



Java ArrayList

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Java ArrayList

The `ArrayList` class is a resizable array, which can be found in the `java.util` package.

The difference between a built-in array and an `ArrayList` in Java, is that the size of an array cannot be modified (if you want to add or remove elements to/from an array, you have to create a new one). While elements can be added and removed from an `ArrayList` whenever you want. The syntax is also slightly different:

Example

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Create an `ArrayList` object called **`cars`** that will store strings:

```
import java.util.ArrayList; // import the ArrayList class

ArrayList<String> cars = new ArrayList<String>(); // Create an ArrayList
```

If you don't know what a package is, read our [Java Packages Tutorial](#).

Add Items

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Example

```
import java.util.ArrayList;

public class Main {
    public static void main(String[] args) {
        ArrayList<String> cars = new ArrayList<String>();
        cars.add("Volvo");
        cars.add("BMW");
        cars.add("Ford");
        cars.add("Mazda");
        System.out.println(cars);
    }
}
```

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Access an Item

To access an element in the `ArrayList`, use the `get()` method and refer to the index number:

Example

```
cars.get(0);
```

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Change an Item

To modify an element, use the `set()` method and refer to the index number:

Example

```
cars.set(0, "Opel");
```

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Remove an Item

To remove an element, use the `remove()` method and refer to the index number:

Example

```
cars.remove(0);
```

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To remove all the elements in the `ArrayList`, use the `clear()` method:

Example

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ArrayList Size

To find out how many elements an ArrayList have, use the `size` method:

Example

```
cars.size();
```

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Loop Through an ArrayList

Loop through the elements of an `ArrayList` with a `for` loop, and use the `size()` method to specify how many times the loop should run:

Example

```
public class Main {  
    public static void main(String[] args) {  
        ArrayList<String> cars = new ArrayList<String>();  
        cars.add("Volvo");  
        cars.add("BMW");  
        cars.add("Ford");  
        cars.add("Mazda");  
        for (int i = 0; i < cars.size(); i++) {  
            System.out.println(cars.get(i));  
        }  
    }  
}
```

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You can also loop through an **ArrayList** with the **for-each** loop:

Example

```
public class Main {  
    public static void main(String[] args) {  
        ArrayList<String> cars = new ArrayList<String>();  
        cars.add("Volvo");  
        cars.add("BMW");  
        cars.add("Ford");  
        cars.add("Mazda");  
        for (String i : cars) {  
            System.out.println(i);  
        }  
    }  
}
```

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Other Types

Elements in an ArrayList are actually objects. In the examples above, we created elements (objects) of type "String". Remember that a String in Java is an object (not a primitive type). To use other types, such as int, you must specify an equivalent wrapper class: **Integer**. For other primitive types, use: **Boolean** for boolean, **Character** for char, **Double** for double, etc:

Example

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```
import java.util.ArrayList;

public class Main {
    public static void main(String[] args) {
        ArrayList<Integer> myNumbers = new ArrayList<Integer>();
        myNumbers.add(10);
        myNumbers.add(15);
        myNumbers.add(20);
        myNumbers.add(25);
        for (int i : myNumbers) {
            System.out.println(i);
        }
    }
}
```

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Sort an ArrayList

Another useful class in the `java.util` package is the `Collections` class, which include the `sort()` method for sorting lists alphabetically or numerically:

Example

Sort an ArrayList of Strings:

```
import java.util.ArrayList;
import java.util.Collections; // Import the Collections class

public class Main {
    public static void main(String[] args) {
        ArrayList<String> cars = new ArrayList<String>();
        cars.add("Volvo");
        cars.add("BMW");
        cars.add("Ford");
```

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```
    for (String i : cars) {  
        System.out.println(i);  
    }  
}  
}
```

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Example

Sort an ArrayList of Integers:

```
import java.util.ArrayList;  
import java.util.Collections; // Import the Collections class  
  
public class Main {  
    public static void main(String[] args) {  
        ArrayList<Integer> myNumbers = new ArrayList<Integer>();  
        myNumbers.add(33);  
        myNumbers.add(15);  
        myNumbers.add(20);  
        myNumbers.add(34);  
        myNumbers.add(8);  
        myNumbers.add(12);  
  
        Collections.sort(myNumbers); // Sort myNumbers  
  
        for (int i : myNumbers) {  
            System.out.println(i);  
        }  
    }  
}
```

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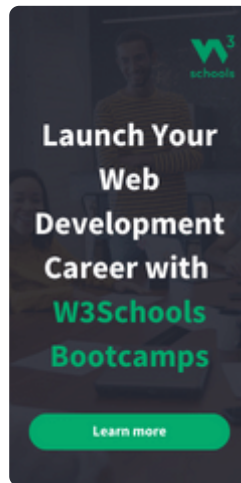
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