ArrayList

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Learning Object

- ArrayList
  - Add methods
  - Get methods
  - Size methods
  - Contains methods

ArrayList

- List is similar roles to Array
  - Use index
  - All elements same type like Array (int [ ], String[ ])
- Has more useful functions
  - Not fixed size unlike Array
  - Various methods
    - add, get, size, contains remove
- **import** java.util.ArrayList;
- One way declare and initialize
  - ArrayList <type> arr_list = **new** ArrayList <type> ();

Add Element in ArrayList

- Method
  - add(index, element) or add(element)
  - Default: Last index
- Size of ArrayList can be changed by add method
  - Add more elements, but the type must be same
- Example:

```
ArrayList <String> baseball_pitches = new ArrayList <String>();
baseball_pitches.add("138 km/h");
baseball_pitches.add("142 km/h");
baseball_pitches.add(0,"199 km/h");
```

Access Element in ArrayList

- Method:
  get(index)
- Access elements using index like Array, but, have to use get() method
- Example:

```
baseball_pitches.get(0);
baseball_pitches.get(1);
```

Number of Element in ArrayList

- Method:
  size()
- Number of element in ArrayList
  - C.f. Array use length without ()
- Example:

```
baseball_pitches.size();
```

Search Value in ArrayList

- Method:
  contains(target element);
  Return: true or false
- Search ArrayList to check whether the target item is in ArrayList or not
- Example:

```
baseball_pitches.contains(“142 km/h”); // true or false
```

Remove element in ArrayList

- Method:

  remove(target element); OR remove(index);

  Return: true or false // Return: target element

- Remove one item in ArrayList per call, Size of ArrayList is reduced
- Example:

```
baseball_pitches.remove(“142 km/h”); // return true or false
baseball_pitches.remove(1)// return 142 km/h
```

Practice

1. Make a new project
   - ❑Project name: Array_List
2. Create a new File
   - ❑Class name: Array_List
3. Coding:

```
ArrayList baseball_pitches = new ArrayList();
baseball_pitches.add("138km/h");
baseball_pitches.add("142km/h");
for(int i = 0 ; i<baseball_pitches.size();i++) {
System.out.println(baseball_pitches.get(i));
}
baseball_pitches.add(0,"150km/h");
System.out.println("After changing index 0");
for(int i = 0 ; i<baseball_pitches.size();i++) {
System.out.println(baseball_pitches.get(i));
}
System.out.println(baseball_pitches.contains("150km/h"));
System.out.println(baseball_pitches.contains("150Km/h"));
baseball_pitches.remove(0);
System.out.println("After remove index 0");
for(int i = 0 ; i<baseball_pitches.size();i++) {
System.out.println(baseball_pitches.get(i));
}
System.out.println("After remove 138km/h");
baseball_pitches.remove("138km/h");
for(int i = 0 ; i<baseball_pitches.size();i++) {
System.out.println(baseball_pitches.get(i));
}
```

Practice – Result

*Array_List.java

```
1  import java.util.ArrayList;
2  public class Array_List {
3      public static void main(String[] args) {
4          ArrayList baseball_pitches = new ArrayList();
5          baseball_pitches.add("138km/h");
6          baseball_pitches.add("142km/h");
7          for(int i = 0 ; i<baseball_pitches.size();i++) {
8              System.out.println(baseball_pitches.get(i));
9          }
10         baseball_pitches.add(0,"150km/h");
11         System.out.println("After changing index 0");
12         for(int i = 0 ; i<baseball_pitches.size();i++) {
13             System.out.println(baseball_pitches.get(i));
14         }
15         System.out.println(baseball_pitches.contains("150km/h"));
16         System.out.println(baseball_pitches.contains("150Km/h"));
17         baseball_pitches.remove(0);
18         System.out.println("After remove index 0");
19         for(int i = 0 ; i<baseball_pitches.size();i++) {
20             System.out.println(baseball_pitches.get(i));
21         }
22         System.out.println("After remove 138km/h");
23         baseball_pitches.remove("138km/h");
24         for(int i = 0 ; i<baseball_pitches.size();i++) {
25             System.out.println(baseball_pitches.get(i));
26         }
27     }
28 }
```

Summary

- **import** java.util.ArrayList;
- One way declare and initialize
  - ArrayList <type> arr_list = **new** ArrayList <type> ();

ArrayList<String> baseball_pitches = new ArrayList <String>();
baseball_pitches.add("138 km/h");
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7          for(int i = 0 ; i<baseball_pitches.size();i++) {
8              System.out.println(baseball_pitches.get(i));
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10         baseball_pitches.add(0,"150km/h");
11         System.out.println("After changing index 0");
12         for(int i = 0 ; i<baseball_pitches.size();i++) {
13             System.out.println(baseball_pitches.get(i));
14         }
15         System.out.println(baseball_pitches.contains("150km/h"));
16         System.out.println(baseball_pitches.contains("150Km/h"));
17         baseball_pitches.remove(0);
18         System.out.println("After remove index 0");
19         for(int i = 0 ; i<baseball_pitches.size();i++) {
20             System.out.println(baseball_pitches.get(i));
21         }
22         System.out.println("After remove 138km/h");
23         baseball_pitches.remove("138km/h");
24         for(int i = 0 ; i<baseball_pitches.size();i++) {
25             System.out.println(baseball_pitches.get(i));
26         }
27     }
28 }
```