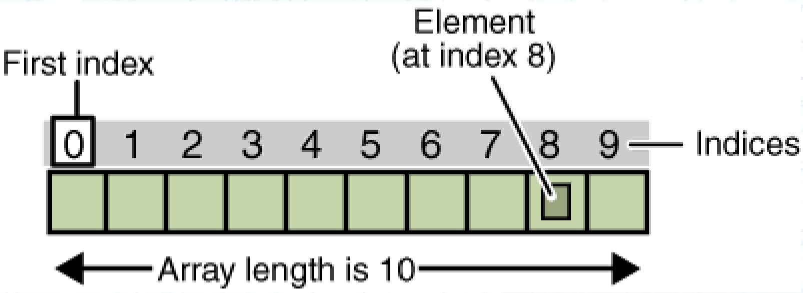
Java Training

Arrays

An array is a container object that holds a **fixed number of values of a single type**.



The length of an array is established when the array is created. After creation, its length is fixed.

Arrays: Example

```
class ArrayDemo {
    public static void main(String[] args) {
        int[] anArray;           // declares an array of integers

        anArray = new int[5];    // allocates memory for 10 integers

        anArray[0] = 100; // initialize first element
        anArray[1] = 200; // initialize second element
        anArray[2] = 300; // etc.
        anArray[3] = 400;
        anArray[4] = 500;


        System.out.println("Element at index 0: " + anArray[0]);
        System.out.println("Element at index 1: " + anArray[1]);
        System.out.println("Element at index 2: " + anArray[2]);
        System.out.println("Element at index 3: " + anArray[3]);
        System.out.println("Element at index 4: " + anArray[4]);
    }
}
```

OUTPUT:

```
Element at index 0: 100
Element at index 1: 200
Element at index 2: 300
Element at index 3: 400
Element at index 4: 500
```

Arrays: Some useful methods

Arrays have a **length data field** (read only), specifying the number of elements in the array. The length data field can be accessed through the dot operator.

```
int[ ]  a = new int[10];
for ( int k=0; k < a.length ; k++ )
System.out.println( a[ k ] );
```

Copying Arrays

Arrays can be copied using the Java System method arraycopy():

public static native void arraycopy(Object src, int src_position, Object dst, int dst_position, int length)

Copies a region of the source array, src,
beginning at the array cell src_position,
to the destination array, dst,
beginning at the cell dst_position in the destination.
The number of cells copied is equal to the length argument.

Example:

```
int[] primes = { 1, 2, 3, 5, 7, 9, 11 };
int[] c = new int[ primes.length ];
System.arraycopy( primes, 0, c, 0, primes.length);
// copy array primes to array c
```

Cloning Arrays

By default, all Java arrays support the clone method.

Example:

```
int[] primes = { 1, 2, 3, 5, 7, 11, 13, 17 };
int[] backup;

backup = (int[]) primes.clone();
```

Sorting Arrays

Use java.util.Arrays's sort method.

Example:

```
import java.util.Arrays;

public class ArraySort {
  public static void main(String args[]) {
      int marks[] = { 98, 95, 91, 93, 97 };
      System.out.println("Before sorting: " + Arrays.toString(marks));

      Arrays.sort(marks);
      System.out.println("After sorting: " + Arrays.toString(marks));
   }
}
```

Searching Arrays, Filling Arrays, lot more..

Exercise:

Look at the API docs for java.util.Arrays.

Q & A