

Arrays

What is an array?

An array is an object that can store many values of the same type.

An array could be a list of ints or Strings or any other reference types you create.

An array store a fixed number of elements of the same type.

int[] scores

0	1	2	3	4
90	87	70	84	98

Making an array with default values

Square brackets `[]` with the number of
elements in the array

`int[] scores = new int[5];`

Empty square brackets `[]`



0	1	2	3	4
0	0	0	0	0

Making an array with default value

```
int[] scores = new int[5];
```

When you create an array in this manner, Java assigns default values to each item.

Type	Default Value
int	0
double	0.0
boolean	false
Objects n	null



Making an Array with Initial Values

```
int[] scores = {90, 87, 79, 84, 98};
```

0	1	2	3	4
90	87	70	84	98



Making an array of any type

Array with default values:

```
Type[] variableName = new Type[numElements];
```

Array with initial value:

```
Type[] variableName = {initial values list};
```



Getting/Setting value at an index

```
int[] scores = {90, 87, 79, 84, 98};
```

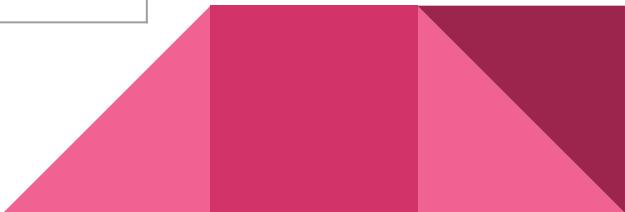
Getting:

```
int myScore = score[1];    ⇒ 87
```

Setting:

```
score[1] = 92 ⇒
```

0	1	2	3	4
90	92	79	84	98



Getting the array length

```
int[] scores = {90, 87, 79, 84, 98};
```

```
int length = scores.length; //no parenthesis ⇒ 5
```



Last Index of Array

```
int lastIndex = array.length - 1;
```

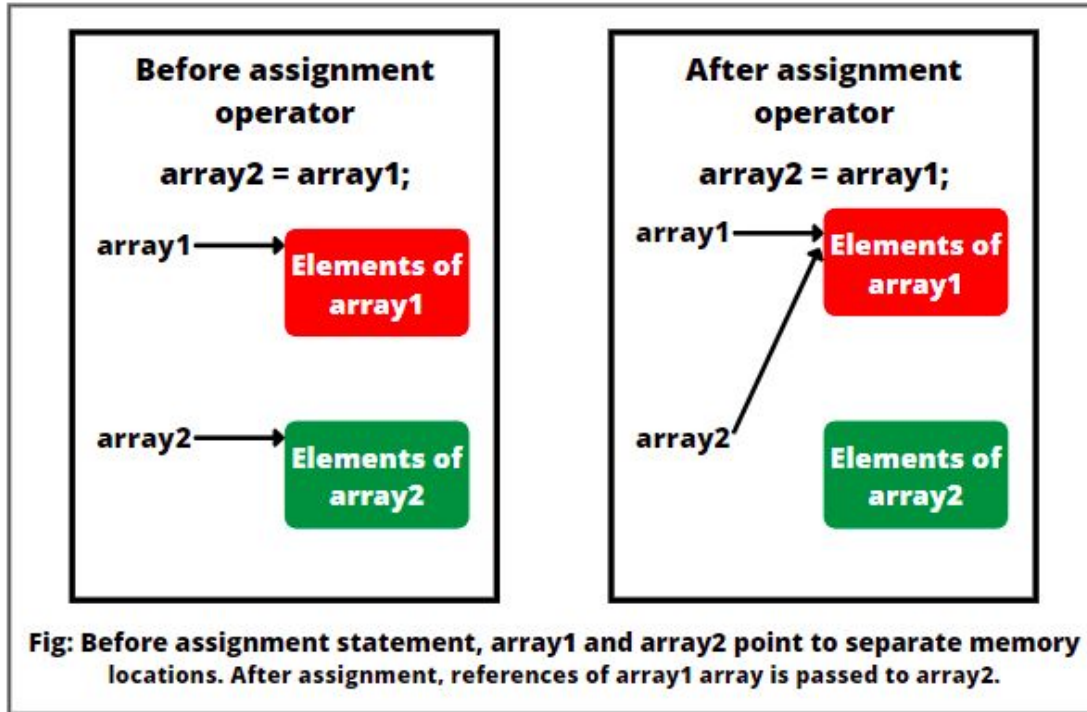
Trying to access a value outside the index value list, you get an `ArrayIndexOutOfBoundsException`



Arrays are reference types

Store an address not a value.

When you make a copy of an array, the pointer (arrow) is copied, not the content.



Example

```
int[] arr1 = {1, 2, 3, 4, 5};  
int[] arr2 = {10, 20, 30, 40, 50};  
arr1 = arr2;  
arr1[0] = 100;
```

What is stored in arr1 and arr2 after after executing that code?

```
arr1 => { 100, 20, 30, 40, 50 }  
arr2 => { 100, 20, 30, 40, 50 }
```

