SLIP 1 :

1) Write a java code to get the output as shown below if the user input the String 'D'.

A
B A
C B A
D C B A

```
import java.util.*;
class p1
{
 public static void main(String argsp[])
 {
  Scanner sc = new Scanner(System.in);
  String input;
  System.out.println("Enter : D ");
  input = sc.next();
  char a = 'A';
  if(input.equals("D") || input.equals("d"))
  {
   for(int i = 0; i <4 ; i++)
   {
     int b = i;
    for(int j = 0 ; j<=i ; j++)
     {
       System.out.print((char)(a+b));
       b--;
     }
     System.out.println();
   }
  }
  else
  {
   System.out.println("Enter : D ");
  }
 }
 }
```

2) Design a class to represent a bank account. Include the following members:
Data Members:
1) Name of the depositor 2)Account number 3) Type of account(Savings/Current)
4) Balance amount in the account(Minimum balance is Rs.500.00)
Methods:
1) To read account number, Depositor name, Type of account
2)To deposit an amount (Deposited amount should de added with it)

3) To withdraw an amount after checking balance(Minimum balance must be Rs.500.00) 4) To display the balance

```
import java.util.*;
class bank
{
	String name,type;
	double accno,balance = 500.0;
	public void read()
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter Account Number : ");
		accno = sc.nextDouble();
		System.out.println("Enter Name of Depositor : ");
		name = sc.next();
		System.out.println("Enter Account Type : ");
		type = sc.next();
	}
	public void deposit(int amt)
	{
		double newbal = balance + amt;
		System.out.println("Balance Before Deposit : " + balance);
		System.out.println("Balance After Deposit : " + newbal);
		balance = newbal;
	}
	public void withdraw(int amt)
	{
		if(balance<500 || amt>500 )
		{
			System.out.println("Insufficient Balance");
			System.out.println("Available Balance is : " + balance);
		}
		else
		{
			double newbal = balance - amt;
			System.out.println("Balance Before Withdrawal : " + balance);
			System.out.println("Balance After Withdrawal : " + newbal);
			balance = newbal;
	 }
	}
	public void display()
 {
		System.out.println("Balance is : " + balance);
	}
	public static void main(String argsp[])
{
	bank b = new bank();
 Scanner sc = new Scanner(System.in);
```

```
 int a,amt;
 do
 {
  System.out.println("Select:\n1 - Enter Account Details \n2 - Deposit \n3 - Withdraw \n4 - Balance \n5 -
Exit");
  a = sc.nextInt();
  switch(a)
  {
                    case 1:
   {
                     b.read();
             break;
            }
            case 2:
            {
                     System.out.println("Enter Deposit Amount : ");
                     amt = sc.nextInt();
                     b.deposit(amt);
                     break;
            }
            case 3:
            {
                     System.out.println("Enter Withdrawal Amount : ");
                     amt = sc.nextInt();
                     b.withdraw(amt);
                     break;
            }
            case 4:
            {
                     b.display();
                     break;
            }
 }
 }while(a!=5);
}
}
```

SLIP 2 :

1) Write a java program to calculate area of rectangle by passing and returning object as a parameter

```
import java.util.*;
class s2
{
        int l,b;
        void read()
        {
  Scanner sc = new Scanner(System.in);
                System.out.println("Enter length and breadth : ");
                l = sc.nextInt();
                b = sc.nextInt();
        }
        void display(s2 s)
        {
                System.out.println("Area of Rectangle is : " + s.l * s.b);
        }
 public static void main(String args[])
 {
          s2 s = new s2();
          s.read();
          s.display(s);
 }
}
```

2) Design an AWT application to calculate the factorial of a number

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class factorial extends Frame implements ActionListener
{
        Button b;
        TextField t;
        Label l1,l2;
        factorial()
        {
                setTitle("Factorial");
                setVisible(true);
                setSize(200,200);
                setLayout(new FlowLayout());

                l1 = new Label("Enter A Number: ");
                l2 = new Label("");
```

```
                t = new TextField(10);

                b = new Button("Factorial");
                b.addActionListener(this);

                add(l1);
                add(t);
                add(b);
                add(l2);
        }
        public void actionPerformed(ActionEvent AE)
        {
                if(AE.getSource() == b)
                {
                        int fact = 1;
                        String n = t.getText();
                        int number = Integer.valueOf(n);
                        for(int i = number ; i >= 1 ; i--)
                        {
                                fact = fact * i;
                        }
                        String n2 = String.valueOf(fact);
                        l2.setText(n2);
                }
        }
 public static void main(String args[])
 {
          factorial f = new factorial();
 }
}
```

Slip 3 :

1) Write a Java program to create a class Employee with a name & salary. Create a class Manager inherited from Employee. Add an instance variable department. Create a class Executive inherit from Manager and add an instance variable location. Write the class definitions, the constructors and methods that read and display the information. (NOT SURE PLEASE CONFIRM WITH SOMEONE)

Filename : Executive.java

```
import java.util.*;
class Employee
{
	int salary;
	String name;
	Employee()
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter Employee Name : ");
		name = sc.next();
		System.out.println("Enter Employee Salary : ");
		salary = sc.nextInt();
	}
	public void disp1()
	{
		System.out.println("Employee Name : " + name + "\nSalary : " + salary);
	}
}
class Manager extends Employee
{
	int salary;
	String dept,name;
	Manager()
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter Manager Name : ");
		name = sc.next();
		System.out.println("Enter Manager Salary : ");
		salary = sc.nextInt();
		System.out.println("Enter Manager Department  ");
		dept = sc.next();
	}
	public void disp2()
		{
			disp1();
			System.out.println("Manager Name : " + name + "\nManager Salary : " + salary +
"\nManager Department : " + dept);
		 }
}
```

```
class Executive extends Manager
{
	int salary;
	String location,name,dept;
	Executive()
	{
		Scanner sc = new Scanner(System.in);
		System.out.println("Enter Executive Name : ");
		name = sc.next();
		System.out.println("Enter Executive Salary : ");
		salary = sc.nextInt();
		System.out.println("Enter Executive Department  ");
	 dept = sc.next();
	 System.out.println("Enter Executive Location : ");
	 location = sc.next();
	}
	public void disp3()
	{
		disp2();
		System.out.println("Executive Name : " + name + "\nExecutive Salary : " + salary +
"\nExecutive Department : " + dept + "\nExecutive Location : " + location);
	}
 public static void main(String args[])
 {
	 Executive e = new Executive();
	 e.disp3();
 }
}
```

2) Design an AWT application to check whether the number entered in textbox is prime or not

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class prime extends Frame implements ActionListener
{
	Button b;
	TextField t;
	Label l1,l2;
	prime()
	{
		setTitle("Prime Number");
		setVisible(true);
		setSize(400,400);
		setLayout(new FlowLayout());

		l1 = new Label("Enter A Number: ");
		l2 = new Label("");
```

```
                t = new TextField(10);

                b = new Button("Check");
                b.addActionListener(this);

                add(l1);
                add(t);
                add(b);
                add(l2);
        }
        public void actionPerformed(ActionEvent AE)
        {
                int flag = 0;
                int num = Integer.valueOf(t.getText());
                int m = num/2;
                if(AE.getSource() == b)
                {
    for(int i = 2 ; i <= m ; i++)
    {
                                        if(num%i==0)
                                         flag = 1;
                                        else
                                         flag = 0;
                                }
                                if(flag == 1)
                                 l2.setText("Not a Prime Number");
                                else
                                 l2.setText("Prime Number");
                }
        }
 public static void main(String args[])
 {
          prime p = new prime();
 }
}
```

Slip 4 :

1) Write a Java program that copies content of one file to another. While copying the destination file should be an encrypted file. For example A is represented as C, B as D, C as E, and D as F and so on.

```
import java.util.*;
import java.io.*;
class file
{
 public static void main(String args[])
 {
  try
  {
                FileReader fr = new FileReader("a.txt");
                FileWriter fw = new FileWriter("b.txt");
                BufferedReader br = new BufferedReader(fr);
                String str,str1="";
                while((str = br.readLine())!= null)
                {
                        str1 = str;
                }
                char[] n = str1.toCharArray();
                for(int i = 0 ; i < n.length ; i++)
                {
                        int n1 = (int)n[i];
                        n1 = n1 + 2;
                        char n2 = (char)n1;
                        fw.write(n2);
                }
                fr.close();
                fw.close();
        }
        catch(Exception e)
        {
                System.out.println("Error : " + e.getMessage());
        }
 }
}
```

2) Design an AWT application to accept a number from user through textbox and print its reverse.

