Defaulted Functions

Further Reading

- For more information on defaulted functions in the context of move operations, see the "Everything You Ever Wanted to Know About Move Semantics" talks by Howard Hinnant, **hinnant14** and **hinnant16**.

Appendix

Implicit Generation of Special Member Functions

The rules a compiler uses to decide if a special member function should be generated implicitly are not entirely intuitive. Howard Hinnant, lead designer and author of the C++11 proposal for move semantics[5] (among other proposals), produced a tabular representation[6] of such rules in the situation where the user provides a single special member function and leaves the rest to the compiler. To understand Table 1, after picking a special member function in the first column, the corresponding row will show what is implicitly generated by the compiler.

Table 1: Implicit generation of special member functions

	Default Ctor	Destructor	Copy Ctor	Copy Assignment	Move Ctor	Move Assignment
Nothing	Defaulted	Defaulted	Defaulted	Defaulted	Defaulted	Defaulted
Any Ctor	Not Declared	Defaulted	Defaulted	Defaulted	Defaulted	Defaulted
Default Ctor	User Declared	Defaulted	Defaulted	Defaulted	Defaulted	Defaulted
Destructor	Defaulted	User Declared	Defaulted[a]	Defaulted[a]	Not Declared	Not Declared
Copy Ctor	Not Declared	Defaulted	User Declared	Defaulted[a]	Not Declared	Not Declared
Copy Assignment	Defaulted	Defaulted	Defaulted[a]	User Declared	Not Declared	Not Declared
Move Ctor	Not Declared	Defaulted	Deleted	Deleted	User Declared	Not Declared
Move Assignment	Defaulted	Defaulted	Deleted	Deleted	Not Declared	User Declared

[a] Deprecated behavior: compilers might warn upon reliance of this implicitly generated member function.

As an example, explicitly declaring a copy-assignment operator would result in the default constructor, destructor, and copy constructor being defaulted and in the move operations not being declared. If more than one `special member function` is user declared, regardless of whether or how it is implemented, the remaining generated member functions are

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[5] **hinnant02**
[6] **hinnant16**