CORE JAVA

WORKOUT – 2

Portions:

Java Class, Objects, Constructor, Command-Line Arguments, Method Overloading, Static Members, Inheritance, overriding

Problems:

1. Create three classes.

    Faculty (facultyid, salary)

    FullTimeFaculty (basic, allowance) inherits the class Faculty

    PartTimeFaculty (hour, rate) inherits the class Faculty

Create a method for accepting input in FullTimeFaculty and PartTimeFaculty, but salary should not be accepted. Salary is calculated on the basis of (basic+allowance) for FullTimeFaculty and (hour*rate) for PartTimeFaculty. Also, create a method in the above classes to display faculty data.

Create another class (say DriverClass) for the main method and store 2 full-time and 2 part-time faculty information. Also, print their details.

2. Create class OneBHK with instance variable roomArea, hallArea and price

    a. Create a default and parameterized constructor;

    b. Method show(): to print OneBHK data member information;

Create another class TwoBHK which has all the properties and behaviour of OneBHK and a new instance variable room2Area.

    a. Create a default and parameterized constructors;

    b. Method show(): to print all data member information;

Write the main function in another class (Say DriverClass), store three TwoBHK flat's information and print information using the show method. Also, print the total amount of all flats.

3. Create a class MathFunction containing the method ‘multiply’ to calculate the multiplication of the following arguments.

- two integers
- two floats
- one float and one integer

4. Create a class Medicine to represent a drug manufactured by a pharmaceutical company. Provide a function displayLabel() in this class to print the Name and address of the company.

Derive Tablet, Syrup and Ointment classes from the Medicine class. Override the displayLabel() function in each of these classes to print additional information suitable to the type of medicine. For example, in the case of tablets, it could be “store in a cool dry place”, in the case of ointments it could be “for external use only” etc.

Create a class TestMedicine and include the main function to do the following:

Create three Medicine objects of the type as decided by a randomly generated integer in the range 1 to 3.

Refer to Java API Documentation to find out the random generation feature.

Check the polymorphic behavior of the displayLabel() method.

5. Create a class Tile to store the edge length of a square tile, and create another class Floor to store the length and width of a rectangular floor. Add method totalTiles(Tile t) in Floor class with Tile as an argument to calculate the whole number of tiles needed to cover the floor completely.

6. Create a class Employee with fields Name, Emp ID, result and three assessment values (ass1, ass2 and ass3 (0-100)). If all the assessment values of the employee are above 75, then the result variable should be updated as "Promoted" else "Demoted". Also, calculate and display the total and percentage of the employee using functions.

7. Create an application program to track and display the number of instances of the class created, destroyed and live during the program execution.

8. Write a program to swap the value of two numbers by call by value and call by reference methods