

# **OOPS IN JAVA**

## **TUTORIAL - 4**

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Roll No: 45

S3 CSE B

# Arrays In Java

## Module - 2

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

```
Tutorials4q... Tutorials4q... Tutorials4q... Tutorials4q... Tutorials4q... *Tutorials6q... × »16
1 package Tutorial6;
2
3 import java.util.Scanner;
4 public class Tutorial6qn1
5 {
6
7     public static void main(String[] args)
8     {
9         // TODO Auto-generated method stub
10        Scanner sc = new Scanner(System.in);
11        int i,n,sum=0;
12        System.out.println("Enter a number of elements: ");
13        n = sc.nextInt();
14        System.out.println("Enter the elements: ");
15
16        int a[] = new int[n];
17        for(i=0; i<n; i++)
18        {
19            a[i] = sc.nextInt();
20            sum += a[i];
21        }
22        System.out.println("The sum of the number is " + sum);
23    }
24
25 }
```

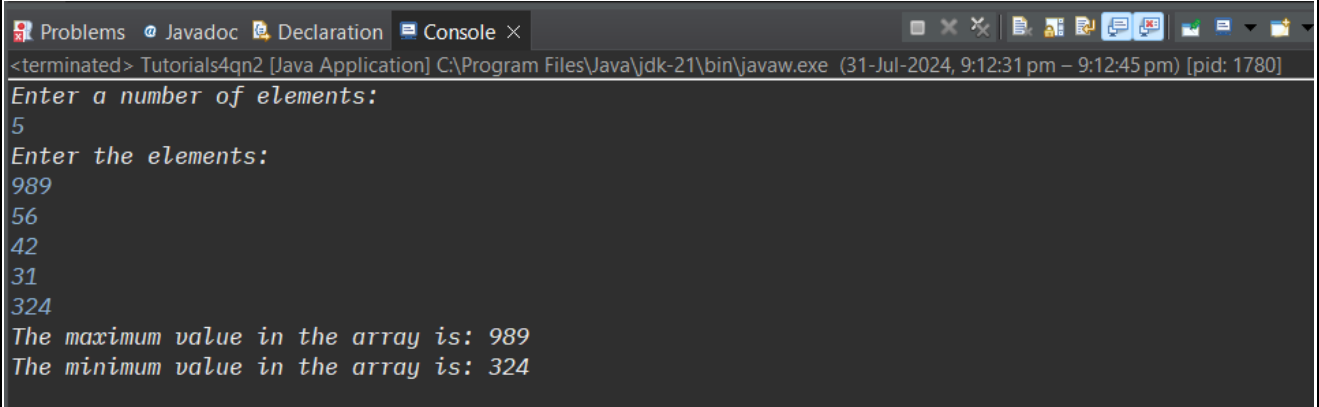
### OUTPUT:

```
Problems Javadoc Declaration Console ×
<terminated> Tutorial6qn1 [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
1 /*
2  TUTORIALS 4
3  MODULE - 2
4  ARRAYS IN JAVA
5
6  QN 2)
7  Write a Java program that finds the maximum and minimum values in an array of
8  integers.
9
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13 */
14
15 package Tutorials4;
16 import java.util.Scanner;
17 public class Tutorials4qn2 {
18
19     public static void main(String[] args) {
20         // TODO Auto-generated method stub
21         Scanner sc = new Scanner(System.in);
22         int i,n;
23         System.out.println("Enter a number of elements: ");
24         n = sc.nextInt();
25         System.out.println("Enter the elements: ");
26
27         int a[] = new int[n];
28         for(i=0; i<n; i++)
29         {
30             a[i] = sc.nextInt();
31         }
32         int max = a[0], min = a[0];
33         for(int num :a)
34         {
35             if(num>max)
36             {
37                 max=num;
38             }
39             else
40             {
41                 min=num;
42             }
43         }
44         System.out.println("The maximum value in the array is: " +max);
45         System.out.println("The minimum value in the array is: " +min);
46
47     }
48
49 }
50
```

# OUTPUT:



The screenshot shows a Java IDE's console window. The title bar includes tabs for 'Problems', 'Javadoc', 'Declaration', and 'Console'. The console text is as follows:

```
<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.**

```
Tutorials3q...  Tutorials4q...  *Tutorials4q... ×  Tutorials4q...  Tutorials4q...  Tutorials6q...  »16
1  /*
2  TUTORIALS 4
3  MODULE - 2
4  ARRAYS IN JAVA
5
6  QN 3) Write a java program to calculate the sum of both diagonals of a square matrix.
7
8
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12 */
13
```

