex,frame,frame,frameflash,fromto,%
3872        gausscurvature,ge,grad,gradient,gradmap,gray,green,gt,help,hermite,%
3873        hermitebasis,hermitesurface,hexahedron,icosahedron,id,idnt,if,in,%
3874        inarcs,innerprod,inset,insl,insr,intersection,intersectionpr,%
3875        intervals,intmax,intmin,intsto,inv,isa,isanimpol,isbool,ischar,%
3876        isclosedshape,iscloseto,isempty,iseven,isfun,isfunvect,isge,isgt,%
3877        isint,isintneg,isinto,isintpos,isle,islt,ismat,ismatof,isnat,%
3878        isnull,isnum,isnumneg,isnumpos,isodd,isometric,isorthoshape,ispair,%
3879        ispoint,ispointseq,ispol,ispoldim,ispolytope,ispurepol,isreal,%
3880        isrealneg,isrealpos,isrealvect,isseq,isseqof,isshape,issimplex,%
3881        issqrmat,isstring,isvect,iszero,jacobian,join,joints,k,last,le,%
3882        left,leftcavalier,len,less,lesseq,lex,lift,light,linecolor,%
3883        linesize,list,ln,load,loadlib,loop,lt,lxmy,magenta,map,mapshapes,%
3884        markersize,mat,matdotprod,material,mathom,max,mean,meanpoint,med,%
3885        merge,mesh,min,minkowski,mirror,mixedprod,mk,mkframe,mkpol,%
3886        mkvector,mkversork,mod,model,move,mul,multextrude,mxby,mxmy,mxty,%
3887        myfont,n,nat2string,neq,ngon,norm2,normalmap,not,nu_grid,nubspline,%
3888        nubsplineknots,nurbspline,nurbsplineknots,octahedron,offset,%
3889        onepoint,open,optimize,or,orange,ord,ortho,orthoproject,orthox,%
3890        orthoy,orthoz,outarcs,outerloop,outerwarp,pairdiff,parallel,%
3891        pascaltriangle,pdiff,pdifference,permutahedron,permutations,%
3892        perspective,perspective,pi,pivotop,plane,planemapping,pmap,%
3893        points2shape,polar,polyline,polymarker,polypoint,power,powerset,%
3894        presort,principalnormal,print,prism,profileprodsurface,%
3895        progressivesum,project,projection,purple,pyramid,q,quadarray,%
3896        quadmesh,quote,r,raise,range,rationalbezier,rationalblend,%
3897        rationalbspline,rationalize,red,rev,reverse,rgbacolor,right,%
3898        rightcavalier,ring,rn,rotatedtext,rotationalsurface,rotn,rtail,%
3899        ruledsurface,rxmy,s,save,scalarmatprod,scalarvectprod,schlegel2d,%
3900        schlegel3d,sdifference,sdifferencepr,segment,sel,setand,setdiff,%
3901        setfontcolor,setor,setxor,sex,shape_0,shape_1,shape2points,%
3902        shape2pol,shapeclosed,shapecomb,shapediff,shapedist,%
```

```
3903        shapeinbetweening,shapeinf,shapejoin,shapelen,shapenorm,%
3904        shapenormal,shapeprod,shaperot,shapesum,shapesup,shapezero,shift,%
3905        showprop,sign,signal,simplex,simplexpile,sin,sinh,size,skeleton,%
3906        skew,smaller,smallest,solidifier,solidify,sort,sphere,spline,%
3907        splinesampling,splitcells,splitpols,sqr,sqrt,star,string,%
3908        stringtokens,struct,sub,svg,sweep,t,tail,tan,tangent,tanh,%
3909        tensorprodsurface,tetrahedron,text,texture,textwithattributes,%
3910        thinsolid,threepoints,time,tmax,tmin,top,torus,torusmap,trace,%
3911        trans,tree,trianglefan,trianglestripe,trimetric,true,truncone,tt,%
3912        tube,twopoints,uk,ukpol,ukpolf,union,unionpr,unitvect,unprune,up,%
3913        vect2dtoangle,vect2mat,vectdiff,vectnorm,vectprod,vectsum,view,%
3914        viewmodel,viewmodel,vrml,warp,warp,where,white,with,xcavalier,xor,%
3915        xquadarray,xx,ycavalier,yellow},%
3916      moredirectives={loadlib},%
3917      otherkeywords={-,+,*,**,/,~,|,..,^,\&,\&\&,\#,\#\#},%
3918      morecomment=[s]{\%}{\%},%
3919      morestring=[b]',%
3920      literate={~}{{$\sim$}}{1} {^}{$\wedge$}{1},%
3921      }[keywords,directives,comments,strings]%

3922 ⟨/lang3⟩
```

2.59 PL/I

Found the data in

- BERNHARD FISCHER, HERMAN FISCHER: **Structured Programming in PL/I and PL/C**; Copyright © 1976 by Marcel Dekker, Inc.; ISBN 0-8247-6394-7

```
3923 ⟨*lang3⟩

3924 \lst@definelanguage{PL/I}%
3925    {morekeywords={ABS,ATAN,AUTOMATIC,AUTO,ATAND,BEGIN,BINARY,BIN,BIT,%
3926        BUILTIN,BY,CALL,CHARACTER,CHAR,CHECK,COLUMN,COL,COMPLEX,CPLX,%
3927        COPY,COS,COSD,COSH,DATA,DATE,DECIMAL,DEC,DECLARE,DCL,DO,EDIT,%
3928        ELSE,END,ENDFILE,ENDPAGE,ENTRY,EXP,EXTERNAL,EXT,FINISH,FIXED,%
3929        FIXEDOVERFLOW,FOFL,FLOAT,FORMAT,GET,GO,GOTO,IF,IMAG,INDEX,%
3930        INITIAL,INIT,INTERNAL,INT,LABEL,LENGTH,LIKE,LINE,LIST,LOG,LOG2,%
3931        LOG10,MAIN,MAX,MIN,MOD,NOCHECK,NOFIXEDOVERFLOW,NOFOFL,NOOVERFLOW,%
3932        NOOFL,NOSIZE,NOUNDERFLOW,NOUFL,NOZERODIVIDE,NOZDIV,ON,OPTIONS,%
3933        OVERFLOW,OFL,PAGE,PICTURE,PROCEDURE,PROC,PUT,READ,REPEAT,RETURN,%
3934        RETURNS,ROUND,SIN,SIND,SINH,SIZE,SKIP,SQRT,STATIC,STOP,STRING,%
3935        SUBSTR,SUM,SYSIN,SYSPRINT,TAN,TAND,TANH,THEN,TO,UNDERFLOW,UFL,%
3936        VARYING,WHILE,WRITE,ZERODIVIDE,ZDIV},%
3937      sensitive=f,%
3938      morecomment=[s]{/*}{*/},%
3939      morestring=[d]'%
3940      }[keywords,comments,strings]%

3941 ⟨/lang3⟩
```

2.60 PostScript

Herbert Voss provided the following definition, written by Christophe Jorssen
provided the following definition.

```
3942 ⟨∗lang3⟩

3943 %%
3944 %% PostScript language definition (c) 2005 Christophe Jorssen.
3945 %%
3946 \lst@definelanguage{PostScript}{%
3947   morekeywords={abs,add,aload,anchorsearch,and,arc,arcn,arct,arcto,array,ashow,
3948     astore,atan,awidthshow,begin,bind,bitshift,bytesavailable,cachestatus,
3949     ceiling,charpath,clear,cleartomark,cleardictstack,clip,clippath,closefile,
3950     closepath,colorimage,concat,concatmatrix,condition,copy,copypage,cos,count,
3951     countdictstack,countexecstack,counttomark,cshow,currentblackgeneration,
3952     currentcacheparams,currentcmykcolor,currentcolor,currentcolorrendering,
3953     currentcolorscreen,currentcolorspace,currentcolortransfer,currentcontext,
3954     currentdash,currentdevparams,currentdict,currentfile,currentflat,currentfont,
3955     currentglobal,currentgray,currentgstate,currenthalftone,currenthalftonephase,
3956     currenthsbcolor,currentlinecap,currentlinejoin,currentlinewidth,currentmatrix,
3957     currentmiterlimit,currentobjectformat,currentpacking,currentpagedevice,
3958     currentpoint,currentrgbcolor,currentscreen,currentshared,currentstrokeadjust,
3959     currentsystemparams,currenttransfer,currentundercolorremoval,currentuserparams,
3960     curveto,cvi,cvlit,cvn,cvr,cvrs,cvs,cvx,def,defaultmatrix,definefont,
3961     defineresource,defineusername,defineuserobject,deletefile,detach,deviceinfo,
3962     dict,dictstack,div,dtransform,dup,
3963     echo,eexec,end,eoclip,eofill,eoviewclip,eq,erasepage,errordict,exch,exec,
3964     execform,execstack,execuserobject,executeonly,executive,exit,
3965     exp,false,file,filenameforall,fileposition,fill,filter,findencoding,findfont,
3966     findresource,flattenpath,floor,flush,flushfile,FontDirectory,for,forall,fork,ge,
3967     get,getinterval,globaldict,GlobalFontDirectory,glyphshow,grestore,grestoreall,
3968     gsave,gstate,gt,identmatrix,idiv,idtransform,if,ifelse,image,
3969     imagemask,index,ineofill,infill,initclip,initgraphics,initmatrix,initviewclip,
3970     instroke,internaldict,inueofill,inufill,inustroke,
3971     invertmatrix,ISOLatin1Encoding,itransform,join,kshow,
3972     known,languagelevel,le,length,lineto,ln,load,lock,log,loop,lt,
3973     makefont,makepattern,mark,matrix,maxlength,mod,monitor,moveto,mul,ne,neg,
3974     newpath,noaccess,not,notify,null,nulldevice,or,packedarray,
3975     pathbbox,pathforall,pop,print,printobject,product,prompt,pstack,put,putinterval,
3976     quit,rand,rcurveto,read,readhexstring,readline,readonly,readstring,
3977     realtime,rectclip,rectfill,rectstroke,rectviewclip,renamefile,repeat,resetfile,
3978     resourceforall,resourcestatus,restore,reversepath,revision,rlineto,rmoveto,roll,
3979     rootfont,rotate,round,rrand,run,save,scale,scalefont,scheck,search,selectfont,
3980     serialnumber,setbbox,setblackgeneration,setcachedevice,setcachedevice2,
3981     setcachelimit,setcacheparams,setcharwidth,setcmykcolor,setcolor,
3982     setcolorrendering,setcolorscreen,setcolorspace,setcolortransfer,setdash,
3983     setdevparams,setfileposition,setflat,setfont,setglobal,setgray,setgstate,
3984     sethalftone,sethalftonephase,sethsbcolor,setlinecap,setlinejoin,setlinewidth,
3985     setmatrix,setmiterlimit,setobjectformat,setoverprint,setpacking,setpagedevice,
3986     setpattern,setrgbcolor,setscreen,setshared,setstrokeadjust,setsystemparams,
```

```
3987       settransfer,setucacheparams,setundercolorremoval,setuserparams,setvmthreshold,
3988       shareddict,show,showpage,sin,sqrt,srand,stack,
3989       StandardEncoding,start,startjob,status,statusdict,stop,stopped,store,string,
3990       stringwidth,stroke,strokepath,sub,systemdict,transform,
3991       translate,true,truncate,type,token,uappend,ucache,ucachestatus,
3992       ueofill,ufill,undef,
3993       upath,userdict,UserObjects,
3994       usertime,ustroke,ustrokepath,version,viewclip,viewclippath,vmreclaim,
3995       vmstatus,wait,wcheck,where,widthshow,write,writehexstring,writeobject,
3996       writestring,wtranslation,xcheck,xor,xshow,xyshow,yield,yshow},
3997   sensitive,
3998   morecomment=[l]\%}[keywords,comments]

3999 ⟨/lang3⟩
```

2.61 POV-Ray

Berthold Höllmann sent me the definition. But I removed `blankstring=false`
and `flexiblecolumns=true` from the driver since they have nothing to do with a
language definition.

```
4000 ⟨*lang1⟩

4001 %%
4002 %% POV definition (c) 1999 Berthold H\"ollmann
4003 %%
4004 \lst@definelanguage{POV}%
4005   {morekeywords={abs,absorption,acos,acosh,adaptive,adc_bailout,agate,%
4006       agate_turb,all,alpha,ambient,ambient_light,angle,aperture,append,%
4007       arc_angle,area_light,array,asc,asin,asinh,assumed_gamma,atan,%
4008       atan2,atanh,average,background,bezier_spline,bicubic_patch,%
4009       black_hole,blob,blue,blur_samples,bounded_by,box,boxed,bozo,%
4010       break,brick,brick_size,brightness,brilliance,bumps,bump_map,%
4011       bump_size,camera,case,caustics,ceil,checker,chr,clipped_by,clock,%
4012       clock_delta,color,color_map,colour,colour_map,component,%
4013       composite,concat,cone,confidence,conic_sweep,control0,control1,%
4014       cos,cosh,count,crackle,crand,cube,cubic,cubic_spline,cubic_wave,%
4015       cylinder,cylindrical,debug,declare,default,defined,degrees,%
4016       density,density_file,density_map,dents,difference,diffuse,%
4017       dimensions,dimension_size,direction,disc,distance,%
4018       distance_maximum,div,eccentricity,else,emission,end,error,%
4019       error_bound,exp,extinction,fade_distance,fade_power,falloff,%
4020       falloff_angle,false,fclose,file_exists,filter,finish,fisheye,%
4021       flatness,flip,floor,focal_point,fog,fog_alt,fog_offset,fog_type,%
4022       fopen,frequency,gif,global_settings,gradient,granite,%
4023       gray_threshold,green,height_field,hexagon,hf_gray_16,hierarchy,%
4024       hollow,hypercomplex,if,ifdef,iff,ifndef,image_map,include,int,%
4025       interior,interpolate,intersection,intervals,inverse,ior,irid,%
4026       irid_wavelength,jitter,julia_fractal,lambda,lathe,leopard,%
4027       light_source,linear_spline,linear_sweep,local,location,log,%
4028       looks_like,look_at,low_error_factor,macro,mandel,map_type,marble,%
```

```
4029        material,material_map,matrix,max,max_intersections,max_iteration,%
4030        max_trace_level,media,media_attenuation,media_interaction,merge,%
4031        mesh,metallic,min,minimum_reuse,mod,mortar,nearest_count,no,%
4032        normal,normal_map,no_shadow,number_of_waves,object,octaves,off,%
4033        offset,omega,omnimax,on,once,onion,open,orthographic,panoramic,%
4034        perspective,pgm,phase,phong,phong_size,pi,pigment,pigment_map,%
4035        planar,plane,png,point_at,poly,polygon,poly_wave,pot,pow,ppm,%
4036        precision,prism,pwr,quadratic_spline,quadric,quartic,quaternion,%
4037        quick_color,quick_colour,quilted,radial,radians,radiosity,radius,%
4038        rainbow,ramp_wave,rand,range,ratio,read,reciprocal,%
4039        recursion_limit,red,reflection,reflection_exponent,refraction,%
4040        render,repeat,rgb,rgbf,rgbft,rgbt,right,ripples,rotate,roughness,%
4041        samples,scale,scallop_wave,scattering,seed,shadowless,sin,%
4042        sine_wave,sinh,sky,sky_sphere,slice,slope_map,smooth,%
4043        smooth_triangle,sor,specular,sphere,spherical,spiral1,spiral2,%
4044        spotlight,spotted,sqr,sqrt,statistics,str,strcmp,strength,strlen,%
4045        strlwr,strupr,sturm,substr,superellipsoid,switch,sys,t,tan,tanh,%
4046        text,texture,texture_map,tga,thickness,threshold,tightness,tile2,%
4047        tiles,torus,track,transform,translate,transmit,triangle,%
4048        triangle_wave,true,ttf,turbulence,turb_depth,type,u,%
4049        ultra_wide_angle,undef,union,up,use_color,use_colour,use_index,%
4050        u_steps,v,val,variance,vaxis_rotate,vcross,vdot,version,vlength,%
4051        vnormalize,vrotate,v_steps,warning,warp,water_level,waves,while,%
4052        width,wood,wrinkles,write,x,y,yes,z},%
4053      moredirectives={break,case,debug,declare,default,else,end,fclose,%
4054        fopen,local,macro,read,render,statistics,switch,undef,version,%
4055        warning,write},%
4056      moredelim=*[directive]\#,%
4057      sensitive,%
4058      morecomment=[l]//,%
4059      morecomment=[s]{/*}{*/},%
4060      morestring=[d]",%
4061    }[keywords,directives,comments,strings]%

4062 ⟨/lang1⟩
```

2.62   Prolog

Dominique de Waleffe mailed me the data for Prolog. He took the keywords from
the LGrind language definition file.

