

SEG 2105: Introduction to Software Engineering (Lab 2)

TA: ABDULAZIZ ALGABLAN

FALL 2019

Lab Requirements

- Installation of JDK to run Java programs.
- (optional) Java IDE such as Eclipse, IntelliJ IDEA, etc.
- Understanding of OOP principles.

Task 1

- Wowber is transportation network company offering mobile riding services.
- Based on the records below, write a single java class to describe Wowber's vehicles:
 - Name it : WowberVehicle.

Car_name	Max_capacity	Type	VIN	Owner	Year
Camry	4	Wowber_X	1234	John	2014
Crown Victoria	4	Wowber_X	7854	Max	2015
Accord	4	Wowber_Pool	9533	Jan	2018
BMW X6	4	Wowber_Select	4324	Xi	2014
Model X	4	Wowber_Select	6334	Ford Tesla	2015
...

Task 2

- Improve your design:
 - WowberVehicle class has a counter that counts the number of cars that Wowber has.
 - Wowber has 4 passengers as maximum capacity for all types.
 - There are only three types of cars (Wowber_X, Wowber_Pool, and Wowber_Select).
 - The **Year** is always is 2013 or later.

Task 3

- Now, write a class for each type (apply OOP concepts):
- Each class should have the method: calculateCost.
 - Its signature is : `public int calculateCost(int distanceInMile, int timeInMin)"`.
- The implementation for calculateCost is similar for all types, which is:
 - $\text{CalculateCost} = \text{calculateBaseCost} * \text{factor_CarType}$
- The factor_CarType for each type is as follows:
 - Wowber_X =1 , Wowber_Pool=0.8, and Wowber_Select=2).
- The method calculateBaseCost is **identical** for all types:
 - The signature is: `calculateBaseCost (int distanceInMile, int timeInMin)"`.
 - It should return: $5 * \text{distanceInMile} + (\text{timeInMin}/5)*2$

Task 4

- Wowber decided to accept an offer and integrate with a large map app. named “LiveMapApp”.
- LiveMapApp offered its interface:

```
Interface ILiveMapAppRideProvider
{
    Public double getTaxiPrice(int distanceInMile, int timeInMin);
    Public String getProvidertName();
    Public int validityOfOffer();
    // ....
}
```

- Improve/Modify your design of Task 3 to allow such integration.
 - Wowber has chosen to set 5 minuets for the validity of offer.

Next

- Tell the TA if you finished.