ARRAY

Arrays are used **to store multiple values in a single variable**, instead of declaring separate variables for each value.

Array can contain primitives (int, char, etc.) as well as object (or non-primitive) references of a class depending on the definition of the array. In case of primitive data types, the actual values are stored in contiguous memory locations. In case of objects of a class, [the actual objects are stored in heap segment](https://www.geeksforgeeks.org/g-fact-46/)



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An array is a group of like-typed variables that are referred to by a common name. Arrays in Java work differently than they do in C/C++. Following are some important points about Java arrays.

* In Java all arrays are dynamically allocated.(discussed below)
* Since arrays are objects in Java, we can find their length using the object property *length*. This is different from C/C++ where we find length using sizeof.
* A Java array variable can also be declared like other variables with [] after the data type.
* The variables in the array are ordered and each have an index beginning from 0.
* Java array can be also be used as a static field, a local variable or a method parameter.
* The **size** of an array must be specified by an int or short value and not long.
* The direct superclass of an array type is [Object](https://www.geeksforgeeks.org/object-class-in-java/).
* Every array type implements the interfaces [Cloneable](https://www.geeksforgeeks.org/marker-interface-java/) and [java.io.Serializable](https://www.geeksforgeeks.org/serialization-in-java/).

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Java provides a data structure, the **array**, which stores a fixed-size sequential collection of elements of the same type. An array is used to store a collection of data, but it is often more useful to think of an array as a collection of variables of the same type.

Instead of declaring individual variables, such as number0, number1, ..., and number99, you declare one array variable such as numbers and use numbers[0], numbers[1], and ..., numbers[99] to represent individual variables.

Example of Java Array

Let's see the simple example of java array, where we are going to declare, instantiate, initialize and traverse an array.

1. //Java Program to illustrate how to declare, instantiate, initialize
2. //and traverse the Java array.
3. **class** Testarray{
4. **public** **static** **void** main(String args[]){
5. **int** a[]=**new** **int**[5];//declaration and instantiation
6. a[0]=10;//initialization
7. a[1]=20;
8. a[2]=70;
9. a[3]=40;
10. a[4]=50;
11. //traversing array
12. **for**(**int** i=0;i<a.length;i++)//length is the property of array
13. System.out.println(a[i]);
14. }}

[**Test it Now**](https://www.javatpoint.com/opr/test.jsp?filename=Testarray)

Output:

10

20

70

40

50

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## **Declaration, Instantiation and Initialization of Java Array**

We can declare, instantiate and initialize the java array together by:

1. **int** a[]={33,3,4,5};//declaration, instantiation and initialization

Let's see the simple example to print this array.

1. //Java Program to illustrate the use of declaration, instantiation
2. //and initialization of Java array in a single line
3. **class** Testarray1{
4. **public** **static** **void** main(String args[]){
5. **int** a[]={33,3,4,5};//declaration, instantiation and initialization
6. //printing array
7. **for**(**int** i=0;i<a.length;i++)//length is the property of array
8. System.out.println(a[i]);
9. }}

[**Test it Now**](https://www.javatpoint.com/opr/test.jsp?filename=Testarray1)

Output:

33

3

4

5

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## **For-each Loop for Java Array**

We can also print the Java array using [**for-each loop**](https://www.javatpoint.com/for-each-loop). The Java for-each loop prints the array elements one by one. It holds an array element in a variable, then executes the body of the loop.

The syntax of the for-each loop is given below:

1. **for**(data\_type variable:array){
2. //body of the loop
3. }

Let us see the example of print the elements of Java array using the for-each loop.

1. //Java Program to print the array elements using for-each loop
2. **class** Testarray1{
3. **public** **static** **void** main(String args[]){
4. **int** arr[]={33,3,4,5};
5. //printing array using for-each loop
6. **for**(**int** i:arr)
7. System.out.println(i);
8. }}

Output:

33

3

4

5

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## **Passing Array to a Method in Java**

We can pass the java array to method so that we can reuse the same logic on any array.

Let's see the simple example to get the minimum number of an array using a method.

1. //Java Program to demonstrate the way of passing an array
2. //to method.
3. **class** Testarray2{
4. //creating a method which receives an array as a parameter
5. **static** **void** min(**int** arr[]){
6. **int** min=arr[0];
7. **for**(**int** i=1;i<arr.length;i++)
8. **if**(min>arr[i])
9. min=arr[i];
11. System.out.println(min);
12. }
14. **public** **static** **void** main(String args[]){
15. **int** a[]={33,3,4,5};//declaring and initializing an array
16. min(a);//passing array to method
17. }}

[**Test it Now**](https://www.javatpoint.com/opr/test.jsp?filename=Testarray2)

Output:

3

## **Anonymous Array in Java**

Java supports the feature of an anonymous array, so you don't need to declare the array while passing an array to the method.

1. //Java Program to demonstrate the way of passing an anonymous array
2. //to method.
3. **public** **class** TestAnonymousArray{
4. //creating a method which receives an array as a parameter
5. **static** **void** printArray(**int** arr[]){
6. **for**(**int** i=0;i<arr.length;i++)
7. System.out.println(arr[i]);
8. }
10. **public** **static** **void** main(String args[]){
11. printArray(**new** **int**[]{10,22,44,66});//passing anonymous array to method
12. }}

[**Test it Now**](https://www.javatpoint.com/opr/test.jsp?filename=TestAnonymousArray)

Output:

10

22

44

66