OOPS IN JAVA
TUTORIAL - 4

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Arrays In Java
Module - 2

Qn 1) Write a Java program to calculate the sum of all elements in an integer array.

```java
package Tutorials6;

import java.util.Scanner;
public class Tutorials6qn1
{

    public static void main(String[] args)
    {
        // TODO Auto-generated method stub
        Scanner sc = new Scanner(System.in);
        int i,n,sum=0;
        System.out.println("Enter a number of elements: ");
        n = sc.nextInt();
        System.out.println("Enter the elements: ");

        int a[] = new int[n];
        for(i=0; i<n; i++)
        {
            a[i] = sc.nextInt();
            sum += a[i];
        }
        System.out.println("The sum of the number is " + sum);
    }

}
```

OUTPUT:

```
Problems  Javadoc  Declaration  Console
<terminated> Tutorials6qn1 [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (31-Jul-2024, 8:33:49 pm – 8:34:03 pm) [pi
Enter a number of elements:
5
Enter the elements:
78
96
5
4
12
The sum of the number is 195
```

Qn 2) Write a Java program that finds the maximum and minimum values in an array of integers.

Tutorials3q... Tutorials4q... Tutorials4q... Tutorials4q... Tutorials6q... Tutorials6q... 16

```java
/*
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 QN 2)
Write a Java program that finds the maximum and minimum values in an array of
integers.

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 */

package Tutorials4;
import java.util.Scanner;
public class Tutorials4qn2 {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner sc = new Scanner(System.in);
        int i,n;
        System.out.println("Enter a number of elements: ");
        n = sc.nextInt();
        System.out.println("Enter the elements: ");

        int a[] = new int[n];
        for(i=0; i<n; i++)
        {
            a[i] = sc.nextInt();
        }
        int max = a[0],min = a[0];
        for(int num :a)
        {
            if(num>max)
            {
                max=num;
            }
            else
            {
                min=num;
            }
        }
        System.out.println("The maximum value in the array is: " +max);
        System.out.println("The minimum value in the array is: " +min);

    }

}
```
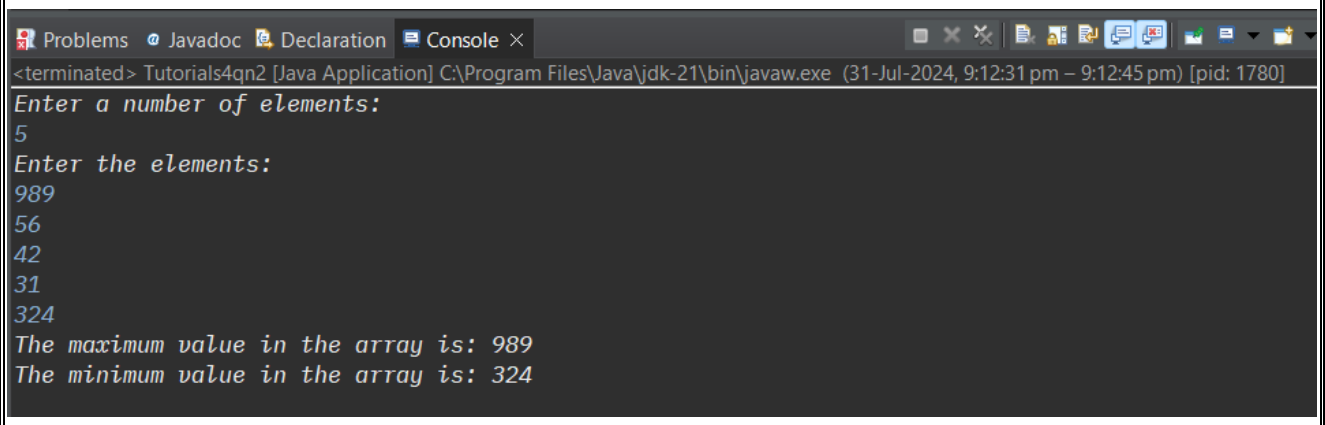

OUTPUT:


Problems
Javadoc
Declaration
Console
<terminated> Tutorials4qn2 [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (31-Jul-2024, 9:12:31 pm – 9:12:45 pm) [pid: 1780]
Enter a number of elements:
5
Enter the elements:
989
56
42
31
324
The maximum value in the array is: 989
The minimum value in the array is: 324

