

Week 4: Research

1. What are the differences between Lists, Sets, and Maps in Java?
2. Write a line of code that shows how you would instantiate an ArrayList of String.

1. Lists, Sets, and Maps are Java data structures that allow us to store and manipulate collections of data. But there are major differences between them:
 - Lists are ordered collections of elements that allow duplicate entries. Lists keep elements ordered by index and are implemented using the List interface such as ArrayList and LinkedList.
 - Sets are unordered collections of elements that do not allow duplicates. In Java, Sets are implemented using the Set interface and several classes that implement it, such as HashSet and TreeSet. Sets are useful when you need to check whether an element is in the collection or not.
 - Maps are collections of key-value pairs where each key is unique. In Java, Maps are implemented using the Map interface and several classes that implement it, such as HashMap and TreeMap. Maps allow you to retrieve a value by its associated key. In Maps, values can be implemented but not keys.

2.

```
List<String> myFavouriteFlowers = new ArrayList<String>();  
students.add("rose");  
students.add("tulip");  
students.add("hydrangea");
```

Recourses:

- <https://learn.promineotech.com/mod/book/view.php?id=10277&chapterid=605>
- <https://www.javatpoint.com/java-list>