

WORKSHEET: Java ArrayList Class (part 1)©2025 Chris Nielsen – www.nielsenedu.com

1. Consult the **Java ArrayList Class** document to answer the following questions. Use complete sentences for short-answer questions.

- a) Given arrays in Java are of fixed length, what must a programmer do add a new element or delete an element from an existing array?

The programmer will need to create a totally new array and copy the elements from the original array into the new one.

- b) Look at the Java Collections hierarchy to determine which *interface* the ArrayList class implements.

List

- c) Write the complete method header for each and every ArrayList method that is included in the *Java AP Subset*.

E get(int index)

boolean add(E obj)

void add(int index, E obj)

E set(int index, E obj)

E remove(int index)

int size()

- d) Write a statement that declares and initializes an array named `arr` that can store 5 objects of type `String`.

```
String[] arr = new String[5];
```

- e) Write a statement that declares and initializes an ArrayList named `list` that can store objects of type `String`.

```
ArrayList<String> list = new ArrayList<>();
```

- f) Write a statement that adds the `String` "Last" to the end of an ArrayList named `list`.

```
list.add("Last");
```

- g) Write a statement that removes the first element of an ArrayList named `list`.

```
list.remove(0);
```

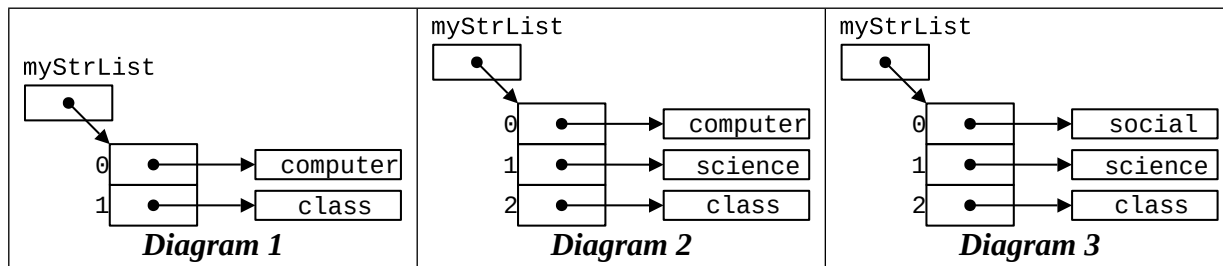
- h) Write a statement that changes the element at index 1 of an ArrayList named `list` to a `String` with a value "element 1".

```
list.set(1, "element 1");
```

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2. Given the following diagrams.



Demonstrate your proficiency with ArrayList by writing the specified code.

a) Write code that creates the ArrayList represented by **Diagram 1**.

```

1 ArrayList<String> myStrList = new ArrayList<>();
2 myStrList.add("computer");
3 myStrList.add("class");

```

b) Use the add method to change the ArrayList given by **Diagram 1** into the structure represented by **Diagram 2**.

```
myStrList.add(1, "science");
```

c) Use the set method to change the ArrayList given by **Diagram 2** into the structure represented by **Diagram 3**.

```
myStrList.set(0, "social");
```

3. Given the following code for method swap, write a version that replaces the array parameter with an ArrayList parameter.

```

1 private static void swap(String[] a, int i, int j) {
2     String tmp = a[i];
3     a[i] = a[j];
4     a[j] = tmp;
5 }

```

```

1 private static void swap(ArrayList<String> a,
2                             int i, int j) {
3     String tmp = a.get(i);
4     a.set(i, a.get(j));
5     a.set(j, tmp);
6 }

```