Qn 3) Write a java program to calculate the sum of both diagonals of a square matrix.

```
/*
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 QN 3) Write a java program to calculate the sum of both diagonals of a square matrix.


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 */

package Tutorials4;

import java.util.Scanner;

public class Tutorials4qn3 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter the size of the square matrix: ");
        int n = sc.nextInt();
        int[][] matrix = new int[n][n];
        System.out.print("Enter the elements of the matrix: ");
        for (int i = 0; i < n; i++) {
            for (int j = 0; j < n; j++) {
                matrix[i][j] = sc.nextInt();
            }
        }

        int sum_diagonal = 0;
        for (int i = 0; i < n; i++) {
            sum_diagonal += matrix[i][i] + matrix[i][n - i - 1];
        }


        System.out.println("Sum of both diagonal Elements: " + sum_diagonal);
    }
}
```

OUTPUT:

```
<terminated> Tutorials4qn3 [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe  (31-Jul-2024, 9:37:51 pm –
Enter the size of the square matrix: 2
Enter the elements of the matrix: 1 2 3 4
Sum of both diagonals: 10
```

Qn 4) Write a java program to search for a specific element in a two-dimensional array and return its position.

Tutorials3q... Tutorials4q... Tutorials4q... *Tutorials4q... Tutorials4q... Tutorials6q... »16

```
/*
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 QN 4)
Write a java program to search for a specific element in a two-dimensional array and
return its position.

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 */
```
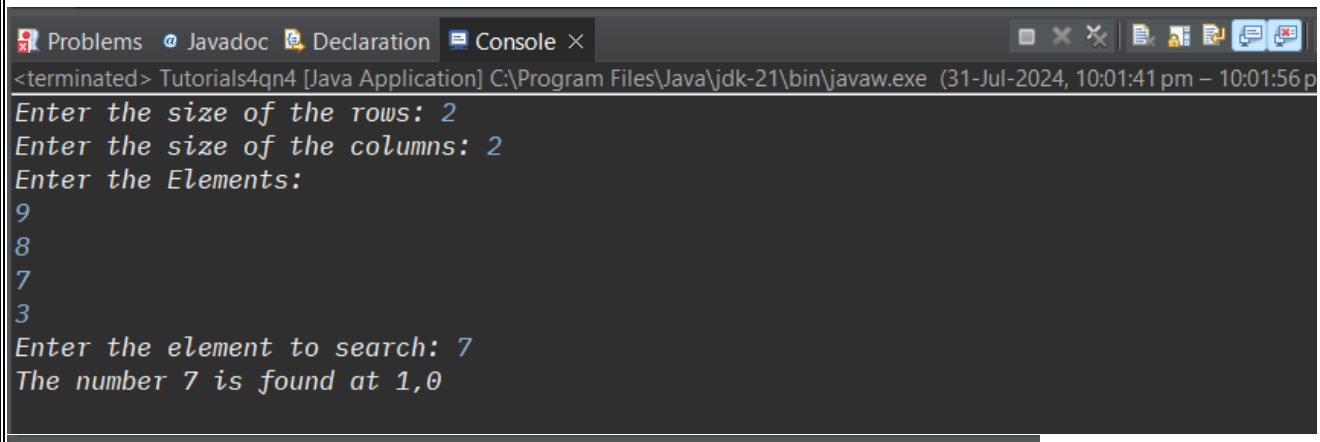
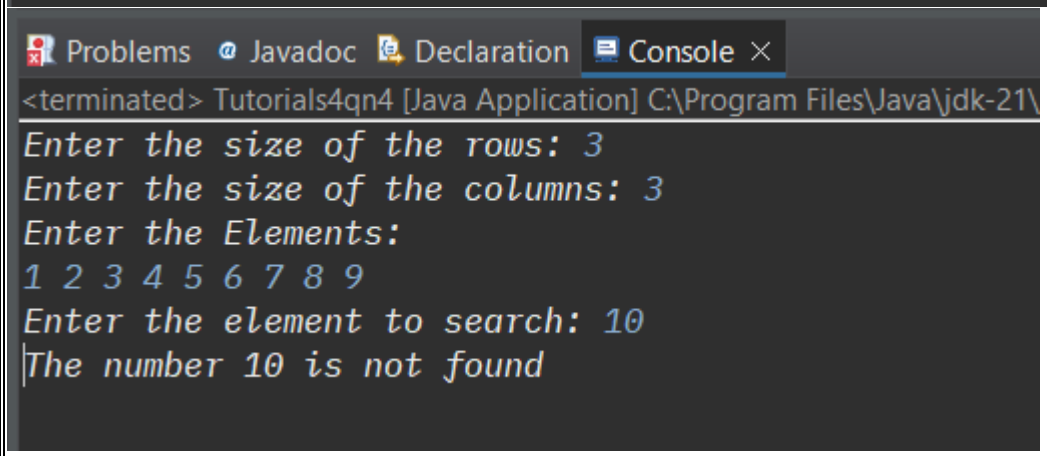

```
package Tutorials4;
import java.util.Scanner;
public class Tutorials4qn4 {

    public static void main(String[] args) {
        // TODO Auto-generated method stub
        Scanner sc = new Scanner(System.in);
        int i,n,j,rows,cols,found=0;

        System.out.print("Enter the size of the rows: ");
        rows=sc.nextInt();
        System.out.print("Enter the size of the columns: ");
        cols=sc.nextInt();

        System.out.println("Enter the Elements: ");
        int [][] arr = new int[rows][cols];
        for(i=0; i<rows; i++)
        {
            for(j=0; j<cols; j++)
            {
                arr[i][j] = sc.nextInt();
            }
        }
```

```
38
39          System.out.print("Enter the element to search: ");
40          n = sc.nextInt();
41          for(i=0; i<rows; i++)
42          {
43              for(j=0; j<cols; j++)
44              {
45                  if(arr[i][j]==n)
46                  {
47                      System.out.println("The number "+n+" is found at " + i + "," + j);
48                      found = 1;
49                  }
50              }
51          }
52          if(found==0)
53          {
54              System.out.println("The number "+n+" is not found");
55          }
56
57      }
58
59  }
```