```
4063 ⟨*lang2⟩

4064 %%
4065 %% Prolog definition (c) 1997 Dominique de Waleffe
4066 %%
4067 \lst@definelanguage{Prolog}%
4068    {morekeywords={op,mod,abort,ancestors,arg,ascii,ask,assert,asserta,%
4069        assertz,atom,atomic,char,clause,close,concat,consult,ed,ef,em,%
4070        eof,fail,file,findall,write,functor,getc,integer,is,length,%
4071        listing,load,name,nl,nonvar,not,numbervars,op,or,pp,prin,print,%
```

```
4072        private,prompt,putc,ratom,read,read_from_this_file,rename,repeat,%
4073        retract,retractall,save,see,seeing,seen,sh,skip,statistics,%
4074        subgoal_of,system,tab,tell,telling,time,told,trace,true,unload,%
4075        untrace,var,write},%
4076      sensitive=f,%
4077      morecomment=[l]\%,%
4078      morecomment=[s]{/*}{*/},%
4079      morestring=[bd]",%
4080      morestring=[bd]'%
4081    }[keywords,comments,strings]%
```

4082 ⟨/lang2⟩

2.63 Promela

Thanks to William ThimblebyPromela for this language definition.

4083 ⟨∗lang3⟩

```
4084 %%
4085 %% Promela definition (c) 2004 William Thimbleby
4086 %%
4087 \lst@definelanguage{Promela}
4088    {morekeywords={active,assert,atomic,bit,bool,break,byte,chan,d_step,%
4089        Dproctype,do,else,empty,enabled,fi,full,goto,hidden,if,init,int,%
4090        len,mtype,nempty,never,nfull,od,of,pcvalue,printf,priority,%
4091        proctype,provided,run,short,skip,timeout,typedef,unless,unsigned,%
4092        xr,xs,true,false,inline,eval},%
4093    moredirectives={define,ifdef,ifndef,if,if,else,endif,undef,include},%
4094    moredelim=*[directive]\#,%
4095    morecomment=[s]{/*}{*/},%
4096    morestring=[b]"%
4097    }[keywords,comments,strings,directives]%
```

4098 ⟨/lang3⟩

2.64 PSTricks

PSTricks is a TEX macro package bundle. Herbert Voss provided the following definition.

4099 ⟨∗lang3⟩

```
4100 %%
4101 %% PSTricks definition (c) 2006 Herbert Voss
4102 %%
4103 \lst@definelanguage{PSTricks}%
4104    {morekeywords={%
4105      begin,end,definecolor,multido,%
4106      KillGlue,DontKillGlue,pslbrace,bsrbrace,psscalebox,psset,pstVerb,pstverb,%
4107      pst@def,,psframebox,psclip,endclip,endpspicture,psframe,
4108 %%      pspicture,%
4109      multirput,multips,Rput,rput,uput,cput,lput,%
```

```
4110     newrgbcolor,newgray,newcmykcolor,
4111 %%
4112 %% pstricks-add
4113     psStep,psgraph,psbrace,psPrintValue,
4114 %%
4115 %% pst-plot
4116     psvlabel,pshlabel,psplot,psline,pscustom,pscurve,psccurve,%
4117     readdata,savedata,fileplot,dataplot,listplot,%
4118     psecurce,psgraph,parametricplot,%
4119     psellipse,psaxes,ncline,nccurve,psbezier,parabola,%
4120     qdisk,qline,clipbox,endpsclip,%
4121     psgrid,pscircle,pscirclebox,psdiabox,pstribox,%
4122     newpsfontdot,psdot,psdots,%
4123     pspolygon,psdiamond,psoval,pstriangle,%
4124     psarc,psarcn,psellipticarc,psellipticarcn,pswedge,psellipticwedge,
4125     pcline,pcdiag,pcdiagg,pccurve,pccurve,pcecurve,%
4126     scalebox,scaleboxto,psmathboxtrue,everypsbox,psverbboxtrue,overlaybox,%
4127     psoverlay,putoverlaybox,%
4128     newpsstyle,newpsobject,%
4129     moveto,newpath,closepath,stroke,fill,gsave,grestore,msave,mrestore,translate,scale,%
4130     swapaxes,rotate,openshadow,closedshadow,movepath,lineto,rlineto,curveto,rcurveto,%
4131     code,dim,coor,rcoor,file,arrows,setcolor,%
4132     rotateleft,rotateright,rotatedown,%
4133 %%
4134 %% pst-node
4135     nput,naput,nbput,ncput,%
4136     ncarc,ncbox,ncangle,ncangles,ncloop,ncdiag,ncdiagg,ncarcbox,ncbar,%
4137     cnodeput,nccircle,%
4138     pnode,rnode,Rnode,Cnode,cnode,fnode,%
4139     circlenode,ovalnode,trinode,dianode,%
4140     psmatrix,endpsmatrix,psspan,%
4141 %%
4142 %% pst-tree
4143     pstree,Tcircle,TCircle,Ttri,Tn,TC,Tc,Tfan,TR,Tr,Tdia,Toval,Tdot,Tp,Tf,%
4144     skiplevel,skiplevels,endskiplevels,tspace,tlput,%
4145 %%
4146 %% pst-text
4147     pscharpath,pstextpath,
4148 %%
4149 %% pst-barcode
4150     psbarcode,
4151 %%
4152 %% pst-coil
4153     psboxfill,pscoil,psCoil,pszigzag,nccoil,
4154     psshadow,pstilt,psTilt,ThreeDput,
4155 %%
4156 %% pst-gr3d
4157     PstGridThreeDNodeProcessor,%
4158 %%
4159 %% pst-vue3d
```

```
4160     PstGridThreeD,
4161     AxesThreeD,LineThreeD,DieThreeD,FrameThreeD,SphereCircleThreeD,SphereMeridienThreeD,
4162     QuadrillageThreeD,TetraedreThreeD,PyramideThreeD,ConeThreeD,CylindreThreeD,
4163     DodecahedronThreeD,ConeThreeD,SphereThreeD,SphereInverseThreeD,DemiSphereThreeD,
4164     SphereCreuseThreeD,SphereCircledThreeD,PortionSphereThreeD,pNodeThreeD,CubeThreeD,%
4165 %%
4166 %% pst-3dplot
4167     pstThreeDCoor,pstThreeDDot,pstThreeDTriangle,pstThreeDCircle,pstPlanePut,%
4168     pstThreeDBox,pstThreeDEllipse,pstThreeDLine,pstThreeDPut,%
4169     pstThreeDNode,pstThreeDSquare,psplotThreeD,parametricplotThreeD,fileplotThreeD,%
4170     dataplotThreeD,pstScalePoints,%
4171 %%
4172 %% pst-circ
4173     resistor,battery,Ucc,Icc,capacitor,coil,diode,Zener,LED,lamp,switch,wire,tension,
4174     circledipole,multidipole,OA,transistor,Tswitch,potentiometer,transformer,
4175     optoCoupler,logic,
4176 %%
4177 %% pst-eucl
4178     pstTriangle,pstMediatorAB,pstInterLL,pstMiddleAB,pstProjection,pstCircleOA,pstLineAB,%
4179 %%
4180 %% pst-func
4181     psBessel,psPolynomial,psFourier,psGaussI,psGauss,psSi,pssi,psCi,psci,%
4182 %%
4183 %% pst-infixplot
4184     psPlot,
4185 %%
4186 %% pst-ob3d
4187     PstDie,PstCube,
4188 %%
4189 %% pst-poly
4190     PstPolygon,pspolygonbox,
4191 %%
4192 %% pst-bar
4193     psbarchart,readpsbardata,psbarscale,newpsbarstyle,%
4194 %%
4195 %% pst-lens
4196     PstLens,%
4197 %%
4198 %% pst-geo
4199     WorldMap,WorldMapII,WorldMapThreeD,WorldMapThreeDII,pnodeMap,MapPut,%
4200 %%
4201 %% pst-autoseg
4202     asr,firstnode,merge,massoc,labelmerge,%
4203 %%
4204 %% gastex
4205     node,imark,fmark,rmark,drawqbpedge,drawedge,drawloop,%
4206 %%
4207 %% pst-labo
4208     Distillation,Ballon,
4209 %%
```

```
4210 %% pst-optic
4211     lens,Transform,%
4212 %%
4213 %% pst-light3d
4214     PstLightThreeDText,%
4215 %%
4216 %% calendrier
4217     Calendrier,%
4218 %%
4219 %% pst-osci
4220     Oscillo%
4221   },%
4222    sensitive,%
4223    alsoother={0123456789$_},%
4224    morecomment=[l]\% %
4225   }[keywords,comments]%
```

4226 ⟨/lang3⟩

2.65 Python

Michael Weber sent me the definition. He got data from MARK LUTZ: **Program-ming Python**; O'Reilly 1996; ISBN 1-56592-197-6. Stephen Kelly reported some problems that indicated that the comment definitions needed to be moved after the string definitions to work correctly.

In August 2013 Alexis Dimitriadis reworked the definition by supplying the builtins.

4227 ⟨∗lang1⟩

```
4228 %%
4229 %% Python definition (c) 1998 Michael Weber
4230 %% Additional definitions (2013) Alexis Dimitriadis
4231 %%
4232 \lst@definelanguage{Python}%
4233   {morekeywords={access,and,break,class,continue,def,del,elif,else,%
4234       except,exec,finally,for,from,global,if,import,in,is,lambda,not,%
4235       or,pass,print,raise,return,try,while},%
```

Python has a long list of builtin-in functions (http://docs.python.org/2/library/functions.html) and it is a good idea to make them visible in printed code

```
4236   % Built-ins
4237   morekeywords=[2]{abs,all,any,basestring,bin,bool,bytearray,callable,chr,
4238       classmethod,cmp,compile,complex,delattr,dict,dir,divmod,enumerate,eval,
4239       execfile,file,filter,float,format,frozenset,getattr,globals,hasattr,hash,
4240       help,hex,id,input,int,isinstance,issubclass,iter,len,list,locals,long,map,
4241       max,memoryview,min,next,object,oct,open,ord,pow,property,range,raw_input,
4242       reduce,reload,repr,reversed,round,set,setattr,slice,sorted,staticmethod,str,
4243       sum,super,tuple,type,unichr,unicode,vars,xrange,zip,apply,buffer,coerce,
4244       intern},
```

```
4245    sensitive=true,%
4246    morecomment=[l]\#,%
4247    morestring=[b]',%
4248    morestring=[b]",%
```

According to PEP (Python Enhancement Proposals) comment should be distinguished from documentation strings, so we define

```
4249    morecomment=[s]{'''}{'''},% used for documentation text (mulitiline strings)
4250    morecomment=[s]{"""}{"""},% added by Philipp Matthias Hahn
```

Jürgen Dietel provided an example with a wrong representation of documentation strings, so the two lines above got changed from morestring → morecomment.

Python now supports so called *raw strings* and also Unicode strings. Here is the definition of these strings:

```
4251    morestring=[s]{r'}{'},% 'raw' strings
4252    morestring=[s]{r"}{"},%
4253    morestring=[s]{r'''}{'''},%
4254    morestring=[s]{r"""}{"""},%
4255    morestring=[s]{u'}{'},% unicode strings
4256    morestring=[s]{u"}{"},%
4257    morestring=[s]{u'''}{'''},%
4258    morestring=[s]{u"""}{"""}%
4259    }%
```

Philipp Matthias Hahn added the third comment. eRreuR found a bug using Python and Nicolas Markey informed me about the corresponding thread on `fr.comp.text.tex` and provided the fix—adding `[b]` to both morestring declarations.

```
4260 ⟨/lang1⟩
```

Alexis Dimitriadis also proposes the following configuration for printing Python code which simulates colorizing the code as it's done by the IDLE GUI:

```
4261 ⟨∗python-prf⟩

4262 \usepackage{xcolor}
4263 \usepackage{textcomp}
4264
4265 %% Actual colors from idlelib/config-highlight.def --> corrected to ''web-safe''
4266 %% strings  = #00aa00 / 0,170,0      (a darker green)
4267 %% builtins = #900090 / 144,0,144    (purple-ish)
4268 %% keywords = #FF7700 / 255,119,0    (quite close to plain 'orange')
4269 %\definecolor{IDLEorange}{RGB}{255,119,0} % pretty close to real orange
4270 %\definecolor{IDLEpurple}{RGB}{144,0,144}
4271 %\definecolor{IDLEgreen}{RGB}{0,170,0}
4272 %\definecolor{IDLEred}{RGB}{221,0,0}
4273 %% Corrected to ''web-safe''
4274 %\definecolor{orange2}{RGB}{255,102,0}
4275 \definecolor{purple2}{RGB}{153,0,153} % there's actually no standard purple
4276 \definecolor{green2}{RGB}{0,153,0} % a darker green
4277 %\definecolor{red2}{RGB}{221,0,0}
4278
```

```
4279 % Except for green and purple, the other colors are pretty good in standard
4280 % hue
4281 \lstdefinestyle{python-idle-code}{%
4282   language=Python,                    % the language
4283   basicstyle=\normalsize\ttfamily,    % size of the fonts for the code
4284   % Color settings to match IDLE style
4285   keywordstyle=\color{orange},        % core keywords
4286   keywordstyle={[2]\color{purple2}},  % built-ins
4287   stringstyle=\color{green2},
4288   commentstyle=\color{red},
4289   upquote=true,                       % requires textcomp
4290 }
4291 % Unimplemented IDLE syntax: function/class names being defined should be
4292 % blue
```

This code is provided in the file `listings-python.prf`, see section 2.4.1 (Preferences) of the listings documentation.

```
4293 ⟨/python-prf⟩
```

2.66   Rexx

Patrick TJ McPhee provided this definition.

```
4294 ⟨*lang2⟩

4295 %%
4296 %% classic rexx listings definition
4297 %% by Patrick TJ McPhee <ptjm@interlog.com>
4298 %%
4299 \lst@definelanguage{Rexx}
4300   {morekeywords={address,arg,call,do,drop,else,end,exit,if,iterate,%
4301                  interpret,leave,nop,numeric,options,otherwise,parse,%
4302                  procedure,pull,push,queue,return,say,signal,then,to,%
4303                  trace,when},%
4304   sensitive=false,%
4305   morecomment=[n]{/*}{*/},%
4306   morestring=[d]{'},%
4307   morestring=[d]{"},%
4308   }[keywords,comments,strings]%

4309 ⟨/lang2⟩
```

2.67   Reduce

was provided by Geraint Paul Bevan.