```
14 package Tutorials4;
15
16 import java.util.Scanner;
17
18 public class Tutorials4qn3 {
19     public static void main(String[] args) {
20         Scanner sc = new Scanner(System.in);
21         System.out.print("Enter the size of the square matrix: ");
22         int n = sc.nextInt();
23         int[][] matrix = new int[n][n];
24         System.out.print("Enter the elements of the matrix: ");
25         for (int i = 0; i < n; i++) {
26             for (int j = 0; j < n; j++) {
27                 matrix[i][j] = sc.nextInt();
28             }
29         }
30
31         int sum_diagonal = 0;
32         for (int i = 0; i < n; i++) {
33             sum_diagonal += matrix[i][i] + matrix[i][n - i - 1];
34         }
35
36         System.out.println("Sum of both diagonal Elements: " + sum_diagonal);
37     }
38 }
39 }
```

**OUTPUT:**

```
Problems  Javadoc  Declaration  Console ×
<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

1  /*
2  TUTORIALS 4
3  MODULE - 2
4  ARRAYS IN JAVA
5
6  QN 4)
7  Write a java program to search for a specific element in a two-dimensional array and
8  return its position.
9
10 Karthik Krishnan
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12 Roll: 45
13 */

15 package Tutorials4;
16 import java.util.Scanner;
17 public class Tutorials4qn4 {
18
19     public static void main(String[] args) {
20         // TODO Auto-generated method stub
21         Scanner sc = new Scanner(System.in);
22         int i,n,j,rows,cols,found=0;
23
24         System.out.print("Enter the size of the rows: ");
25         rows=sc.nextInt();
26         System.out.print("Enter the size of the columns: ");
27         cols=sc.nextInt();
28
29         System.out.println("Enter the Elements: ");
30         int [][] arr = new int[rows][cols];
31         for(i=0; i<rows; i++)
32         {
33             for(j=0; j<cols; j++)
34             {
35                 arr[i][j] = sc.nextInt();
36             }
37         }
38     }
39 }
```

```

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:

```

<terminated> Tutorials4qn4 [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (31-Jul-2024, 10:01:41 pm - 10:01:56 p
Enter the size of the rows: 2
Enter the size of the columns: 2
Enter the Elements:
9
8
7
3
Enter the element to search: 7
The number 7 is found at 1,0

```

```

<terminated> Tutorials4qn4 [Java Application] C:\Program Files\Java\jdk-21\
Enter the size of the rows: 3
Enter the size of the columns: 3
Enter the Elements:
1 2 3 4 5 6 7 8 9
Enter the element to search: 10
The number 10 is not found

```

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

```
Numbersign.java  Tutorials5q...  Tutorials5q...  Tutorials5q...  Tutorials3q...  Tutorials4q...  × 16
1  /*
2  TUTORIALS 4
3  MODULE - 2
4  ARRAYS IN JAVA
5
6  QN 5)
7  Create a program that performs matrix addition for two-dimensional arrays.
8
9  Karthik Krishnan
10 S3 CSE B
11 Roll: 45
12 */
13
14 package Tutorials4;
15
16 import java.util.Scanner;
17
18 public class Tutorials4qn5 {
19     public static void main(String[] args) {
20         Scanner sc = new Scanner(System.in);
21
22         System.out.println("Enter the number of rows: ");
23         int rows = sc.nextInt();
24         System.out.println("Enter the number of columns: ");
25         int cols = sc.nextInt();
26
27         int[][] matrix1 = new int[rows][cols];
28         int[][] matrix2 = new int[rows][cols];
29
30         System.out.println("Enter the elements of matrix 1: ");
31         for (int i = 0; i < rows; i++) {
32             for (int j = 0; j < cols; j++) {
33                 matrix1[i][j] = sc.nextInt();
34             }
35         }
36
37         System.out.println("Enter the elements of matrix 2: ");
38         for (int i = 0; i < rows; i++) {
39             for (int j = 0; j < cols; j++) {
40                 matrix2[i][j] = sc.nextInt();
41             }
42         }
43     }
44 }
```

