**Java**

Assignment - Day 3

Concept: Abstraction & Polymorphism

Objective: At the end of the assignment, participants will be able to:

* Create Abstract classes & Interfaces
* Use packages

Problems:

1. Create an abstract class **Medicine** to represent a drug manufactured by a pharmaceutical company with attributes price and expiry date and a method getDetails() to print them.

Also include an abstract function displayLabel() in the Medicine class.

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 case of tablets, it could be “store in a cool dry place”, in case of ointments it could be “for external use only” etc.

Create a class **TestMedicine** with the main method that declares an array of Medicine references of size 5. Create a medicine object of the type Tablet/Syrup/Ointment as decided by a randomly generated integer in the range 1 to 3. (Refer Java API Documentation to find out random number generation)

Check the polymorphic behavior of the displayLabel() method.

1. Create a package **com.shape** containing the following classes and interfaces.

An interface **Polygon** containing the members as given below:

void calcArea( ); Method to calculate area

void calcPeri( ); Method to calculate perimeter

Create a class **Square** that implements Polygon and has the following member:

side float

Create another class **Rectangle** that implements Polygon and has the following member:

length float

breadth float

In another package **com.test**, create a class that imports the above package and instantiates an object of the Square class and an object of the Rectangle class.

Call the methods on each of the classes to calculate the area and perimeter given the side and the length/breadth of the Square class and the Rectangle class respectively.