```
4310 ⟨*lang3⟩

4311 %%
4312 %% Reduce definition (c) 2002 Geraint Paul Bevan
4313 %%
4314 \lst@definelanguage{Reduce}%
4315   {morekeywords={%
```

```
4316 %% reserved identifiers
4317 abs,acos,acosh,acot,acoth,acsc,acsch,%
4318 adjprec,algebraic,algint,allbranch,allfac,and,%
4319 antisymmetric,append,arglength,array,asec,asech,%
4320 asin,asinh,atan,atan2,atanh,begin,bfspace,bye,%
4321 card_no,ceiling,clear,clearrules,coeff,coeffn,%
4322 cofactor,combineexpt,combinelogs,comment,comp,%
4323 complex,conj,cons,cont,cos,cosh,cot,coth,cramer,%
4324 cref,csc,csch,decompose,define,defn,deg,demo,den,%
4325 depend,det,df,difference,dilog,display,div,do,e,%
4326 echo,ed,editdef,ei,end,eps,eq,equal,erf,errcont,%
4327 evallhseqp,eval_mode,even,evenp,exp,expandlogs,%
4328 expr,expt,ezgcd,factor,factorial,factorize,fexpr,%
4329 first,fix,fixp,floor,for,forall,foreach,fort,%
4330 fort_width,freeof,fullroots,g,gcd,geq,go,goto,%
4331 greaterp,high_pow,hypot,i,if,ifactor,impart,in,%
4332 index,infinity,infix,input,int,integer,interpol,%
4333 intstr,k,korder,lambda,lcm,lcof,length,leq,lessp,%
4334 let,lhs,linear,linelength,lisp,list,listargp,%
4335 listargs,ln,load,load_package,log,log10,logb,%
4336 low_pow,lterm,macro,mainvar,mass,mat,match,%
4337 mateigen,matrix,max,mcd,member,memq,min,minus,mkid,%
4338 modular,msg,mshell,multiplicities,nat,neq,nero,%
4339 nextprime,nil,nodepend,noncom,nonzero,nosplit,%
4340 nospur,nullspace,num,numberp,odd,off,on,operator,%
4341 or,order,ordp,out,output,part,pause,period,pf,pi,%
4342 plus,precedence,precise,precision,pret,pri,primep,%
4343 print_precision,procedure,product,quit,quotient,%
4344 random,random_new_seed,rank,rat,ratarg,rational,%
4345 rationalize,ratpri,real,rederr,reduct,remainder,%
4346 remfac,remind,repart,repeat,rest,resultant,retry,%
4347 return,reverse,revpri,rhs,rlisp88,%
4348 root_multiplicity,round,roundall,roundbf,rounded,%
4349 saveas,savestructr,scalar,sec,sech,second,set,%
4350 setmod,setq,share,showrules,showtime,shut,sign,sin,%
4351 sinh,smacro,solve,solvesingular,spur,sqrt,structr,%
4352 sub,sum,symbolic,symmetric,t,tan,tanh,third,time,%
4353 times,tp,tra,trace,trfac,trigform,trint,until,%
4354 varname,vecdim,vector,weight,when,where,while,%
4355 write,ws,wtlevel,%
4356 %% identifiers with spaces
4357 %% for all,for each,go to,such that,%
4358 },%
4359   sensitive=false,%
4360   morecomment=[l]\%,%
4361   morecomment=[s]{COMMENT}{;},%
4362   morecomment=[s]{COMMENT}{$},%
4363   morestring="%
4364 }[keywords,comments,strings]%
```

2.68   RSL

Thanks go to Brian Christensen.

4366 ⟨∗lang3⟩

```
4367 %%
4368 %% RSL definition (c) 2004 Brian Christensen
4369 %%
4370 \lst@definelanguage{RSL}%
4371   {morekeywords={Bool,Char,devt_relation,Int,Nat,Real,Text,Unit,abs,any,%
4372       as,axiom,card,case,channel,chaos,class,do,dom,elems,else,elsif,end,%
4373       extend,false,for,hd,hide,if,in,inds,initialise,int,len,let,local,%
4374       object,of,out,post,pre,read,real,rng,scheme,skip,stop,swap,%
4375       test_case,theory,then,tl,true,type,until,use,value,variable,while,%
4376       with,write},%
4377 literate=%
4378 {<}{$<$}{1}%
4379 {>}{$>$}{1}%
4380 {[}{$[$}{1}%%
4381 {]}{$]$}{1}%%
4382 {^}{{\mbox{$\widehat{\;}$}}}{1}%%
4383 {'}{{\raisebox{1ex}[1ex][0ex]{\protect\scriptsize$\prime$}}}{1}%%
4384 {||}{{\mbox{$\parallel$}}}{2}%%
4385 {|-}{$\vdash$}{1}%%
4386 {|=|}{{\mbox{$\lceil\!\rceil\!\!\!\!\!\!\!\;\lfloor\!\rfloor$}}}{1}%%
4387 {**}{$\uparrow$}{1}%
4388 {/\\}{$\wedge$}{1}%%
4389 {inter}{$\cap$}{1}%%
4390 {-\\}{$\lambda$}{1}%%
4391 {->}{$\rightarrow$}{1}%%
4392 {-m->}{{\mbox{$\rightarrow \hspace{-2.5\lst@width} _{m}\;$}}}{1}%
4393 {-~m->}{{\mbox{$\stackrel{\sim}{\mbox{$\rightarrow\hspace{-2.5\lst@width} _{m}\;$}}$}}}{1}%
4394 {-~->}{{\mbox{$\stackrel{\sim}{\rightarrow}$}}}{1}%%
4395 {-set}{\bf{-set}}{4}%%
4396 {-list}{{$^{\ast}$}}{1}%%
4397 {-inflist}{$^\omega$}{1}%
4398 {-infset}{{\mbox{{\bf -infset}}}}{7}%
4399 {\#}{$\circ$}{1}%
4400 {:-}{{\raisebox{.4ex}{\tiny $\bullet$}}}{1}%%
4401 {=}{$=$}{1}%%
4402 {==}{$==$}{2}%%
4403 {=>}{$\Rightarrow$}{1}%%
4404 {\ is\protect\^^M}{{$\;\equiv$}}{2}%
4405 {\ is\ }{{$\equiv$}}{3}%%
4406 {\ isin\protect\^^M}{$\;\in$}{2}%%
4407 {~}{$\sim$}{1}%%
4408 {~=}{$\neq$}{1}%%
4409 {~isin}{$\notin$}{1}%%
```

```
4410 {+>}{$\mapsto$}{1}%%
4411 {++}{}{1}%
4412 {|^|}{{\mbox{$\lceil\!\rceil$}}}{1}%%
4413 {\\/}{$\vee$}{1}%%
4414 {exists}{$\exists$}{1}%%
4415 {union}{$\cup$}{1}%%
4416 {>=}{$\geq$}{1}%%
4417 {><}{$\times$}{1}%%
4418 {>>}{$\supset$}{1}%
4419 {>>=}{$\supseteq$}{1}%%
4420 {<=}{$\leq$}{1}%%
4421 {<<}{$\subset$}{1}%
4422 {<.}{$\langle$}{1}%%
4423 {<<=}{$\subseteq$}{1}%%
4424 {<->}{$\leftrightarrow$}{1}%%
4425 {[=}{$\sqsubseteq$}{1}%%
4426 {\{=}{$\preceq$}{1}%%
4427 {\ all\protect\^^M}{$\forall$}{2}%%
4428 {\ all\ }{$\forall$}{3}%%
4429 {!!}{$\dagger$}{1}%%
4430 {always}{$\Box$}{1}%%
4431 {.>}{$\rangle$}{1}%%
4432 {`alpha}{$\alpha$}{1}%
4433 {`beta}{$\beta$}{1}%
4434 {`gamma}{$\gamma$}{1}%
4435 {`delta}{$\delta$}{1}%
4436 {`epsilon}{$\epsilon$}{1}%
4437 {`zeta}{$\zeta$}{1}%
4438 {`eta}{$\eta$}{1}%
4439 {`theta}{$\theta$}{1}%
4440 {`iota}{$\iota$}{1}%
4441 {`kappa}{$\kappa$}{1}%
4442 {`mu}{$\mu$}{1}%
4443 {`nu}{$\nu$}{1}%
4444 {`xi}{$\xi$}{1}%
4445 {`pi}{$\pi$}{1}%
4446 {`rho}{$\rho$}{1}%
4447 {`sigma}{$\sigma$}{1}%
4448 {`tau}{$\tau$}{1}%
4449 {`upsilon}{$\upsilon$}{1}%
4450 {`phi}{$\phi$}{1}%
4451 {`chi}{$\chi$}{1}%
4452 {`psi}{$\psi$}{1}%
4453 {`omega}{$\omega$}{1}%
4454 {`Gamma}{$\Gamma$}{1}%
4455 {`Delta}{$\Delta$}{1}%
4456 {`Theta}{$\Theta$}{1}%
4457 {`Lambda}{$\Lambda$}{1}%
4458 {`Xi}{$\Xi$}{1}%
4459 {`Pi}{$\Pi$}{1}%
```

```
4460 {`Sigma}{$\Sigma$}{1}%
4461 {`Upsilon}{$\Upsilon$}{1}%
4462 {`Phi}{$\Phi$}{1}%
4463 {`Psi}{$\Psi$}{1}%
4464 {`Omega}{$\Omega$}{1},%
4465    sensitive=true,%
4466    morecomment=[l]{--},%
4467    morecomment=[s]{/*}{*/}%
4468   }[keywords,comments]%
```

4469 ⟨/lang3⟩

2.69   Ruby

Christian Kaiser provided the initial definition. Xavier Noria replaced the keywords with the keywords from the at the time of writing current stable Ruby version. An erroneous string delimiter was removed following a bug reported on comp.text.tex on 2006/09/01.

Ruby supports string delimiters of the form %q!...!, where ! can be any character, or can be matched braces or parentheses or brackets. The included string definitions include most of the common variants, but are of course not comprehensive.

4470 ⟨*lang2⟩

```
4471 \lst@definelanguage{Ruby}%
4472   {morekeywords={__FILE__,__LINE__,BEGIN,END,alias,and,begin,break,%
4473       case,class,def,defined?,do,else,elsif,end,ensure,false,for,%
4474       if,in,module,next,nil,not,or,redo,rescue,retry,return,self,%
4475       super,then,true,undef,unless,until,when,while,yield},%
4476    sensitive=true,%
4477    morecomment=[l]\#,%
4478    morecomment=[l]\#\#,%
4479    morecomment=[s]{=BEGIN}{=END},%
4480    morestring=[b]',%
4481    morestring=[b]",%
4482    morestring=[s]{\%q/}{/},%
4483    morestring=[s]{\%q!}{!},%
4484    morestring=[s]{\%q\{}{\}},%
4485    morestring=[s]{\%q(}{)},%
4486    morestring=[s]{\%q[}{]},%
4487    morestring=[s]{\%q-}{-},%
4488    morestring=[s]{\%Q/}{/},%
4489    morestring=[s]{\%Q!}{!},%
4490    morestring=[s]{\%Q\{}{\}},%
4491    morestring=[s]{\%Q(}{)},%
4492    morestring=[s]{\%Q[}{]},%
4493    morestring=[s]{\%Q-}{-}%
4494   }[keywords,comments,strings]%
4495 %    \begin{macrocode}
4496 ⟨/lang2⟩
```

109

2.70   Scilab

Thanks go to Jean-Philippe Grivet.

```
4497 ⟨*lang1⟩

4498 %%
4499 %% Scilab definition (c) 2002,2003 Jean-Philippe Grivet
4500 %%
4501 \lst@definelanguage{Scilab}%
4502   {morekeywords={abcd,abinv,abort,abs,acoshm,acosh,acosm,acos,addcolor,%
4503       addf,addinter,addmenu,add_edge,add_node,adj2sp,adj_lists,aff2ab,%
4504       amell,analpf,analyze,ans,apropos,arc_graph,arc_number,argn,arhnk,%
4505       arl2,arma2p,armac,armax1,armax,arma,arsimul,artest,articul,ascii,%
4506       asinhm,asinh,asinm,asin,atanhm,atanh,atanm,atan,augment,auread,%
4507       auwrite,balanc,balreal,bandwr,basename,bdiag,besseli,besselj,%
4508       besselk,bessely,best_match,bezout,bifish,bilin,binomial,black,%
4509       bloc2exp,bloc2ss,bode,bool2s,boolean,boucle,break,bstap,buttmag,%
4510       bvode,cainv,calerf,calfrq,call,canon,casc,case,ccontrg,cdfbet,%
4511       cdfbin,cdfchi,cdfchn,cdffnc,cdff,cdfgam,cdfnbn,cdfnor,cdfpoi,%
4512       cdft,ceil,center,cepstrum,chaintest,chain_struct,champ1,champ,%
4513       chart,chdir,cheb1mag,cheb2mag,check_graph,check_io,chepol,chfact,%
4514       chol,chsolve,circuit,classmarkov,clean,clearfun,clearglobal,%
4515       clear,close,cls2dls,cmb_lin,cmndred,cmoment,code2str,coeff,coffg,%
4516       coff,colcompr,colcomp,colinout,colormap,colregul,companion,comp,%
4517       cond,conj,connex,contour2di,contour2d,contourf,contour,%
4518       contract_edge,contrss,contr,cont_frm,cont_mat,convex_hull,convol,%
4519       convstr,con_nodes,copfac,copy,correl,corr,coshm,cosh,cosm,cos,%
4520       cotg,cothm,coth,covar,csim,cspect,ctr_gram,cumprod,cumsum,%
4521       curblock,cycle_basis,czt,c_link,dasrt,dassl,datafit,date,dbphi,%
4522       dcf,ddp,debug,dec2hex,deff,definedfields,degree,delbpt,%
4523       delete_arcs,delete_nodes,delete,delip,delmenu,demos,denom,%
4524       derivative,derivat,des2ss,des2tf,determ,detr,det,dft,dhinf,%
4525       dhnorm,diag,diary,diff,diophant,dirname,dispbpt,dispfiles,disp,%
4526       dlgamma,double,dragrect,drawaxis,drawlater,drawnow,draw,driver,%
4527       dscr,dsearch,dsimul,dtsi,dt_ility,duplicate,edge_number,%
4528       edit_curv,edit_graph_menus,edit_graph,edit,eigenmarkov,ell1mag,%
4529       elseif,else,emptystr,endfunction,end,eqfir,eqiir,equil1,equil,%
4530       ereduc,erfcx,erfc,erf,errbar,errcatch,errclear,error,eval3dp,%
4531       eval3d,eval,evans,evstr,excel2sci,execstr,exec,exists,exit,expm,%
4532       exp,external,eye,fac3d,factors,faurre,fchamp,fcontour2d,fcontour,%
4533       fec,feedback,feval,ffilt,fftshift,fft,fgrayplot,figure,fileinfo,%
4534       file,filter,findm,findobj,findx0BD,find_freq,find_path,find,%
4535       findABCD,findAC,findBD,findBDK,findR,fit_dat,fix,floor,flts,foo,%
4536       formatman,format,fort,for,fourplan,fplot2d,fplot3d1,fplot3d,%
4537       fprintf,fprintfMat,frep2tf,freq,freson,frexp,frfit,frmag,fscanf,%
4538       fscanfMat,fsfirlin,fsolve,fspecg,fstabst,fstair,ftest,ftuneq,%
4539       fullrfk,fullrf,full,fun2string,funcprot,functions,function,%
4540       funptr,fusee,gainplot,gamitg,gammaln,gamma,gcare,gcd,gcf,%
4541       genfac3d,genlib,genmarkov,gen_net,geom3d,geomean,getblocklabel,%
4542       getcolor,getcurblock,getcwd,getdate,getd,getenv,getfield,getfont,%
```