OUTPUT:





Qn 5) Create a program that performs matrix addition for two-dimensional arrays.

Numbersign.java | Tutorials5q... | Tutorials5q... | Tutorials5q... | Tutorials3q... | Tutorials4q...

```java
/*
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 QN 5)
Create a program that performs matrix addition for two-dimensional arrays.

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 */

package Tutorials4;

import java.util.Scanner;

public class Tutorials4qn5 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.println("Enter the number of rows: ");
        int rows = sc.nextInt();
        System.out.println("Enter the number of columns: ");
        int cols = sc.nextInt();


        int[][] matrix1 = new int[rows][cols];
        int[][] matrix2 = new int[rows][cols];


        System.out.println("Enter the elements of matrix 1: ");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                matrix1[i][j] = sc.nextInt();
            }
        }


        System.out.println("Enter the elements of matrix 2: ");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                matrix2[i][j] = sc.nextInt();
            }
        }

```
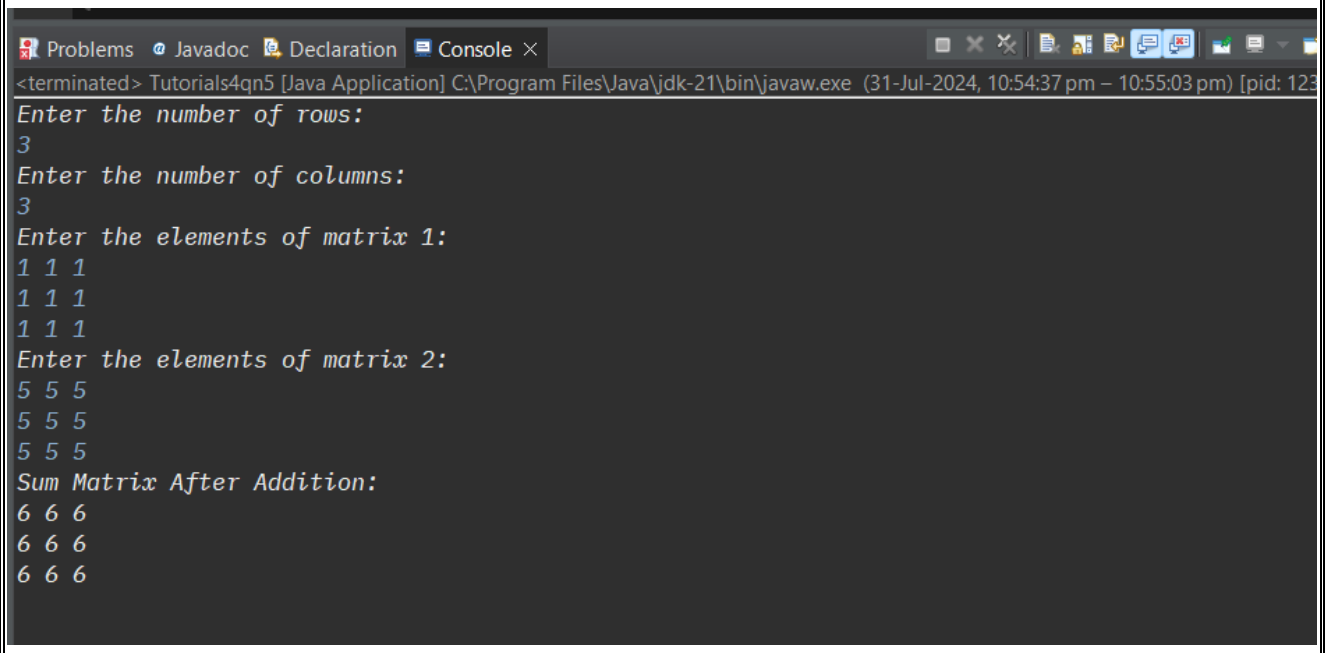

```java

        int[][] sumMatrix = new int[rows][cols];


        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                sumMatrix[i][j] = matrix1[i][j] + matrix2[i][j];
            }
        }


        System.out.println("Sum Matrix After Addition: ");
        for (int i = 0; i < rows; i++) {
            for (int j = 0; j < cols; j++) {
                System.out.print(sumMatrix[i][j] + " ");
            }
            System.out.println();
        }
    }
}

