Java Programming
CS6308
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1. Define a class called **Time** that has data fields: **seconds**, **minutes** and **hour** of type integer. **Time** should have **get** methods and constructors (default, three arguments), **toString()** that will print the details of **Time** instance. When initialising second, minute, hour using set methods ensure that the argument passed is not less than zero and not greater than 59, throw IllegalArgumentException in the method.

override **equals()** of class Object to check whether the two instances (class Time) are same, greater or lesser. **Time addTime(Time)**, this methods adds two Time instances stores it in new Time instance and that instance is returned (temporary instance created inside the function). **display(int)** that prints the Time instance as 24 hour clock when the option passed to the function is 1, else if 0, print as 12 hour clock

Derive two classes from class **Time : TwentyFrHrClock and TwelveHrClock.** Override the display function in the derived classes to print the respective instance as 24-hr clock display and 12-hr clock display. Provide the following instance method to class **TwentyFrHrClock: timeelapsed(int)** method that takes the number of seconds of elapsed and the instance invoking method should add the seconds to its seconds data field. If the seconds exceed 60, the minute should be incremented and subsequently the hour has to be incremented if exceeds 60 minutes.

Provide the following instance method to class **TwelveHrClock: int difference(Time):** that returns the number of seconds which is the difference between the two Time instances.

Write a Test program that demonstrates the functionalities of all the classes.

Create an interface for the class **Time** defined as follows:

```
public interface StopWatch{

    public static final TimerSeconds  = 20;

    public abstract void StartTimer();
```

}

2. Create an abstract class called Vehicle with members: vehicleNumber(integer), brand(String), model(String), vehicleCost(double),number of rentals(integer),

constructors with arguments to initialise data members and number of rentals is initialised to zero. Define Car that extends from the class Vehicle with fields:

mileage(double) and year(integer) and constructor. Create interface Analysable that finds the Car which has been rented maximum number of times.

Write a main program to create an array of Vehicles to store the objects of Car.