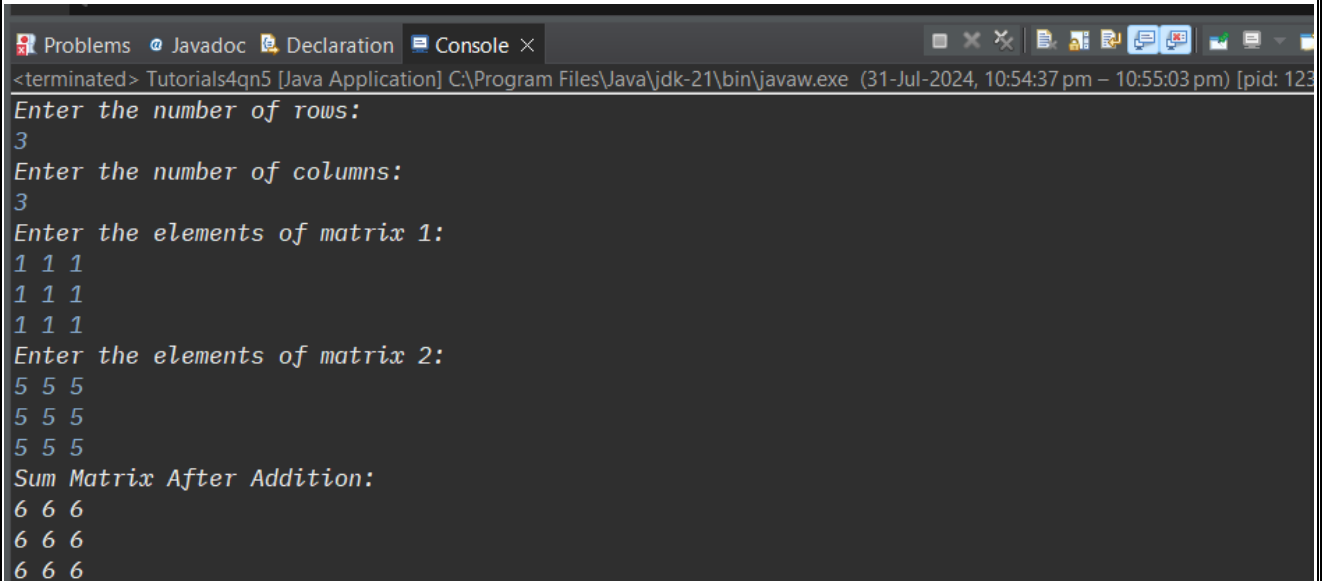


```

48
49     int[][] sumMatrix = new int[rows][cols];
50
51
52     for (int i = 0; i < rows; i++) {
53         for (int j = 0; j < cols; j++) {
54             sumMatrix[i][j] = matrix1[i][j] + matrix2[i][j];
55         }
56     }
57
58
59     System.out.println("Sum Matrix After Addition: ");
60     for (int i = 0; i < rows; i++) {
61         for (int j = 0; j < cols; j++) {
62             System.out.print(sumMatrix[i][j] + " ");
63         }
64         System.out.println();
65     }
66 }
67 }
68

```

## OUTPUT:



```

Problems Javadoc Declaration Console x
<terminated> Tutorials4qn5 [Java Application] C:\Program Files\Java\jdk-21\bin\javaw.exe (31-Jul-2024, 10:54:37 pm – 10:55:03 pm) [pid: 123
Enter the number of rows:
3
Enter the number of columns:
3
Enter the elements of matrix 1:
1 1 1
1 1 1
1 1 1
Enter the elements of matrix 2:
5 5 5
5 5 5
5 5 5
Sum Matrix After Addition:
6 6 6
6 6 6
6 6 6

```

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

```
Tutorials5q... Tutorials5q... Tutorials3q... Tutorials4q... Tutorials4q... Tutorials4q... × »16
1  /*
2  TUTORIALS 4
3  MODULE - 2
4  ARRAYS IN JAVA
5
6  QN 6)
7  Write a java program to compute the transpose of a given matrix
8
9  Karthik Krishnan
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11 Roll: 45
12 */
13
14 package Tutorials4;
15 import java.util.Scanner;
16
17 public class Tutorials4qn6 {
18     public static void main(String[] args) {
19         Scanner sc = new Scanner(System.in);
20         int i, j, rows, cols;
21
22         System.out.println("Enter the number of rows: ");
23         rows = sc.nextInt();
24         System.out.println("Enter the number of Columns: ");
25         cols = sc.nextInt();
26
27         System.out.println("Enter the elements of Matrix: ");
28         int[][] a = new int[rows][cols];
29         int[][] b = new int[cols][rows];
30
31         for (i = 0; i < rows; i++)
32         {
33             for (j = 0; j < cols; j++)
34             {
35                 a[i][j] = sc.nextInt();
36             }
37         }
38
39         System.out.println("Transpose of matrix: ");
40         for (i = 0; i < cols; i++)
41         {
42             for (j = 0; j < rows; j++)
43             {
44                 b[i][j] = a[j][i];
45                 System.out.print(b[i][j] + " ");
46             }
47             System.out.println();
48         }
49     }
50 }
```

# 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
```