```
4543        getf,getio,getlinestyle,getmark,getpid,getscicosvars,getsymbol,%
4544        getvalue,getversion,get_function_path,get,gfare,gfrancis,girth,%
4545        givens,glever,glist,global,glue,gpeche,graduate,grand,%
4546        graphics_entities,graph_2_mat,graph_center,graph_complement,%
4547        graph_diameter,graph_power,graph_simp,graph_sum,graph_union,%
4548        graph-list,graycolormap,grayplot,graypolarplot,grep,group,%
4549        gr_menu,gschur,gsort,gspec,gstacksize,gtild,g_margin,h2norm,halt,%
4550        hamilton,hankelsv,hank,harmean,havewindow,help,hermit,hess,%
4551        hex2dec,hilb,hinf,hist3d,histplot,horner,host,hotcolormap,%
4552        householder,hrmt,htrianr,hypermat,h_cl,h_inf_st,h_inf,h_norm,%
4553        iconvert,icon_edit,ieee,if,iirgroup,iirlp,iir,ilib_build,%
4554        ilib_compile,ilib_for_link,ilib_gen_gateway,ilib_gen_loader,%
4555        ilib_gen_Make,imag,impl,imrep2ss,imult,im_inv,inistate,input,%
4556        int16,int2d,int32,int3d,int8,intc,intdec,integrate,interpln,%
4557        interp,intersci,intersect,intg,intl,intppty,intsplin,inttrap,%
4558        inttype,int,invr,invsyslin,inv_coeff,inv,iqr,isdef,isdir,isequal,%
4559        iserror,isglobal,isinf,isnan,isoview,isreal,is_connex,jmat,%
4560        justify,kalm,karmarkar,kernel,keyboard,knapsack,kpure,krac2,%
4561        kroneck,kron,lasterror,lattn,lattp,lcf,lcmdiag,lcm,ldivf,ldiv,%
4562        leastsq,legends,length,leqr,levin,lev,lex_sort,lft,lgfft,library,%
4563        lib,lin2mu,lincos,lindquist,lines,line_graph,linfn,linf,link,%
4564        linmeq,linpro,linsolve,linspace,lin,listfiles,list,lmisolver,%
4565        lmitool,loadmatfile,loadplots,loadwave,load_graph,load,locate,%
4566        log10,log1p,log2,logm,logspace,log,lotest,lqe,lqg2stan,lqg_ltr,%
4567        lqg,lqr,lsq,lsslist,lstcat,lstsize,ltitr,ludel,lufact,luget,%
4568        lusolve,lu,lyap,macglov,macr2lst,macrovar,macro,mad,make_graph,%
4569        make_index,manedit,man,mapsound,markp2ss,matfile2sci,matrix,%
4570        mat_2_graph,maxi,max_cap_path,max_clique,max_flow,max,mclearerr,%
4571        mclose,meanf,mean,median,meof,mese,mesh2d,mfft,mfile2sci,mgeti,%
4572        mgetl,mgetstr,mget,milk_drop,mine,mini,minreal,minss,%
4573        min_lcost_cflow,min_lcost_flow1,min_lcost_flow2,min_qcost_flow,%
4574        min_weight_tree,min,mlist,mode,modulo,moment,mopen,move,%
4575        mps2linpro,mputl,mputstr,mput,mrfit,msd,mseek,mtell,mtlb_load,%
4576        mtlb_mode,mtlb_save,mtlb_sparse,mu2lin,mulf,mvvacov,m_circle,%
4577        names,nand2mean,nanmax,nanmeanf,nanmean,nanmedian,nanmin,%
4578        nanstdev,nansum,narsimul,ndims,nearfloat,nehari,neighbors,%
4579        netclose,netwindows,netwindow,newest,newfun,nextpow2,nf3d,nfreq,%
4580        nlev,nnz,nodes_2_path,nodes_degrees,node_number,noisegen,norm,%
4581        null,numdiff,numer,nyquist,obscont1,obscont,observer,obsvss,%
4582        obsv_mat,obs_gram,odedc,odedi,odeoptions,ode_discrete,ode_root,%
4583        ode,oldload,oldsave,ones,optim,orth,param3d1,param3d,%
4584        paramfplot2d,parrot,part,pathconvert,path_2_nodes,pause,pbig,%
4585        pdiv,pen2ea,pencan,penlaur,perctl,perfect_match,pertrans,pfss,%
4586        phasemag,phc,pinv,pipe_network,playsnd,plot2d1,plot2d2,plot2d3,%
4587        plot2d4,plot2d,plot3d1,plot3d2,plot3d3,plot3d,plotframe,%
4588        plotprofile,plot_graph,plot,plzr,pmodulo,pol2des,pol2str,pol2tex,%
4589        polarplot,polar,polfact,poly,portr3d,portrait,power,ppol,prbs_a,%
4590        predecessors,predef,printf,printing,print,prod,profile,projsl,%
4591        projspec,proj,psmall,pspect,pvm_addhosts,pvm_barrier,pvm_bcast,%
4592        pvm_bufinfo,pvm_config,pvm_delhosts,pvm_error,pvm_exit,%
```

```
4593        pvm_f772sci,pvm_getinst,pvm_gettid,pvm_get_timer,pvm_gsize,%
4594        pvm_halt,pvm_joingroup,pvm_kill,pvm_lvgroup,pvm_mytid,pvm_parent,%
4595        pvm_probe,pvm_recv,pvm_reduce,pvm_sci2f77,pvm_send,pvm_set_timer,%
4596        pvm_spawn_independent,pvm_spawn,pvm_start,pvm_tasks,%
4597        pvm_tidtohost,pvm,pwd,p_margin,qassign,qr,quapro,quart,quaskro,%
4598        quit,randpencil,rand,range,rankqr,rank,rat,rcond,rdivf,read4b,%
4599        readb,readc_,readmps,read,real,recur,reglin,regress,remezb,remez,%
4600        repfreq,replot,residu,resume,return,riccati,riccsl,ricc,ric_desc,%
4601        rlist,roots,rotate,round,routh_t,rowcompr,rowcomp,rowinout,%
4602        rowregul,rowshuff,rpem,rref,rtitr,rubberbox,salesman,savewave,%
4603        save_graph,save,scaling,scanf,schur,sci2exp,sci2for,sci2map,%
4604        sciargs,scicosim,scicos,scifunc_block,sd2sci,secto3d,select,%
4605        semidef,sensi,setbpt,seteventhandler,setfield,setmenu,%
4606        setscicosvars,set,sfact,sgrid,shortest_path,showprofile,%
4607        show_arcs,show_graph,show_nodes,sident,signm,sign,simp_mode,simp,%
4608        sincd,sinc,sinc,sinhm,sinh,sinm,sin,size,sm2des,sm2ss,smooth,%
4609        solve,sorder,sort,sound,sp2adj,spaninter,spanplus,spantwo,sparse,%
4610        spchol,spcompack,specfact,spec,speye,spget,splin,split_edge,%
4611        spones,sprand,sprintf,spzeros,sqroot,sqrtm,sqrt,squarewave,%
4612        square,srfaur,srkf,ss2des,ss2ss,ss2tf,sscanf,sskf,ssprint,ssrand,%
4613        stabil,stacksize,standard_define,standard_draw,standard_input,%
4614        standard_origin,standard_output,startup,stdevf,stdev,steadycos,%
4615        str2code,strange,strcat,strindex,strings,string,stripblanks,%
4616        strong_connex,strong_con_nodes,strsubst,st_deviation,st_ility,%
4617        subf,subgraph,subplot,successors,sum,supernode,sva,svd,svplot,%
4618        sylm,sylv,sysconv,sysdiag,sysfact,syslin,syssize,systems,system,%
4619        systmat,tabul,tangent,tanhm,tanh,tanm,tan,tdinit,testmatrix,%
4620        texprint,tf2des,tf2ss,then,thrownan,timer,time_id,titlepage,%
4621        tk_getdir,tk_getfile,tlist,toeplitz,tokenpos,tokens,trace,%
4622        translatepaths,trans_closure,trans,trfmod,trianfml,tril,trimmean,%
4623        trisolve,triu,trzeros,typename,typeof,type,uicontrol,uimenu,%
4624        uint16,uint32,uint8,ui_observer,ulink,unglue,union,unique,unix_g,%
4625        unix_s,unix_w,unix_x,unix,unobs,unsetmenu,user,varargin,%
4626        varargout,variancef,variance,varn,warning,wavread,wavwrite,%
4627        wcenter,wfir,what,whereami,whereis,where,while,whos,who_user,who,%
4628        wiener,wigner,window,winsid,with_gtk,with_pvm,with_texmacs,%
4629        with_tk,writb,write4b,write,xarcs,xarc,xarrows,xaxis,xbasc,%
4630        xbasimp,xbasr,xchange,xclear,xclea,xclick,xclip,xdel,xend,xfarcs,%
4631        xfarc,xfpolys,xfpoly,xfrect,xgetech,xgetfile,xgetmouse,xget,%
4632        xgraduate,xgrid,xinfo,xinit,xlfont,xload,xname,xnumb,xpause,%
4633        xpolys,xpoly,xrects,xrect,xrpoly,xs2fig,xs2gif,xs2ppm,xs2ps,%
4634        xsave,xsegs,select,xsetech,xsetm,xset,xstringb,xstringl,xstring,%
4635        xtape,xtitle,x_choices,x_choose,x_dialog,x_matrix,x_mdialog,%
4636        x_message_modeless,x_message,yulewalk,zeropen,zeros,zgrid,zpbutt,%
4637        zpch1,zpch2,zpell,mfprintf,mfscanf,mprintf,mscanf,msprintf,%
4638        msscanf,mucomp,%
4639        ABSBLK_f,AFFICH_f,ANDLOG_f,ANIMXY_f,BIGSOM_f,CLINDUMMY_f,CLKIN_f,%
4640        CLKINV_f,CLKOUT_f,CLKOUTV_f,CLKSOM_f,CLKSOMV_f,CLKSPLIT_f,%
4641        CLOCK_f,CLR_f,CLSS_f,CONST_f,COSBLK_f,CURV_f,DELAY_f,DELAYV_f,%
4642        DEMUX_f,DLR_f,DLRADAPT_f,DLSS_f,EVENTSCOPE_f,EVTDLY_f,EVTGEN_f,%
```

```
4643        EXPBLK_f,G_make,GAIN_f,GAINBLK_f,GENERAL_f,GENERIC_f,GENSIN_f,%
4644        GENSQR_f,HALT_f,IFTHEL_f,IN_f,INTEGRAL_f,INTRP2BLK_f,INTRPLBLK_f,%
4645        INVBLK_f,LOGBLK_f,LOOKUP_f,Matplot1,Matplot,MAX_f,MCLOCK_f,%
4646        MFCLCK_f,MIN_f,MUX_f,NDcost,NEGTOPOS_f,OUT_f,POSTONEG_f,POWBLK_f,%
4647        PROD_f,QUANT_f,RAND_f,READC_f,REGISTER_f,RELAY_f,RFILE_f,%
4648        ScilabEval,Sfgrayplot,Sgrayplot,SAMPLEHOLD_f,SAT_f,SAWTOOTH_f,%
4649        SCOPE_f,SCOPXY_f,SELECT_f,SINBLK_f,SOM_f,SPLIT_f,STOP_f,SUPER_f,%
4650        TANBLK_f,TCLSS_f,TEXT_f,TIME_f,TK_EvalFile,TK_EvalStr,TK_GetVar,%
4651        TK_SetVar,TRASH_f,WFILE_f,WRITEC_f,ZCROSS_f,%
4652        \%asn,\%helps,\%k,\%sn},%
4653     alsoletter=\%,% chmod
4654     sensitive,%
4655     morecomment=[l]//,%
4656     morestring=[b]",%
4657     morestring=[m]'%
4658    }[keywords,comments,strings]%

4659 ⟨/lang1⟩
```

2.71 SHELXL

Thanks to Aidan Philip Heerdegen for mailing this definition.

```
4660 ⟨*lang2⟩

4661 %%
4662 %% SHELXL definition (c) 1999 Aidan Philip Heerdegen
4663 %%
4664 \lst@definelanguage{SHELXL}%
4665    {morekeywords={TITL,CELL,ZERR,LATT,SYMM,SFAC,DISP,UNIT,LAUE,%
4666        REM,MORE,TIME,END,HKLF,OMIT,SHEL,BASF,TWIN,EXTI,SWAT,%
4667        MERG,SPEC,RESI,MOVE,ANIS,AFIX,HFIX,FRAG,FEND,EXYZ,EADP,%
4668        EQIV,OMIT,CONN,PART,BIND,FREE,DFIX,BUMP,SAME,SADI,CHIV,%
4669        FLAT,DELU,SIMU,DEFS,ISOR,SUMP,L.S.,CGLS,SLIM,BLOC,DAMP,%
4670        WGHT,FVAR,BOND,CONF,MPLA,RTAB,LIST,ACTA,SIZE,TEMP,WPDB,%
4671        FMAP,GRID,PLAN,MOLE},%
4672     sensitive=false,%
4673     alsoother=_,% Makes the syntax highlighting ignore the underscores
4674     morecomment=[l]{! },%
4675    }%

4676 ⟨/lang2⟩
```

2.72 Simula

Took data from

- GÜNTHER LAMPRECHT: **Introduction to SIMULA 67**; Braunschweig; Wiesbaden: Vieweg, 1981

```
4677 ⟨*lang3⟩

4678 \lst@definelanguage[IBM]{Simula}[DEC]{Simula}{}%
```

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```
4679 \lst@definelanguage[DEC]{Simula}[67]{Simula}%
4680   {morekeywords={and,eq,eqv,ge,gt,hidden,imp,le,long,lt,ne,not,%
4681      options,or,protected,short}%
4682   }%
4683 \lst@definelanguage[CII]{Simula}[67]{Simula}%
4684   {morekeywords={and,equiv,exit,impl,not,or,stop}}%
4685 \lst@definelanguage[67]{Simula}%
4686   {morekeywords={activate,after,array,at,before,begin,boolean,%
4687      character,class,comment,delay,detach,do,else,end,external,false,%
4688      for,go,goto,if,in,inner,inspect,integer,is,label,name,new,none,%
4689      notext,otherwise,prior,procedure,qua,reactivate,real,ref,resume,%
4690      simset,simulation,step,switch,text,then,this,to,true,until,value,%
4691      virtual,when,while},%
4692   sensitive=f,%
4693   keywordcommentsemicolon={end}{else,end,otherwise,when}{comment},%
4694   morestring=[d]",%
4695   morestring=[d]'%
4696   }[keywords,keywordcomments,strings]%
4697 ⟨/lang3⟩
```

