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# ArrayList

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## List

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

The difference between a built-in array and an `ArrayList` in Java, is that the size of an array is fixed (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` at any time, you never have to worry about the size of the array. The syntax is also slightly different:

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 object
```

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



# Add Items

The `ArrayList` class has many useful methods. For example, to add elements to the `ArrayList`, use the `add()` method:

## 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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**Remember:** Array indexes start with 0: [0] is the first element. [1] is the second element, etc.

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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

```
cars.clear();
```

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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 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

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

Create an `ArrayList` to store numbers (add elements of type `Integer`):

```
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:



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```
import java.util.Collections; // Import the Collections class
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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");
        Collections.sort(cars); // Sort cars
        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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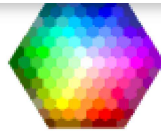
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