

Object Oriented Programing Lab 6, 7 and 8 (JAVA)

Class, Abstract, Interface, String, super, this

1) Create an application that calculate your daily driving cost , so that you can estimate how much money could be saved by car pooling which also has other advantages such as reducing carbon emission and traffic congestion . The application should input the following information and display the user's cost per day of driving to work.

- **total miles driven per day**
- **b)cost per gallon of gasoline**
- **c)average fees per day s**
- **d)tolls per day**

Q2.) Create a class called invoice that hardware store might use to represent an invoice for an item sold at the store. An invoice should include four pieces of information as instance variable

- **a part number(type string)**
- **a part description(type string)**
- **a quantity of the item being purchased(type int)**
- **a price per item(double)**

Your class should have a constructor that initialization the four instance variable . Provide a set and a get method for each instance variable . In addition provide method named getInvoiceAmount that calculate the invoice amount(i.e. multiplies the quantity per item), then return the amount as a double value.If the quantity is not positive it should be set to 0. If the price per item is not positive it should be set to 0.0. Write test application named invoice test that demonstration class invoice capabilities.

Q3.) Create a class called employee that include three instance variable a)name(type string) b) last name (type string) and c) monthly salary(double). Provide a constructor that initialize the three instance variable. Provide a set and a get method of instance variable. if the monthly salary is not positive do not set its value. Write a test application named employeetest that demonstrate class employee capabilities.create two employee object and display each object yearly salary. Then give each employee a 10% hike and display each employee yearly salary again.

Q4.) Create a class called date that include three instance variable a) month(type int) b)day (type int) and c) year (type int) . provide a constructor that initialize a three instance variable and assume the value provided are correct. Provide a set and a get method for each instance variable.Provide a method DisplayDate that display the month year and day separated by forward slashand write a test application named DateTest that demonstrate date capabilities.

Q5.)(Gas mileage) Drivers are concerned with the mileage theit automobiles get. One driver has kept track of several trips by recording the miles driven and gallons used for each tankful.Develop a java application that will input the miles driven and gallons used(both as in) for each trip.The program should calculate and display the miles per gallon obtained for each trip and print the combined miles per gallon obtained for all trips up to this point. All averaging calculate should produce floating point results. Use class scanner and sentinel-controlled repetition to obtain the data from the user.

Q6) Write a function Model-of-Category for a Tata motor dealers, which accepts category of car customer is looking for and returns the car Model available in that category. the function should accept the following categories “SUV”, “SEDAN”, “ECONOMY”, and “MINI” which in turn returns “TATA SAFARI” , “TATA INDIGO” , “TATA INDICA” and “TATA NANO” respectively.

Q.7) A popular game of chance is a die game know as craps, which is played in casinos and back alley throught the world .the rules of the game are straightforward: You roll two dice. Each die has six faces, which contain one,two,three,four,five and six spots, respectively .after the dice have come to rest ,the sum of the spots on the two upward faces is calculated .if the sum is 7 or 11 on the first throw ,you win .if the sum is 2,3 or 12 on the first throw(**called "Craps"**),you lose (i.e. the "house" wins). If the sum is 4,5,6,8,9,10 on the first throw, that sum becomes your "points" To win, you must continue rolling the die until you **“make your point”** (i.e. roll that same point value),you lose by rolling a 7 before making your point. Hint use ENUM,switch case.

Q.8)
Create a package named **FigPackage**. Define an abstract class called figure having the following attribute r,a,v and pi of the datatype double,the attribute pi must have a value equal to 3.1428.must have the following abstract method- **public abstract void calcArea(); public abstract void calcVolume(); public abstract void dispArea();public abstract void dispVolume();**
design three classes **cone,sphere,cylinder**. each of these class must extends the **Figure** class

| class name | Attribute |
|------------|----------------------|
| Cone | n,s of type double |
| Sphere | |
| Cylinder | n of the type double |

the formulae for the area and volume of the **cone,cylinder and sphere** are as follows:

| Class | Formal |
|-----------------|---|
| cone | area=(pi*r*s)+(pi*r*r) volume=(pi*r*v*h)/3 |
| Sphere | area=(4*pi*r*r) volume=(4*pi*r*r*r)/3 |
| Cylinder | area=(2*pi*r*r)+(2*pi*r*h) volume=pi*r*r*h |

define the inherited abstract method in the subclass by using the given formulae and set values of inherited attribute a and v for the rea and volume ,respectively define any constructor /method that may be necessary. write a main method in a class called Demo and invoke the method of each subclass. all the created class must be put in the fig Package compile and execute program at command prompt.

Q.9) We need to write the function to check the password entered is correct or not based on the following conditions.

- It must have atleast one lower case character and one digit.
- It must not have any Upper case characters and any special characters
- length should be b/w 5-12.
- It should not have any same immediate patterns like

abcanan1 : not acceptable coz of an an pattern
abc11se: not acceptable, coz of pattern 11
123sd123 : acceptable, as not immediate pattern
adfasdsdf : not acceptable, as no digits
Aasdfasd12: not acceptable, as have uppercase character

Q.10) A string is entered like **aabcdeabcjlkjerwlaaabbsadfsf...**

And you have to print those characters which exceed a given no. n entered by user.

Q.11) You have to enter a string and check whether it is a perfect string or not. A perfect string is a string which has occurrence of every character only once.

Eg. absdhkqwertyuioplmnvczx

Q.12) you have to enter a range from a and b and search how many no. of times a pattern n. occurs between the range a and b.

Eg :i/p:enter range :0 100

Enter pattern: 13

o/p: the no. times 13 occurred betwwn 0 to 100:1

Eg :i/p:enter range :100 1000

Enter pattern: 13

o/p: the no. times 13 occurred betwwn 100 to 1000:

(in this 13,113,131,132,133.139,213,313,.913 all these will be counted)

Q.13) Declare an interface called **Function** that has a method named evaluate that takes an int parameter and returns an int value. Create a class **Half** that implements Function. Make the implementation of the method evaluate() return the value obtained by dividing the int argument by 2. In a client, create a method that takes an arbitrary array of int values as parameter and returns an array that has the same length, but the value of an element in the new array is half that of the value in the corresponding element in the array passed as parameter. Let the implementation of this method create an instance of Half and use this instance to calculate the values in the array to be returned.