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class reverse extends Frame implements ActionListener
{
```

```
	Button b;
	TextField t;
	Label l1,l2;
	reverse()
	{
		setTitle("Reverse");
		setVisible(true);
		setSize(200,200);
		setLayout(new FlowLayout());

		l1 = new Label("Enter A Number: ");
		l2 = new Label("");

		t = new TextField(10);

		b = new Button("Reverse");
		b.addActionListener(this);

		add(l1);
		add(t);
		add(b);
		add(l2);
	}
	public void actionPerformed(ActionEvent AE)
	{
		int num = Integer.valueOf(t.getText());
		int rev = 0,rem;
		if(AE.getSource() == b)
		{
		 while(num>0)
		 {
			rem = num%10;
			rev = rev * 10 + rem;
			num = num/10;
		 }
		 l2.setText("Reverse is : " + rev);
		}
	}
 public static void main(String args[])
 {
	 reverse r = new reverse();
 }
}
```

Slip 5 :

1) Write a Java code to input height (in inches) and convert it into feet and inches. Display the final result in feet and inches. For e.g. if height is 77 inches then after conversion it will be 6 feet 5 inches. [1 feet=12 inches].

```
import java.util.*;
class convert
{
 public static void main(String args[])
 {
  Scanner sc = new Scanner(System.in);
  int height,feet,inch;
  System.out.println("Enter Height in Inches : ");
  height = sc.nextInt();
  feet = height/12;
  inch = height%12;
  System.out.println("Height is : " + feet + "ft " + inch + "in");
 }
}
```

2) Write a Java code to implement MouseListener and MouseMotionListener.

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class mouse extends Frame implements MouseListener,MouseMotionListener
{
	Label l1,l2;
	mouse()
	{
		setTitle("Mouse Listeners");
		setVisible(true);
		setSize(200,200);
		setLayout(new FlowLayout());

		l1 = new Label("Click to activate mouseClicked Event");
		l2 = new Label("Click and Drag mouse to activate mouseDragged Event");

		add(l1);
		add(l2);
		addMouseListener(this);
		addMouseMotionListener(this);
	}
	public void mouseClicked(MouseEvent ME)
	{
```

```
                l1.setText("Mouse Clicked");
        }
        public void mouseExited(MouseEvent ME)
        {}
        public void mouseEntered(MouseEvent ME)
        {}
        public void mouseReleased(MouseEvent ME)
        {}
        public void mousePressed(MouseEvent ME)
        {}
        public void mouseMoved(MouseEvent ME)
        {}
        public void mouseDragged(MouseEvent ME)
        {
                l2.setText("Mouse Dragged");
        }
 public static void main(String args[])
 {
          mouse m = new mouse();
 }
}
```

Slip 6 :

1) Write a Java program to input Basic salary of a person and calculate Net salary in Rs. after increasing his salary as per the following criteria and Display the Net Salary.

```
import java.util.*;
class salary
{
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        double basic,net;
        System.out.println("Enter Basic Salary : ");
        basic = sc.nextDouble();
        if(basic < 3000)
        {
                net = basic + basic * 0.02;
                System.out.println("Net Salary : " + net);
        }
        else if(basic >= 3000 && basic < 5000)
        {
                net = basic + basic * 0.05;
                System.out.println("Net Salary : " + net);
        }
        else if(basic >= 5000 && basic < 10000)
        {
                net = basic + basic * 0.1;
                System.out.println("Net Salary : " + net);
        }
        else
        {
                net = basic + basic * 0.2;
                System.out.println("Net Salary : " + net);
        }
 }
}
```

2) Write a Java program for multiplying two matrices and print the product for the same.

```
import java.util.*;
class mult
{
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        int a[][] = new int[2][2];
```

```
        int b[][] = new int[2][2];
        int c[][] = new int[2][2];
        int i,j,k;
        System.out.println("Enter elements for 1st Matrix : ");
        for(i = 0 ; i < 2 ; i++)
        {
                for(j = 0 ; j < 2 ; j++)
                {
                        a[i][j] = sc.nextInt();
                }
        }
        System.out.println("Enter elements for 2nd Matrix : ");
        for(i = 0 ; i < 2 ; i++)
        {
                for(j = 0 ; j < 2 ; j++)
                {
                        b[i][j] = sc.nextInt();
                }
        }
        System.out.println("Product of Matrices : ");
        for(i = 0 ; i < 2 ; i++)
                {
                        for(j = 0 ; j < 2 ; j++)
                        {
                                for(k = 0 ; k < 2 ; k++)
                                {
                                 c[i][j] = c[i][j] + (a[i][k]*b[k][j]);
                                }
                        }
        }
        for(i = 0 ; i < 2 ; i++)
         {
                 for(j = 0 ; j < 2 ; j++)
                 {
                        System.out.print(c[i][j]+" ");
                 }
                 System.out.println();
        }
 }
}
```

Slip 7 :

1) Write a Java program that translates a letter grade into a number grade. Letter grades are A, B, C, D, and F possibly followed by + or -. Their numeric values are 4,3,2,1 and 0. There is no F+ and F-. + increases the value by 0.3 and – decreases the value by 0.3. However A+ has the value as 4.0 only.
For example
Enter the grade: B
The numeric value is : 2.7

```
import java.util.*;
class grade
{
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        String g,g1;
        float a = 4 , b = 3 , c = 2 , d = 1, f = 0;
        System.out.println("Enter your Grade : ");
        g = sc.next();
        g1 = g.toUpperCase();
        if(g1.equals("A") || g1.equals("A+"))
        {
                System.out.println("The numeric value is : " + a);
        }
        else if(g1.equals("A-"))
        {
                float r = a - 0.3f;
                System.out.println("The numeric value is : " + r);
        }
        else if(g1.equals("B+"))
        {
                float r = b + 0.3f;
                System.out.println("The numeric value is : " + r);
        }
        else if(g1.equals("B-"))
        {
                float r = b - 0.3f;
                System.out.println("The numeric value is : " + r);
        }
        else if(g1.equals("C+"))
        {
                float r = c + 0.3f;
                System.out.println("The numeric value is : " + r);
        }
        else if(g1.equals("C-"))
        {
```

```
                float r = c - 0.3f;
                System.out.println("The numeric value is : " + r);
        }
        else if(g1.equals("D+"))
        {
                float r = d + 0.3f;
                System.out.println("The numeric value is : " + r);
        }
        else if(g1.equals("D-"))
        {
                float r = d - 0.3f;
                System.out.println("The numeric value is : " + r);
        }
        else if(g1.equals("F") || g1.equals("F+") || g1.equals("F-"))
        {
                System.out.println("The numeric value is : " + f);
        }
        else if(g1.equals("A"))
        {
                System.out.println("The numeric value is : " + a);
        }
        else if(g1.equals("B"))
        {
                System.out.println("The numeric value is : " + b);
        }
        else if(g1.equals("C"))
        {
                System.out.println("The numeric value is : " + c);
        }
        else if(g1.equals("D"))
        {
                System.out.println("The numeric value is : " + d);
        }
        else
        {
                System.out.println("Invalid Input");
        }
 }
}
```

2) Write a Java program to merge the contents of two file into a single file.

```
import java.util.*;
import java.io.*;
class merge
{
 public static void main(String args[])
 {
```

```
            try
            {
             FileReader fr1 = new FileReader("a.txt");
             FileReader fr2 = new FileReader("b.txt");
             FileWriter fw = new FileWriter("c.txt");
             BufferedReader br1 = new BufferedReader(fr1);
             BufferedReader br2 = new BufferedReader(fr2);
             String s1,s2,s3="",s4="";
             while((s1 = br1.readLine()) != null)
             {
                      s3 = s1 ;
             }
             while((s2 = br2.readLine()) != null)
             {
                      s4 = s2;
             }
             String s5 = s3 + " " + s4;
             fw.write(s5);
             fr1.close();
             fr2.close();
             fw.close();
  }
  catch(Exception e)
  {
    System.out.println(e.getMessage());
  }
 }
}
```

Slip 8 :

1) Create a class player as follows:-
Data members:-
pname(String),innings(int),runs(int),notouts(int)
Methods:-
i) void showdata() – to display the details of player.
ii) Void calcAvg() – to calculate batting average of player as follows:- Bat. Avg= runs/(inningsnotouts);
Write a Java program to create an object of class Player to input player details and invoke all its methods.

```
import java.util.*;
class Player
{
 String pname;
 int innings, runs, notouts;
 Player(String n , int i , int r , int no)
 {
        pname = n;
        innings = i;
        runs = r;
        notouts = no;
 }
 public void showdata()
 {
        System.out.println("Player Name : " + pname + "\nRuns Scored : " + runs + "\nInnings Played : "
+ innings + "\nNotOuts : " + notouts);
 }
 public void calcAvg()
 {
        int BatAvg = runs/(innings-notouts);
        System.out.println("Batting Average is : " + BatAvg);
 }
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        String name;
        int in,r,no;
        System.out.println("Enter Player Name : ");
        name = sc.next();
        System.out.println("Enter Number Of Innings : ");
        in = sc.nextInt();
        System.out.println("Enter Runs : ");
        r = sc.nextInt();
        System.out.println("Enter Number Of NotOuts : ");
        no = sc.nextInt();
        Player p = new Player(name,in,r,no);
```

```
        p.showdata();
        p.calcAvg();
 }
}
```

2) Write a Java program to implement KeyListener.

