



JAVA

Class 11

Agenda

Arrays in JAVA

2D Arrays in Java

String Class in Java

String Manipulations

For each/ advanced for loop

- For-Each Loop is another form of for loop used to traverse the array.
- It starts with the keyword **for** like a normal for-loop.
- Instead of declaring and initializing a loop counter variable, we declare a variable that is the same type as the base type of the array, followed by a colon, which is then followed by the array name.
- In the loop body, we can use the loop variable we created rather than using an indexed array element.
- It's commonly used to iterate over an array or a Collections class

For each/ advanced for loop

Syntax of for-each loop:

```
for(data_type variable : array | collection){  
  
}
```

```
3 public class ForEachLoop {  
4  
5     public static void main(String[] args) {  
6  
7         String[] names= {"Anna", "John", "Mike", "Sasha", "Alex"};  
8  
9         for (String name: names) {  
10             System.out.println(name);  
11         }  
12     }  
13 }  
14
```

Console

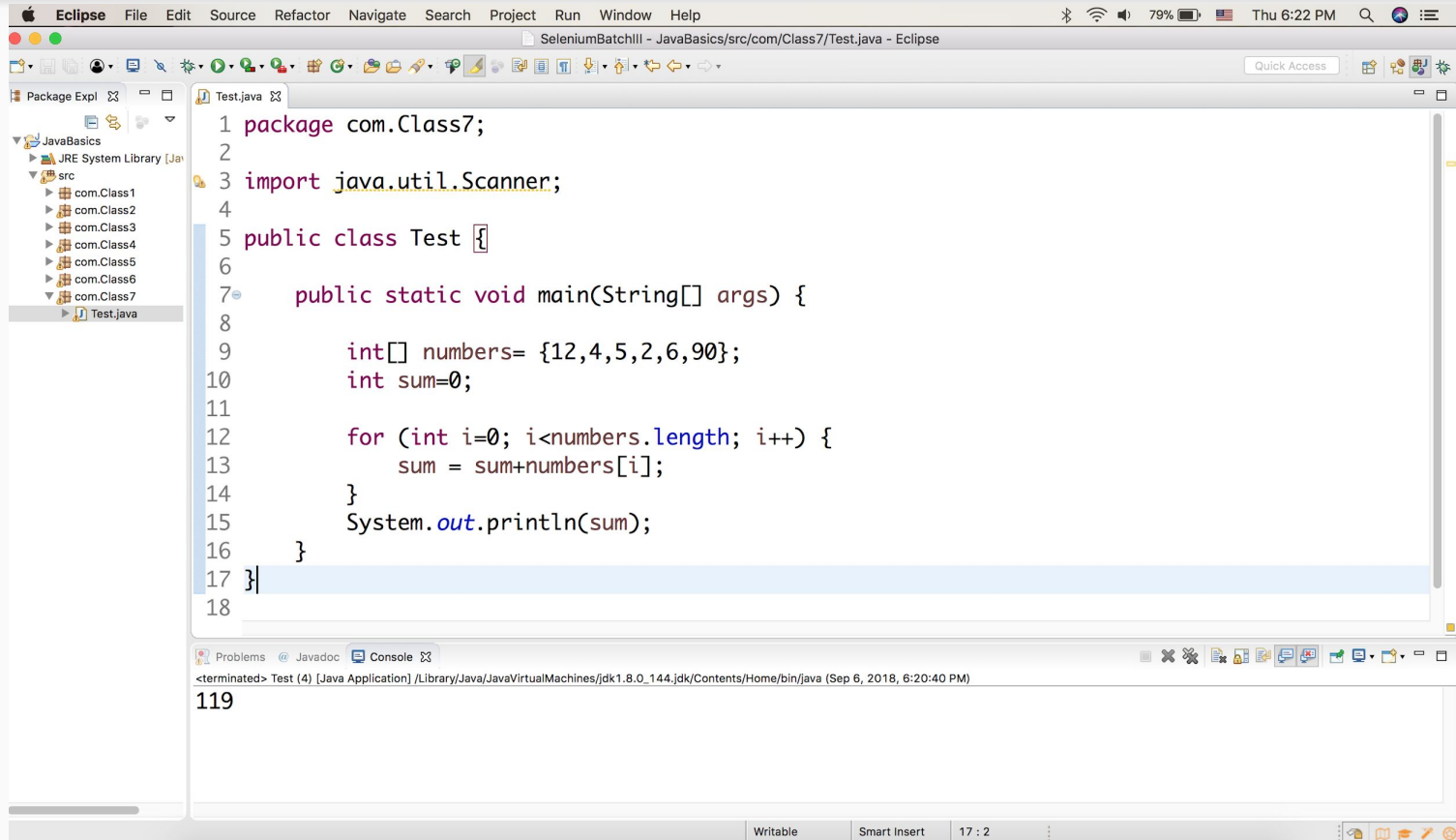
<terminated> ForEachLoop [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Mar 22, 2019, 2:18:21 PM)

Anna
John
Mike
Sasha
Alex

Task

1. Create an array of cars and store 6 elements into it. Using 2 different loops print all values from the array.
2. Create an array of countries. While retrieving all values from an array print capital for each country. (use 2 different loops).
3. Create an array on integers and calculate the sum of all elements in an array.

