Assignment 2

Web Application Development (Comp 340)

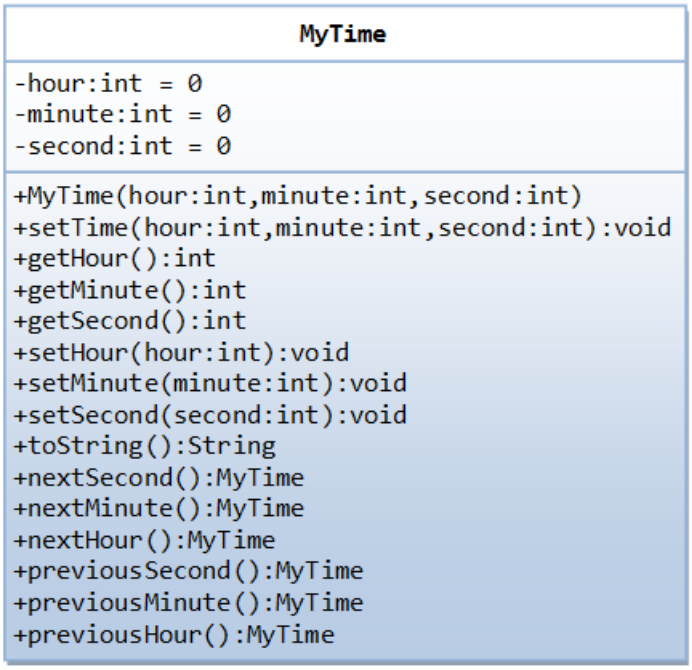
Deadline: Monday Sept, 21st. 6:00 PM (No late submissions will be accepted)

Total Points:

Important Notes: This is an individual assignment. Code sharing, reusing code on the internet or taking help from fellow students is strictly prohibited. Violators will receive no points not only for this assignment but also for the next 3 homework assignments.

Question 1 (30 Points)

A class called MyTime, which models a time instance, is designed as shown in the class diagram.



It contains the following private instance variables:

- hour: between 0 to 23.
- minute: between 0 to 59.
- Second: between 0 to 59.

The constructor shall invoke the setTime() method (to be described later) to set the instance variable.

It contains the following public methods:

- setTime(int hour, int minute, int second): It shall check if the given hour, minute and second are valid before setting the instance variables. (Advanced: Otherwise, it shall throw an IllegalArgumentException with the message "Invalid hour, minute, or second!".)
- Setters setHour(int hour), setMinute(int minute), setSecond(int second): It shall check if the parameters are valid, similar to the above.
- Getters getHour(), getMinute(), getSecond().
- toString(): returns "HH:MM:SS".
- nextSecond(): Update this instance to the next second and return this instance (of type MyTime). Take note that the nextSecond() of23:59:59 is 00:00:00.
- nextMinute(), nextHour(), previousSecond(), previousMinute(), previousHour(): similar to the above.

Write the code for the MyTime class. Also write a test program (called TestMyTime) to test all the methods defined in the MyTime class.

Question 2 **(30 Points)**

Write a function *removeDuplicates* which takes an **ArrayList** of Integers as an input. The function should remove all the duplicate values from the ArrayList and return the **ArrayList** with all duplicates removed. For Example if this list {1, 2, 2, 5, 4, 5, 7, 1, 1} should return {1, 2, 5, 4, 7}.

In the main function, test the removeDuplicates method by taking a list of integers as input from console and displaying the ArrayList with all duplicates removed.

Overload the same method for ArrayList of Strings. The function should return an ArrayList of Strings with all duplicates removed. While checking if 2 string are duplicates of each other, ignore the case (upper/lower). For example, “Book” , “book”, “BOOK” or “BoOK” are all duplicates of each other.

In the main function, test the Overloaded removeDuplicates method by taking a list of strings as input from console and displaying the ArrayList with all duplicates removed.

Overload the same method for ArrayList of MyTime (class you implemented in question 1). The function should return an ArrayList of MyTime with all duplicates removed.

In the main function, test the Overloaded removeDuplicates method by taking a list of MyTime as input (No need to take input from console) and displaying the ArrayList with all duplicates removed.