Example of Using C++ Classes

We will look at several examples showing different ways to organize C++ classes. The example we'll used is a class representing the time of day, which consists of a 24-hour clock with hours (0-23), minutes (0-59), and seconds (0-59).

Time Class Version 1

In the simplest implementation of the Time class, the code that specifies the class is located in the same file as the main function that uses the class.

File: TimeClass1.cpp

Time Class Version 2

The specification for the class has been separated from the implementation of the class. The specification, the implementation, and the main function are all still located in the same C++ source file.

File: TimeClass2.cpp

Time Class Version 3

The class specification and implementation have been moved to their own separate header file. The file containing the main function now must include the header file.

Files:

TimeClass3.h – The header file containing the class
TimeTester3.cpp – A tester program to test the Time class. Must include TimeClass3.h.

Time Class Version 4

The specification and implementation of the Time class are now in two separate files.

Files:

TimeClass4.h – The specification for the Time class
TimeClass4.cpp – The implementation of the Time class. Must include TimeClass4.h
TimeTester4.cpp – A tester program for the Time class. Must include TimeClass4.h.

Time Class Version 5

To avoid having the header file included twice, pre-processor directives have been added to the header file.

Files:

TimeClass5.h – The specification for the Time class, with the pre-processor directives added.
TimeClass5.cpp – The implementation of the Time class. Must include TimeClass5.h.
TimeTester5.cpp – A tester program for the Time class. Must include Time5.h.

Time Class Version 6

provides default arguments to the default constructor

Files:

TimeClass6.h – The specification for the Time class.
TimeClass6.cpp – Implements Time class with default constructor arguments. Include TimeClass6.h.
TimeTester6.cpp – A tester program for the Time class. Must include Time6.h.