

## Session-6 Multidimensional Array

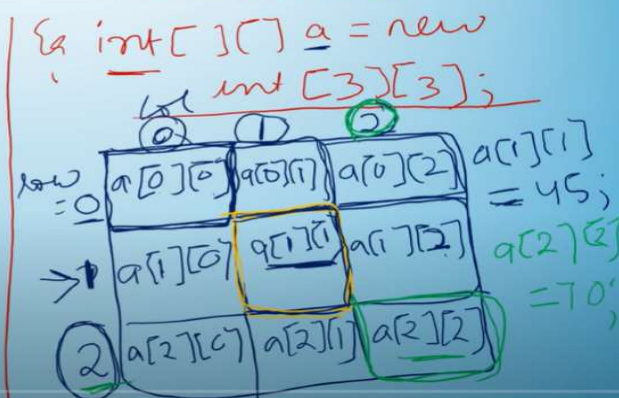
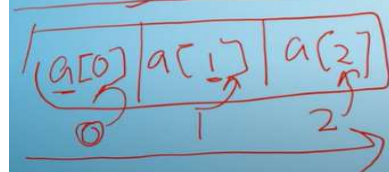
Thursday, July 7, 2022 4:23 PM

### Multi Dimensional/Two Dimensional Arrays

In multidimensional arrays, data is stored in row and column based index (also known as matrix form).

Single Dim

`int[] a = new int[3];`



### Multidimensional Array

- Declare & instantiate array ✓
- Insert values to array ✓
- Find length of row & column
- Read values from array
- Change value of an array element

### Declaration & Instantiation

#### Declaration

1. `dataType[][] arrayRefVar;`  $\rightarrow$  `int[][] a;` (1) or `int a[][];` (2)
2. `dataType arrayRefVar[][];`

#### Instantiation

`arrayRefVar = new dataType[row size][col size];`  $\rightarrow$  `a = new int[3][3];`

#### Combine Declaration & instantiation in one statement

`dataType[][] arrRefVar = new dataType[row size][col size];` ✓  
`dataType[][] arrRefVar = {{1,2,3},{2,3,4},{8,5,4}};`

```
1 package session6;
2
3 public class TwoDimArray {
4
5     public static void main(String[] args) {
6         // TODO Auto-generated method stub
7
8         // declare and instantiate array
9         int [][] a = new int [3][2]; //3 row and 2 cols
10
11         //insert values in array
```

```
session6
  TwoDimArray
    main(String[]):void
```

```

12 //a[row][col]
13 a[0][0] = 12; //row=0, col=0
14 a[0][1] = 13; //row=0, col=1
15
16 a[1][0] = 14; //row=1, col=0
17 a[1][1] = 15; //row=1, col=1
18
19 a[2][0] = 16; //row=2, col=0
20 a[2][1] = 17; //row=2, col=1
21
22 //print size of row and column
23 System.out.println("no. of rows:" + a.length); //no. of rows
24 System.out.println("no. of columns:" + a[0].length); //no. of columns
25
26

```

Print value of I and J

```

20 // a[2][1] = 17; //row=2, col=1
21
22 int [][] a = {{12,13},{14,15},{16,17}};
23
24
25 //print size of row and column
26 System.out.println("no. of rows:" + a.length); //no. of rows
27 System.out.println("no. of columns:" + a[0].length); //no. of columns
28
29 //read values from array
30
31 for(int i=0; i<a.length;i++) //i=0, i=1 i=2
32 {
33     for(int j=0; j<a[0].length;j++) //j=0,j=1
34     {
35         System.out.println(a[i][j]); //12 13 14 15
36     }
37 }

```

The screenshot shows an IDE with two windows. The top window, titled "TwoDimArray.java", contains the following code:

```

38
39
40 //enhanced for loop
41
42 for(int [] row : a) // {12,13}, {14,15}, {16,17}
43 {
44     for(int colvalue:row) //row = 12,13, row=14,15, row=16,17
45     {
46         System.out.println(colvalue);
47     }
48 }
49
50
51 }
52

```

The bottom window is the Console, showing the output of the program:

```

<terminated> TwoDimArray (1) [Java Application] C:\Program Files\Java\jdk-17.0.1\bin\javaw.exe (Nov 6, 2021, 11:57:15 AM - 11:57:15 AM)
no. of rows:3
no. of columns:2
12
13
14
15
16

```