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class key extends Frame implements KeyListener
{
 Label l;
 key()
 {
        setTitle("Key Listener");
        setVisible(true);
        setLayout(new FlowLayout());
        setSize(400,400);

        l = new Label("Press a Key on Keyboard to Activate KeyPressed");

        add(l);
        addKeyListener(this);
 }
 public void keyReleased(KeyEvent KE)
 {}
 public void keyPressed(KeyEvent KE)
 {
        l.setText("Key Pressed");
 }
 public void keyTyped(KeyEvent KE)
 {}
 public static void main(String args[])
 {
  key k = new key();
 }
}
```

Slip 9 :

1) Write a Java program to accept the credit card type and shopping amount from the user and then display the Net Price as Net Price= Shopping Amount – Discount.

```
import java.util.*;
class credit
{
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        String card;
        double amt,net;
        System.out.println("Enter Card Type : ");
        card = sc.next();
        System.out.println("Enter Shopping Amount : ");
        amt = sc.nextDouble();
        if(card.equals("VISA") || card.equals("visa") && amt < 5000)
        {
                net = amt - amt * 0.1;
                System.out.println("Net Price : " + net);
        }
        else if(card.equals("VISA") || card.equals("visa") && amt >= 5000)
        {
                net = amt - amt * 0.2;
                System.out.println("Net Price : " + net);
        }
        else if(card.equals("XYZ") || card.equals("xyz") && amt < 10000)
        {
                net = amt - amt * 0.15;
                System.out.println("Net Price : " + net);
        }
        else if(card.equals("XYZ") || card.equals("xyz") && amt >= 10000)
        {
                net = amt - amt * 0.25;
                System.out.println("Net Price : " + net);
        }
        else if(card.equals("ABC") || card.equals("abc") && amt < 8000)
        {
                net = amt - amt * 0.12;
                System.out.println("Net Price : " + net);
        }
        else if(card.equals("ABC") || card.equals("abc") && amt >= 8000)
        {
                net = amt - amt * 0.15;
                System.out.println("Net Price : " + net);
        }
```

```
        else
        {
                System.out.println("Net Price : " + amt);
        }
 }
}
```

2) Write a Java program to convert a decimal number to binary number.

```
import java.util.*;
class decimal
{
 public static void main(String args[])
 {
  Scanner sc = new Scanner(System.in);
  int num;
  System.out.println("Enter a Number : ");
  num = sc.nextInt();
  System.out.println("Binary Equivalent : " + Integer.toBinaryString(num));
 }
}
```

OR

```
Scanner sc = new Scanner(System.in);
int num, i = 0;
System.out.println("Enter a Number : ");
num = sc.nextInt();
int a[] = new int[num];
  while(num>0)
  {
    a[i++] = num % 2;
    num = num / 2;
}
for(int j = i - 1 ; j >= 0 ; j--)
{
  System.out.print(a[j]);
}
```

Slip 10 :

1) Write a java program to input two numbers x and y and count total number of prime numbers between x and y.
For example if x=1 and y=10 then o/p is 4.

```
import java.util.*;
class primerange
{
 public static void main(String args[])
 {
            Scanner sc = new Scanner(System.in);
            int x,y,count = 0;
            System.out.println("Enter X : ");
            x = sc.nextInt();
            System.out.println("Enter Y : ");
            y = sc.nextInt();
            while(x<y)
            {
             for(int i = 2 ; i <= x/2 ; i++)
             {
                        if(x % i == 0)
                                    break;
                              count++;
             }
             x++;
            }
            System.out.println("Number of Prime Nos : " + count);
 }
}
```

2) Write a Java Program to find the largest and smallest element from an array.

```
import java.util.*;
class largesmall
{
 public static void main(String args[])
 {
            Scanner sc = new Scanner(System.in);
            int i,large,small;
            int a[] = new int[5];
            System.out.println("Enter 5 elements in array :");
            for(i = 0 ; i < 5 ; i++)
            {
              a[i] = sc.nextInt();
            }
            large = small = a[0];
            for(int j = 1 ; j < 5 ; j++)
            {
              if(a[j] > large)
               large = a[j];
              if(a[j] < small)
              small = a[j];
            }
           System.out.println("Smallest " + small);
           System.out.println("Largest " + large);
 }
}
```

Slip 11 :

1) Write a Java program to create a class account with attributes acc_no, name and balance. Initialize the values through parameterized constructor. If balance between 1000 and 5000 generate a user defined exception "Balance within the range".

```
import java.util.*;
import java.io.*;
class exception extends Exception
{
exception(String s1)
{
  super(s1);
 }
}
class account
{
 int acc_no,balance;
 String name;
 account(int ano , int bal , String n)
 {
            acc_no = ano;
            balance = bal;
            name = n;
            try
            {
           if(balance >= 1000 && balance <= 5000)
             throw new exception("Balance Within Range");
           else
       System.out.println("Name : " + name + "\nAccount Number : " + acc_no + "\nBalance : "+balance);
  }
  catch(exception e)
  {
    System.out.println(e.getMessage());
  }
 }
 public static void main(String args[])
 {
            account a = new account(12345 , 3000 , "ABC");
 }
}
```

2) Write a Java AWT program to accept a number from user (TextBox) and display the cube of the number.

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class cube extends Frame implements ActionListener
{
	Button b;
	TextField t;
	Label l1,l2;
	cube()
	{
		setTitle("Cube");
		setVisible(true);
		setSize(400,400);
		setLayout(new FlowLayout());

		l1 = new Label("Enter A Number: ");
		l2 = new Label("");

		t = new TextField(10);

		b = new Button("Cube");
		b.addActionListener(this);

		add(l1);
		add(t);
		add(b);
		add(l2);
	}
	public void actionPerformed(ActionEvent AE)
	{
		if(AE.getSource() == b)
		{
			String n = t.getText();
			int number = Integer.valueOf(n);
			  int c = number * number * number;
			String n2 = String.valueOf(c);
			l2.setText("Cube is : " + n2);
		}
	}
 public static void main(String args[])
 {
	 cube c = new cube();
 }
}
```

Slip 12 :

1) Define a class Electbill that contains consumer details as follows:-
Data members/Instance variable :
cno (long) //consumer number
cname (String) // consumer name
cadd (String) // consumer address
NOU(long) // to store number of units consumed
Member functions / Methods :
(i) Electbill() : Parameterised constructor to assign values to consumer number, consumer name and address
(ii) void display() : Display consumers details
(iii) void calculate() : Calculate the monthly bill of consumer according to following slabs and it should also display the total amount to be paid.

```
import java.util.*;
class Electbill
{
 long cno,NOU;
 String cname,cadd;
 Electbill(long c , String name, String add)
 {
            cno = c;
            cname = name;
            cadd = add;
 }
 void display()
 {
            System.out.println("Customer Details : ");
            System.out.println("Name : " + cname + "\nCustomer Number : " + cno + "\nAddress :"+cadd);
 }
 void calculate(long N)
 {
            display();
            NOU = N;
            double amt = 500;
            if(NOU >= 1 && NOU <= 100)
            {
                        System.out.println("Total amount to be paid : " + amt);
            }
            if(NOU >= 101 && NOU <= 200)
            {
                         amt = NOU + amt ;
              System.out.println("Total amount to be paid : " + amt);
            }
            if(NOU >= 201 && NOU <= 300)
            {
```

```
                amt = amt + (1.20 * NOU);
                System.out.println("Total amount to be paid : " + amt);
        }
        if(NOU >= 300)
        {
                amt = amt + (1.50 * NOU);
                System.out.println("Total amount to be paid : " + amt);
        }
}
 public static void main(String args[])
{
        Scanner sc = new Scanner(System.in);
        long no,nou;
        String name,add;
        System.out.println("Enter Cno : " );
        no = sc.nextLong();
        System.out.println("Enter Cname : ");
        name = sc.next();
        System.out.println("Enter Caddress : " );
        add = sc.next();
        System.out.println("Enter NOU consumed : " );
        nou = sc.nextLong();
        Electbill e = new Electbill(no,name,add);
        e.calculate(nou);
}
}
```

2) Write a Java program that prompts the user(using Buffered Reader) for a radius and then prints a. Area and Circumference of the circle with that radius b. Volume ((4/3)*Pi*R3))and Surface Area(4*Pi*R2) of the sphere with that radius.

```
import java.util.*;
import java.io.*;
class circle
{
 public static void main(String args[])
 {
        try
        {
         InputStreamReader isr = new InputStreamReader(System.in);
         BufferedReader br = new BufferedReader(isr);
         double radius,area,c,vol,sa;
         System.out.println("Enter Radius : ");
         radius = Double.valueOf(br.readLine());
         area = 3.142 * radius * radius;
         c = 2 * 3.142 * radius;
         System.out.println("Radius : " + radius + "\nArea : " + area + "\nCircumference : " + c);
         vol = (4 * 3.142 * radius * radius * radius) / 3;
```

```
            sa = 4 * 3.142 * radius * radius;
            System.out.println("Volume Of Sphere : " + vol + "\nSurface Area of Sphere : " + sa);
           }
  catch(Exception e)
  {
    System.out.println(e.getMessage());
 }
 }
}
```

