1.What is this Collection framework in Java?

Ans-The Java Collection Framework is a set of classes and interfaces that provide common functionalities for handling groups of objects. It includes interfaces like List, Set, Map, and classes like ArrayList, LinkedList, HashMap, etc. The framework helps in organizing and manipulating collections of objects.

2.What is the difference between ArrayList and LinkedList?

Ans-Both ArrayList and LinkedList are implementations of the List interface in Java.
The main difference lies in their underlying data structures. ArrayList uses a dynamic array, and LinkedList uses a doubly linked list.
ArrayList is generally faster for random access and is a good choice when the main operation is retrieval. On the other hand, LinkedList is more efficient for frequent insertion and deletion operations.

3.What is the difference between Iterator and ListIterator?

Ans-Iterator and ListIterator are both interfaces in Java used to iterate over collections.
Iterator can be used to iterate forward through a collection, whereas ListIterator is specific to lists and allows bidirectional iteration (both forward and backward).
ListIterator provides additional methods like previous() and hasPrevious() compared to the Iterator interface.

4.What is the difference between Iterator and Enumeration?

Ans-Enumeration is an older interface that was part of the original Java Collections Framework. It is only available for legacy reasons.
Iterator is a more flexible and feature-rich successor to Enumeration. It allows the removal of elements during iteration and has additional methods like remove().

5.What is the difference between List and Set?

Ans-Both List and Set are interfaces in the Java Collection Framework.
List is an ordered collection that allows duplicate elements. Elements in a List are accessed by their index.
Set is an unordered collection that does not allow duplicate elements. It ensures that each element is unique.

6.What is the difference between HashSet and TreeSet?

Ans-HashSet and TreeSet are implementations of the Set interface in Java.
HashSet is unordered and uses a hash table for storage. It provides constant-time average complexity for basic operations.
TreeSet is ordered and uses a red-black tree for storage. It maintains elements in sorted order and provides log(n) time complexity for most operations.
7.What is the difference between Array and ArrayList?

Ans-Array is a basic data structure in Java with a fixed size. Once created, the size cannot be changed.
ArrayList is part of the Java Collection Framework and is dynamic in size. It is implemented using an array that can dynamically resize itself.