VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY:: NAMBUR

# MID TERM ASSIGNMENT

**ACADEMIC YEAR:20    TO 20**

**Hall Ticket No.** : 19BQ1A05H6

**Name of the Student** : Peram Srinivas

**Course** : B.Tech

**Branch** : ECE/CSE/EEE/IT

**Subject** : JAVA programming

## ASSIGNMENT / MARKS DETAILS

| To be filled by the Student | | | To be filled by the Subject Teacher | | |
|---|---|---|---|---|---|
| Submission Date | Assignment | Signature of the Student | Max Marks | Marks Obtained | Signature of Subject Teacher |
| | | | 5 | | |

## INSTRUCTIONS TO THE STUDENTS

1. The assignment should be submitted to the subject teacher on or before the given schedule.
2. Answer should be written on both sides of the paper.

## INSTRUCTIONS TO THE SUBJECT TEACHER

1. The Subject teacher has to value with red ball point pen only.
2. The Subject teacher should award the marks on the left hand side of the margin and at the end of the each answer.
3. Do not correct the marks by overwriting or by scratching and writing.
4. The Subject teacher has to post marks in the space provided.

Set - 3

Sub:- Java

Name:- P. Srinivas

Reg No:- 19B81A05H6

Sec:- CSE - C

1) What is data abstraction? Differentiate dat and procedural abstractions write inheritance hierarchy for the Super class quadrailateral parallelogram, Square and Rectangle. calculate area of square, rectangle and parallelogram.

A: Data abstraction is the process of hiding certain details and showing only essential information to the user. Abstraction can be achived with either abstract classes or interfaces [which you will learn more about in the next chapter]

Data Abstraction in Java:-

Data Abstraction is the property by virtue of which only the essential details are displayed to the used. the trivial or the non-esentials units are not displayed to the user Ex:- A car is viewed as a car rather than it's individual components. A simple example is queue data and the associated operations add( ) and delete ( ) Both add( ) and delete( ) operations manipulates queue data. In a Simple procedural abstractions, there would be only add and delete operations separately but their associ-ation with the queue data will not be captured.

Advantages :- 1) It reduces the complexisy of viewing the things

2) Avoids code duplication and increases reusability

3) Helps to increase security of an application or progra-m as only important details are provided to the user.

4) It is easy to figure out the associated operations that need to be changed.

Procedural abstractions :- procedural abstraction is a particular mechanism for separating use from implementation. It is tied to The idea that each particular method perform as well-specified function. In Some Cases, a method may calculate the answer to particular question. procedural abstractions are used extensively by requirements analysts, as well as designers and program mers. procedural abstraction are normally characterized in a programming language as function/sub-function or "prcedure" abstraction

**Advantages** :- 1) It is easier to test code if it is neatly segregated from the rest of the program.

2) If there's a mistake in the code. it only needs to be fixed in one place.

3) choosing good names for procedures helps document the code, making it easier for someone else to read.

**Public class quadrilateral :-**

```
{
    protected int x1, x2, x3, x4, y1, y2, y3, y4
    protected void setCoordinate (int a, int b, int c, int d, int e, int f
                                                  int g, int h)
{
     x1 = a;
     y1 = b;
     x2 = c;
     y2 = d;
     x3 = e;
     y3 = f;
     x4 = g;
     y4 = h;
  }
  }
  public class square extends quadrilateral
  {
  Square (int a, int b, int c, int d, int e, int f, int g, int h)
 {
  setCoordinate (a, b, c, d, e, f, g, h);
 } int area ()
 {  int d = (int) Math.sqrt ((x1-x2)*(x1-x2)+(y1-y2)*(y1-y2));
    return d*d;
 }
 }
Public class Rectangle extends quadrilateral
{
 Rectangle (int a, int b, int c, int d, int e, int f, int g, int h)
 {
 setCoordinate (a, b, c, d, e, f, g, h)
 } int area ( )
 {
```

```
int d1 =(int) Math. sqrt ((x1-x2)*(x1-x2) +(y1-y2 )*(y1-y2)),
int d2 = (int)Math.sqrt((x1-x4)*(x1-x4) +(y1-y4 )*(y1-y4));
return d1*d2
}
}
public class ~~trapezoid~~ parallelogram extends quadrilateral
{
private int height;
parallelogram (int a, int b, int c, int d, int e, int f, int g, int h , int height
{
setcoordinate (a,b,c,d,e,f,g,h);
this. height =height;
}
int area ( )
{
int d1 =(int)Math.sqrt ((x1-x2)*(x1-x2)+(y1-y2)*(y1 -y2));
return d1* height;
}
}
public class testquadrilateral
{
public static void main(String []args)
{
Square sq = new Square (10, 10, 20, 10, ~~20, 10,~~ 20, 20, 10, 20);
System. out. println ("Area of The Square is " + sq. area());
Rectangle rec = new Rectangle (10,10, 30,10,30, 20, 10, 20);
System. out. println ("Area of The Rectangle is" +rec.area ());
parallelogram p= new parallelogram (10, 10,30, 10, 20,20, 0,20, 8);
System. out. println ("Area of parallelogram is" + p. area());
}
}
```

