RIPHAH INTERNATIONAL UNIVERSITY, LAHORE CAMPUS.

SCHOOL OF COMPUTING & INNOVATION

OBJECT ORIENTED PROGRAMMING (CS 2104)

ASSIGNMENT 01

Issue Date: 25-04-2022
Due Date: 09-05-2022
Semester: SPRING 2022
Class: BSCS (2A, 2B)
Total Marks: 100

Objectives:

- Implementation of classes
- Understanding of constructors overloading
- Understanding of access specifiers
- Converting UML Class Diagram to C++ code.

Instructions:

- Assignment type is individual, so no sharing is allowed.
- You can use internet and books as helping resources but sharing content with peers is strictly prohibited.
- **Plagiarized assignments will get zero and may fail the course.**
- I am available for your help/guidance.
- **Start early!**

Submission Method:

- There will one .cpp file.
- Submit your .cpp file at Moellim. No submission is allowed on email.

We are going to write 'Time' class that will work for 12 hour time format and has following data members and functions given in below UML Class Diagram.

Time
– hour : int – min : int – sec : int – mode : char
+ Time() + Time (int, int, int, char) + Time (int, int, int) + Time (const Time&) + getHours() : int + getMinutes() : int + getSeconds() : int + getMode() : char + setHours(int) : void + setMinutes(int) : void + setSeconds(int) : void + setMode(char) : void + displayTime () : void + convertToSeconds() : double + convertToMinutes() : double + convertToHours() : double + convertTo24HourFormat() : void + incrementSeconds(int) : void + incrementMinutes(int) : void

Explanation of Data Members:

- **hour** *(stores hours of time e.g. 11)*
- **min** *(stores minutes of time e.g. 42)*
- **sec** *(stores seconds of time e.g. 51)*
- **mode** *(stores mode of time like AM/PM – stores 'a' for AM and 'p' for PM)*

Explanation of Functions:

Function Name	Explanation
Time()	Default constructor – sets 0 in hour/min/sec and 'a' in mode
Time (int, int, int, char)	Parameterized constructor – sets all given values. It should check that no out of range value is entered. For example, hour must be in 1 – 12, minutes and seconds in 0 – 59 and mode must be either 'a' or 'p'
Time (int, int, int)	Parameterized constructor – sets all given values. It should check that no out of range value is entered. For example, hour must be in 1 – 12, minutes and seconds in 0 – 59.
Time (const Time&)	Copy constructor
getHours() **getMinutes()** **getSeconds()** **getMode()**	Getters / Accessors
setHours(int) **setMinutes(int)** **setSeconds(int)** **setMode(char)**	Setters / Mutators
displayTime ()	Display time in hh:mm:ss AM/PM format
convertToSeconds()	Convert all hours/min/sec in seconds and return from function.
convertToMinutes()	Convert all hours/min/sec in minutes and return from function.
convertToHours()	Convert all hours/min/sec in hours and return from function.
convertTo24HourFormat()	Convert complete time to 24 hour format and print in function.
incrementSeconds(int)	Takes number of seconds in parameters and increment those seconds in actual time. If your seconds exceed 59, increment in minutes and if minutes exceed 59, increment in hours. Take care of AM/PM as well.
incrementMinutes(int)	Takes number of minutes in parameters and increment those minutes in actual time. If your minutes exceed 59, increment in hours. Take care of AM/PM as well.

Write any suitable main() function to test your functions. I will add my own main function in your code to test it and it will contain all the functions used in this class. So write a generic code to run on any main function provided.

Good Luck 😊