**Collection framework Assignments by gaurav diwan**

**Java with DSA and System design**

Q1] what is collection framework in java?

Ans. The Collection Framework in Java is a unified architecture for representing and manipulating collections (objects that group multiple elements) in a systematic way. It provides interfaces and classes for lists, sets, queues, and more.

Q2] what is the difference between arraylist and linkedlist ?

Ans. ArrayList:

- Implements dynamic arrays.

- Good for random access and iterating.

LinkedList:

- Implements doubly-linked lists.

- Good for frequent insertions and deletions.

Q3] what is the difference between iterator and listiterator ?

Ans. Iterator:

- Supports forward direction only.

- Methods: `hasNext()`, `next()`, `remove()`.

ListIterator:

- Supports both forward and backward directions.

- Extends `Iterator` and adds methods: `hasPrevious()`, `previous()`, `add()`, `set()`.

Q4] what is the difference between iterator and enumeration ?

Ans. Iterator:

- Introduced in Java 1.2.

- Supports both read and remove operations.

- More flexible and powerful.

Enumeration:

- Deprecated in Java.

- Supports only read operations.

- Less flexible than Iterator.

Q5] what is the difference between list and set ?

Ans. List:

- Ordered collection.

- Allows duplicate elements.

Set:

- Unordered collection.

- Does not allow duplicate elements.

Q6] what is the difference between hashset and treeset ?

Ans. HashSet:

- Uses hash table for storage.

- Unordered collection.

TreeSet:

- Uses a red-black tree for storage.

- Elements are ordered.

Q7] what is the difference between array and arraylist ?

Ans. Array:

- Fixed size.

- Primitives and objects can be stored.

ArrayList:

- Dynamic size (can grow or shrink).

- Only objects can be stored.

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