output :-

```
Area of The Square is 1000
Area of The Rectangle is 200
Area of The parallelogram is 160
```

Scanned with CamScanner

2) What is the importance of Constructor ? Write a Java program to perform Constructor overloading Describe the usage of static members and nesting members with suitable example in java programs.

A: Importance of Constructor :-

To understand the working of Constructor, lets take an example we have a class My class. when we creat the object of My class like

My class obj = new My class ()

The new keyword here creates the object of class [My class] and invokes the Constructor to initialize This newly created object.

Constructor overloading Example :-

```
public class Demo
{
   private int rollNum;
   Demo (int rnum)
  {
      rollNum = rollNum + rnum;
  }
   public static void main (String args[])
   {
     Demo obj =new Demo ();
   }
 }
```

output :-

```
exeption in thread "main" java. lag. Error: unresolved comilation
problem: the Costructor Demo() is undefined
```

Static nested class :- A static class i.e created inside a class is called static nested class in java. It cannot access non-static data methods. It can be accessed by outer class name.

* It can access static data members of outer class including private.

Example :-

```
class TestOuter1 {
    Static int data = 30;
    Static class inner {
      void msg(){System.out.println("data is"+data);}
    }
    public static void main (String args[]){
    TestOuter1.Inner obj =new TestOuter1.Inner();
    obj.msg();
     }
   }
```

output:- dat is 30

3. Define a class named Book Fair with the following description:
Instance variables / Data members.
i) BookFair() - Default Constructor to initialize data members.
ii) void Input() - To input and store the name and the price of the book
iii) void caluclate() - To calclate the price after discont. Discount is claculated based on the following Criteria.

| price | Discount |
|---|---|
| less than or equal to Rs 1000 | 2% of price |
| more than Rs 1000 and less than or equal to Rs 3000 | 10% of price |
| more than Rs 3000 | 15% of price |

iv) void display() - To display the name and price of the book after discount.

Write a main method to create an object of the class and call the above member methods.

```
import java.util.Scanner;
class BookFair
{
  String Bname
  double price
  BookFair()
  {
  Bname = " ";
  price = 0;
void input( )
{
Scanner S = new scanner (system.in);
System.out.println("Enter Book name");
Bname =S.nextline();
System.out.println('Enter price');
price =S.next Double();
}
 void calculate ( )
{
     double d;
    if (price < = 1000)
      d = 2.0/100 * price;
    else if (price  < = 3000)
      d = 10.0/100* price ;
else
      d = 15.0/100* price ;
  price = price-d;
 }
 void display ( )
{
   system.out.println ("Book name" + Bname);
   system.out.println ("price" + price);
}
  public static void main( )
{
   BookFair b = new BookFair ();
 b. output ( );
  b. calculate ( );
   b. display ( );
 }
}
```

4.) Special words are those words which starts and ends with the same letter:

Examples:-

Existence

comic

window

palindrome words are those which read the same from left to right and vice-versa.

Example:-

Malayalam
Madam
Level
Rotator
civic

All palindromes are special words. but all special words are not palindromes.

write a program to accept a word check and print whether The word is a palindrome or only special word.

A:
```
import java.util.Scanner;
class test
{
    public static void main()
    {
        Scanner s = new Scanner (System.in);
        System.out.println('Enter a word');
        String w = s.next();
        int l = w.length();
        String w1 = " "; char ch1, ch2;
        for (int k =; k < l; k++)
        {
            ch1 = w.charAt(k);
            w1 = ch1 + w1;
        }
        if (w1.equals(w) == true)
        System.out.println('It palindrome word');
        else if (w.charAt(0) == w.charAt(l-1))
        System.out.println('It is onley a Special word');
     else
        System.out.println('It is not a special word');
        }
    }
```

Source :-

(*) The 3rd and 4rth question answer was taken from shaalaa.com website in google

* 1st and 2nd question matter was taken from w3schools.com.