Slip 13 :

1) Write a Java program that prompts the users for 2 integers using command line argument and then prints (i) sum (ii) difference (iii) product (iv) average (v) maximum (vi) minimum. Write methods to calculate the same.

```
import java.util.*;
class num
{
 public void sum(int a, int b)
 {
            System.out.println("Sum is : " + (a+b));
 }
 public void diff(int a, int b)
 {
            System.out.println("Difference is : " + (a-b));
 }
 public void product(int a, int b)
 {
            System.out.println("Product is : " + (a*b));
 }
 public void avg(int a, int b)
 {
  System.out.println("Average is : " + (a+b)/2);
 }
 public void max(int a, int b)
 {
            if(a > b)
   System.out.println("Maximum is : " + a);
  else
   System.out.println("Maximum is : " + b);
 }
 public void min(int a, int b)
 {
            if(a > b)
   System.out.println("Minimum is : " + b);
  else
   System.out.println("Minimum is : " + a);
 }
 public static void main(String args[])
 {
            Scanner sc = new Scanner(System.in);
            num n = new num();
            int a,b;
            System.out.println("Enter 2 integer nos : ");
            a = sc.nextInt();
            b = sc.nextInt();
```

```
        n.sum(a,b);
        n.diff(b,a);
        n.product(a,b);
        n.avg(a,b);
        n.max(a,b);
        n.min(a,b);
 }
}
```

2) Write an AWT Program to design the Following GUI.

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class marks extends Frame implements ActionListener
{
        Button b;
        TextField t1,t2;
        Label l1;
        marks()
        {
                setTitle("Marks");
                setVisible(true);
                setSize(300,300);
                setLayout(new GridBagLayout());
                GridBagConstraints gbc = new GridBagConstraints();

                l1 = new Label("Enter your marks % : ");
                gbc.gridx = 0;
                gbc.gridy = 0;
                add(l1,gbc);

                t1 = new TextField(10);
                gbc.gridx = 1;
                gbc.gridy = 0;
  add(t1,gbc);

                t2 = new TextField(30);
                gbc.gridx = 1;
                gbc.gridy = 2;
  t2.setEditable(false);
                add(t2,gbc);

                b = new Button("Calculate Grade");
                gbc.gridx = 0;
                gbc.gridy = 1;
                gbc.gridwidth = 2;
                b.addActionListener(this);
```

```
   add(b,gbc);
            }
            public void actionPerformed(ActionEvent AE)
            {
  int marks = Integer.valueOf(t1.getText());
  if(AE.getSource() == b)
  {
                        if(marks >= 60)
                         t2.setText("A++");
                        else if(marks >= 45 && marks < 60)
                         t2.setText("B");
                        else if(marks >= 33 && marks < 45)
                         t2.setText("C");
                        else if(marks < 33)
                         t2.setText("F");
                        else
                         t2.setText("Invalid");
            }
            }
 public static void main(String args[])
 {
             marks m = new marks();
 }
}
```

Slip 14 :

1) Write a java program to input a number from user and print the sum of its odd factors only. Example: - If number is 36 then its factors are 1,2,3,4,6,9,12,18 and sum of its odd factors is 1+3+9=13

```
import java.util.*;
class factor
{
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        int num, sum = 0;
        System.out.println("Enter a number : ");
        num = sc.nextInt();
        for(int i = 1; i <= num ; i++)
        {
                if(num % i == 0)
                {
                        int factor = i ;
                        if(factor % 2 == 1)
                                sum = sum + factor;
                }
        }
        System.out.println("Sum of odd Factors is : " + sum);
 }
}
```

2) Write a java Program to input any digit number and print the sum of only its even digits. Example: 2354=2+4=6.

```
import java.util.*;
class even
{
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        int num,rem, sum = 0;
        System.out.println("Enter a number : " );
        num = sc.nextInt();
        while(num > 0)
        {
                rem = num%10;
                num = num/10;
                if(rem % 2 == 0)
                        sum = sum + rem;
        }
        System.out.println("Sum of Even Digits : " + sum);
 }
```

}

Slip 15 :

1) Design an abstract class called Shape which has three subclasses say Triangle, Rectangle, and Circle. Define one method area () in the abstract class and override this area () in these three subclasses to calculate for specific object i.e. area () of Triangle subclass should calculate area of triangle etc. Same for Rectangle and Circle.

Filename : Triangle.java

```
import java.util.*;
abstract class Shape
{
 abstract public void area();
}
class Rectangle extends Shape
{
 public void area()
 {
        Scanner sc = new Scanner(System.in);
        double l,b;
        System.out.println("Enter Length : ");
        l = sc.nextDouble();
        System.out.println("Enter Breadth : ");
        b = sc.nextDouble();
        double a = l * b;
        System.out.println("Area of Rectangle is : " + a);
        }
}
class Circle extends Shape
{
 public void area()
 {
  Scanner sc = new Scanner(System.in);
  double r;
  System.out.println("Enter Radius : ");
  r = sc.nextDouble();
  double a = 3.142 * r * r;
  System.out.println("Area of Circle is : " + a);
 }
}
class Triangle extends Shape
{
 public void area()
 {
        Scanner sc = new Scanner(System.in);
        double b,h;
        System.out.println("Enter Base : ");
```

```
        b = sc.nextDouble();
        System.out.println("Enter Height : ");
        h = sc.nextDouble();
        double a = 0.5 * b * h;
        System.out.println("Area of Circle is : " + a);
}
public static void main(String args[])
{
        Rectangle r = new Rectangle();
        r.area();
        Circle c = new Circle();
        c.area();
        Triangle t = new Triangle();
        t.area();
}
}
```

2) Write a java program for multiplying two matrices and print the product for the same.

Same as Slip 6 – 2

Slip 16 :

1) Create a class "Employee" as follows:-
Instance variables:- empno(long), empname(String), job(String)
Methods:-
i) void showinfo() - to display details of employee.
Create another class "Salary" that inherits from class "Employee" as follows:-
Instance variables:- basic(double), newsal(double)
Methods:-
i) void calculate(double perc) – that takes percentage amount "perc" as argument and calculates newsalary by incrementing the basic salary by that percentage amount.
ii) void dispdata() – to display basic salary.
Write a Java program to create an object of class Salary to input details of employee and also invoke showinfo(), calculate() and dispdata() methods.

Filename : salary.java

```
import java.util.*;
class Employee
{
 long empno;
 String empname, job;
 public void showinfo(String en, String j, long n)
 {
        empname = en;
        empno = n;
        job = j;
        System.out.println("Name : " + empname + "\nEmp No : " + empno + "\nJob : " + job);
 }
}
 class salary extends Employee
 {
        double basic, newsal;
        public void calculate(double b , double perc)
        {
                basic = b;
                newsal = basic + basic * (perc/100);
        }
        public void dispdata()
        {
                System.out.println("Basic Salary : " + basic + " New Salary : " + newsal);
        }
```

```
public static void main(String args[])
{
        Scanner sc = new Scanner(System.in);
        long eno;
        String n,j;
        System.out.println("Enter Name : ");
        n = sc.next();
        System.out.println("Enter EmpNo : ");
        eno = sc.nextLong();
        System.out.println("Enter Job : ");
        j = sc.next();
        salary s = new salary();
        s.showinfo(n,j,eno);
        System.out.println("Enter Basic Salary : ");
        double b = sc.nextDouble();
        System.out.println("Enter Increase % : ");
        double p = sc.nextDouble();
        s.calculate(b,p);
        s.dispdata();
}
}
```

2) Write a Java program for generating 4 threads to do the following operations.
(a)getting n numbers
(b)printing even numbers
(c)printing odd numbers
(d)printing square of a numbers

Filename : threadprog.java

```
import java.util.*;
class thread1 extends Thread
{
        public void run()
        {
         System.out.println("Getting N Numbers " );
         int a;
         Scanner sc = new Scanner(System.in);
         System.out.print("Enter a Number : " );
         a = sc.nextInt();
         try
         {
                for(int i = 0 ; i <= a ; i++)
                {
                        System.out.println(i);
                        Thread.sleep(10);
          }
         }
         catch(Exception e)
```

```
		{
			System.out.println(e.getMessage());
		}
		}
}
class thread2 extends Thread
{
		public void run()
		{
		System.out.println();
		System.out.println("Even Numbers ");
		int a;
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter a Number : " );
		a = sc.nextInt();
		try
		{
			for(int i = 0 ; i <= a ; i++)
			{
				if(i % 2 == 0)
				System.out.println(i);
		 }
		}
		catch(Exception e)
		{
			System.out.println(e.getMessage());
		}
		}
}
class thread3 extends Thread
{
		public void run()
		{
		System.out.println();
		System.out.println("Odd Numbers");
		int a;
		Scanner sc = new Scanner(System.in);
		System.out.print("Enter a Number : " );
		a = sc.nextInt();
		try
		{
			for(int i = 0 ; i <= a ; i++)
			{
				if(i % 2 == 1)
				System.out.println(i);
		 }
		}
		catch(Exception e)
```

```
            {
                        System.out.println(e.getMessage());
            }
            }
}
class thread4 extends Thread
{
            public void run()
            {
             int a;
             Scanner sc = new Scanner(System.in);
             System.out.println();
             System.out.println("Square Of Numbers : ");
             System.out.print("Enter a Number : " );
             a = sc.nextInt();
             try
             {
                        for(int i = 1 ; i <= a ; i++)
                        {
                                    int p = i * i;
                        System.out.println(p);
              }
             }
             catch(Exception e)
             {
                        System.out.println(e.getMessage());
             }
            }
}
class threadprog extends Thread
{
 public static void main(String args[])
 {
            try
            {
             thread1 t1 = new thread1();
             t1.start();
             t1.join();
             thread2 t2 = new thread2();
             t2.start();
             t2.join();
             thread3 t3 = new thread3();
             t3.start();
             t3.join();
             thread4 t4 = new thread4();
             t4.start();
             t4.join();
            }
```

```
        catch(Exception e)
        {
                System.out.println(e.getMessage());
        }
}
}
```

Slip 17 :

1) Write a Java program to multiply two matrices. Before multiplication the matrices should be checked whether they can be multiplied or not.

