SYNTAX
TECHNOLOGIES

JAVA

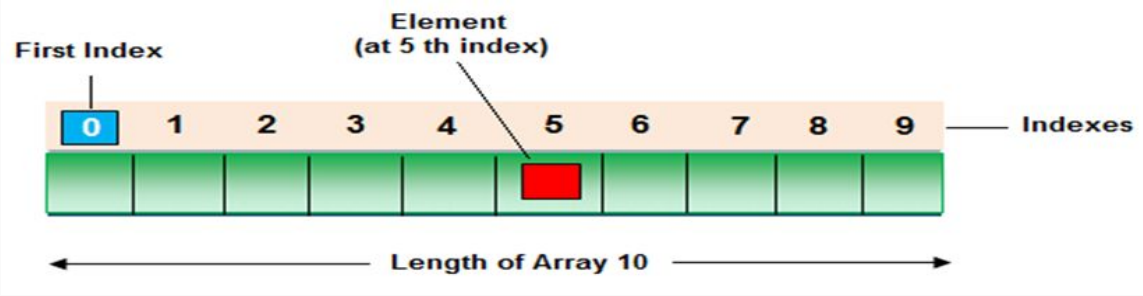
Class 9

Agenda

Arrays in JAVA

Array in Java

- Array is a collection of similar type of data.
- Array is a container object that hold values of homogeneous type.
- It is a collection of similar data types.
- It is fixed in size that means you can't increase the size of array at run time.
- It stores the value on the basis of index value.The first element of an array starts with zero



Declaring and Initializing an Array

dataType[] arrayVar;
preferred way

or

dataType arrayVar[];
works but not preferred way

dataType[] arrayVar = new dataType[arraySize];
preferred way

Or

dataType arrayVar[] = new dataType[arraySize];
works but not preferred way

Note: At the time of array declaration we can not specify the size of array.
For Example int[5] a; → this is wrong.

Array in Java

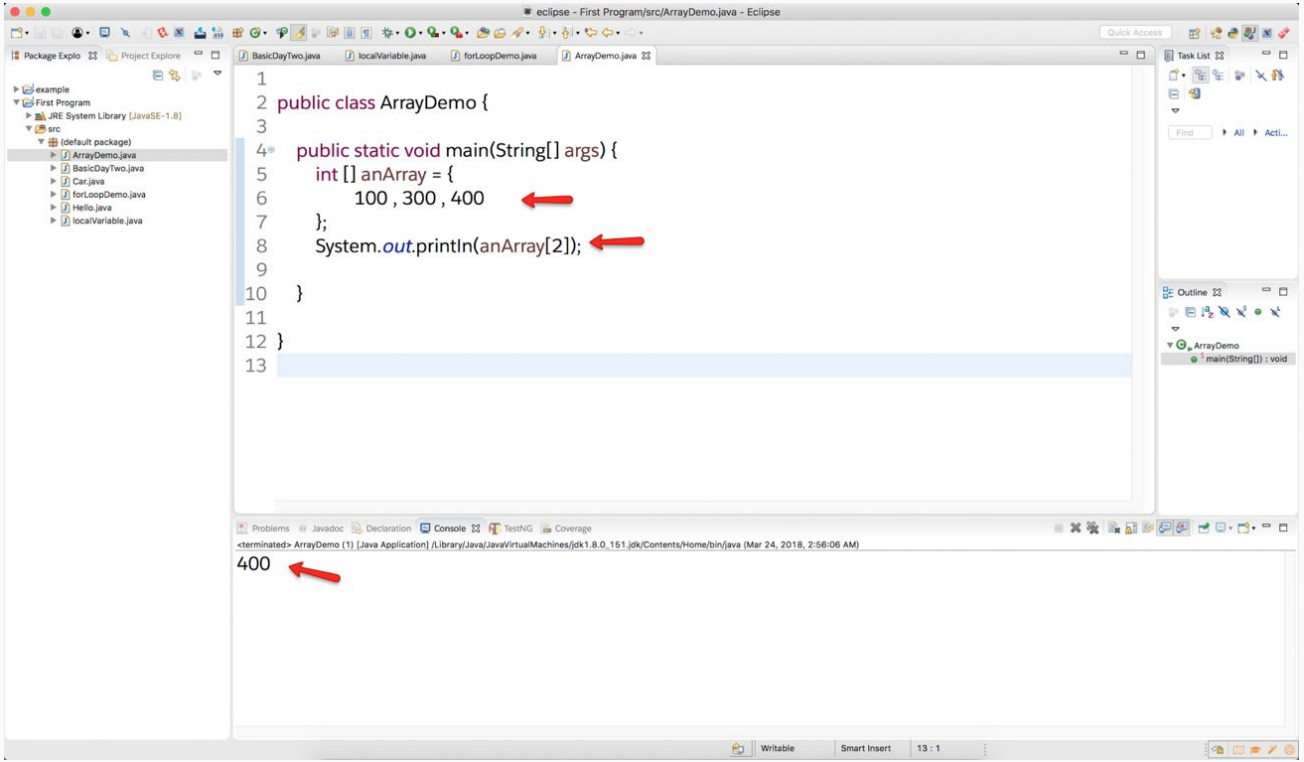
- Every array in a java is an object, hence we can create array by using **new** keyword.
- Access the elements of array by using index value of an elements.

```
5      public static void main(String[] args) {
6          //declare an array
7          int[] array;
8
9          //initialize or create an array
10         array=new int[3];
11
12         //assign value
13         array[0]=10;
14         array[1]=20;
15         array[2]=30;
16
17         //access array element
18         System.out.println(array[1]);
19     }
20 }
21
```

```
Console
<terminated> ArraysIntro [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/java (Mar 15, 2019,
20
```

Array in Java

Another way to write the previous scenario which will create and initialize an array is



Array in Java

int[] arr = new int[10]; // The size of array is 10.
or
int[] arr = {10,20,30,40,50};

Note:

1) At the time of array creation we must be specify the size of array otherwise get an compile time error. For Example
int[] a = new int[]; → Invalid.
int[] a = new int[5]; → Valid

2) If we specify array size as negative int value, then we will get run-time error, NegativeArraySizeException.

3) To specify array size the allowed data types are byte, short, int, char. If we use other data type then we will get an compile time error.

4) The maximum allowed size of array in java is 2147483647
(It is maximum value of int data type)

How to find a size of an Array

To find the length of an array, we can use the following syntax:

arrayName.length;

```
String[] names=new String[5];

names[0]="John";
names[1]="Anna";
names[2]="Michael";
names[3]="Donald";
names[4]="Omar";

System.out.println(names.length); output->5
```

How to print all values from an Array

To print all values from an array we can use for loop using following syntax

```
for ( int i=0; i < array.length; i++ ) {
        System.out.println( array[i] );
}
```

```
String[] names=new String[3];

names[0]="John";
names[1]="Anna";
names[2]="Michael";

for (int i=0; i<names.length; i++) {
            System.out.println(names[i]+" ");
}
```

Array in java

Advantage of Array	Disadvantage of Array
One variable can store multiple value: The main advantage of array is we can represent multiple value under the same name.	The main limitation of array is **Size Limit**: Once we declare array there is no chance to increase and decrease the size of array according to our requirement
Code Optimization: No, need to declare a lot of variable of same type data, We can retrieve and short data easily.	Arrays can store only homogeneous values
Random access: We can retrieve any data from array with the help of index value.	

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

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
```