

Research: Week 04

Prompts

1. What are the differences between Lists, Sets, and Maps in Java?

Lists, Sets, and maps in Java all fall under the category of "collections". Like arrays, they are a grouping of elements or objects in java. While they have similar functions, it is their differences that make them significant. Lists, while almost indistinguishable from an array, are more flexible in that they are mutable or amendable. Lists can be shortened, lengthened, and rearranged, but are still order dependent. Lists can also contain any amount of null values. Maps, like lists, are ordered, however their "index" is replaced by a key that can be any unique number, char, or string. Maps allow you to create dictionaries or other key based repositories. Maps cannot contain a null as a key. Sets can be used when order doesn't matter, like when simply grouping states, cities, genres. Sets can contain a single null value but can contain no duplicates of any value.

3. Write a line of code that shows how you would instantiate an ArrayList of String.

The syntax for instantiation of an ArrayList is:

```
ArrayList<Type>();
```

OR

```
ArrayList<Type> name = new ArrayList<>();
```

An example of this is as follows:

```
ArrayList<Integer> factors = new ArrayList<>(); //instantiates ArrayList
for (int i = 1; i <= userNumber; i++){
    if (userNumber % i == 0){
        factors.add(i); //utilizes the method "add" to grow the list by 1 element
    }
}
System.out.println(factors);
```

References

Martinez, Javier. *Week 4 Backend Software Development Class*. Promineo Tech. 27 September 2022.

Class ArrayList<E>. Oracle.com. (n.d.) Retrieved September 27 from <https://docs.oracle.com/javase/8/docs/api/java/util/ArrayList.html>

Difference between List, Set and Map in Java. GeeksforGeeks.com. 27 September 2022. Retrieved 1 October 2022 from <https://www.geeksforgeeks.org/difference-between-list-set-and-map-in-java/>

Lists. Promineo Tech. (n.d.). Retrieved 1 October 2022, from <https://youtu.be/yCojNb3p9oE>