

The New C Standard (Excerpted material)

An Economic and Cultural Commentary

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6.11.1 Floating types

floating types
future language
directions

Future standardization may include additional floating-point types, including those with greater range, precision, or both than **long double**.

extended
signed in-
teger types

Commentary

Unlike the integer types, the standard does not specify any mechanism for implementations to provide additional floating-point types.

C90

This future direction is new in C99.

C++

The C++ Standard specifies (Annex D) deprecated features. With one exception these all relate to constructs specific to C++.

D.5p2 *Each C header, whose name has the form `name.h`, behaves as if each name placed in the Standard library namespace by the corresponding `cname` header is also placed within the namespace scope of the namespace `std` and is followed by an explicit `using-declaration` (7.3.3)*

Common Implementations

While some processors support floating types having 128 bits value bits,^[1] support for 256 bits (known as *quad-double*) is currently only available in software.^[2]

Coding Guidelines

Some existing programs were broken by the introduction, in C99, of an integer type that was *bigger* than **long**. This situation occurred because of an assumption made by developers (and at times the C committee). The introduction of a floating-point type with greater range and precision than **long double** may cause existing programs to break for the same reason. However, it is not possible to estimate the costs and benefits of taking account of this possibility, when writing or modifying code, in guideline recommendations aimed at a wide audience. Developers are left to make their own cost/benefit analysis.

References

1. Hewlett-Packard. *PA-RISC 2.0*. Hewlett-Packard, 2.0 edition, 1995.
2. Y. Hida, X. S. Li, and D. H. Bailey. Quad-double arithmetic: Algorithms, implementation, and application. Technical Report LBNL-46996, Lawrence Berkeley National Laboratory, 2000.