How to sum number in Array



The screenshot shows the Eclipse IDE interface. The top menu bar includes File, Edit, Source, Refactor, Navigate, Search, Project, Run, Window, and Help. The title bar indicates the file is 'SeleniumBatchIII - JavaBasics/src/com/Class7/Test.java - Eclipse'. The left sidebar shows the Package Explorer with a project named 'JavaBasics' containing a 'src' folder with classes 'com.Class1' through 'com.Class7', and 'Test.java' is selected. The main editor displays the following Java code:

```
1 package com.Class7;  
2  
3 import java.util.Scanner;  
4  
5 public class Test {  
6  
7     public static void main(String[] args) {  
8  
9         int[] numbers= {12,4,5,2,6,90};  
10        int sum=0;  
11  
12        for (int i=0; i<numbers.length; i++) {  
13            sum = sum+numbers[i];  
14        }  
15        System.out.println(sum);  
16    }  
17 }  
18
```

The bottom of the IDE shows the Console tab with the output:
<terminated> Test (4) [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Sep 6, 2018, 6:20:40 PM)
119

The status bar at the bottom indicates 'Writable', 'Smart Insert', and '17 : 2'.

How to find largest number in Array

```
5 public static void main(String[] args) {  
6  
7     int[] numbers = { 200, -20, 13, 499, 650000 };  
8  
9     int largest = numbers[0];  
10  
11     for(int i =0; i<numbers.length; i++) {  
12  
13         if(numbers[i]>largest) {  
14             largest=numbers[i];  
15         }  
16     }  
17     System.out.println("The largest number is "+largest);  
18 }  
19 }
```

Console

<terminated> Largest [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_201.jdk/Contents/Home/bin/java (Mar 23, 2019, 1:39:46 PM)

The largest number is 650000

2D Array

In Java, multidimensional arrays are actually arrays of arrays. It can have multiple rows and multiple columns (also known as matrix form) unlike single dimensional array, which can have only one full row or one full column.

	0	1	2	3
0	45	10	2	1
1	11	54	45	8
2	14	42	8	10

Syntax:

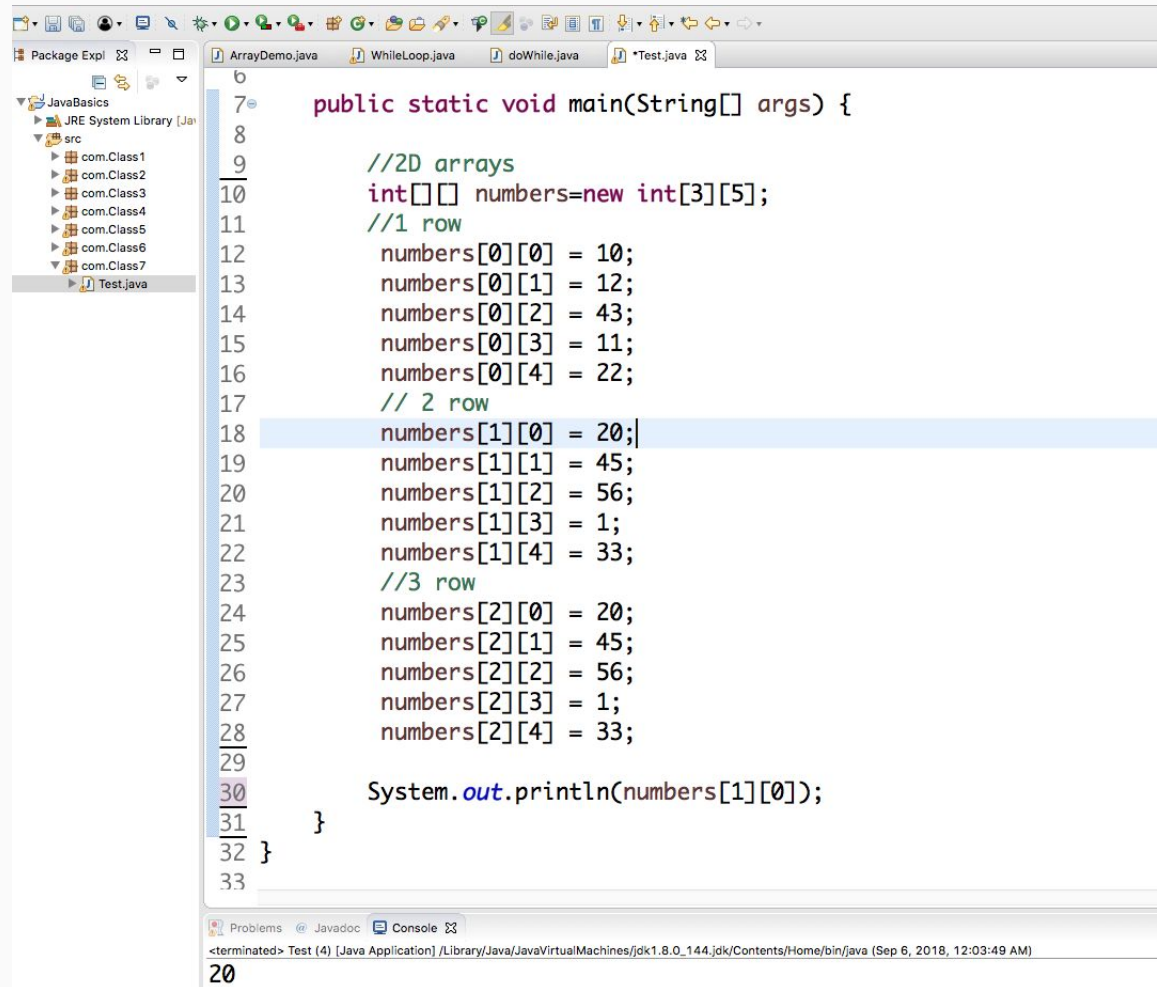
```
Data_Type[][] Array_Name = new int[Row_Size][Column_Size];
```


