EXPERIMENT NO.6 2D ARRAY

Program of 1D array:-

```java
import java.util.Scanner;

public class array
{
 public static void main(String args[])

 {
   int n;
   Scanner sc=new Scanner(System.in);
   System.out.println("Enter the number of the element you want to store: ");
   n=sc.nextInt();

   int[] array = new int[10];
   System.out.println("Enter the element of the array:");
   for(int i=0;i<n;i++)
   {
     array[i]=sc.nextInt();
   }
   System.out.println("Array element are:" );
   for(int i=0;i<n;i++)
   {
     System.out.println(array[i]);
   }
 }
}
```

OUTPUT:-

```
C:\Users\ketan\OneDrive\Desktop\java>javac array.java

C:\Users\ketan\OneDrive\Desktop\java>java array.java
Enter the number of the element you want to store:
5
Enter the element of the array:
5
2
4
3
1
Array element are:
5
2
4
3
1
```

Program of 2D array:-

import java.util.Scanner;

public class Matrix

{

 public static void main(String args[])

{

  System.out.println("Enter the number of rows in matrix");

  Scanner sc= new Scanner(System.in);

  int row= sc.nextInt();

  System.out.println("Enter the columns in the matrix");

  int column = sc.nextInt();

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

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

  for(int r=0; r<row;r++)

{

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

{

```java
        System.out.println(String.format("Enter first [%d][%d] integer",r,c));

        first[r][c]=sc.nextInt();

    }

}


for (int r = 0; r < row; r++)

{

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

    {

        System.out.println(String.format("Enter second[%d][%d] integer", r, c));

        second[r][c] = sc.nextInt();

    }

}



    System.out.println("First Matrix:\n");

    print2dArray(first);


    System.out.println("Second Matrix:\n");

    print2dArray(second);


    System.out.println("Main Menu");

    System.out.println("1.Additionof matrix");

    System.out.println("2.Substraction of matrix");

    System.out.println("3.Multiplication of matrix");

    System.out.println("4.Exit");

    System.out.println("Enter your option");

    int option=sc.nextInt();

    sc.close();
```

```
switch(option)

{

  case 1:

  sum(first, second);

  break ;


  case 2:

  substraction(first,second);

  break;


  case 3:

  multiplication(first,second);

  break;


 }


}



private static void sum(int[][]first ,int[][]second)

 {

  int row =first.length;

  int column=first[0].length;


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


   for(int r=0;r<row;r++)

  {
```

```java
      for(int c=0;c<column;c++)
    {
      sum[r][c] = first[r][c] + second[r][c];
    }
   }


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

   print2dArray(sum);

  }



static void substraction(int[][]first ,int[][]second)
{
  int row =first.length;

  int column=first[0].length;


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


  for(int r=0;r<row;r++)
 {
  for(int c=0;c<column;c++)
 {
   sum[r][c]=first[r][c]-second[r][c];
 }
 }

System.out.println("Substraction of matrix");

  print2dArray(sum);

 }
```

```java
static void multiplication(int[][] first, int[][] second)
{

        int row = first.length;

        int column = first[0].length;

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


        for (int r = 0; r < row; r++) {

                for (int c = 0; c < column; c++) {

                        sum[r][c] = first[r][c] * second[r][c];

        }

    }


        System.out.println("\nMultiplication of Matrices:\n");

        print2dArray(sum);

}



static void print2dArray(int[][] matrix)
{
 for(int r=0;r<matrix.length;r++)
 {
  for(int c=0;c<matrix[0].length;c++)
  {
   System.out.print(matrix[r][c] + "\t");
  }
   System.out.println();
 }
}
```

```
}
```

```
C:\Users\ketan\OneDrive\Desktop\java>javac Matrix.java

C:\Users\ketan\OneDrive\Desktop\java>java Matrix.java
Enter the number of rows in matrix
3
Enter the columns in the matrix
3
Enter first [0][0] integer
23
Enter first [0][1] integer
45
Enter first [0][2] integer
56
Enter first [1][0] integer
78
Enter first [1][1] integer
90
Enter first [1][2] integer
23
Enter first [2][0] integer
45
Enter first [2][1] integer
67
Enter first [2][2] integer
34
Enter second[0][0] integer
45
Enter second[0][1] integer
4
```

```
Enter second[1][2] integer
45
Enter second[2][0] integer
45
Enter second[2][1] integer
45
Enter second[2][2] integer
45
First Matrix:

23        45        56
78        90        23
45        67        34
Second Matrix:

45        4         55
45        45        45
45        45        45
Main Menu
1.Additionof matrix
2.Substraction of matrix
3.Multiplication of matrix
4.Exit
Enter your option
3

Multiplication of Matrices:

1035     180       3080
3510     4050      1035
2025     3015      1530
```