```
import java.util.*;
class check
{
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
         int a1,a2,b1,b2;
         System.out.println("How many rows and cols for matrix 1 : ");
         a1 = sc.nextInt();
         a2 = sc.nextInt();
         System.out.println("How many rows and cols for matrix 2 : ");
         b1 = sc.nextInt();
         b2 = sc.nextInt();
         int a[][] = new int[a1][a2];
         int b[][] = new int[b1][b2];
         if(a2 == b1)
         {
          System.out.println("Multiplication Possible");
          int c[][] = new int[a1][b2];
          int i,j,k;
          System.out.println("Enter elements for 1st Matrix : ");
          for(i = 0 ; i < a1 ; i++)
          {
           for(j = 0 ; j < a2 ; j++)
          {
             a[i][j] = sc.nextInt();
          }
          }
          System.out.println("Enter elements for 2nd Matrix : ");
          for(i = 0 ; i < b1 ; i++)
          {
          for(j = 0 ; j < b2 ; j++)
           {
            b[i][j] = sc.nextInt();
```

```
            }
            }
            System.out.println("Product of Matrices : ");
            for(i = 0 ; i < a1 ; i++)
            {
             for(j = 0 ; j < b2 ; j++)
             {
               for(k = 0 ; k < b1 ; k++)
            {
              c[i][j] = c[i][j] + (a[i][k]*b[k][j]);
            }
            }
            }
            for(i = 0 ; i < a1 ; i++)
            {
             for(j = 0 ; j < b2 ; j++)
             {
               System.out.print(c[i][j]+" ");
             }
            System.out.println();
            }
        }
            else
            {
             System.out.println("Multiplication Not Possible");
            }
 }
}
```

2) Write a method in Java that takes two integer arguments and returns power of it. Suppose x and y passing as an argument(using call by reference) then it returns x to power y after calculation.

```
import java.util.*;
class number
{
        double x,y;
}
class refer
{
 public static void power(number x1, number y1)
 {
        x1.x = Math.pow(x1.x,y1.y);
  System.out.println("X to the power Y is : " + x1.x);
 }
 public static void main(String args[])
 {
        number n1 = new number();
        n1.x = 2;
```

```
        number n2 = new number();
        n2.y = 3;
        power(n1,n2);
 }
}
```

Slip 18 :

1) Define 2 packages (i) Prime (ii) Factorial. Write a Java program to create a class PrimeFact to import these packages.

Filename : PrimeFact.java

PACKAGE PRIMENO :

```
package v50;
public class primeno
{
 public void check(int a)
 {
  int flag = 0;
  for(int i = 2 ; i < a/2 ; i++)
  {
   if(a % i == 0)
   {
    flag = 1;
    break;
   }
  }
  if(flag == 1)
   System.out.println(a + " is not a Prime Number");
   else
    System.out.println(a + " is Prime Number");
 }
}
```

PACKAGE FACTORIAL:

```
package v50;
public class f
{
 public void fact(int a)
 {
  int f1 = 1;
  for(int i = a ; i > 0 ; i--)
  {
```

```
   f1 = f1 * i ;
  }
  System.out.println("Factorial is : " + f1);
 }
}
```

CLASS PRIMEFACT:

```
import java.util.*;
import v50.*;
class PrimeFact
{
 public static void main(String args[])
 {
            Scanner sc = new Scanner(System.in);
            int a;
            System.out.println("Enter a Number : " );
            a = sc.nextInt();
            primeno p = new primeno();
            p.check(a);
            int b;
            System.out.println("Enter a Number : " );
            b = sc.nextInt();
   f c = new f();
   c.fact(b);
 }
}
```

2) Write a java program to copy the contents from one file to other file.

```
import java.util.*;
import java.io.*;
class copy
{
 public static void main(String args[])
 {
  try
          {
            FileReader fr = new FileReader("a.txt");
            FileWriter fw = new FileWriter("b.txt");
            BufferedReader br = new BufferedReader(fr);
            String str;
            while((str = br.readLine())!= null)
            {
                    fw.write(str);
   }
   fw.close();
   fr.close();
```

```
 }
 catch(Exception e)
 {
                System.out.println(e.getMessage());
        }
}
}
```

Slip 19 :

1) Define a class Travel with the following descriptions :
Data members/Instance variable :
TravelCode(long),Place(string),No_of_travellers(int),No_of_buses(integer)
Member functions / Methods :
i) A constructor to assign initial values of TravelCode as 201, Place as "Nainital", No_of_travellers as 10, No_of_buses as 1
ii)A method NewTravel() which allows user to enter TravelCode, Place and No_of_travellers through arguments. Also, assign the value of No_of_buses as per the following conditions :
iii) A method ShowTravel( ) to display the content of all the data members on screen. WAP to create an object of class Travel and invoke all its methods

```
import java.util.*;
class Travel
{
 long TravelCode;
 String Place;
 int not, nob;
 Travel()
 {
        TravelCode = 201;
        Place = "Nainital";
        not = 10;
        nob = 1;
 }
 public void NewTravel()
 {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter Travel Code : ");
        TravelCode = sc.nextLong();
        System.out.println("Enter Place : ");
        Place = sc.next();
        System.out.println("Enter No. of Travellers : ");
        not = sc.nextInt();
        if(not < 20)
                nob = 1;
```

```
            else if(not >= 20 && not < 40)
              nob = 2;
            else if(not >= 40)
              nob = 3;
 }
 public void ShowTravel()
 {
            System.out.println("Travel Code : " + TravelCode + "\nPlace " + Place + "\nNo. of Travellers : " +
not + "\nNo. of Buses : " + nob);
 }
 public static void main(String args[])
 {
            Travel t = new Travel();
            t.NewTravel();
            t.ShowTravel();
 }
}
```

2) Write a Java program to accept a sentence from user using command line argument and store it in a file data.txt

```
import java.util.*;
import java.io.*;
class sentence
{
 public static void main(String args[])
 {
  try
  {
                        FileOutputStream fos = new FileOutputStream("data.txt");
                        Scanner sc = new Scanner(System.in);
                        String str;
                        System.out.println("Enter a sentence : ");
                        str = sc.nextLine();
                        byte b[] = str.getBytes();
                        fos.write(b);
                        fos.close();
            }
            catch(Exception e)
            {
                        System.out.println("Error : " + e.getMessage());
            }
 }
}
```

Slip 20 :

1) Write a Java program that translates a number between 0 to 4 into the letter grades as F, D, C, B and A. For example if the number entered is 2.8 then grade is B and if number entered is 2.3 then grade would be C.

