Programming II

Comp 111

Spring 2020



Department of Computer Science

Forman Christian College University

Lab 6

List of Objects, List in a class

Basic UML

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| **Question #** | **Total Marks** |
| Question 1 | 5 |
| Question 2 | 5 |
| Question 3 | 5 |
| Question 3 | 5 |

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# **Lab Problem**

**Question 1: (Revision of class)** Implement a class Car with the following properties. A car has a certain fuel efficiency (measured in miles/gallon) and a certain amount of fuel in the gas tank. The efficiency is specified in the constructor, and the initial fuel level is 0. Supply a method drive that simulates driving the car for a certain distance, reducing the fuel level in the gas tank, and methods getGasLevel, to return the current fuel level, and addGas, to tank up. Sample usage:

myHybrid = Car(50) # 50 miles per gallon

myHybrid.addGas(20) # Tank 20 gallons

myHybrid.drive(100) # Drive 100 miles

print(myHybrid.getGasLevel()) # Print fuel remaining

**Question 2: (Class variable)**

You are to implement an Employee class having the following attributes:

* EmployeeID
* EmployeeName
* EmployeeSalary

And another class of Manager having the following attributes:

* ManagerName
* ManagerID

Create two object lists in the driver having 3 Employees and 2 Managers. Both the classes should have a class variable type\_Emp which will be “Lower Grade” in case of Employee class and “Upper Grade” in case of Manager class. Lastly; display the entire details of all the created instances.

**Question 3: (List of objects)** Implement a class Student with attributes StudentID, StudentName, Semester, TotalMarks and a method Studentinfo() that prints the information about the student. Also implement the mutators and accessors for all the attributes. Read file “my\_file.txt” which contains the records of students and populate these attributes accordingly. Make a list and store all the instances of the student. The number of instances is equal to the number of records in the file. Finally, you should display all the students’ information through a loop.

**Question 4: (List in a class)** A class called Actor is designed to model a movie’s actor. It contains three instance variables: name (String), dateofBirth (String), and gender (char of either 'm' or 'f'). There should be getter and setter function for all instance variables.

* Actor also performs in movies so make a list of movie for each actor and store the names of movie in it.
* There should be methods DisplayActor() which displays all the actor data along with the movies.
* For an actor, add AddMovie() function which adds movie name in the list.
* Add one more function named CompareActor() that compares the two objects of actor class and find if they have worked together in a same movie. This function will return the list of same movies.

Write a test driver to test all the methods in the class Actor.

**Question 5:**

Draw UML (Class diagram) of above questions (Question 1 to Question 4). At this stage, just draw the classes and mention their attributes and behaviors. Don’t mention the accessor and mutators.