Day.5

Inheritance
The super keyword
instanceOf
Runtime Polymorphism
Runtime Polymorphism in action
Conversion and casting
Covariant return type

Q1) Create a class called Vehicle. Create subclasses Truck, Bus and Car. Add common methods in the base class and specific methods in the corresponding subclasses. Create a class called Road and create objects for Truck, Bus and Car and display the appropriate messages. Also, in the Vehicle class constructor, initialize the variables color, no of wheels and model. Give appropriate values for these variables from the invoking subclass.

Q2) Create a class called Inventory in a package stock. This class has data members called quantity and lowOrderLevelQuantity. Two classes that inherit from this class -Accessories and Laptops, are in package called material. The lowOrderLevelQuantity for laptops is 3, while lowOrderLevelQuantity for Accessories is 5. Apart from these members, Accessories and Laptops also have members describing them and a unique id.

- Create 5 laptops and 10 Accessories objects. The quantity member must add up accordingly in the individual classes.
- Create an Order class and have customers place orders. If the ordered quantity is available then Invoice should be generated. If the quantity is below lowOrderLevelQuantity then a RequestForMaterial (RFM) must be generated.

Q3) Create a class called Worker. Write classes DailyWorker and SalariedWorker that inherit from Worker. Every worker has a name and a salary. Write method pay() to compute the week pay of every worker. A Daily worker is paid on the basis of the number of days she/he works. The salaried worker gets paid the wage for 40 hours a week no matter what the actual worked hours are. Create a few different types of workers and print all the details of the workers(name, salary and D/W (indicating the type of worker)) in sorted order of the salary.

Q4) The Charity Collection Box contains money in different currencies - dollars-cents or pounds-pence or rupees-paise. All of these currencies have notes and coins. The note and coin numbers are counted when they are added based on their value (that is number of 5 rupee notes, or $1 dollar note). A super class representing Currency is created with different denomination for of notes and coins. Subclass Dollar, Pound and Rupee has conversion methods to rupees, print() and compute().

- Create class called CollectionBox that allows entry of these currencies in terms of number of notes and coins of different denomination. Create a display method that allows any of these currency types and displays the total amount collected in terms of Rupees. (Assume1 dollar= Rs. 50 and 1 pound = 1.6232 U.S. dollars)

Q5) In the worker exercise, instead of printing individual attributes like name, salary and so on, if the object is printed automatically the details must be printed. Also two workers are same if their names are same. Therefore before printing salary report, a check needs to made to see if duplicate workers have been entered. If so, the duplicates must be removed from the list.