

Proposal for C2Y WG14 N3646

Title: Clarification of range error condition for atan2
Author, affiliation: C FP group
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This proposal addresses an issue raised by Javier Múgica in an email message to CFP which says:

...

The atan2 functions [...]. A domain error may occur if both arguments are zero. A range error occurs if x is positive and nonzero y/x is too close to zero.

The last sentence reads, in English, "A range error occurs if (x is (positive and nonzero) y/x is too close to zero)."

and there seems to be a missing "and". But reading the analogous sentence for other functions, e.g., atan:

The atan functions compute the principal value of the arc tangent of x. A range error occurs if nonzero x is too close to zero.

one can guess the intended meaning. It should read:

A range error occurs if x is positive and if y/x is nonzero and too close to zero.

...

CFP agrees with this explanation. However, this rewording could reasonably be read as saying a range error occurs if x is positive and a range error occurs if y/x is nonzero and too close to zero.

The same issue occurs for the `atan2pi` functions.

Suggested Changes

In 7.12.5.4 (`atan2`) #2, change:

... A range error occurs if **both** x is positive and **also** nonzero y/x is too close to zero.

In 7.12.5.11 (`atan2pi`) #2, change:

... A range error occurs if **both** x is positive and **also** nonzero y/x is too close to zero.

