

Arrays in Java

Student's Name

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Course Number and Name

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Due Date

Arrays in Java

An array in Java is a data structure that stores a collection of elements. Basically, elements stored in an array are of the same data type. According to Simplilearn, 2022, there are three major types of arrays, named *one-dimensional arrays*, *two-dimensional arrays*, and *multidimensional arrays*. Each element in an array is identified by its index.

A one-dimensional array stores its element in a single row. The values are declared using a single index and stored in adjacent memory locations, and indexes start at 0 (Javatpoint, 2021). As a result, a single loop can be used to retrieve all the elements.

A two-dimensional array stores its elements in two rows and multiple columns. The first element has an index of 0,0 in the left upper corner. The rows are separated by brackets, and elements in the same row are separated by commas (Javatpoint, 2021). To retrieve data stored in this type of array, two loops are used.

A multidimensional array is a combination of two or more arrays. According to Simplilearn 2022, a multidimensional array has more than one dimension. For example, it can have three rows and six columns. As a result, a multidimensional array is an array of arrays.

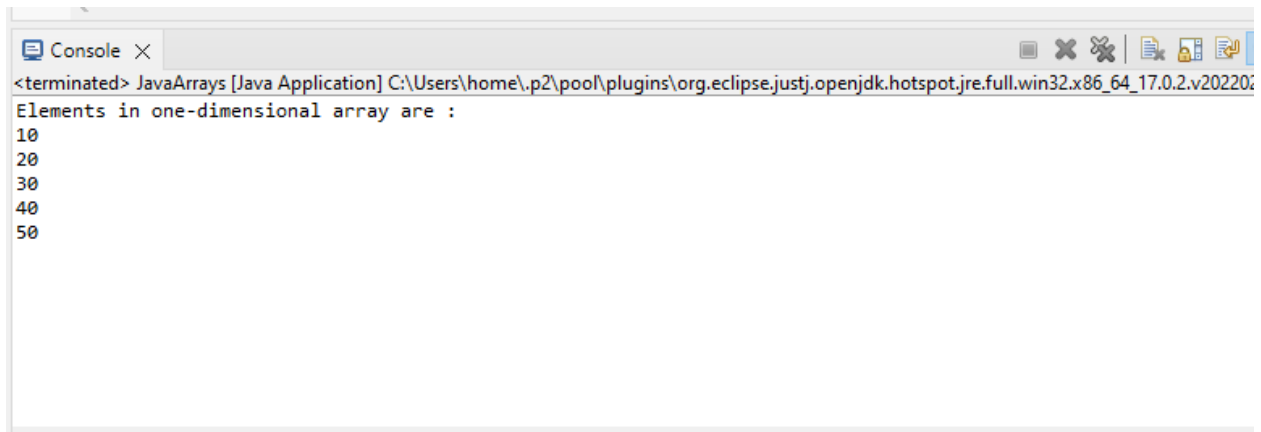
Demonstration of Arrays in Java

One-dimensional Array Java Code

```
1
2 public class JavaArrays {
3
4 public static void main (String[] args)
5 {
6     //declaration and initialization
7     int arr[]={10,20,30,40,50};
8     System.out.println("Elements in one-dimensional array are :");
9
10    for(int i = 0; i < arr.length; i++)
11    {
12        System.out.println(arr[i]);
13    }
14 }
15
16 }
17
```

Figure 1 One-dimensional array code

Printing All Values in a One-dimensional Array



The screenshot shows a console window titled "Console x" with the following output:

```
<terminated> JavaArrays [Java Application] C:\Users\home\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_64_17.0.2.v20220
Elements in one-dimensional array are :
10
20
30
40
50
```

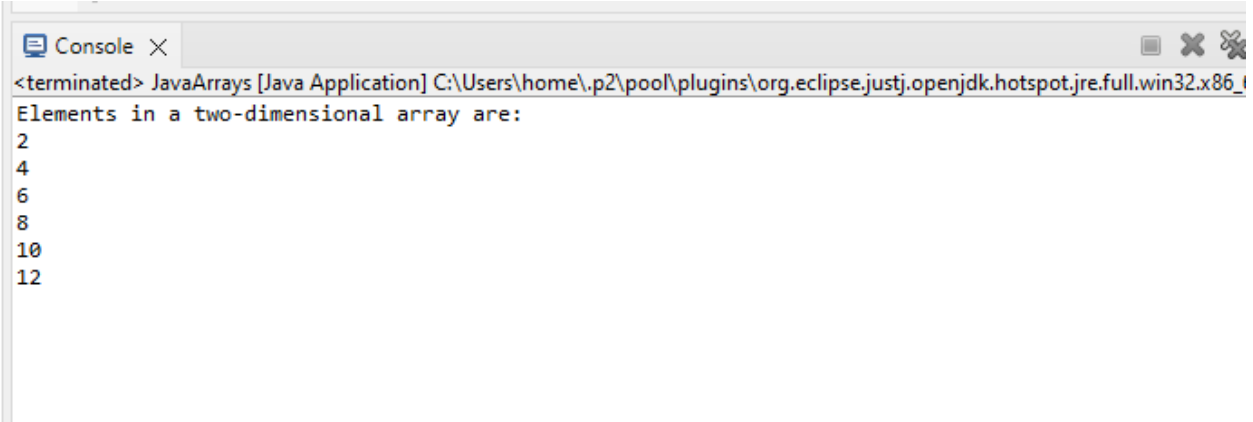
Figure 2 Using a single loop to get elements of a one-dimensional array