2.73   SPARQL

This definition for the SPARQL query language (SPARQL Protocol and RDF Query Language, http://www.w3.org/TR/rdf-sparql-query/) was provided by Christoph Kiefer.

```
4698 ⟨*lang3⟩

4699 %%
4700 %% SPARQL definition (c) 2006 Christoph Kiefer
4701 %%
4702 \lst@definelanguage{SPARQL}%
4703   {morekeywords={BASE,PREFIX,SELECT,DISTINCT,CONSTRUCT,DESCRIBE,ASK,%
4704      FROM,NAMED,WHERE,ORDER,BY,ASC,DESC,LIMIT,OFFSET,OPTIONAL,%
4705      GRAPH,UNION,FILTER,a,STR,LANG,LANGMATCHES,DATATYPE,BOUND,%
4706      isIRI,isURI,isBLANK,isLITERAL,REGEX,true,false},%
4707   sensitive=false,%
4708   morecomment=[l]\#,%
4709   morestring=[d]',%
4710   morestring=[d]"%
4711   }[keywords,comments,strings]%
4712 ⟨/lang3⟩
```

2.74   SQL

Data come from Christian Haul. Neil Conway added some keywords, ditto Torsten Flatter, Robert Frank and Dirk Jesko.

```
4713 ⟨*lang1⟩
```

```
4714 %%
4715 %% SQL definition (c) 1998 Christian Haul
4716 %%                  (c) 2002 Neil Conway
4717 %%                  (c) 2002 Robert Frank
4718 %%                  (c) 2003 Dirk Jesko
4719 %%
4720 \lst@definelanguage{SQL}%
4721    {morekeywords={ABSOLUTE,ACTION,ADD,ALLOCATE,ALTER,ARE,AS,ASSERTION,%
4722        AT,BETWEEN,BIT_LENGTH,BOTH,BY,CASCADE,CASCADED,CASE,CAST,%
4723        CATALOG,CHAR_LENGTH,CHARACTER_LENGTH,CLUSTER,COALESCE,%
4724        COLLATE,COLLATION,COLUMN,CONNECT,CONNECTION,CONSTRAINT,%
4725        CONSTRAINTS,CONVERT,CORRESPONDING,CREATE,CROSS,CURRENT_DATE,%
4726        CURRENT_TIME,CURRENT_TIMESTAMP,CURRENT_USER,DAY,DEALLOCATE,%
4727        DEC,DEFERRABLE,DEFERED,DESCRIBE,DESCRIPTOR,DIAGNOSTICS,%
4728        DISCONNECT,DOMAIN,DROP,ELSE,END,EXEC,EXCEPT,EXCEPTION,EXECUTE,%
4729        EXTERNAL,EXTRACT,FALSE,FIRST,FOREIGN,FROM,FULL,GET,GLOBAL,%
4730        GRAPHIC,HAVING,HOUR,IDENTITY,IMMEDIATE,INDEX,INITIALLY,INNER,%
4731        INPUT,INSENSITIVE,INSERT,INTO,INTERSECT,INTERVAL,%
4732        ISOLATION,JOIN,KEY,LAST,LEADING,LEFT,LEVEL,LIMIT,LOCAL,LOWER,%
4733        MATCH,MINUTE,MONTH,NAMES,NATIONAL,NATURAL,NCHAR,NEXT,NO,NOT,NULL,%
4734        NULLIF,OCTET_LENGTH,ON,ONLY,ORDER,ORDERED,OUTER,OUTPUT,OVERLAPS,%
4735        PAD,PARTIAL,POSITION,PREPARE,PRESERVE,PRIMARY,PRIOR,READ,%
4736        RELATIVE,RESTRICT,REVOKE,RIGHT,ROWS,SCROLL,SECOND,SELECT,SESSION,%
4737        SESSION_USER,SIZE,SPACE,SQLSTATE,SUBSTRING,SYSTEM_USER,%
4738        TABLE,TEMPORARY,THEN,TIMEZONE_HOUR,%
4739        TIMEZONE_MINUTE,TRAILING,TRANSACTION,TRANSLATE,TRANSLATION,TRIM,%
4740        TRUE,UNIQUE,UNKNOWN,UPPER,USAGE,USING,VALUE,VALUES,%
4741        VARGRAPHIC,VARYING,WHEN,WHERE,WRITE,YEAR,ZONE,%
4742        AND,ASC,avg,CHECK,COMMIT,count,DECODE,DESC,DISTINCT,GROUP,IN,% FF
4743        LIKE,NUMBER,ROLLBACK,SUBSTR,sum,VARCHAR2,% FF
4744        MIN,MAX,UNION,UPDATE,% RF
4745        ALL,ANY,CUBE,CUBE,DEFAULT,DELETE,EXISTS,GRANT,OR,RECURSIVE,% DJ
4746        ROLE,ROLLUP,SET,SOME,TRIGGER,VIEW},% DJ
4747    morendkeywords={BIT,BLOB,CHAR,CHARACTER,CLOB,DATE,DECIMAL,FLOAT,% DJ
4748        INT,INTEGER,NUMERIC,SMALLINT,TIME,TIMESTAMP,VARCHAR},% moved here
4749    sensitive=false,% DJ
4750    morecomment=[l]--,%
4751    morecomment=[s]{/*}{*/},%
4752    morestring=[d]',%
4753    morestring=[d]"%
4754    }[keywords,comments,strings]%

4755 ⟨/lang1⟩
```

2.75 Tcl/Tk

Tcl/Tk is a very dynamic language. A statical analysis might not be adequate. Nevertheless the following definitions produce the desired result for my programs with a minimum of "misses".

Data come from

- WELCH, BRENT B.: **Practical Programming in Tcl and Tk**; © 1997 Prentice Hall, Inc.; ISBN 0-13-616830-2.

- OUSTERHOUT, JOHN K.: **Tcl and the Tk Toolkit**; © 1997 Addison-Wesley Publishing Company; ISBN 0-201-6337-X.

Gerd Neugebauer added support for Tcl/Tk.

```
4756 ⟨∗lang2⟩

4757 %%
4758 %% Tcl/Tk definition (c) Gerd Neugebauer
4759 %%
4760 \lst@definelanguage[tk]{tcl}[]{tcl}%
4761     {morekeywords={activate,add,separator,radiobutton,checkbutton,%
4762         command,cascade,all,bell,bind,bindtags,button,canvas,canvasx,%
4763         canvasy,cascade,cget,checkbutton,config,configu,configur,%
4764         configure,clipboard,create,arc,bitmap,image,line,oval,polygon,%
4765         rectangle,text,textwindow,curselection,delete,destroy,end,entry,%
4766         entrycget,event,focus,font,actual,families,measure,metrics,names,%
4767         frame,get,grab,current,release,status,grid,columnconfigure,%
4768         rowconfigure,image,image,create,bitmap,photo,delete,height,types,%
4769         widt,names,index,insert,invoke,itemconfigure,label,listbox,lower,%
4770         menu,menubutton,message,move,option,add,clear,get,readfile,pack,%
4771         photo,place,radiobutton,raise,scale,scroll,scrollbar,search,see,%
4772         selection,send,stdin,stdout,stderr,tag,bind,text,tk,tkerror,%
4773         tkwait,window,variable,visibility,toplevel,unknown,update,winfo,%
4774         class,exists,ismapped,parent,reqwidth,reqheight,rootx,rooty,%
4775         width,height,wm,aspect,client,command,deiconify,focusmodel,frame,%
4776         geometry,group,iconbitmap,iconify,iconmask,iconname,iconposition,%
4777         iconwindow,maxsize,minsize,overrideredirect,positionfrom,%
4778         protocol,sizefrom,state,title,transient,withdraw,xview,yview,%
4779         yposition,%
4780         -accelerator,-activebackground,-activeborderwidth,%
4781         -activeforeground,-after,-anchor,-arrow,-arrowshape,-aspect,%
4782         -async,-background,-before,-bg,-bigincrement,-bitmap,-bordermode,%
4783         -borderwidth,-button,-capstyle,-channel,-class,-closeenough,%
4784         -colormap,-column,-columnspan,-command,-confine,-container,%
4785         -count,-cursor,-data,-default,-detail,-digits,-direction,%
4786         -displayof,-disableforeground,-elementborderwidth,-expand,%
4787         -exportselection,-extend,-family,-fg,-file,-fill,-focus,-font,%
4788         -fontmap,-foreground,-format,-from,-gamma,-global,-height,%
4789         -highlightbackground,-highlightcolor,-highlightthickness,-icon,%
4790         -image,-in,-insertbackground,-insertborderwidth,-insertofftime,%
4791         -insertontime,-imsertwidth,-ipadx,-ipady,-joinstyle,-jump,%
4792         -justify,-keycode,-keysym,-label,-lastfor,-length,-maskdata,%
4793         -maskfile,-menu,-message,-mode,-offvalue,-onvalue,-orient,%
4794         -outlien,-outlinestipple,-overstrike,-override,-padx,-pady,%
4795         -pageanchor,-pageheight,-pagewidth,-pagey,-pagey,-palette,%
4796         -parent,-place,-postcommand,-relheight,-relief,-relwidth,-relx,%
4797         -rely,-repeatdelay,-repeatinterval,-resolution,-root,-rootx,%
4798         -rooty,-rotate,-row,-rowspan,-screen,-selectcolor,-selectimage,%
```

```
4799        -sendevent,-serial,-setgrid,-showvalue,-shrink,-side,-size,%
4800        -slant,-sliderlength,-sliderrelief,-smooth,-splinesteps,-state,%
4801        -sticky,-stipple,-style,-subsample,-subwindow,-tags,-takefocus,%
4802        -tearoff,-tearoffcommand,-text,-textvariable,-tickinterval,-time,%
4803        -title,-to,-troughcolor,-type,-underline,-use,-value,-variable,%
4804        -visual,-width,-wrap,-wraplength,-x,-xscrollcommand,-y,%
4805        -bgstipple,-fgstipple,-lmargin1,-lmargin2,-rmargin,-spacing1,%
4806        -spacing2,-spacing3,-tabs,-yscrollcommand,-zoom,%
4807        activate,add,addtag,bbox,cget,clone,configure,coords,%
4808        curselection,debug,delete,delta,deselect,dlineinfo,dtag,dump,%
4809        entrycget,entryconfigure,find,flash,fraction,get,gettags,handle,%
4810        icursor,identify,index,insert,invoke,itemcget,itemconfigure,mark,%
4811        moveto,own,post,postcascade,postscript,put,redither,ranges,%
4812        scale,select,show,tag,type,unpost,xscrollcommand,xview,%
4813        yscrollcommand,yview,yposition}%
4814    }%
4815 \lst@definelanguage[]{tcl}%
4816    {alsoletter={.:,*=&-},%
4817     morekeywords={after,append,array,names,exists,anymore,donesearch,%
4818        get,nextelement,set,size,startsearch,auto_mkindex,binary,break,%
4819        case,catch,cd,clock,close,concat,console,continue,default,else,%
4820        elseif,eof,error,eval,exec,-keepnewline,exit,expr,fblocked,%
4821        fconfigure,fcopy,file,atime,dirname,executable,exists,extension,%
4822        isdirectory,isfile,join,lstat,mtime,owned,readable,readlink,%
4823        rootname,size,stat,tail,type,writable,-permissions,-group,-owner,%
4824        -archive,-hidden,-readonly,-system,-creator,-type,-force,%
4825        fileevent,flush,for,foreach,format,gets,glob,global,history,if,%
4826        incr,info,argsbody,cmdcount,commands,complete,default,exists,%
4827        globals,level,library,locals,patchlevel,procs,script,tclversion,%
4828        vars,interp,join,lappend,lindex,linsert,list,llength,lrange,%
4829        lreplace,lsearch,-exact,-regexp,-glob,lsort,-ascii,-integer,%
4830        -real,-dictionary,-increasing,-decreasing,-index,-command,load,%
4831        namespace,open,package,forget,ifneeded,provide,require,unknown,%
4832        vcompare,versions,vsatisfies,pid,proc,puts,-nonewline,pwd,read,%
4833        regexp,-indices,regsub,-all,-nocaserename,return,scan,seek,set,%
4834        socket,source,split,string,compare,first,index,last,length,match,%
4835        range,tolower,toupper,trim,trimleft,trimright,subst,switch,tell,%
4836        time,trace,variable,vdelete,vinfo,unknown,unset,uplevel,upvar,%
4837        vwait,while,acos,asin,atan,atan2,ceil,cos,cosh,exp,floor,fmod,%
4838        hypot,log,log10,pow,sin,sinh,sqrt,tan,tanh,abs,double,int,round%
4839        },%
4840     morestring=[d]",%
4841     morecomment=[f]\#,%
4842     morecomment=[l]{;\#},%
4843     morecomment=[l]{[\#},%
4844     morecomment=[l]{\{\#}%
4845    }[keywords,comments,strings]%
```

And after receiving a bug report from Vitaly A. Repin I converted the version 0.21 contents of `MoreSelectCharTable` to version 1.0.

