**Prompts**

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

2. List at least two different implementations for each collection (List, Set, and Map). When would you use one of the implementations over the other?

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

4. Write a line of code that shows how you would instantiate a HashSet of StringBuilder.

5. Write a line of code that shows how you would instantiate a HashMap of String, String.

6. What is your favorite thing you learned this week?

**Instructions**

As developers, research is a constant part of our job. A common saying is that 90% of software development is Googling, and while that is an exaggeration, Google is a highly used tool in the role. This Research assignment is meant to go beyond the course curriculum and increase your understanding of relevant topics while exposing you to online resources you'll frequently use on the job. Please write a paragraph for **two (2)** of the above prompts and include URLs from where you found the information to cite your sources. Do not copy and paste text from the internet or any other source; use the information you find in your research, summarize, in your own words, the concepts. Plagiarism will result in a zero for the assignment as well as disciplinary actions.

Prompt 1:

Lists use a index based method that allow data contained within it to manipulated. Elements can be searched, deleted, or updated. What sets Lists apart from Sets and Maps are that their values can be duplicated, and the order of the list set predictable. Additionally multiple elements can be nulled.

A Set does not follow an ordered pattern. Unlike Lists, Sets may be ordered  differently than implemented than initially coded. Example a code with elements may return values in order Banana, Apple, Orange.

```
Set.add("Apple");
Set.add("Banana");
Set.add("Orange");
```

Duplicate items are ignored, and essentially rolled up to the first instance it was encountered in the code. A set will allow for 1 null value.

Maps are synonymous with dictionaries. They contain both a key and a value and can be mapped to a specific value. A Key can only have one value and cannot have duplicate elements. Values can then be returned solely by looking up the key.

Prompt 3

```
List<String> names = new ArrayList<>();

        // How to add elements in a List
        names.add("Linda");
        names.add("George");
        names.add("Barbara");

        // Iterating the List using an enhanced for loop to print the names

        for (String name : names)
            System.out.println(name);
```

The console prints

```
Linda
George
Barbara
```

**Reference: Difference between List, Set and Map in Java 27 Sep, 2021**
Difference between List, Set and Map in Java - GeeksforGeeks