Two-dimensional Array Java Code

```
1
2 public class JavaArrays {
3
4     public static void main (String[] args)
5     {
6         //declaration and initialization
7         int[][] a={{2,4},{6,8},{10,12}};
8         System.out.println("Elements in a two-dimensional array are:");
9         for (int i = 0; i < 3; i++)
10        {
11            for (int j = 0; j < 2; j++)
12            {
13                System.out.println(a[i][j]);
14            }
15        }
16    }
17 }
18 }
19
```

Figure 3 Two-dimensional array code

Printing Elements of a Two-dimensional Array



```
Console X
<terminated> JavaArrays [Java Application] C:\Users\home\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86_
Elements in a two-dimensional array are:
2
4
6
8
10
12
```

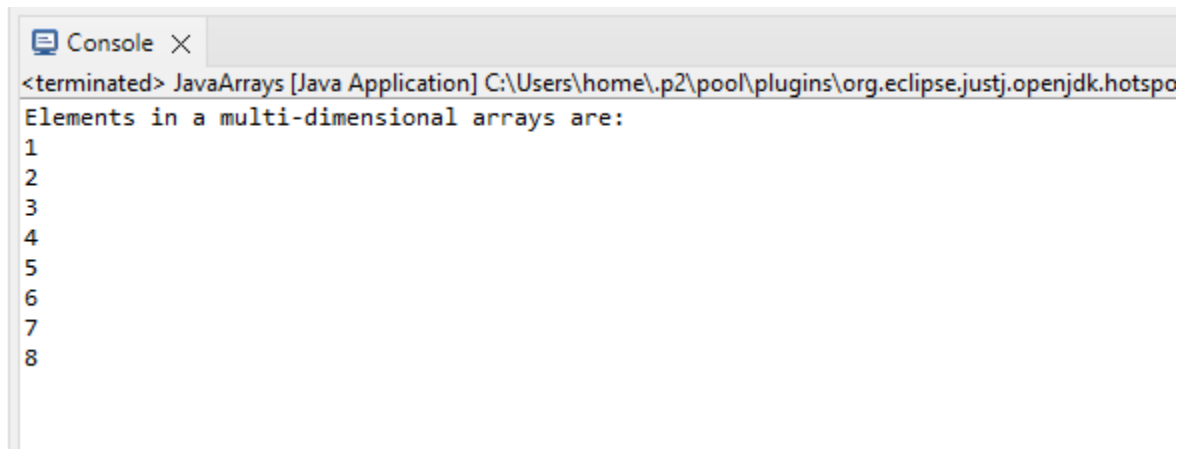
Figure 4 Using two loop to get elements of a two-dimensional array

Multidimensional Array Java Code

```
1
2 public class JavaArrays {
3
4 public static void main (String[] args)
5 {
6     //declaration and initialization
7     int[][][] arr = { { { 1, 2 }, { 3, 4 } }, { { 5, 6 }, { 7, 8 } } };
8     System.out.println("Elements in a multi-dimensional arrays are: ");
9     for (int i = 0; i < 2; i++)
10         for (int j = 0; j < 2; j++)
11             for (int z = 0; z < 2; z++)
12                 System.out.println(arr[i][j][z]);
13 }
14 }
15 }
16 }
```

Figure 5 Multidimensional Array Code

Printing All Values in a Multidimensional Array



```
Console X
<terminated> JavaArrays [Java Application] C:\Users\home\p2\pool\plugins\org.eclipse.justj.openjdk.hotspo
Elements in a multi-dimensional arrays are:
1
2
3
4
5
6
7
8
```

Figure 6 Using multiple loops to get the elements of a multidimensional array

References

Javatpoint. (2021, November 12). Java array - Javatpoint. www.javatpoint.com.

<https://www.javatpoint.com/array-in-java>

Simplilearn. (2020, May 20). Arrays in Java: Declare, Define, and Access Array.

Simplilearn.com. <https://www.simplilearn.com/tutorials/java-tutorial/arrays-in-java>