

NAME

isanan – Is single-precision *x* a NaN?

SYNOPSIS

Fortran (77, 90, 95, HPF):

```
f77 [ flags ] file(s) ... -L/usr/local/lib -lgjl
```

LOGICAL FUNCTION isanan(x)

REAL *x*

C (K&R, 89, 99), C++ (98):

```
cc [ flags ] -I/usr/local/include file(s) ... -L/usr/local/lib -lgjl
```

Use

```
#include <gampsi.h>
```

to get this prototype:

```
fortran_logical isanan(const fortran_real * x_);
```

NB: The definition of C/C++ data types **fortran_***xxx*, and the mapping of Fortran external names to C/C++ external names, is handled by the C/C++ header file. That way, the same function or subroutine name can be used in C, C++, and Fortran code, independent of compiler conventions for mangling of external names in these programming languages.

Last code modification: 10-Jun-2000

DESCRIPTION

Return **.TRUE.** if *x* is a NaN, and **.FALSE.** otherwise.

This function should be implementable as a simple inline test for inequality of *x* with itself:

```
isanan = (x .ne. x)
```

in ALL compilers for ALL programming languages on ALL systems with IEEE 754 arithmetic.

Unfortunately, some compilers, even without optimization, incorrectly reduce this test to **.FALSE.** This happens with all optimization levels on SGI IRIX 6.x f77 and f90 compilers. Thus, we have to obfuscate the test by wrapping one operand in a function call. This successfully foiled the SGI compilers, without requiring disassembly and examination of the bit patterns of *x*.

SEE ALSO

anan(3), **dnan(3)**, **isdnan(3)**, **isqnan(3)**, **qnan(3)**.

AUTHORS

The algorithms and code are described in detail in the paper

Algorithm xxx: Quadruple-Precision Gamma(x) and psi(x) Functions for Real Arguments

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