

Integrating default member initialization with braced initialization

Another new feature for C++11 is *default member initializers* for data members in a class; see Section 2.1. “Default Member Init” on page 318. This new syntax supports both copy list initialization and direct list initialization. However, initialization with parentheses is not permitted in this context:

```

struct S
{
    int i = { 13 };

    S() { } // OK, i == 13.
    explicit S(int x) : i(x) { } // OK, i == x.
};

struct W
{
    S a{}; // OK, by default i == 13.
    S b{42}; // OK, by default i == 42.
    S c = {42}; // Error, constructor for S is explicit.
    S d = S{42}; // OK, direct initialization of temporary for initializer
    S e(42); // Error, fails to parse as a function declaration
    S f(); // OK, declares member function f
};

```

List initialization where the list itself is a single argument to a constructor

Another new form of initialization for C++11 is *list initialization* with a braced list of arguments to populate a container; see Section 2.1. “initializer_list” on page 553. If a braced list contains arguments that are all of the same type, then the compiler will look for a constructor taking an argument of type `std::initializer_list<T>`, where `T` is that common type. Similarly, if a braced list of values can be implicitly converted to a common type, then a constructor for an `std::initializer_list` of that type will be preferred. When initializing from a nonempty braced-initializer list, a matching initializer list constructor always wins overload resolution. However, *value* initializing from a pair of empty braces will prefer a default constructor:

```

#include <initializer_list> // std::initializer_list

struct S
{
    S() {}
    S(std::initializer_list<int>) {}
    S(int, int);
};

```