

Allow Duplicate Attributes

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Motivation

This paper is being submitted as a liaison activity from the WG21 Evolution Working Group. The issue was discussed in the C++ EWG and approved in July 2020, refer to (1). WG14 should align with this modification to maintain compatibility between C and C++.

There is an inconsistency in the language rules about duplicate attributes between attribute-list and attribute-specifier-sequence. Each of the standard attributes, deprecated, fallthrough, maybe_unused and nodiscard are described with the Constraint “it shall appear at most once in each attribute list”. However, a similar Constraint does not exist which prohibits the attribute from appearing in multiple attribute-specifiers. As stated in (1), *since intuitively these cases are equivalent, they should be treated the same*. In the current language definition, the motivation for allowing duplicate attributes across attribute-specifiers is because macro’s are often used to conditionally add attributes to an attribute-specifier-seq, this is why C++ chose to allow duplicates in attribute-list rather than prohibit duplicates across attribute-specifiers.

This paper proposes that the prohibition about duplicate entries in attribute lists be removed, this will provide a more consistent programming model for where duplicate attributes are permitted as well as realign the constraints for attributes between C and C++.

Proposed Wording

The wording proposed is a diff from WG14 N2478. Green text is new text, while red-text is deleted text.

6.7.11.2 The nodiscard attribute

P 1 Modify the second sentence: ~~It shall appear at most once in each attribute list and no~~ No attribute argument clause shall be present.

6.7.11.3 The maybe_unused attribute

P 1 Modify the second sentence: ~~It shall appear at most once in each attribute list and no~~ No attribute argument clause shall be present.

6.7.11.4 The deprecated attribute

P 1 Delete the second sentence: ~~It shall appear at most once in each attribute list.~~

6.7.11.5 The fallthrough attribute

P 1 Modify the second sentence: ~~The attribute token fallthrough shall appear at most once in each attribute list and no~~ No attribute argument clause shall be present

Acknowledgements

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References

- (1) <http://www.open-std.org/jtc1/sc22/wg21/docs/papers/2020/p2156r0.pdf>, P2156R0: Allow Duplicate Attributes