APPLICATION DEVELOPMENT PROJECT USING JAVA

(CSE4171)

Assignment - I

Topic: Inheritance & Interfaces in Java

---

1. Define a class **Employee** with two instance variables:
   - name, salary and age

   and two member methods:
   - setData(): set the details of the person.
   - displayData(): display the details of the person.

   Now, create two objects of class **Employee** and initialize one object value directly (by using the **dot**(.) operator name: “Joseph”, salary: 65784.50 and age: 25). Accept your name and age through the keyboard and set them to another object using the setData() method.
   Now display both the member variables using the displayData() method. Also, check who is older.

2. In a supermarket each product has minimum details like prodId, price, quantity that is used during the biling process. Keeping this in mind prepare a class named as **Product** having the member variables
   - prodId, price, quantity
   - a static variable totalPrice

   Initialize the value of the product through a parameterized constructor. It consists of a display() method to display the value of instance variables. A person went to the market and purchased 5 different products. Using the above mentioned class, display the details of products that the person has purchased. Also, determine how much total amount the person will pay for the purchase of 5 products.

3. Define a class **Deposit**. The instance variables of the class **Deposit** are mentioned below.

Instance Variable	Data Type
Principal	Long
Time	Integer
Rate	Double
TotalAmt	Double

Initialize the instance variables Principal, Time, rate through constructors. Constructors are overloaded with the following prototypes.
Constructor1: Deposit ( )
Constructor2: Deposit (long, int, double)
Constructor3: Deposit (long, int)
Constructor4: Deposit (long, double)
Apart from constructors, the other instance methods are (i) display ( ): to display the value of instance variables, (ii) calcAmt( ): to calculate the total amount. totalAmt = Principal + (Principal * rate * Time)/100;

4. Define a base class **Employee** with instance variable **name**, **age**. The instance variables are initialized through constructors. The prototype of the constructor is as below.

Employee (string, int)

Define a derived class **HR** with instance variables **Eid**, **salary**. The instance variables are initialized through constructors. The prototype of the constructor is as below.

HR (string, int, int, double).

Another instance method of the **HR** class is DisplayDetails() to display the information of **HR** details.

5. Create an abstract class **Marks** with three instance variables (markICP, markDSA, and percentage) and an abstract method **getPercentage**(). Create two classes: **CSE** with instance variable algoDesign, and **NonCSE** with instance variable enggMechanics. Both classes inherit the abstract class **Marks** and override the abstract method **getPercentage**(). The constructor of class **CSE** takes the marks in three subjects (markICP, markDSA, and algoDesign) as its parameters, and the constructor of class **NonCSE** takes the marks in three subjects (markICP, markDSA, and enggMechanics) as its parameters. Create an object for each of the two classes and print the percentage of marks for both students.

6. Define an interface **DetailInfo** to declare methods **display**( ) & **count**( ). Another class **Student** contains a static data member maxcount, instance member name & method **setter**(String name) to assign the values to the instance variable and **getter**( ) to display the name of a student, count the no. of characters present in the name of the student.

7. Design a package that contains two classes: **Student** & **Test**. The **Student** class has data members as name, roll and instance methods inputDetails() & showDetails(). Similarly the **Test** class has data members as mark1, mark2 and instance methods inputDetails(), showDetails(), Student is extended by Test. Another package carry interface Sports with 2 attributes score1, score2. Find grand total mark & score in another class.