```
import java.util.*;
class translate
{
 public static void main(String args[])
 {
            Scanner sc = new Scanner(System.in);
            double a;
            System.out.println("Enter number between 0-4: ");
            a = sc.nextDouble();
            if( a >= 3.1 && a <= 4.0)
             System.out.println("Grade A");
            else if(a >= 2.6 && a <= 3.0)
             System.out.println("Grade B");
            else if(a >= 2.1 && a <= 2.5)
             System.out.println("Grade C");
            else if(a >= 1.5 && a <= 2.0)
             System.out.println("Grade D");
            else if(a > 0 && a < 1.5)
             System.out.println("Grade E");
            else
             System.out.println("Invalid");
 }
}
```

2) Write a Java AWT program to calculate area of Rectangle

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class areaRect extends Frame implements ActionListener
{
```

```
        Button b1;
        TextField t1,t2;
        Label l1,l2,l3;
        areaRect()
        {
                setTitle("Area Of Rectangle");
                setVisible(true);
                setSize(400,400);
                setLayout(new FlowLayout());

                l1 = new Label("Enter Length: ");
                l2 = new Label("Enter Breadth");
                l3 = new Label("");

                t1 = new TextField(10);
                t2 = new TextField(10);

                b1 = new Button("Area");
                b1.addActionListener(this);

                add(l1);
                add(t1);
                add(l2);
                add(t2);
                add(b1);
                add(l3);
        }
        public void actionPerformed(ActionEvent AE)
        {
                int l = Integer.valueOf(t1.getText());
                int b = Integer.valueOf(t2.getText());
                if(AE.getSource() == b1)
                {
                        int area = l * b;
                        l3.setText(String.valueOf(area));
                }
        }
 public static void main(String args[])
 {
         areaRect a = new areaRect();
 }
}
```

Slip 21 :

1) Write a Java program to create a class student with attributes roll no, name, age and course. Initialize values through parameterized constructor. If age is not between 15 and 21 then generate a user defined exception "Age not within the range".

```
import java.util.*;
import java.io.*;
class exception extends Exception
{
        exception(String s1)
        {
                super(s1);
 }
}
class student
{
 int rollno,age;
 String name,course;
 student(int rno , int a , String n , String c)
 {
        rollno = rno;
        age = a;
        name = n;
        course = c;
        try
        {
         if(age >= 15 && age <= 21)
          System.out.println("Name : " + name + "\nRoll Number : " + rollno + "\nAge : " + age +
"\nCourse : " + course);
         else
          throw new exception("Age not within the range");
  }
  catch(exception e)
  {
                System.out.println(e.getMessage());
        }
```

```
 }
 public static void main(String args[])
 {
          student s = new student(50 , 10 , "ABC" , "BscIT");
 }
}
```

2) Write a Java program to sort the array in ascending and descending order.

```
import java.util.*;
class ascdesc
{
 public static void main(String args[])
 {
          Scanner sc = new Scanner(System.in);
          System.out.println("Enter size of Array : ");
          int n = sc.nextInt();
          int a[] = new int[n];
          System.out.println("Enter " + n + " elements");
          int i,j,temp;
          for(i = 0 ; i < n ; i++)
          {
                    a[i] = sc.nextInt();
          }
          for(i = 0 ; i < n ; i++)
          {
                    for(j = i + 1 ; j < n ; j++)
                    {
                              if(a[i] > a[j])
                              {
                              temp = a[i];
                              a[i] = a[j];
                              a[j] = temp;
                              }
                    }
          }
          System.out.println("Ascending Order : ");
          for(i = 0 ; i < n ; i++)
           System.out.print(a[i]+ " ");
          for(i = 0 ; i < n ; i++)
          {
                   for(j = i + 1 ; j < n ; j++)
                   {
                    if(a[i] < a[j])
                             {
                    temp = a[i];
```

```
                        a[i] = a[j];
                        a[j] = temp;
                       }
                }
        }
        System.out.println("Descending Order : ");
                for(i = 0 ; i < n ; i++)
          System.out.print(a[i]+ " ");
}
}
```

Slip 22 :

1) Define 3 packages Rectangle, Square and Triangle each having area of their respective shape. Create a class ShapeDemo importing these 3 packages and displaying the area of rectangle, square and triangle

SIMILAR TO SLIP 18 – 1

2) Write a Java program to convert digit into words.(E.g.: 12 One Two)

```
import java.util.*;
class numword
{
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        String words[] = new String[10];
        words[0] = "Zero";
        words[1] = "One";
        words[2] = "Two";
        words[3] = "Three";
        words[4] = "Four";
        words[5] = "Five";
        words[6] = "Six";
        words[7] = "Seven";
        words[8] = "Eight";
        words[9] = "Nine";
        int num,rem;
        String conv = "";
        System.out.println("Enter a Number : ");
        num = sc.nextInt();
        for(int i = num ; i > 0 ; i = i/10)
        {
                rem = i%10;
                conv = words[rem] + " " + conv;
        }
        System.out.println(conv);
```

```
 }
}
```

Slip 23 :

1) Define a class TOUR as follows:-
Private Members:- Tcode(string),Noofadults(int),Noofkids(int),kilometres(int),totFare(float)
Public:
i) A constructor to assign initial values as follows:- Tcode with the word "NULL", Nofadults,Noofkids,kilometres & totfare with zero.
ii) A function AssignFare() which calculates and assigns the value of data members TotFare as follows:-
iii) EnterTour() to input values for Tcode, Nofoadults,Noofkids and kilometres through arguments. ShowTour() to display the details of all the data members along with total fare.

```
import java.util.*;
class TOUR
{
 private String Tcode;
 private int Noofadults, Noofkids , kilometres;
 private float totFare;
 public TOUR()
 {
            Tcode = null;
            Noofadults = Noofkids = kilometres = 0;
            totFare = 0f;
 }
 public void AssignFare()
 {
            if(kilometres >= 1000)
                        totFare = (500 * Noofadults) + (250 * Noofkids);
   else if(kilometres >= 500 && kilometres < 1000)
     totFare = (300 * Noofadults) + (150 * Noofkids);
   else if(kilometres < 500)
     totFare = (200 * Noofadults) + (100 * Noofkids);
   else
     System.out.println("Invalid");
 }
 public void EnterTour(String t , int na, int nk, int k)
 {
```

```
 Tcode = t;
  Noofadults = na;
  Noofkids = nk;
  kilometres = k;
 }
 public void ShowTour()
 {
          System.out.println("Tcode : " + Tcode + "\nNo. of Adults : " + Noofadults + "\nNo. of Kids : " +
Noofkids + "\nKilometres : " + kilometres + "\nTotal Fare : " + totFare);
 }
 public static void main(String args[])
 {
          TOUR t = new TOUR();
          Scanner sc = new Scanner(System.in);
          String tc;
          int na,nk,k;
          System.out.println("Enter Tcode : ");
          tc = sc.next();
          System.out.println("Enter No. of Adults : ");
          na = sc.nextInt();
          System.out.println("Enter No. of Kids : ");
          nk = sc.nextInt();
          System.out.println("Enter No. of Kms : ");
          k = sc.nextInt();
          t.EnterTour(tc,na,nk,k);
          t.AssignFare();
          t.ShowTour();
 }
}
```

2) Write a Java program that accepts two strings as command line arguments. It checks for the number of command line arguments. If they are less or more it throws a user defined exception else it will display the strings.

After compiling -> type the string using space after command java filename -> enter
Eg.
javac filename.java -> enter -> java filename hello world -> enter

```
import java.util.*;
import java.io.*;
class exception extends Exception
{
          exception(String s1)
          {
                    super(s1);
  }
}
class string
```

```
{
 public static void main(String args[])
 {
          try
  {
           int count = 0;
           for(int i = 0 ; i < args.length ; i++)
                    count++;
   System.out.println("Number of command line arguments : " + count);
           for(int i = 0 ; i < args.length ; i++)
           {
            if(count > 0 && count <= 2)
             System.out.println(args[i]);
            else
             throw new exception("Invalid Number of Line Arguments");
           }
  }
          catch(Exception e)
          {
                   System.out.println(e.getMessage());
          }
 }
}
```

Slip 24 :

1) Write a Java program called CozaLozaWoza which prints the number 1 to 110, 11 numbers per line. The program shall print "Coza" in place of the numbers which are multiples of 3, "Loza" for multiples of 5, "Woza" for multiples of 7, "CozaLoza" for multiples of 3 and 5, and so on. The output shall look like: 1 2 Coza 4 Loza Coza Woza 8 Coza Loza 11 Coza 13 Woza CozaLoza 16 17 Coza 19 Loza CozaWoz

```
import java.util.*;
class CozaWozaLoza
{
 public static void main(String args[])
 {
          String a = "Coza";
          String b = "Loza";
          String c = "Woza";
          int count = 1;
          int num = 0;
  for(int i = 1 ; i <= 11 ; i++)
  {
   for(int j = 1 ; j <= count  ; j ++)
    {
                    while(count <= 11 && num <= 110)
                    {
                     count++;
                     num++;
                     if(num % 3 == 0)
                       System.out.print(a+ " ");
                     else if(num % 5 == 0)
                       System.out.print(b + " ");
                     else if(num % 7 == 0)
                       System.out.print(c + " ");
                     else
                        System.out.print(num + " ");
                     }
                      count = 1;
                    }
                    System.out.println();
 }
```

```
 }
}
```

2) Write a Java AWT program to calculate area of Circle.

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class areaCircle extends Frame implements ActionListener
{
	Button b1;
	TextField t1;
	Label l1,l2;
	areaCircle()
	{
		setTitle("Area Of Circle");
		setVisible(true);
		setSize(400,400);
		setLayout(new FlowLayout());

		l1 = new Label("Enter Radius: ");
		l2 = new Label("");

		t1 = new TextField(10);

		b1 = new Button("Area");
		b1.addActionListener(this);

		add(l1);
		add(t1);
		add(b1);
		add(l2);
	}
	public void actionPerformed(ActionEvent AE)
	{
		double r = Double.valueOf(t1.getText());
		if(AE.getSource() == b1)
		{
			double area = 3.142 * r * r;
			l2.setText(String.valueOf(area));
		}
	}
```

```
 public static void main(String args[])
 {
        areaCircle a = new areaCircle();
 }
}
```

Slip 25 :

1) Design a student class. A student has a name, stipend, and enrolment number. Write a default constructor and a constructor with two parameters (name and enrolment number) and two methods. (a) To return the name and enrolment number. (b) A method that increases the student's stipend. Write a small program that tests your class.

