

Supplement IV.D: Default Arguments in Constructors and Functions

For Introduction to C++ Programming
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As discussed in §7.6, “Default Arguments,” a function may have default arguments. You can also use default arguments for functions in a class as well as constructors. Listing 1 declares the `Time` class. The constructor (line 7) has default arguments for `hour`, `minute`, and `second`. The `setHour` function has a default argument `9`.

Listing 1 Time.h

```
#ifndef TIME_H
#define TIME_H

class Time
{
public:
    Time(int hour = 1, int minute = 1, int second = 1);
    int getHour();
    int getMinute();
    int getSecond();
    void setHour(int hour = 9);

private:
    int hour;
    int minute;
    int second;
};

#endif
```

Listing 2 gives the implementation of the header file.

Listing 2 Time.cpp

```
#include "Time.h"

// Construct a Time object
Time::Time(int h, int m, int s)
{
    hour = h;
    minute = m;
    second = s;
}

// Return hour
int Time::getHour()
```

```

    {
        return hour;
    }

    // Return minute
    int Time::getMinute()
    {
        return minute;
    }

    // Return second
    int Time::getSecond()
    {
        return second;
    }

    // Set a new hour
    void Time::setHour(int h)
    {
        hour = h;
    }

```

Listing 3 gives a test program.

Listing 3 TestTime.cpp

```

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

int main()
{
    Time time1;
    cout << "Hour: " << time1.getHour() << endl;

    Time time2(10, 20, 30);
    cout << "Hour: " << time2.getHour() << endl;

    time2.setHour();
    cout << "Hour: " << time2.getHour() << endl;

    return 0;
}

```

Sample output

```

Hour: 1
Hour: 10
Hour: 9

```

Since all the parameters have default values in the constructor, this class in effect has a no-arg constructor.

Line 7 creates a `Time` object using the no-arg constructor. In this case, the default values for hour, minute, and second are used. Line 13 invokes the `setHour` function with passing an argument. In this case, the default hour `9` is set for the hour.