

# Map and Generics

## Assignment Solutions



## 1. What is a Map in Java?

**Ans:** A Map is a collection in Java that stores data as key-value pairs, where each key is unique.

## 2. What are the commonly used implementations of Map in Java?

**Ans:** The commonly used implementations of Map in Java are HashMap, TreeMap, LinkedHashMap, and ConcurrentHashMap.

## 3. What is the difference between HashMap and TreeMap?

**Ans:** HashMap is an unordered collection that uses hashing to store the key-value pairs, while TreeMap is a sorted collection that stores the key-value pairs in a sorted order based on the natural order of the keys or a custom Comparator.

## 4. How do you check if a key exists in a Map in Java?

**Ans:** we can check if a key exists in a Map in Java using the `containsKey()` method or the `get()` method. The `containsKey()` method returns a boolean value indicating whether the Map contains the specified key, while the `get()` method returns the value associated with the specified key, or null if the key is not present in the Map.

## 5. What are Generics in Java?

**Ans:** Generics in Java are used to provide type safety and reduce code redundancy by allowing the use of generic types. It allows classes, methods, and interfaces to be written generically, without specifying the type of data being used.

## 6. What are the benefits of using Generics in Java?

**Ans:** The benefits of using Generics in Java are:

- Type safety
- Code reusability
- Improved readability
- Reduced code redundancy
- Improved performance

## 7. What is a Generic Class in Java?

**Ans:** A Generic Class in Java is a class that can work with different types of data. It is defined using a type parameter enclosed in angle brackets, which represents the type of data being used.

## 8. What is a Type Parameter in Java Generics?

**Ans:** A Type Parameter in Java Generics is a placeholder for the type of data that is used by a generic class or method. It is defined using a single uppercase letter enclosed in angle brackets, such as `<T>` or `<E>`.

## 9. What is a Generic Method in Java?

**Ans:** A Generic Method in Java is a method that can work with different types of data. It is defined using a type parameter enclosed in angle brackets, which represents the type of data being used.

## 10. What is the difference between ArrayList and ArrayList<T>?

**Ans:** ArrayList is a non-generic class, while ArrayList<T> is a generic class. ArrayList<T> provides type safety, as it can only store elements of the specified type, whereas ArrayList can store any type of element.