```
import java.util.*;
class Student1
{
 String name;
 int stipend,enrollno;
 Student1()
 {
        stipend = 100;
        enrollno = 1;
        name = "ABC";
 }
 Student1(String n , int s , int e)
 {
        name = n;
        stipend = s;
        enrollno = e;
 }
 public String first()
 {
        return "Name : " + name + "\n" + "Enrollment Number : " + String.valueOf(enrollno);
 }
 public void incr(int i)
 {
        System.out.println("Old Stipend : " + stipend + "\nNew Stipend : " + (stipend+i));
 }
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        int s,e;
        String n;
        System.out.println("Enter Name : ");
```

```
        n = sc.next();
        System.out.println("Enter Stipend : ");
        s = sc.nextInt();
        System.out.println("Enter Enrollment Number : ");
        e = sc.nextInt();
        System.out.println("Enter Amount : ");
        int a = sc.nextInt();
        Student1 s1 = new Student1(n , s , e);
        String a1 = s1.first();
        s1.incr(a);
        System.out.println(a1);
 }
}
```

2) Write a Java code to design the following GUI and perform the arithmetic operation.

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class arith extends Frame implements ItemListener
{
        TextField t1,t2,t3;
        Label l1,l2,l3,l4;
        Choice c;
        arith()
        {
                setTitle("Arithmatic Operations");
                setVisible(true);
                setSize(300,300);
                setLayout(new GridBagLayout());
                GridBagConstraints gbc = new GridBagConstraints();

                l1 = new Label("Enter 1st no : ");
                gbc.gridx = 0;
                gbc.gridy = 0;
                add(l1,gbc);

                t1 = new TextField(10);
                gbc.gridx = 1;
                gbc.gridy = 0;
               add(t1,gbc);

               l2 = new Label("Enter 2nd no : ");
                gbc.gridx = 0;
                gbc.gridy = 1;
                add(l2,gbc);

                t2 = new TextField(10);
```

```
            gbc.gridx = 1;
            gbc.gridy = 1;
            add(t2,gbc);

             l3 = new Label("Result : ");
            gbc.gridx = 0;
            gbc.gridy = 2;
            add(l3,gbc);

            t3 = new TextField(10);
            gbc.gridx = 1;
            gbc.gridy = 2;
            t3.setEditable(false);
            add(t3,gbc);

            c = new Choice();
            c.add("Select Operation");
            c.add("+");
            c.add("-");
            c.add("*");
            c.add("/");
            gbc.gridx = 2;
            gbc.gridy = 2;
            c.addItemListener(this);
            add(c,gbc);

            l4 = new Label("0");
            gbc.gridx = 1;
            gbc.gridy = 3;
            add(l4,gbc);
}
public void itemStateChanged(ItemEvent IE)
{
 int a = Integer.valueOf(t1.getText());
 int b = Integer.valueOf(t2.getText());
 int result;
 if(c.getSelectedIndex() == 1)
 {
            result = a + b;
            t3.setText(String.valueOf(result));
            l4.setText(String.valueOf(result));
 }
 if(c.getSelectedIndex() == 2)
 {
            result = a - b;
            t3.setText(String.valueOf(result));
            l4.setText(String.valueOf(result));
 }
```

```
        if(c.getSelectedIndex() == 3)
        {
                result = a * b;
                t3.setText(String.valueOf(result));
                l4.setText(String.valueOf(result));
        }
        if(c.getSelectedIndex() == 4)
        {
                result = a / b;
                t3.setText(String.valueOf(result));
                l4.setText(String.valueOf(result));
        }

       }
 public static void main(String args[])
 {
        arith a = new arith();
 }
}
```

Slip 26 :

1) Write a Java Program to create 5 threads using Runnable Interface.

Filename : runthread.java

```
class thread1 implements Runnable
{
        public void run()
        {
        for(int i = 0 ; i < 3; i++)
        {
         System.out.println("Thread 1");
          }
        }
}
class thread2 implements Runnable
{
        public void run()
        {
        for(int i = 0 ; i < 3; i++)
        {
         System.out.println("Thread 2");
          }
        }
}
class thread3 implements Runnable
{
        public void run()
        {
        for(int i = 0 ; i < 3; i++)
        {
         System.out.println("Thread 3");
          }
        }
}
class thread4 implements Runnable
{
        public void run()
```

```
        {
        for(int i = 0 ; i < 3; i++)
        {
         System.out.println("Thread 4");
          }
        }
}
class thread5 implements Runnable
{
        public void run()
        {
        for(int i = 0 ; i < 3; i++)
        {
         System.out.println("Thread 5");
          }
        }
}
class runthread
{
 public static void main(String args[])
 {
          try
          {
           thread1 T1 = new thread1();
           Thread t1 = new Thread(T1);
           t1.start();
           t1.join();
           t1.sleep(200);
           thread2 T2 = new thread2();
          Thread t2 = new Thread(T2);
          t2.start();
           t2.join();
           t2.sleep(200);
           thread3 T3 = new thread3();
          Thread t3 = new Thread(T3);
          t3.start();
          t3.join();
           t3.sleep(200);
           thread4 T4 = new thread4();
          Thread t4 = new Thread(T4);
           t4.start();
          t4.join();
           t4.sleep(200);
           thread5 T5 = new thread5();
          Thread t5 = new Thread(T5);
          t5.start();
          t5.join();
           t5.sleep(200);
```

```
        }
        catch(Exception e)
        {
                System.out.println(e.getMessage());
        }
 }
}
```

2) Write a Java program to read the student data from user and store it in the file.

```
import java.util.*;
import java.io.*;
class readdata
{
 public static void main(String args[])
 {
        try
        {
         Scanner sc = new Scanner(System.in);
         String name;
         int rollno;
         System.out.println("Enter Name : ");
         name = sc.next();
         System.out.println("Enter Roll No : ");
         rollno = sc.nextInt();
         String r = String.valueOf(rollno);
         FileWriter fw = new FileWriter("student.txt");
         fw.write(name+" ");
         fw.write(r);
         fw.close();
  }
  catch(Exception e)
  {
                System.out.println(e.getMessage());
        }
 }
}
```

Slip 27 :

1) Write a Java program to create an interface Area with one method AreaCompute() with 2 float parameters. Design 2 classes Rectangle and Circle implementing the Area Interface. Input should be taken from the user using Buffered Reader class.

Filename : Circle1.java

```
import java.util.*;
import java.io.*;
interface Area
{
        public void AreaCompute(float l , float b);
}
class Rectangle implements Area
{
        public void AreaCompute(float l , float b)
        {
                float area = l * b;
                System.out.println("Area of Rectangle : " + area);
        }
}
class Circle1 implements Area
{
 public void AreaCompute(float l , float b)
 {
        float area = 3.142f * l * l ;
        System.out.println("Area of Circle : " + area);
 }
 public static void main(String args[])
 {
        try
        {
         InputStreamReader isr = new InputStreamReader(System.in);
         BufferedReader br = new BufferedReader(isr);
         System.out.println("Enter Length : ");
```

```
            float l = Float.valueOf(br.readLine());
            System.out.println("Enter Breadth : ");
            float b = Float.valueOf(br.readLine());
            Rectangle r = new Rectangle();
            r.AreaCompute(l,b);
            System.out.println("Enter Radius : ");
            float radius = Float.valueOf(br.readLine());
            Circle1 c = new Circle1();
            c.AreaCompute(radius,0f);
           }
  catch(Exception e)
           {
            System.out.println(e.getMessage());
  }
 }
}
```

2) Develop a GUI application using Java AWT to present a set of stationary items (combo box) to the user. When the user clicks on a particular stationary item, display the price of the item.

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class stationary extends Frame implements ItemListener
{
        Label l;
        Choice c;
        stationary()
        {
                setTitle("Stationary Items");
                setVisible(true);
                setSize(500,500);
                setLayout(new FlowLayout());
                l = new Label("Price : ");
                c = new Choice();
                c.add("Select Item");
                c.add("Ruler");
                c.add("Pencil");
                c.add("Pen");
                c.add("Eraser");
                c.add("NoteBook");
                c.addItemListener(this);
                add(c);
                add(l);
        }
        public void itemStateChanged(ItemEvent IE)
        {
         if(c.getSelectedIndex() == 1)
```

```
                l.setText("Price is : 10");
        if(c.getSelectedIndex() == 2)
                l.setText("Price is : 12");
        if(c.getSelectedIndex() == 3)
                l.setText("Price is : 20");
        if(c.getSelectedIndex() == 4)
                l.setText("Price is : 5");
        if(c.getSelectedIndex() == 5)
                l.setText("Price is : 32");
       }
 public static void main(String args[])
 {
   stationary s = new stationary();
 }
}
```

Slip 28 :

1) Write a java program for swapping of two n dimensional arrays. Accept the array element from user.

