WORKSHEET: Java `ArrayList` Class (part 1)

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?

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

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

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

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

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

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

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

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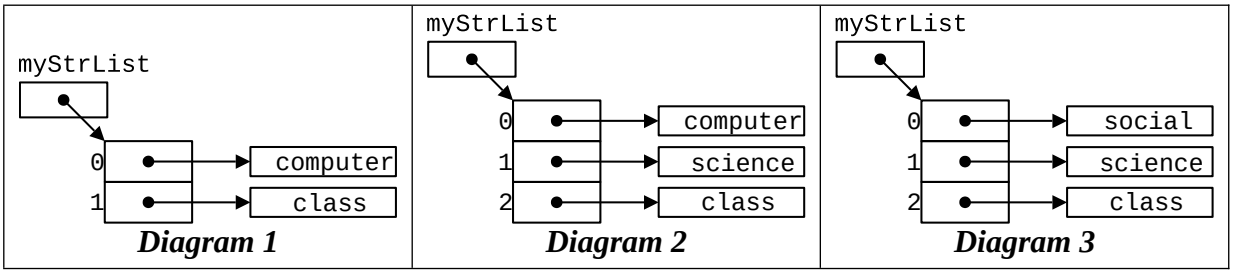
2. Given the following diagrams.



Demonstrate your proficiency with `ArrayList` by writing the specified code.

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

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

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

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  }
```