Programming II
Comp 111
Spring 2021

FORMAN CHRISTIAN COLLEGE
(A Chartered University)

Department of Computer Science

Forman Christian College University

Lab 4

Classes

(Constructor, Accessor, Mutators)

Lab Problems

Question 1:

Explain the following in terms of actual code that might be found in a class definition:

(a) method

(b) instance variable

(c) constructor

(d) accessor

(e) mutator

Question 2:

Write a class to represent the geometric solid sphere. Your class should implement the following methods:

`__init__(self, radius)` Creates a sphere having the given radius.

`getRadius(self)` Returns the radius of this sphere.

`surfaceArea(self)` Returns the surface area of the sphere.

`volume(self)` Returns the volume of the sphere.

Question 3:

Write a Python class, Flower, that has three instance variables of type str, int, and float, that respectively represent the name of the flower, its number of petals, and its price. Your class must include a constructor method that initializes each variable to an appropriate value, and your class should include methods (mutators) for setting the value of each type, and retrieving (accessors) the value of each type. Also, add the following functions given in example below.
Sample usage:

myFlower = Flower("Rose",20,50)
myFlower.UpdatePetals(10,"Add") # Add 10 + 20 and update the petals
myFlower.UpdatePetals(15,"less") # subtract 30 - 15 and update the petals myFlower.Show()
# Display all the attributes of flower

Question 4:

Implement a class Car with the following properties. A car has a certain fuel effi-ciency (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.getCasLevel0))
# Print fuel remaining
```