Blanket Wording for Specifying “Hidden Friends”

Abstract

[P1601R0] provided wording guidance for the specification of a hidden friend, a function or function template that is declared a friend of a class or class template such that only argument-dependent lookup can find its declaration. That guidance recommended that a carefully-worded Remarks: element become part of the specification of each hidden friend entity throughout the standard library “[u]nless made unnecessary by pre-existing blanket wording to the same effect.”

This paper proposes such blanket wording so that no individual Remarks: elements need be provided for the stated purpose.

A friend to all is a friend to none.
— ARISTOTLE

Friends are the siblings God never gave us.
— MENCIUS

1 Introduction

[P1601R0] provided wording guidance for the specification of a hidden friend, a function or function template that is declared a friend of a class or class template such that only argument-dependent lookup can find its declaration. That guidance recommended that a carefully-worded Remarks: element become part of the specification of each hidden friend entity throughout the standard library “[u]nless made unnecessary by pre-existing blanket wording to the same effect.”

This paper proposes such blanket wording so that no individual Remarks: elements need be provided for the stated purpose. If adopted, the proposed wording would resolve LWG issue 3239, Hidden friends should be specified more narrowly, thereby addressing NB comment DE165, Regular unqualified lookup of functions specified as friends.

2 Affected declarations

For reference, adoption of the blanket wording proposed below will impact friend declarations found in each of the following subclauses of [N4835]:
3 Proposed wording

3.1 Insert the following new subclause into clause [conforming], either between existing subclauses [member functions] and [constexpr.functions] or nearby at the discretion of the Project Editor:

16.5.5.\textit{n} Friend functions \textit{[hidden.friends]}

1 Whenever this document specifies a friend declaration of a function or function template within a class or class template definition, that declaration shall be the only declaration of that function or function template provided by an implementation. \textit{[Note: In particular, an implementation is not allowed to provide an additional declaration of that function or function template at namespace scope. —end note]} \textit{[Note: Such a friend function or function template declaration is known as a hidden friend, as it is visible neither to ordinary unqualified lookup ([basic.lookup.unqual]) nor to qualified lookup ([basic.lookup.qual]). —end note]}

4 Bibliography


5 Document history

<table>
<thead>
<tr>
<th>Rev.</th>
<th>Date</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>2019–11–06</td>
<td>• Published as P1965R0, post-Belfast mailing.</td>
</tr>
</tbody>
</table>

\footnote{Proposed additions are based on [N4835]. Editorial instructions and drafting notes look like this.}