



CIS 346, Inheritance and Polymorphism Coding Assignment

Due 10/28/2015 at 11:55PM via Moodle

30 points

Time Format

Design a class called `MilTime` that is derived from the `Time` class. The `MilTime` class should convert time in military (24-hour) format to the standard time format used by the `Time` class. The class should have the following member variables:

- **milHours:** Contains the hour in 24-hour format. For example, 1:00 pm would be stored as 1300 hours, and 4:30 pm would be stored as 1630 hours.
- **milSeconds:** Contains the seconds in standard format. The class should have the following member functions:
- **Constructor:** The constructor should accept arguments for the hour and seconds, in military format. The time should then be converted to standard time and stored in the `hours`, `min`, and `sec` variables of the `Time` class.
- **setTime:** Accepts arguments to be stored in the `milHours` and `milSeconds` variables. The time should then be converted to standard time and stored in the `hours`, `min`, and `sec` variables of the `Time` class.
- **getHour:** Returns the hour in military format.
- **getStandHr:** Returns the hour in standard format.
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Demonstrate the class in a program that asks the user to enter the time in military format. The program should then display the time in both military and standard format. Be sure to comment each line of code.

Input Validation: The `MilTime` class should not accept hours greater than 2359, or less than 0. It should not accept seconds greater than 59 or less than 0.

Time Clock

Design a class named `TimeClock`. The class should be derived from the `MilTime` class you designed above. The class should allow the programmer to pass two times to it: starting time and ending time. The class should have a member function that returns the amount of time elapsed between the two times. For example, if the starting time is 900 hours (9:00 am), and the ending time is 1300 hours (1:00 pm), the elapsed time is 4 hours. Be sure to comment each line of code.

Input Validation: The class should not accept hours greater than 2359 or less than 0.

Deliverable:

Submit the zipped folder of your C++ programs. Your submitted file should be labelled as followed: <your-username>-Inheritance, e.g., bmarsha6-Inheritance.zip

Contents of Time.h

```
1 // Specification file for the Time class
2 #ifndef TIME_H
3 #define TIME_H
4
5 class Time
6 {
7 protected:
8 int hour;
9 int min;
10 int sec;
11 public:
12 // Default constructor
13 Time()
14 { hour = 0; min = 0; sec = 0; }
15
16 // Constructor
17 Time(int h, int m, int s)
18 { hour = h; min = m; sec = s; }
19
20 // Accessor functions
21 int getHour() const
22 { return hour; }
23
24 int getMin() const
25 { return min; }
26
27 int getSec() const
28 { return sec; }
29 };
30 #endif
```