2.76   Statistical languages

These languages have been added by Winfried Theis. Robert Denham contributed
the additional string delimiter '.

```
4848 \lst@definelanguage{S}[]{R}{}
4849 \lst@definelanguage[PLUS]{S}[]{R}{}
4850 \lst@definelanguage{R}%
4851    {keywords={abbreviate,abline,abs,acos,acosh,action,add1,add,%
4852       aggregate,alias,Alias,alist,all,anova,any,aov,aperm,append,apply,%
4853       approx,approxfun,apropos,Arg,args,array,arrows,as,asin,asinh,%
4854       atan,atan2,atanh,attach,attr,attributes,autoload,autoloader,ave,%
4855       axis,backsolve,barplot,basename,besselI,besselJ,besselK,besselY,%
4856       beta,binomial,body,box,boxplot,break,browser,bug,builtins,bxp,by,%
4857       c,C,call,Call,case,cat,category,cbind,ceiling,character,char,%
4858       charmatch,check,chol,chol2inv,choose,chull,class,close,cm,codes,%
4859       coef,coefficients,co,col,colnames,colors,colours,commandArgs,%
4860       comment,complete,complex,conflicts,Conj,contents,contour,%
4861       contrasts,contr,control,helmert,contrib,convolve,cooks,coords,%
4862       distance,coplot,cor,cos,cosh,count,fields,cov,covratio,wt,CRAN,%
4863       create,crossprod,cummax,cummin,cumprod,cumsum,curve,cut,cycle,D,%
4864       data,dataentry,date,dbeta,dbinom,dcauchy,dchisq,de,debug,%
4865       debugger,Defunct,default,delay,delete,deltat,demo,de,density,%
4866       deparse,dependencies,Deprecated,deriv,description,detach,%
4867       dev2bitmap,dev,cur,deviance,off,prev,,dexp,df,dfbetas,dffits,%
4868       dgamma,dgeom,dget,dhyper,diag,diff,digamma,dim,dimnames,dir,%
4869       dirname,dlnorm,dlogis,dnbinom,dnchisq,dnorm,do,dotplot,double,%
4870       download,dpois,dput,drop,drop1,dsignrank,dt,dummy,dump,dunif,%
4871       duplicated,dweibull,dwilcox,dyn,edit,eff,effects,eigen,else,%
4872       emacs,end,environment,env,erase,eval,equal,evalq,example,exists,%
4873       exit,exp,expand,expression,External,extract,extractAIC,factor,%
4874       fail,family,fft,file,filled,find,fitted,fivenum,fix,floor,for,%
4875       For,formals,format,formatC,formula,Fortran,forwardsolve,frame,%
4876       frequency,ftable,ftable2table,function,gamma,Gamma,gammaCody,%
4877       gaussian,gc,gcinfo,gctorture,get,getenv,geterrmessage,getOption,%
4878       getwd,gl,glm,globalenv,gnome,GNOME,graphics,gray,grep,grey,grid,%
4879       gsub,hasTsp,hat,heat,help,hist,home,hsv,httpclient,I,identify,if,%
4880       ifelse,Im,image,\%in\%,index,influence,measures,inherits,install,%
4881       installed,integer,interaction,interactive,Internal,intersect,%
4882       inverse,invisible,IQR,is,jitter,kappa,kronecker,labels,lapply,%
4883       layout,lbeta,lchoose,lcm,legend,length,levels,lgamma,library,%
4884       licence,license,lines,list,lm,load,local,locator,log,log10,log1p,%
4885       log2,logical,loglin,lower,lowess,ls,lsfit,lsf,ls,machine,Machine,%
4886       mad,mahalanobis,make,link,margin,match,Math,matlines,mat,matplot,%
4887       matpoints,matrix,max,mean,median,memory,menu,merge,methods,min,%
4888       missing,Mod,mode,model,response,mosaicplot,mtext,mvfft,na,nan,%
4889       names,omit,nargs,nchar,ncol,NCOL,new,next,NextMethod,nextn,%
```

```
4890        nlevels,nlm,noquote,NotYetImplemented,NotYetUsed,nrow,NROW,null,%
4891        numeric,\%o\%,objects,offset,old,on,Ops,optim,optimise,optimize,%
4892        options,or,order,ordered,outer,package,packages,page,pairlist,%
4893        pairs,palette,panel,par,parent,parse,paste,path,pbeta,pbinom,%
4894        pcauchy,pchisq,pentagamma,persp,pexp,pf,pgamma,pgeom,phyper,pico,%
4895        pictex,piechart,Platform,plnorm,plogis,plot,pmatch,pmax,pmin,%
4896        pnbinom,pnchisq,pnorm,points,poisson,poly,polygon,polyroot,pos,%
4897        postscript,power,ppoints,ppois,predict,preplot,pretty,Primitive,%
4898        print,prmatrix,proc,prod,profile,proj,prompt,prop,provide,%
4899        psignrank,ps,pt,ptukey,punif,pweibull,pwilcox,q,qbeta,qbinom,%
4900        qcauchy,qchisq,qexp,qf,qgamma,qgeom,qhyper,qlnorm,qlogis,qnbinom,%
4901        qnchisq,qnorm,qpois,qqline,qqnorm,qqplot,qr,Q,qty,qy,qsignrank,%
4902        qt,qtukey,quantile,quasi,quit,qunif,quote,qweibull,qwilcox,%
4903        rainbow,range,rank,rbeta,rbind,rbinom,rcauchy,rchisq,Re,read,csv,%
4904        csv2,fwf,readline,socket,real,Recall,rect,reformulate,regexpr,%
4905        relevel,remove,rep,repeat,replace,replications,report,require,%
4906        resid,residuals,restart,return,rev,rexp,rf,rgamma,rgb,rgeom,R,%
4907        rhyper,rle,rlnorm,rlogis,rm,rnbinom,RNGkind,rnorm,round,row,%
4908        rownames,rowsum,rpois,rsignrank,rstandard,rstudent,rt,rug,runif,%
4909        rweibull,rwilcox,sample,sapply,save,scale,scan,scan,screen,sd,se,%
4910        search,searchpaths,segments,seq,sequence,setdiff,setequal,set,%
4911        setwd,show,sign,signif,sin,single,sinh,sink,solve,sort,source,%
4912        spline,splinefun,split,sqrt,stars,start,stat,stem,step,stop,%
4913        storage,strstrheight,stripplot,strsplit,structure,strwidth,sub,%
4914        subset,substitute,substr,substring,sum,summary,sunflowerplot,svd,%
4915        sweep,switch,symbol,symbols,symnum,sys,status,system,t,table,%
4916        tabulate,tan,tanh,tapply,tempfile,terms,terrain,tetragamma,text,%
4917        time,title,topo,trace,traceback,transform,tri,trigamma,trunc,try,%
4918        ts,tsp,typeof,unclass,undebug,undoc,union,unique,uniroot,unix,%
4919        unlink,unlist,unname,untrace,update,upper,url,UseMethod,var,%
4920        variable,vector,Version,vi,warning,warnings,weighted,weights,%
4921        which,while,window,write,\%x\%,x11,X11,xedit,xemacs,xinch,xor,%
4922        xpdrows,xy,xyinch,yinch,zapsmall,zip},%
4923     otherkeywords={!,!=,~,$,*,\&,\%/\%,\%*\%,\%\%,<-,<<-,_,/},%
4924     alsoother={._$},%
4925     sensitive,%
4926     morecomment=[l]\#,%
4927     morestring=[d]",%
4928     morestring=[d]'% 2001 Robert Denham
4929    }%
```

Benjamin Janson got a `prockeywords` `undefined` error, which was removed by Heiko Oberdiek.

```
4930 \lst@definelanguage{SAS}%
4931    {procnamekeys={proc},%
4932    morekeywords={DATA,AND,OR,NOT,EQ,GT,LT,GE,LE,NE,INFILE,INPUT,DO,BY,%
4933        TO,SIN,COS,OUTPUT,END,PLOT,RUN,LIBNAME,VAR,TITLE,FIRSTOBS,OBS,%
4934        DELIMITER,DLM,EOF,ABS,DIM,HBOUND,LBOUND,MAX,MIN,MOD,SIGN,SQRT,%
4935        CEIL,FLOOR,FUZZ,INT,ROUND,TRUNC,DIGAMMA,ERF,ERFC,EXP,GAMMA,%
4936        LGAMMA,LOG,LOG2,LOG10,ARCOS,ARSIN,ATAN,COSH,SINH,TANH,TAN,%
```

```
4937        POISSON,PROBBETA,PROBBNML,PROBCHI,PROBF,PROBGAM,PROBHYPR,%
4938        PROBNEGB,PROBNORM,PROBT,BETAINV,CINV,FINV,GAMINV,PROBIT,TINV,CSS,%
4939        CV,KURTOSIS,MEAN,NMISS,RANGE,SKEWNESS,STD,STDERR,SUM,USS,NORMAL,%
4940        RANBIN,RANCAU,RANEXP,RANGAM,RANNOR,RANPOI,RANTBL,RANTRI,RANUNI,%
4941        UNIFORM,IF,THEN,ELSE,WHILE,UNTIL,DROP,KEEP,LABEL,DEFAULT,ARRAY,%
4942        MERGE,CARDS,CARDS4,PUT,SET,UPDATE,ABORT,DELETE,DISPLAY,LIST,%
4943        LOSTCARD,MISSING,STOP,WHERE,ARRAY,DROP,KEEP,WINDOW,LENGTH,RENAME,%
4944        RETAIN,MEANS,UNIVARIATE,SUMMARY,TABULATE,CORR,FREQ,FOOTNOTE,NOTE,%
4945        SHOW},%
4946    otherkeywords={!,!=,~,$,*,\&,_,/,<,>=,=<,>},%
4947    morestring=[d]'%
4948    }[keywords,comments,strings,procnames]%

4949 ⟨/lang3⟩
```

2.77 TeX

I extracted the data from `plain.tex`, `latex.ltx`, and `size10.clo`. Dr. Peter Leibner reported that some keywords are missing and also added a couple.

```
4950 ⟨*lang3⟩

4951 \lst@definelanguage[AlLaTeX]{TeX}[LaTeX]{TeX}%
4952    {moretexcs={AtBeginDocument,AtBeginDvi,AtEndDocument,AtEndOfClass,%
4953        AtEndOfPackage,ClassError,ClassInfo,ClassWarning,%
4954        ClassWarningNoLine,CurrentOption,DeclareErrorFont,%
4955        DeclareFixedFont,DeclareFontEncoding,DeclareFontEncodingDefaults,%
4956        DeclareFontFamily,DeclareFontShape,DeclareFontSubstitution,%
4957        DeclareMathAccent,DeclareMathAlphabet,DeclareMathAlphabet,%
4958        DeclareMathDelimiter,DeclareMathRadical,DeclareMathSizes,%
4959        DeclareMathSymbol,DeclareMathVersion,DeclareOldFontCommand,%
4960        DeclareOption,DeclarePreloadSizes,DeclareRobustCommand,%
4961        DeclareSizeFunction,DeclareSymbolFont,DeclareSymbolFontAlphabet,%
4962        DeclareTextAccent,DeclareTextAccentDefault,DeclareTextCommand,%
4963        DeclareTextCommandDefault,DeclareTextComposite,%
4964        DeclareTextCompositeCommand,DeclareTextFontCommand,%
4965        DeclareTextSymbol,DeclareTextSymbolDefault,ExecuteOptions,%
4966        GenericError,GenericInfo,GenericWarning,IfFileExists,%
4967        InputIfFileExists,LoadClass,LoadClassWithOptions,MessageBreak,%
4968        OptionNotUsed,PackageError,PackageInfo,PackageWarning,%
4969        PackageWarningNoLine,PassOptionsToClass,PassOptionsToPackage,%
4970        ProcessOptionsProvidesClass,ProvidesFile,ProvidesFile,%
4971        ProvidesPackage,ProvideTextCommand,RequirePackage,%
4972        RequirePackageWithOptions,SetMathAlphabet,SetSymbolFont,%
4973        TextSymbolUnavailable,UseTextAccent,UseTextSymbol},%
4974    morekeywords={array,center,displaymath,document,enumerate,eqnarray,%
4975        equation,flushleft,flushright,itemize,list,lrbox,math,minipage,%
4976        picture,sloppypar,tabbing,tabular,trivlist,verbatim}%
4977    }%

4978 \lst@definelanguage[LaTeX]{TeX}[common]{TeX}%
4979    {moretexcs={a,AA,aa,addcontentsline,addpenalty,addtocontents,%
```

```
4980    addtocounter,addtolength,addtoversion,addvspace,alph,Alph,and,%
4981    arabic,array,arraycolsep,arrayrulewidth,arraystretch,author,%
4982    baselinestretch,begin,bezier,bfseries,bibcite,bibdata,bibitem,%
4983    bibliography,bibliographystyle,bibstyle,bigskip,boldmath,%
4984    botfigrule,bottomfraction,Box,caption,center,CheckCommand,circle,%
4985    citation,cite,cleardoublepage,clearpage,cline,columnsep,%
4986    columnseprule,columnwidth,contentsline,dashbox,date,dblfigrule,%
4987    dblfloatpagefraction,dblfloatsep,dbltextfloatsep,dbltopfraction,%
4988    defaultscriptratio,defaultscriptscriptratio,depth,Diamond,%
4989    displaymath,document,documentclass,documentstyle,doublerulesep,%
4990    em,emph,endarray,endcenter,enddisplaymath,enddocument,%
4991    endenumerate,endeqnarray,endequation,endflushleft,endflushright,%
4992    enditemize,endlist,endlrbox,endmath,endminipage,endpicture,%
4993    endsloppypar,endtabbing,endtabular,endtrivlist,endverbatim,%
4994    enlargethispage,ensuremath,enumerate,eqnarray,equation,%
4995    evensidemargin,extracolsep,fbox,fboxrule,fboxsep,filecontents,%
4996    fill,floatpagefraction,floatsep,flushbottom,flushleft,flushright,%
4997    fnsymbol,fontencoding,fontfamily,fontseries,fontshape,fontsize,%
4998    fontsubfuzz,footnotemark,footnotesep,footnotetext,footskip,frac,%
4999    frame,framebox,fussy,glossary,headheight,headsep,height,hline,%
5000    hspace,I,include,includeonly,index,inputlineno,intextsep,%
5001    itemindent,itemize,itemsep,iterate,itshape,Join,kill,label,%
5002    labelsep,labelwidth,LaTeX,LaTeXe,leadsto,lefteqn,leftmargin,%
5003    leftmargini,leftmarginii,leftmarginiii,leftmarginiv,leftmarginv,%
5004    leftmarginvi,leftmark,lhd,lim,linebreak,linespread,linethickness,%
5005    linewidth,list,listfiles,listfiles,listparindent,lrbox,%
5006    makeatletter,makeatother,makebox,makeglossary,makeindex,%
5007    makelabel,MakeLowercase,MakeUppercase,marginpar,marginparpush,%
5008    marginparsep,marginparwidth,markboth,markright,math,mathbf,%
5009    mathellipsis,mathgroup,mathit,mathrm,mathsf,mathsterling,mathtt,%
5010    mathunderscore,mathversion,mbox,mdseries,mho,minipage,%
5011    multicolumn,multiput,NeedsTeXFormat,newcommand,newcounter,%
5012    newenvironment,newfont,newhelp,newlabel,newlength,newline,%
5013    newmathalphabet,newpage,newsavebox,newtheorem,nobreakspace,%
5014    nobreakspace,nocite,nocorr,nocorrlist,nofiles,nolinebreak,%
5015    nonumber,nopagebreak,normalcolor,normalfont,normalmarginpar,%
5016    numberline,obeycr,oddsidemargin,oldstylenums,onecolumn,oval,%
5017    pagebreak,pagenumbering,pageref,pagestyle,paperheight,paperwidth,%
5018    paragraphmark,parbox,parsep,partopsep,picture,poptabs,pounds,%
5019    protect,pushtabs,put,qbezier,qbeziermax,r,raggedleft,raisebox,%
5020    ref,refstepcounter,renewcommand,renewenvironment,restorecr,%
5021    reversemarginpar,rhd,rightmargin,rightmark,rmfamily,roman,Roman,%
5022    rootbox,rule,samepage,sbox,scshape,secdef,section,sectionmark,%
5023    selectfont,setcounter,settodepth,settoheight,settowidth,sffamily,%
5024    shortstack,showoutput,showoverfull,sloppy,sloppypar,slshape,%
5025    smallskip,sqsubset,sqsupset,SS,stackrel,stepcounter,stop,stretch,%
5026    subparagraphmark,subsectionmark,subsubsectionmark,sum,%
5027    suppressfloats,symbol,tabbing,tabbingsep,tabcolsep,tabular,%
5028    tabularnewline,textasciicircum,textasciitilde,textbackslash,%
5029    textbar,textbf,textbraceleft,textbraceright,textbullet,%
```

```
5030        textcircled,textcompwordmark,textdagger,textdaggerdbl,textdollar,%
5031        textellipsis,textemdash,textendash,textexclamdown,textfloatsep,%
5032        textfraction,textgreater,textheight,textit,textless,textmd,%
5033        textnormal,textparagraph,textperiodcentered,textquestiondown,%
5034        textquotedblleft,textquotedblright,textquoteleft,textquoteright,%
5035        textregistered,textrm,textsc,textsection,textsf,textsl,%
5036        textsterling,textsuperscript,texttrademark,texttt,textunderscore,%
5037        textup,textvisiblespace,textwidth,thanks,thefootnote,thempfn,%
5038        thempfn,thempfootnote,thepage,thepage,thicklines,thinlines,%
5039        thispagestyle,title,today,topfigrule,topfraction,topmargin,%
5040        topsep,totalheight,tracingfonts,trivlist,ttfamily,twocolumn,%
5041        typein,typeout,unboldmath,unitlength,unlhd,unrhd,upshape,usebox,%
5042        usecounter,usefont,usepackage,value,vector,verb,verbatim,vline,%
5043        vspace,width,%
5044        normalsize,small,footnotesize,scriptsize,tiny,large,Large,LARGE,%
5045        huge,Huge}%
5046    }%
5047 \lst@definelanguage[plain]{TeX}[common]{TeX}%
5048    {moretexcs={advancepageno,beginsection,bf,bffam,bye,cal,cleartabs,%
5049        columns,dosupereject,endinsert,eqalign,eqalignno,fiverm,fivebf,%
5050        fivei,fivesy,folio,footline,hang,headline,it,itemitem,itfam,%
5051        leqalignno,magnification,makefootline,makeheadline,midinsert,mit,%
5052        mscount,nopagenumbers,normalbottom,of,oldstyle,pagebody,%
5053        pagecontents,pageinsert,pageno,plainoutput,preloaded,proclaim,rm,%
5054        settabs,sevenbf,seveni,sevensy,sevenrm,sl,slfam,supereject,%
5055        tabalign,tabs,tabsdone,tabsyet,tenbf,tenex,teni,tenit,tenrm,%
5056        tensl,tensy,tentt,textindent,topglue,topins,topinsert,tt,ttfam,%
5057        ttraggedright,vfootnote}%
5058    }%
```