2D Array

- Each element in the 2D array must be the same type
- Subscripted variables can be use just like a variable:
`rating[0][3] = 10;`
- To access all the items in a multidimensional array the technique is to use one loop inside of another.

	Column 1	Column 2	Column 3	Column 4
Row 1	<code>x[0][0]</code>	<code>x[0][1]</code>	<code>x[0][2]</code>	<code>x[0][3]</code>
Row 2	<code>x[1][0]</code>	<code>x[1][1]</code>	<code>x[1][2]</code>	<code>x[1][3]</code>
Row 3	<code>x[2][0]</code>	<code>x[2][1]</code>	<code>x[2][2]</code>	<code>x[2][3]</code>

2D Array



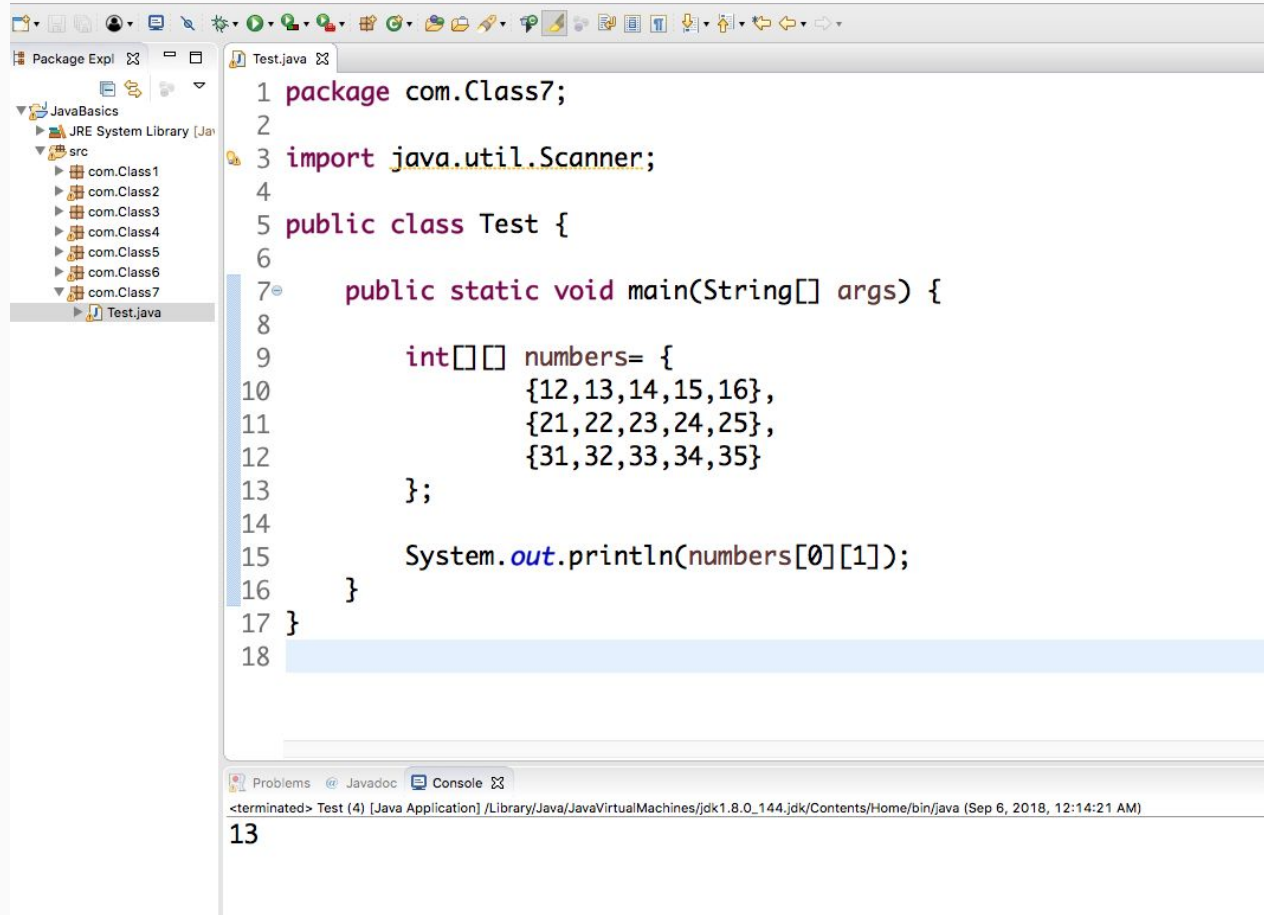
The screenshot shows an IDE with a project named 'JavaBasics' containing a 'src' folder with several class files. The 'Test.java' file is selected and open in the editor. The code defines a 2D array 'numbers' of type 'int' with dimensions [3][5]. It initializes the first row with values [10, 12, 43, 11, 22] and the second row with values [20, 45, 56, 1, 33]. The third row is commented out. The program prints the value at 'numbers[1][0]'.

```
6  
7 public static void main(String[] args) {  
8  
9     //2D arrays  
10    int[][] numbers=new int[3][5];  
11    //1 row  
12    numbers[0][0] = 10;  
13    numbers[0][1] = 12;  
14    numbers[0][2] = 43;  
15    numbers[0][3] = 11;  
16    numbers[0][4] = 22;  
17    // 2 row  
18    numbers[1][0] = 20;  
19    numbers[1][1] = 45;  
20    numbers[1][2] = 56;  
21    numbers[1][3] = 1;  
22    numbers[1][4] = 33;  
23    //3 row  
24    numbers[2][0] = 20;  
25    numbers[2][1] = 45;  
26    numbers[2][2] = 56;  
27    numbers[2][3] = 1;  
28    numbers[2][4] = 33;  
29  
30    System.out.println(numbers[1][0]);  
31 }  
32 }  
33
```

Problems @ Javadoc Console

<terminated> Test (4) [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Sep 6, 2018, 12:03:49 AM)

2D Array



