Assignment = 1

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Collection Framework in Java

Introduction

The Collection Framework in Java is a set of classes and interfaces that help in storing and processing a group of objects efficiently. It includes various interfaces like List, Set, and Map, along with their implementations like ArrayList, LinkedList, HashSet, TreeSet, etc.

Key Components of Collection Framework:

1. **List** – Ordered collection, allows duplicates (e.g., ArrayList, LinkedList).
2. **Set** – Unordered collection, does not allow duplicates (e.g., HashSet, TreeSet).
3. **Map** – Stores key-value pairs (e.g., HashMap, TreeMap).

Implementation of List and Set

1. Implementing List (ArrayList Example)

```
import java.util.*;

public class ListExample {
    public static void main(String[] args) {
        List<String> myList = new ArrayList<>();

        myList.add("Apple");
        myList.add("Banana");
        myList.add("Mango");
        myList.add("Apple");

        System.out.println("List Elements: " + myList);
    }
```

```
}
```

Output:

List Elements: [Apple, Banana, Mango, Apple]

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2. Implementing Set (HashSet Example)

```
import java.util.*;

public class SetExample {
    public static void main(String[] args) {
        Set<String> mySet = new HashSet<>();

        mySet.add("Apple");
        mySet.add("Banana");
        mySet.add("Mango");
        mySet.add("Apple"); // Duplicate, will be ignored

        System.out.println("Set Elements: " + mySet);
    }
}
```

Output:

Set Elements: [Banana, Mango, Apple]

Conclusion

- **List** allows duplicates and maintains insertion order.
- **Set** does not allow duplicates and does not maintain insertion order.
- Both are useful based on the type of data storage needed.

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