The following language is only a helper.

```
5059 \lst@definelanguage[common]{TeX}[primitive]{TeX}
5060    {moretexcs={active,acute,ae,AE,aleph,allocationnumber,allowbreak,%
5061        alpha,amalg,angle,approx,arccos,arcsin,arctan,arg,arrowvert,%
5062        Arrowvert,ast,asymp,b,backslash,bar,beta,bgroup,big,Big,bigbreak,%
5063        bigcap,bigcirc,bigcup,bigg,Bigg,biggl,Biggl,biggm,Biggm,biggr,%
5064        Biggr,bigl,Bigl,bigm,Bigm,bigodot,bigoplus,bigotimes,bigr,Bigr,%
5065        bigskip,bigskipamount,bigsqcup,bigtriangledown,bigtriangleup,%
5066        biguplus,bigvee,bigwedge,bmod,bordermatrix,bot,bowtie,brace,%
5067        braceld,bracelu,bracerd,braceru,bracevert,brack,break,breve,%
5068        buildrel,bullet,c,cap,cases,cdot,cdotp,cdots,centering,%
5069        centerline,check,chi,choose,circ,clubsuit,colon,cong,coprod,%
5070        copyright,cos,cosh,cot,coth,csc,cup,d,dag,dagger,dashv,ddag,%
5071        ddagger,ddot,ddots,deg,delta,Delta,det,diamond,diamondsuit,dim,%
5072        displaylines,div,do,dospecials,dot,doteq,dotfill,dots,downarrow,%
5073        Downarrow,downbracefill,egroup,eject,ell,empty,emptyset,endgraf,%
5074        endline,enskip,enspace,epsilon,equiv,eta,exists,exp,filbreak,%
5075        flat,fmtname,fmtversion,footins,footnote,footnoterule,forall,%
5076        frenchspacing,frown,gamma,Gamma,gcd,ge,geq,gets,gg,goodbreak,%
5077        grave,H,hat,hbar,heartsuit,hglue,hideskip,hidewidth,hom,%
```

```
5078        hookleftarrow,hookrightarrow,hphantom,hrulefill,i,ialign,iff,Im,%
5079        imath,in,inf,infty,int,interdisplaylinepenalty,%
5080        interfootnotelinepenalty,intop,iota,item,j,jmath,joinrel,jot,%
5081        kappa,ker,l,L,lambda,Lambda,land,langle,lbrace,lbrack,lceil,%
5082        ldotp,ldots,le,leavevmode,leftarrow,Leftarrow,leftarrowfill,%
5083        leftharpoondown,leftharpoonup,leftline,leftrightarrow,%
5084        Leftrightarrow,leq,lfloor,lg,lgroup,lhook,lim,liminf,limsup,line,%
5085        ll,llap,lmoustache,ln,lnot,log,longleftarrow,Longleftarrow,%
5086        longleftrightarrow,Longleftrightarrow,longmapsto,longrightarrow,%
5087        Longrightarrow,loop,lor,lq,magstep,magstep,magstephalf,mapsto,%
5088        mapstochar,mathhexbox,mathpalette,mathstrut,matrix,max,maxdimen,%
5089        medbreak,medskip,medskipamount,mid,min,models,mp,mu,multispan,%
5090        nabla,narrower,natural,ne,nearrow,neg,negthinspace,neq,newbox,%
5091        newcount,newdimen,newfam,newif,newinsert,newlanguage,newmuskip,%
5092        newread,newskip,newtoks,newwrite,next,ni,nobreak,nointerlineskip,%
5093        nonfrenchspacing,normalbaselines,normalbaselineskip,%
5094        normallineskip,normallineskiplimit,not,notin,nu,null,nwarrow,o,O,%
5095        oalign,obeylines,obeyspaces,odot,oe,OE,offinterlineskip,oint,%
5096        ointop,omega,Omega,ominus,ooalign,openup,oplus,oslash,otimes,%
5097        overbrace,overleftarrow,overrightarrow,owns,P,parallel,partial,%
5098        perp,phantom,phi,Phi,pi,Pi,pm,pmatrix,pmod,Pr,prec,preceq,prime,%
5099        prod,propto,psi,Psi,qquad,quad,raggedbottom,raggedright,rangle,%
5100        rbrace,rbrack,rceil,Re,relbar,Relbar,removelastskip,repeat,%
5101        rfloor,rgroup,rho,rhook,rightarrow,Rightarrow,rightarrowfill,%
5102        rightharpoondown,rightharpoonup,rightleftharpoons,rightline,rlap,%
5103        rmoustache,root,rq,S,sb,searrow,sec,setminus,sharp,showhyphens,%
5104        sigma,Sigma,sim,simeq,sin,sinh,skew,slash,smallbreak,smallint,%
5105        smallskip,smallskipamount,smash,smile,sp,space,spadesuit,sqcap,%
5106        sqcup,sqrt,sqsubseteq,sqsupseteq,ss,star,strut,strutbox,subset,%
5107        subseteq,succ,succeq,sum,sup,supset,supseteq,surd,swarrow,t,tan,%
5108        tanh,tau,TeX,theta,Theta,thinspace,tilde,times,to,top,tracingall,%
5109        triangle,triangleleft,triangleright,u,underbar,underbrace,%
5110        uparrow,Uparrow,upbracefill,updownarrow,Updownarrow,uplus,%
5111        upsilon,Upsilon,v,varepsilon,varphi,varpi,varrho,varsigma,%
5112        vartheta,vdash,vdots,vec,vee,vert,Vert,vglue,vphantom,wedge,%
5113        widehat,widetilde,wlog,wp,wr,xi,Xi,zeta}}%
5114    }%
```

Herbert Voss pointed to a typo: the TeX primitive is `lineskiplimit` instead of `lineskiplimits`.

```
5115 \lst@definelanguage[primitive]{TeX}%
5116    {moretexcs={above,abovedisplayshortskip,abovedisplayskip,aftergroup,%
5117        abovewithdelims,accent,adjdemerits,advance,afterassignment,atop,%
5118        atopwithdelims,badness,baselineskip,batchmode,begingroup,%
5119        belowdisplayshortskip,belowdisplayskip,binoppenalty,botmark,box,%
5120        boxmaxdepth,brokenpenalty,catcode,char,chardef,cleaders,closein,%
5121        closeout,clubpenalty,copy,count,countdef,cr,crcr,csname,day,%
5122        deadcycles,def,defaulthyphenchar,defaultskewchar,delcode,%
5123        delimiter,delimiterfactor,delimitershortfall,dimen,dimendef,%
5124        discretionary,displayindent,displaylimits,displaystyle,%
```

```
5125        displaywidowpenalty,displaywidth,divide,doublehyphendemerits,dp,%
5126        edef,else,emergencystretch,end,endcsname,endgroup,endinput,%
5127        endlinechar,eqno,errhelp,errmessage,errorcontextlines,%
5128        errorstopmode,escapechar,everycr,everydisplay,everyhbox,everyjob,%
5129        everymath,everypar,everyvbox,exhyphenpenalty,expandafter,fam,fi,%
5130        finalhypendemerits,firstmark,floatingpenalty,font,fontdimen,%
5131        fontname,futurelet,gdef,global,globaldefs,halign,hangafter,%
5132        hangindent,hbadness,hbox,hfil,hfill,hfilneg,hfuzz,hoffset,%
5133        holdinginserts,hrule,hsize,hskip,hss,ht,hyphenation,hyphenchar,%
5134        hyphenpenalty,if,ifcase,ifcat,ifdim,ifeof,iffalse,ifhbox,ifhmode,%
5135        ifinner,ifmmode,ifnum,ifodd,iftrue,ifvbox,ifvmode,ifvoid,ifx,%
5136        ignorespaces,immediate,indent,input,insert,insertpenalties,%
5137        interlinepenalty,jobname,kern,language,lastbox,lastkern,%
5138        lastpenalty,lastskip,lccode,leaders,left,lefthyphenmin,leftskip,%
5139        leqno,let,limits,linepenalty,lineskip,lineskiplimit,long,%
5140        looseness,lower,lowercase,mag,mark,mathaccent,mathbin,mathchar,%
5141        mathchardef,mathchoice,mathclose,mathcode,mathinner,mathop,%
5142        mathopen,mathord,mathpunct,mathrel,mathsurround,maxdeadcycles,%
5143        maxdepth,meaning,medmuskip,message,mkern,month,moveleft,%
5144        moveright,mskip,multiply,muskip,muskipdef,newlinechar,noalign,%
5145        noboundary,noexpand,noindent,nolimits,nonscript,nonstopmode,%
5146        nulldelimiterspace,nullfont,number,omit,openin,openout,or,outer,%
5147        output,outputpenalty,over,overfullrule,overline,overwithdelims,%
5148        pagedepth,pagefilllstretch,pagefillstretch,pagefilstretch,%
5149        pagegoal,pageshrink,pagestretch,pagetotal,par,parfillskip,%
5150        parindent,parshape,parskip,patterns,pausing,penalty,%
5151        postdisplaypenalty,predisplaypenalty,predisplaysize,pretolerance,%
5152        prevdepth,prevgraf,radical,raise,read,relax,relpenalty,right,%
5153        righthyphenmin,rightskip,romannumeral,scriptfont,%
5154        scriptscriptfont,scriptscriptstyle,scriptspace,scriptstyle,%
5155        scrollmode,setbox,setlanguage,sfcode,shipout,show,showbox,%
5156        showboxbreadth,showboxdepth,showlists,showthe,skewchar,skip,%
5157        skipdef,spacefactor,spaceskip,span,special,splitbotmark,%
5158        splitfirstmark,splitmaxdepth,splittopskip,string,tabskip,%
5159        textfont,textstyle,the,thickmuskip,thinmuskip,time,toks,toksdef,%
5160        tolerance,topmark,topskip,tracingcommands,tracinglostchars,%
5161        tracingmacros,tracingonline,tracingoutput,tracingpages,%
5162        tracingparagraphs,tracingrestores,tracingstats,uccode,uchyph,%
5163        underline,unhbox,unhcopy,unkern,unpenalty,unskip,unvbox,unvcopy,%
5164        uppercase,vadjust,valign,vbadness,vbox,vcenter,vfil,vfill,%
5165        vfilneg,vfuzz,voffset,vrule,vsize,vskip,vsplit,vss,vtop,wd,%
5166        widowpenalty,write,xdef,xleaders,xspaceskip,year},%
5167    sensitive,%
5168    alsoother={0123456789$_},%$ to make Emacs fontlocking happy
5169    morecomment=[l]\%%
5170  }[keywords,tex,comments]%

5171 ⟨/lang3⟩
```

2.78 VBScript

Sonja WeidmannVBScript sent me this language definition.

```
5172 ⟨*lang2⟩

5173 %%
5174 %% VBScript definition (c) 2000 Sonja Weidmann
5175 %%
5176 \lst@definelanguage{VBScript}%
5177   {morekeywords={Call,Case,Const,Dim,Do,Each,Else,End,Erase,Error,Exit,%
5178       Explicit,For,Function,If,Loop,Next,On,Option,Private,Public,%
5179       Randomize,ReDim,Rem,Select,Set,Sub,Then,Wend,While,Abs,Array,Asc,%
5180       Atn,CBool,CByte,CCur,CDate,CDbl,Chr,CInt,CLng,Cos,CreateObject,%
5181       CSng,CStr,Date,DateAdd,DateDiff,DatePart,DateSerial,DateValue,%
5182       Day,Exp,Filter,Fix,FormatCurrency,FormatDateTime,FormatNumber,%
5183       FormatPercent,GetObject,Hex,Hour,InputBox,InStr,InStrRev,Int,%
5184       IsArray,IsDate,IsEmpty,IsNull,IsNumeric,IsObject,Join,LBound,%
5185       LCase,Left,Len,LoadPicture,Log,LTrim,Mid,Minute,Month,MonthName,%
5186       MsgBox,Now,Oct,Replace,RGB,Right,Rnd,Round,RTrim,ScriptEngine,%
5187       ScriptEngineBuildVersion,ScriptEngineMajorVersion,%
5188       ScriptEngineMinorVersion,Second,Sgn,Sin,Space,Split,Sqr,StrComp,%
5189       StrReverse,String,Tan,Time,TimeSerial,TimeValue,Trim,TypeName,%
5190       UBound,UCase,VarType,Weekday,WeekdayName,Year, And,Eqv,Imp,Is,%
5191       Mod,Not,Or,Xor,Add,BuildPath,Clear,Close,Copy,CopyFile,%
5192       CopyFolder,CreateFolder,CreateTextFile,Delete,DeleteFile,%
5193       DeleteFolder,Dictionary,Drive,DriveExists,Drives,Err,Exists,File,%
5194       FileExists,FileSystemObject,Files,Folder,FolderExists,Folders,%
5195       GetAbsolutePathName,GetBaseName,GetDrive,GetDriveName,%
5196       GetExtensionName,GetFile,GetFileName,GetFolder,%
5197       GetParentFolderName,GetSpecialFolder,GetTempName,Items,Keys,Move,%
5198       MoveFile,MoveFolder,OpenAsTextStream,OpenTextFile,Raise,Read,%
5199       ReadAll,ReadLine,Remove,RemoveAll,Skip,SkipLine,TextStream,Write,%
5200       WriteBlankLines,WriteLine,Alias,Archive,CDROM,Compressed,%
5201       Directory,Fixed,ForAppending,ForReading,ForWriting,Hidden,Normal,%
5202       RAMDisk,ReadOnly,Remote,Removable,System,SystemFolder,%
5203       TemporaryFolder,TristateFalse,TristateTrue,TristateUseDefault,%
5204       Unknown,Volume,WindowsFolder,vbAbortRetryIgnore,%
5205       vbApplicationModal,vbArray,vbBinaryCompare,vbBlack,vbBlue,%
5206       vbBoolean,vbByte,vbCr,vbCrLf,vbCritical,vbCurrency,vbCyan,%
5207       vbDataObject,vbDate,vbDecimal,vbDefaultButton1,vbDefaultButton2,%
5208       vbDefaultButton3,vbDefaultButton4,vbDouble,vbEmpty,vbError,%
5209       vbExclamation,vbFirstFourDays,vbFirstFullWeek,vbFirstJan1,%
5210       vbFormFeed,vbFriday,vbGeneralDate,vbGreen,vbInformation,%
5211       vbInteger,vbLf,vbLong,vbLongDate,vbLongTime,vbMagenta,vbMonday,%
5212       vbNewLine,vbNull,vbNullChar,vbNullString,vbOKC,ancel,vbOKOnly,%
5213       vbObject,vbObjectError,vbQuestion,vbRed,vbRetryCancel,vbSaturday,%
5214       vbShortDate,vbShortTime,vbSingle,vbString,vbSunday,vbSystemModal,%
5215       vbTab,vbTextCompare,vbThursday,vbTuesday,vbUseSystem,%
5216       vbUseSystemDayOfWeek,vbVariant,vbVerticalTab,vbWednesday,vbWhite,%
5217       vbYellow,vbYesNo,vbYesNoCancel},%
```

```
5218    sensitive=f,%
5219    morecomment=[l]',%
5220    morestring=[d]"%
5221    }[keywords,comments,strings]%
```

5222 ⟨/lang2⟩

2.79   Verilog

Thanks to Cameron H. G. Wright for providing the definition. After a bug report by George M. Georgiou I changed the declaration of directives to use normal keywords.