The screenshot shows an IDE with a project named 'JavaBasics' containing a 'src' folder with classes 'com.Class1' through 'com.Class7' and 'Test.java'. The 'Test.java' file is open, showing the following code:

```
1 package com.Class7;
2
3 import java.util.Scanner;
4
5 public class Test {
6
7     public static void main(String[] args) {
8
9         int[][] numbers= {
10             {12,13,14,15,16},
11             {21,22,23,24,25},
12             {31,32,33,34,35}
13         };
14
15         System.out.println(numbers[0][1]);
16     }
17 }
18
```

The console output at the bottom shows the message: <terminated> Test (4) [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Sep 6, 2018, 12:14:21 AM).

Task

1. Create a 2D array where you will store the following values: Mr, Mrs, Ms, Miss and Smith, Jordan, Jackson, Obama. After storing values print the following: Mrs Smith, Mr Obama, Ms Jackson, Miss Jordan.
2. Create a 2D array that first row will contain 4 names and second row will contain grades. Then your program should print name of the students that has as an A and B grade

How print all values from 2D Array

```
6
7 public static void main(String[] args) {
8
9     int[][] numbers = {
10         { 12, 13, 14, 15, 16 },
11         { 21, 22, 23, 24, 25 },
12         { 31, 32, 33, 34, 35 }
13     };
14
15     for (int row = 0; row < numbers.length; row++) {
16         for (int col = 0; col < numbers[row].length; col++) {
17             System.out.print(numbers[row][col]+" ");
18         }
19     }
20 }
21 }
22
23
```

Problems @ Javadoc Console

<terminated> Test (4) [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Sep 6, 2018, 6:27:36 PM)

12 13 14 15 16 21 22 23 24 25 31 32 33 34 35

Writable Smart Insert 19 : 10

Task

1. Create an array of cars : american, german, korean, italian. Then retrieve all values from that array
2. Create an array of countries: north america countries, south america countries, europe countries, asian countries, african countries. Then print all values from that array.