Separate Header and Implementation Files

In this section, we demonstrate how to make class reusable by separating it into other files.

Header File

Class declarations are stored in a separate file. A file that contains a class declaration is called header file. The name of the class is usually the same as the name of the class, with a .h extension. For example, the Time class would be declared in the file Time .h.

```cpp
#ifndef TIME_H
#define TIME_H

class Time
{
    private :
        int hour;
        int minute;
        int second;
    public :
        //with default value
        Time(const int h = 0, const int m  = 0, const int s = 0);
        // setter function
        void setTime(const int h, const int m, const int s);
        // Print a description of object in " hh:mm:ss"
        void print() const;
        //compare two time object
        bool equals(const Time&);
};

#endif
```

Implementation File

The member function definitions for a class are stored in a separate .cpp file, which is called the class implementation file. The file usually has the same name as the class, with the .cpp extension. For example the Time class member functions would be defined in the file Time.cpp.

```cpp
#include <iostream>
#include <iomanip>
#include "Time.h"
using namespace std;

Time :: Time(const int h, const int m, const int s)
  : hour(h), minute (m), second(s)
{}

void Time :: setTime(const int h, const int m, const int s)
{
    hour = h;
    minute = m;
    second = s;
}

void Time :: print() const
{
    cout << setw(2) << setfill('0') << hour << ":"
      << setw(2) << setfill('0') << minute << ":"
       << setw(2) << setfill('0') << second << "\n";

}

bool Time :: equals(const Time &otherTime)
{
    if(hour == otherTime.hour
        && minute == otherTime.minute
        && second == otherTime.second)
        return true;
    else
        return false;
}
```

Client Code

Client code, is the one that includes the main function. This file should be stored by the name main.cpp

```cpp
#include <iostream>
using namespace std;
#include "Time.h"

int main()
{
    Time t1(10, 50, 59);
    t1.print();    // 10:50:59
    Time t2;
    t2.print(); // 06:39:09
    t2.setTime(6, 39, 9);
    t2.print();    // 06:39:09

    if(t1.equals(t2))
        cout << "Two objects are equal\n";
    else
        cout << "Two objects are not equal\n";

    return 0;
}
```

The advantages of storing class definition in separate file are

1. The class is reusable.

2. The clients of the class know what member functions the class provides, how to call them and what return types to expect.

3. The clients do not know how the class's member functions are implemented.