5223 ⟨∗lang3⟩

```
5224 %%
5225 %% Verilog definition (c) 2003 Cameron H. G. Wright <c.h.g.wright@ieee.org>
5226 %%    Based on the IEEE 1364-2001 Verilog HDL standard
5227 %%    Ref: S. Palnitkar, "Verilog HDL: A Guide to Digital Design and Synthesis,"
5228 %%        Prentice Hall, 2003. ISBN: 0-13-044911-3
5229 %%
5230 \lst@definelanguage{Verilog}%
5231    {morekeywords={% reserved keywords
5232        always,and,assign,automatic,begin,buf,bufif0,bufif1,case,casex,%
5233        casez,cell,cmos,config,deassign,default,defparam,design,disable,%
5234        edge,else,end,endcase,endconfig,endfunction,endgenerate,%
5235        endmodule,endprimitive,endspecify,endtable,endtask,event,for,%
5236        force,forever,fork,function,generate,genvar,highz0,highz1,if,%
5237        ifnone,incdir,include,initial,inout,input,instance,integer,join,%
5238        large,liblist,library,localparam,macromodule,medium,module,nand,%
5239        negedge,nmos,nor,noshowcancelled,not,notif0,notif1,or,output,%
5240        parameter,pmos,posedge,primitive,pull0,pull1,pulldown,pullup,%
5241        pulsestyle_onevent,pulsestyle_ondetect,rcmos,real,realtime,reg,%
5242        release,repeat,rnmos,rpmos,rtran,rtranif0,rtranif1,scalared,%
5243        showcancelled,signed,small,specify,specparam,strong0,strong1,%
5244        supply0,supply1,table,task,time,tran,tranif0,tranif1,tri,tri0,%
5245        tri1,triand,trior,trireg,unsigned,use,vectored,wait,wand,weak0,%
5246        weak1,while,wire,wor,xnor,xor},%
5247    morekeywords=[2]{% system tasks and functions
5248        $bitstoreal,$countdrivers,$display,$fclose,$fdisplay,$fmonitor,%
5249        $fopen,$fstrobe,$fwrite,$finish,$getpattern,$history,$incsave,%
5250        $input,$itor,$key,$list,$log,$monitor,$monitoroff,$monitoron,%
5251        $nokey},%
5252    morekeywords=[3]{% compiler directives
5253        `accelerate,`autoexpand_vectornets,`celldefine,`default_nettype,%
5254        `define,`else,`elsif,`endcelldefine,`endif,`endprotect,%
5255        `endprotected,`expand_vectornets,`ifdef,`ifndef,`include,%
5256        `no_accelerate,`noexpand_vectornets,`noremove_gatenames,%
5257        `nounconnected_drive,`protect,`protected,`remove_gatenames,%
5258        `remove_netnames,`resetall,`timescale,`unconnected_drive},%
5259    alsoletter=\`,%
```

```
5260    sensitive,%
5261    morecomment=[s]{/*}{*/},%
5262    morecomment=[l]//,% nonstandard
5263    morestring=[b]"%
5264   }[keywords,comments,strings]%
```

5265 ⟨/lang3⟩

2.80 VHDL

This language is due to Kai WollenweberVHDL. I've done conversion to version 0.19 only. Gaurav Aggarwal reported that VHDL is case insensitive and Arnaud Tisseranddded three keywords.

5266 ⟨*lang1⟩

```
5267 %%
5268 %% VHDL definition (c) 1997 Kai Wollenweber
5269 %%
5270 \lst@definelanguage{VHDL}%
5271    {morekeywords={ALL,ARCHITECTURE,ABS,AND,ASSERT,ARRAY,AFTER,ALIAS,%
5272        ACCESS,ATTRIBUTE,BEGIN,BODY,BUS,BLOCK,BUFFER,CONSTANT,CASE,%
5273        COMPONENT,CONFIGURATION,DOWNTO,ELSE,ELSIF,END,ENTITY,EXIT,%
5274        FUNCTION,FOR,FILE,GENERIC,GENERATE,GUARDED,GROUP,IF,IN,INOUT,IS,%
5275        INERTIAL,IMPURE,LIBRARY,LOOP,LABEL,LITERAL,LINKAGE,MAP,MOD,NOT,%
5276        NOR,NAND,NULL,NEXT,NEW,OUT,OF,OR,OTHERS,ON,OPEN,PROCESS,PORT,%
5277        PACKAGE,PURE,PROCEDURE,POSTPONED,RANGE,REM,ROL,ROR,REPORT,RECORD,%
5278        RETURN,REGISTER,REJECT,SIGNAL,SUBTYPE,SLL,SRL,SLA,SRA,SEVERITY,%
5279        SELECT,THEN,TYPE,TRANSPORT,TO,USE,UNITS,UNTIL,VARIABLE,WHEN,WAIT,%
5280        WHILE,XOR,XNOR,%
5281        DISCONNECT,ELIF,WITH},% Arnaud Tisserand
5282    sensitive=f,% 1998 Gaurav Aggarwal
5283    morecomment=[l]--,%
5284    morestring=[d]{"}%
5285   }[keywords,comments,strings]%
```

The VHDL-AMS dialect has been added by Steffen Klupsch.

```
5286 %%
5287 %% VHDL-AMS definition (c) Steffen Klupsch
5288 %%
5289 \lst@definelanguage[AMS]{VHDL}[]{VHDL}%
5290   {morekeywords={ACROSS,ARRAY,BREAK,DISCONNECT,NATURE,NOISE,PORT,%
5291        PROCEDURAL,QUANTITY,SHARED,SPECTRUM,SUBNATURE,TERMINAL,THROUGH,%
5292        TOLERANCE,UNAFFACTED,UNITS}}
```

5293 ⟨/lang1⟩

2.81 VRML

This language is due to Oliver Baum VRML.

5294 ⟨*lang2⟩

```
5295 %%
5296 %% VRML definition (c) 2001 Oliver Baum
5297 %%
5298 \lst@definelanguage[97]{VRML}
5299   {morekeywords={DEF,EXTERNPROTO,FALSE,IS,NULL,PROTO,ROUTE,TO,TRUE,USE,%
5300       eventIn,eventOut,exposedField,field,Introduction,Anchor,%
5301       Appearance,AudioClip,Background,Billboard,Box,Collision,Color,%
5302       ColorInterpolator,Cone,Coordinate,CoordinateInterpolator,%
5303       Cylinder,CylinderSensor,DirectionalLight,ElevationGrid,Extrusion,%
5304       Fog,FontStyle,Group,ImageTexture,IndexedFaceSet,IndexedLineSet,%
5305       Inline,LOD,Material,MovieTexture,NavigationInfo,Normal,%
5306       NormalInterpolator,OrientationInterpolator,PixelTexture,%
5307       PlaneSensor,PointLight,PointSet,PositionInterpolator,%
5308       ProximitySensor,ScalarInterpolator,Script,Shape,Sound,Sphere,%
5309       SphereSensor,SpotLight,Switch,Text,TextureCoordinate,%
5310       TextureTransform,TimeSensor,TouchSensor,Transform,Viewpoint,%
5311       VisibilitySensor,WorldInfo},%
5312    morecomment=[l]\#,% bug: starts comment in the first column
5313    morestring=[b]"%
5314   }[keywords,comments,strings]

5315 ⟨/lang2⟩
```

2.82 XML et al

Bernhard Walle provided the following two definitions.

```
5316 ⟨∗lang1⟩

5317 \lst@definelanguage{XSLT}[]{XML}%
5318   {morekeywords={%
5319       % main elements
5320       xsl:stylesheet,xsl:transform,%
5321       % childs of the main element
5322       xsl:apply-imports,xsl:attribute-set,xsl:decimal-format,xsl:import,%
5323       xsl:include,xsl:key,xsl:namespace-alias,xsl:output,xsl:param,%
5324       xsl:preserve-space,xsl:strip-space,xsl:template,xsl:variable,%
5325       % 21 directives
5326       xsl:apply-imports,xsl:apply-templates,xsl:attribute,%
5327       xsl:call-template,xsl:choose,xsl:comment,xsl:copy,xsl:copy-of,%
5328       xsl:element,xsl:fallback,xsl:for-each,xsl:if,xsl:message,%
5329       xsl:number,xsl:otherwise,xsl:processing-instruction,xsl:text,%
5330       xsl:value-of,xsl:variable,xsl:when,xsl:with-param},%
5331    alsodigit={-},%
5332   }%

5333 \lst@definelanguage{Ant}[]{XML}%
5334   {morekeywords={%
5335       project,target,patternset,include,exclude,excludesfile,includesfile,filterset,%
5336       filter,filtersfile,libfileset,custom,classpath,fileset,none,depend,mapper,%
5337       filename,not,date,contains,selector,depth,or,and,present,majority,size,dirset,%
5338       filelist,pathelement,path,param,filterreader,extension,filterchain,linecontainsregexp,%
```

```
5339    regexp,classconstants,headfilter,tabstospaces,striplinebreaks,tailfilter,stripjavacomments
5340    expandproperties,linecontains,replacetokens,token,striplinecomments,comment,prefixlines,%
5341    classfileset,rootfileset,root,description,xmlcatalog,entity,dtd,substitution,%
5342    extensionSet,propertyfile,entry,vsscheckin,sql,transaction,cvspass,csc,%
5343    dirname,wlrun,wlclasspath,p4label,replaceregexp,get,jjtree,sleep,jarlib,%
5344    dependset,targetfileset,srcfileset,srcfilelist,targetfilelist,zip,zipgroupfileset,zipfiles
5345    patch,jspc,webapp,style,test,arg,jvmarg,sysproperty,testlet,env,tstamp,%
5346    format,unwar,vsshistory,icontract,cvschangelog,user,p4submit,ccmcheckin,%
5347    p4change,bzip2,vssadd,javadoc,bottom,source,doctitle,header,excludepackage,bootclasspath,%
5348    doclet,taglet,packageset,sourcepath,link,footer,package,group,title,tag,%
5349    translate,signjar,vajload,vajproject,jarlib,extensionset,WsdlToDotnet,buildnumber,%
5350    jpcovmerge,tomcat,ejbjar,weblogictoplink,jboss,borland,weblogic,iplanet,jonas,%
5351    support,websphere,wasclasspath,war,manifest,attribute,section,metainf,lib,%
5352    classes,webinf,rename,sequential,serverdeploy,generic,property,move,%
5353    copydir,ccconcheckin,wljspc,fixcrlf,sosget,pathconvert,map,record,p4sync,exec,%
5354    p4edit,maudit,rulespath,searchpath,antlr,netrexxc,jpcovreport,reference,filters,%
5355    coveragepath,execon,targetfile,srcfile,ccmcheckout,ant,xmlvalidate,xslt,%
5356    iplanet,ccmcheckintask,gzip,native2ascii,starteam,ear,archives,input,%
5357    rmic,extdirs,compilerarg,checksum,mail,bcc,message,cc,to,from,loadfile,vsscheckout,%
5358    stylebook,soscheckin,mimemail,stlabel,gunzip,concat,cab,touch,parallel,splash,%
5359    antcall,ccconcheckout,typedef,p4have,xmlproperty,copy,tomcat,antstructure,ccmcreatetask,%
5360    rpm,delete,replace,replacefilter,replacetoken,replacevalue,mmetrics,waitfor,isfalse,%
5361    equals,available,filepath,os,filesmatch,istrue,isset,socket,http,uptodate,srcfiles,%
5362    untar,loadproperties,echoproperties,vajexport,stcheckout,bunzip2,copyfile,vsscreate,%
5363    ejbc,unjar,tomcat,wsdltodotnet,mkdir,condition,cvs,commandline,marker,argument,%
5364    tempfile,junitreport,report,taskdef,echo,ccupdate,java,renameext,vsslabel,basename,%
5365    javadoc2,vsscp,tar,tarfileset,tomcat,vajimport,setproxy,wlstop,p4counter,ilasm,%
5366    soscheckout,apply,ccuncheckout,jarlib,location,url,cvstagdiff,jlink,mergefiles,%
5367    addfiles,javacc,pvcs,pvcsproject,jarlib,options,depends,chmod,jar,sound,fail,%
5368    success,mparse,blgenclient,genkey,dname,javah,class,ccmreconfigure,unzip,javac,%
5369    src,p4add,soslabel,jpcoverage,triggers,method,vssget,deltree,ddcreator},
5370  deletekeywords={default},%
5371  }
5372 ⟨/lang1⟩
```

This is my first attempt to support XML. It is from 2000/07/18.

```
5373 ⟨∗lang1⟩
5374 \lst@definelanguage{XML}%
5375   {keywords={,CDATA,DOCTYPE,ATTLIST,termdef,ELEMENT,EMPTY,ANY,ID,%
5376      IDREF,IDREFS,ENTITY,ENTITIES,NMTOKEN,NMTOKENS,NOTATION,%
5377      INCLUDE,IGNORE,SYSTEM,PUBLIC,NDATA,PUBLIC,%
5378      PCDATA,REQUIRED,IMPLIED,FIXED,%%% preceded by #
5379      xml,xml:space,xml:lang,version,standalone,default,preserve},%
5380   alsoother=$,%
5381   alsoletter=:,%
5382   tag=**[s]<>,%
5383   morestring=[d]",% ??? doubled
5384   morestring=[d]',% ??? doubled
5385   MoreSelectCharTable=%
```

```
5386        \lst@CArgX--\relax\lst@DefDelimB{}{}%
5387            {\ifnum\lst@mode=\lst@tagmode\else
5388                \expandafter\@gobblethree
5389             \fi}%
5390            \lst@BeginComment\lst@commentmode{{\lst@commentstyle}}%
5391        \lst@CArgX--\relax\lst@DefDelimE{}{}{}%
5392            \lst@EndComment\lst@commentmode
5393        \lst@CArgX[CDATA[\relax\lst@CDef{}%
5394            {\ifnum\lst@mode=\lst@tagmode
5395                \expandafter\lst@BeginCDATA
5396             \else \expandafter\lst@CArgEmpty
5397             \fi}%
5398            \@empty
5399        \lst@CArgX]]\relax\lst@CDef{}%
5400            {\ifnum\lst@mode=\lst@GPmode
5401                \expandafter\lst@EndComment
5402             \else \expandafter\lst@CArgEmpty
5403             \fi}%
5404            \@empty
5405    }[keywords,comments,strings,html]%
```

And after receiving a bug report from Michael Niedermair I converted the version 0.21 contents of `MoreSelectCharTable` to version 1.0.

5406 ⟨/lang1⟩