```
import java.util.*;
class swap
{
 public static void main(String args[])
 {
        Scanner sc = new Scanner(System.in);
        int a[][] = new int[2][2];
        int b[][] = new int[2][2];
        int i,j,temp;
        System.out.println("Enter 4 numbers for 1st Array : ");
        for(i = 0 ; i < 2 ; i++)
        {
                for(j = 0 ; j < 2 ; j++)
                {
                        a[i][j] = sc.nextInt();
                }
        }
        System.out.println("Enter 4 numbers for 2nd Array : ");
        for(i = 0 ; i < 2 ; i++)
        {
                for(j = 0 ; j < 2 ; j++)
                {
                  b[i][j] = sc.nextInt();
                }
        }
        System.out.println("Arrays Before Swapping : ");
```

```
        System.out.print("Array 1 : ");
        for(i = 0 ; i < 2 ; i++)
        {
                for(j = 0 ; j < 2 ; j++)
                {
                        System.out.print(a[i][j] +" ");
                }
        }
        System.out.print("\nArray 2 : ");
        for(i = 0 ; i < 2 ; i++)
        {
                for(j = 0 ; j < 2 ; j++)
                {
                 System.out.print(b[i][j] +" ");
                }
        }
        for(i = 0 ; i < 2 ; i++)
        {
                 for( j = 0 ; j <2 ; j++)
                 {
                        temp = a[i][j];
                        a[i][j] = b[i][j];
                        b[i][j] = temp;
                 }
        }
        System.out.println("\nArrays After Swapping");
        System.out.print("Array 1 : ");
        for(i = 0 ; i < 2 ; i++)
        {
                for(j = 0 ; j < 2 ; j++)
                {
                 System.out.print(a[i][j] +" ");
                }
        }
        System.out.print("\nArray 2 : ");
        for(i = 0 ; i < 2 ; i++)
        {
                for(j = 0 ; j < 2 ; j++)
                {
                 System.out.print(b[i][j] +" ");
                }
        }
 }
}
```

2) Write a Java AWT code to calculate the factorial of a number for the following

```
import java.util.*;
import java.awt.*;
import java.awt.event.*;
class factorial2 extends Frame implements ActionListener
{
	Button b1,b2;
	TextField t;
	Label l1,l2,l3;
	factorial2()
	{
		setTitle("Factorial");
		setVisible(true);
		setSize(300,200);
		setLayout(new GridLayout(3,2));

		l1 = new Label("Enter A Number: ");
		l2 = new Label("The Factorial is :");
		l3 = new Label("");

		t = new TextField(10);

		b1 = new Button("Find");
		b2 = new Button("Clear");
		b1.addActionListener(this);
		b2.addActionListener(this);

		add(l1);
		add(t);
		add(l2);
		add(l3);
		add(b1);
		add(b2);
	}
	public void actionPerformed(ActionEvent AE)
	{
		if(AE.getSource() == b1)
		{
			int fact = 1;
			String n = t.getText();
			int number = Integer.valueOf(n);
			for(int i = number ; i >= 1 ; i--)
			{
				fact = fact * i;
			}
```

```
                String n2 = String.valueOf(fact);
                l3.setText(n2);
            }
            if(AE.getSource() == b2)
            {
                t.setText(" ");
                l3.setText("");
            }
        }
 public static void main(String args[])
 {
         factorial2 f = new factorial2();
 }
}
```

Slip 29 :

1) Write a Java Program using AWT Program to design the calculator (Same as Practicals)

```
import java.awt.*;
import java.awt.event.*;
public class calculator1 implements ActionListener
{
  int c,n;
  String s1,s2,s3,s4,s5;
  Frame f;
  Button b1,b2,b3,b4,b5,b6,b7,b8,b9,b10,b11,b12,b13,b14,b15,b16,b17;
  Panel p;
  TextField tf;
  GridLayout g;
  calculator1()
  {
    f = new Frame("My calculator");
    p = new Panel();
    f.setLayout(new FlowLayout());
    b1 = new Button("0");
    b1.addActionListener(this);
    b2 = new Button("1");
    b2.addActionListener(this);
    b3 = new Button("2");
    b3.addActionListener(this);
    b4 = new Button("3");
    b4.addActionListener(this);
    b5 = new Button("4");
    b5.addActionListener(this);
    b6 = new Button("5");
    b6.addActionListener(this);
```

```
    b7 = new Button("6");
    b7.addActionListener(this);
    b8 = new Button("7");
    b8.addActionListener(this);
    b9 = new Button("8");
    b9.addActionListener(this);
    b10 = new Button("9");
    b10.addActionListener(this);
    b11 = new Button("+");
    b11.addActionListener(this);
    b12 = new Button("-");
    b12.addActionListener(this);
    b13 = new Button("*");
    b13.addActionListener(this);
    b14 = new Button("/");
    b14.addActionListener(this);
    b15 = new Button("%");
    b15.addActionListener(this);
    b16 = new Button("=");
    b16.addActionListener(this);
    b17 = new Button("C");
    b17.addActionListener(this);
    tf = new TextField(20);
    f.add(tf);
    g = new GridLayout(4,4,10,20);
    p.setLayout(g);
    p.add(b1);p.add(b2);p.add(b3);p.add(b4);p.add(b5);p.add(b6);p.add(b7);p.add(b8);p.add(b9);
    p.add(b10);p.add(b11);p.add(b12);p.add(b13);p.add(b14);p.add(b15);p.add(b16);p.add(b17);
    f.add(p);
    f.setSize(300,300);
    f.setVisible(true);
}
public void actionPerformed(ActionEvent e)
{
    if(e.getSource()==b1)
    {
        s3 = tf.getText();
        s4 = "0";
        s5 = s3+s4;
        tf.setText(s5);
    }
    if(e.getSource()==b2)
    {
        s3 = tf.getText();
        s4 = "1";
        s5 = s3+s4;
        tf.setText(s5);
    }
```

```
if(e.getSource()==b3)
{
   s3 = tf.getText();
   s4 = "2";
   s5 = s3+s4;
   tf.setText(s5);
}if(e.getSource()==b4)
{
   s3 = tf.getText();
   s4 = "3";
   s5 = s3+s4;
   tf.setText(s5);
}
if(e.getSource()==b5)
{
   s3 = tf.getText();
   s4 = "4";
   s5 = s3+s4;
   tf.setText(s5);
}
if(e.getSource()==b6)
{
   s3 = tf.getText();
   s4 = "5";
   s5 = s3+s4;
   tf.setText(s5);
}
if(e.getSource()==b7)
{
   s3 = tf.getText();
   s4 = "6";
   s5 = s3+s4;
   tf.setText(s5);
}
if(e.getSource()==b8)
{
   s3 = tf.getText();
   s4 = "7";
   s5 = s3+s4;
   tf.setText(s5);
}
if(e.getSource()==b9)
{
   s3 = tf.getText();
   s4 = "8";
   s5 = s3+s4;
   tf.setText(s5);
}
```

```
if(e.getSource()==b10)
{
   s3 = tf.getText();
   s4 = "9";
   s5 = s3+s4;
   tf.setText(s5);
}
if(e.getSource()==b11)
{
   s1 = tf.getText();
   tf.setText("");
   c=1;

}
if(e.getSource()==b12)
{
   s1 = tf.getText();
   tf.setText("");
   c=2;

}
if(e.getSource()==b13)
{
   s1 = tf.getText();
   tf.setText("");
   c=3;

}
if(e.getSource()==b14)
{
   s1 = tf.getText();
   tf.setText("");
   c=4;

}
if(e.getSource()==b15)
{
   s1 = tf.getText();
   tf.setText("");
   c=5;

}
if(e.getSource()==b16)
{
   s2 = tf.getText();
   if(c==1)
   {
      n = Integer.parseInt(s1)+Integer.parseInt(s2);
```

```
            tf.setText(String.valueOf(n));
        }
        else
        if(c==2)
        {
            n = Integer.parseInt(s1)-Integer.parseInt(s2);
            tf.setText(String.valueOf(n));
        }
        else
        if(c==3)
        {
            n = Integer.parseInt(s1)*Integer.parseInt(s2);
            tf.setText(String.valueOf(n));
        }
        if(c==4)
        {
            try
            {
                int p=Integer.parseInt(s2);
                if(p!=0)
                {
                                n = Integer.parseInt(s1)/Integer.parseInt(s2);
                tf.setText(String.valueOf(n));
                 }
                 else
                   tf.setText("infinite");

            }
            catch(Exception i){}
        }
        if(c==5)
        {
            n = Integer.parseInt(s1)%Integer.parseInt(s2);
            tf.setText(String.valueOf(n));
        }
      }
      if(e.getSource()==b17)
      {
        tf.setText("");
      }
    }

    public static void main(String[] abc)
    {
      calculator1 v = new calculator1();
    }
}
```