**Slip 5**

[October 31, 2023](https://nilambariblogfortybsc-cs.blogspot.com/2023/10/slip-5.html)

 Q1) Write a program for multilevel inheritance such that Country is inherited from Continent. State is inherited from Country. Display the place, State, Country and Continent. [10 marks]

import java.io.\*;

class Continent

{

   String con;

  BufferedReader r  = new BufferedReader(new InputStreamReader(System.in));

 void con\_input() throws IOException

 {

       System.out.println("Enter Continent Name:  ");

       con = r.readLine();

 }

}

class Country extends Continent

{

 String cou ;

 void cou\_input() throws IOException

 {

       System.out.println("Enter Country Name:  ");

       cou = r.readLine();

 }

}

class State extends Country

{

 String sta,place;

 void sta\_input() throws IOException

 {

       System.out.println("Enter State Name:  ");

       sta = r.readLine();

System.out.println("Enter place Name:  ");

       place = r.readLine();

 }

 public static void main( String argsp[] )throws IOException

 {

   State s = new State();

s.con\_input();

   s.cou\_input();

   s.sta\_input();

    System.out.println("Continent: "+s.con);

   System.out.println("Country: "+s.cou);

   System.out.println("State: "+s.sta);

System.out.println("Place: "+s.place);

 }

}

 Q2) Write a menu driven program to perform the following operations on multidimensional array ie matrices : 1. Addition 2.Multiplication 3.Exit

import java.util.Arrays;

import java.util.Scanner;

public class Slip5\_2

{

  public static void main(String[] args)

  {

    Scanner scan = new Scanner(System.in);

    int a[][] = { { 5, 6, 7 }, { 8, 9, 10 }, { 3, 1, 2 } };

    int b[][] = { { 1, 2, 3 }, { 4, 5, 6 }, { 7, 8, 9 } };

    int c[][] = new int[3][3];

    System.out.println("A = " + Arrays.deepToString(a));

    System.out.println("B = " + Arrays.deepToString(b));

    int choice;

    do

  {

      System.out.println("\nChoose the matrix operation,");

      System.out.println("----------------------------");

      System.out.println("1. Addition");

      System.out.println("2. Multiplication");

System.out.println("3. Exit");

      System.out.print("Enter your choice: ");

      choice = scan.nextInt();

      switch (choice) {

      case 1:

        c = add(a, b);

        System.out.println("Sum of matrix: ");

        System.out.println(Arrays.deepToString(c));

        break;

      case 2:

        c = multiply(a, b);

        System.out.println("Multiplication of matrix: ");

        System.out.println(Arrays.deepToString(c));

        break;

      }

    } while (choice!=3);

  }

  public static int[][] add(int[][] a, int[][] b)

  {

    int row = a.length;

    int column = a[0].length;

    int sum[][] = new int[row][column];

    for (int i = 0; i < row; i++)

    {

      for (int j = 0; j < column; j++)

      {

        sum[i][j] = a[i][j] + b[i][j];

      }

    }

    return sum;

  }

 public static int[][] multiply(int[][] a, int[][] b)

  {

    int row = a.length;

    int column = b[0].length;

    int product[][] = new int[row][column];

    for (int i = 0; i < row; i++)

    {

      for (int j = 0; j < column; j++)

       {

        product[i][j] = 0;

        for (int k = 0; k < a[0].length; k++)

        {

          product[i][j] += a[i][k] \* b[k][j];

        }

      }

    }

    return product;

  }

 }