

Enumeration Scoping in C++ -- August 5, 2021

The Problem

I spent way too much time trying to figure out what was wrong with this code:

```
#include <iostream>

using namespace std;

enum enum_1 { ok, warning, error };

enum enum_2 { ok, warning, error };

int main() {
    enum_1 my_value1 = enum_1::ok;
    enum_2 my_value2 = enum_2::error;

    if (my_value1 == enum_1::ok) {
        cout << "my_value1 is OK!" << endl;
    } else {
        cout << "my_value1 is not OK!" << endl;
    }

    if (my_value2 == enum_2::ok) {
        cout << "my_value2 is OK!" << endl;
    } else {
        cout << "my_value2 is not OK!" << endl;
    }

    return (0);
}
```

Trying to build this code produces the following errors:

```
main.cpp:9:15: error: redefinition of enumerator 'ok'
enum enum_2 { ok, warning, error };
              ^
main.cpp:6:15: note: previous definition is here
enum enum_1 { ok, warning, error };
              ^
main.cpp:9:19: error: redefinition of enumerator 'warning'
enum enum_2 { ok, warning, error };
                  ^
main.cpp:6:19: note: previous definition is here
enum enum_1 { ok, warning, error };
                  ^
```

```
main.cpp:9:28: error: redefinition of enumerator 'error'
enum enum_2 { ok, warning, error };
                        ^
main.cpp:6:28: note: previous definition is here
enum enum_1 { ok, warning, error };
                        ^
main.cpp:13:30: error: no member named 'error' in 'enum_2'
enum_2 my_value2 = enum_2::error;
                        ~~~~~^
main.cpp:21:20: error: no member named 'ok' in 'enum_2'; did you mean simply
'ok'?
if (my_value2 == enum_2::ok) {
                        ^~~~~~
                        ok
main.cpp:6:15: note: 'ok' declared here
enum enum_1 { ok, warning, error };
                ^
```

A quick search of StackOverflow, and I learned that “old style” enumerations in C++ are unscoped. Since the individual members in enums are global, the member names have to be unique.

Solution 1 (C++11)

If your compiler supports the C++11 standard, the fix is easy. Just add “class” to your enum declarations:

```
#include <iostream>

using namespace std;

enum class enum_1 { ok, warning, error };

enum class enum_2 { ok, warning, error };

int main() {
    enum_1 my_value1 = enum_1::ok;
    enum_2 my_value2 = enum_2::error;

    if (my_value1 == enum_1::ok) {
        cout << "my_value1 is OK!" << endl;
    } else {
        cout << "my_value1 is not OK!" << endl;
    }

    if (my_value2 == enum_2::ok) {
        cout << "my_value2 is OK!" << endl;
    } else {
```

```
    cout << "my_value2 is not OK!" << endl;
}

return (0);
}
```

Solution 2

Alternatively, you can wrap your enums in namespaces:

```
namespace scope1 {
    enum enum_1 { ok, warning, error };
}

namespace scope2 {
    enum enum_2 { ok, warning, error };
}
```

Then, you can access the members as `scope1::enum_1::ok`, `scope2::enum_2::warning`, etc.

From:

<https://blog.devtoprd.com/> - **Jim's Blog**

Permanent link:

https://blog.devtoprd.com/doku.php?id=posts:2021:2021.08.05_-_enumeration_scoping_in_cpp&rev=1704155416

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