```

OUTPUT:



Qn 6) Write a java program to compute the transpose of a given matrix.

Tutorials5q... Tutorials5q... Tutorials3q... Tutorials4q... Tutorials4q... Tutorials4q...

```java
/*
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 QN 6)
Write a java program to compute the transpose of a given matrix

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 */

package Tutorials4;
import java.util.Scanner;

public class Tutorials4qn6 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int i, j, rows, cols;

        System.out.println("Enter the number of rows: ");
        rows = sc.nextInt();
        System.out.println("Enter the number of Columns: ");
        cols = sc.nextInt();

        System.out.println("Enter the elements of Matrix: ");
        int[][] a = new int[rows][cols];
        int[][] b = new int[cols][rows];

        for (i = 0; i < rows; i++)
        {
            for (j = 0; j < cols; j++)
            {
                a[i][j] = sc.nextInt();
            }
        }

        System.out.println("Transpose of matrix: ");
        for (i = 0; i < cols; i++)
        {
            for (j = 0; j < rows; j++)
            {
                b[i][j] = a[j][i];
                System.out.print(b[i][j] + " ");
            }
            System.out.println();
        }
    }
}
```
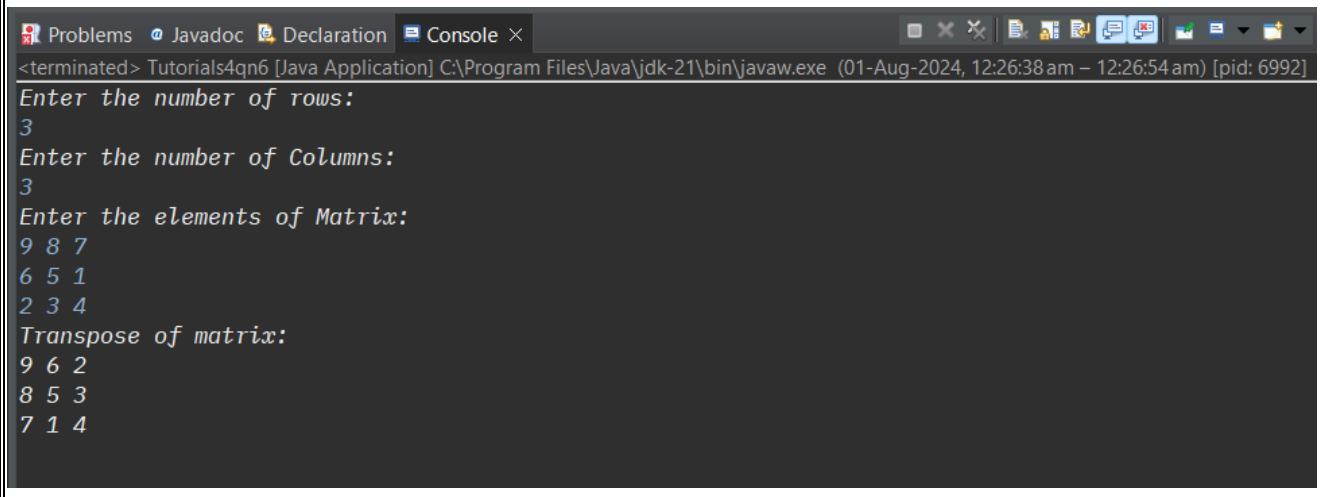

OUTPUT:


Problems
Javadoc
Declaration
Console
<terminated> Tutorials4qn6 [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (01-Aug-2024, 12:26:38 am – 12:26:54 am) [pid: 6992]
Enter the number of rows:
3
Enter the number of Columns:
3
Enter the elements of Matrix:
9 8 7
6 5 1
2 3 4
Transpose of matrix:
9 6 2
8 5 3
7 1 4