

W614/11305-  
X3T11/93-052

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Re: ISO/IEC DIS 10967-1:1993  
Language Independent Arithmetic (LIA) --  
Part 1: Integer and floating point arithmetic.  
JTC1/SC22/WG11 N364R, August 4, 1993, version 4.1.

X3J11 (ANSI C) votes YES with comments.

Page 2, 1.2 Specifications not within the scope of this standard  
Consider adding two more data types after item e).

f) A so called "doubled precision" (sum of two regular floating-point numbers, each with fixed precision p) data type, or the operations on such data. This standard neither requires nor excludes such data or operations.

g) A logarithmic data type, or the operations on such data. This standard neither requires nor excludes such data or operations.

Page 10, 5.2 Floating point types.

Page 36, A.5.2 Floating point types.

Change "five parameters" to "five constant parameters".

We assume that the precision p, as well as the other four parameters, are constants.

Page 18, 5.2.9 Conformity to IEC 559.

Remove "extended comparisons," in the first NOTE as they are an optional feature of IEEE-754 so should not be mentioned here. Someone might believe that they are required and that languages supporting LIA and IEEE-754 will have to have all 26 comparison operators.

Page 19, 5.3 Conversion operations

For integer to integer conversion,  $cvtIa \rightarrow Ib$ , change "integer\_overflow if x not element Ib" to two cases similar to  $addI(x,y)$ . That is, have one case for the target type has modulo true and a second case for the target type has modulo false. Then the conversion of a signed int -1 to an unsigned int will be taken care of without integer overflow.

Page 19, 5.3 Conversion operations

Change "Let nearestx be a helper rounding function from R to X satisfying the round to nearest property." to "Let nearestx be a helper rounding function from R to X."

#### Page 20, 6 Notification

Consider adding a NOTE that LIA does not address client-server paradigms or programs that never terminate.

#### Page 63, Annex C

Change "This means that a complete programming language binding for LIA-1 should provide a binding for all IEC 559 facilities as well." to "This means that a complete programming language binding for LIA-1 should provide a binding for all required IEC 559 facilities as well."

#### Pages 63-64, C.1 Summary

Options f), g), and h) (optional in IEC 559) should be under a new phrase: "The binding should provide the notation for invoking each of the following operations:" and renumbered to a), b), and c).

#### Page 64, C.1 Summary

Options c) and d) (optional in IEC 559) should be under a new phrase: "The binding should provide the ability to read and write the following components of the floating point environment (modes or flags):" and renumbered to a) and b).

#### Page 66, E Bindings for specific languages

Change "A complete binding for the LIA-1 will include a binding for IEC 559." to "A complete binding for the LIA-1 should include a binding for IEC 559."

#### Page 75, E.4 C

Change the discussion on cast operators being used as conversion operators. Leave the existing C casts with their more general rounding requirements alone. Add new functions for conversions with round to nearest semantics.

#### Page 83, E.6 Fortran

In the NOTE, remove the "77" from "Fortran 77".

#### Page 97, H Bibliography

The following could be added:

Seppo Linnainmaa, Software for Doubled-Precision Floating-Point Computations, ACM Transactions on Mathematical Software, Vol. 7, No. 3, September 1981, Pages 272-283.

These are not IBM's views. This was prepared for X3J11 by:

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