***Collection Assignment***

**Ques) What is collection framework in java?**

**Ans) The Collection in Java is a framework that provides an architecture to store and manipulate the group of objects.**

**Java Collections can achieve all the operations that you perform on a data such as searching, sorting, insertion, manipulation, and deletion.**

**Java Collection means a single unit of objects. Java Collection framework provides many interfaces (Set, List, Queue, Deque) and classes ([ArrayList](https://www.javatpoint.com/java-arraylist), Vector, [LinkedList](https://www.javatpoint.com/java-linkedlist), [PriorityQueue](https://www.javatpoint.com/java-priorityqueue), HashSet, LinkedHashSet, TreeSet).**

**Ques) What is the difference between ArrayList and LinkedList?**

**Ans)**

| Sr. No. | Key | ArrayList | LinkedList |
| --- | --- | --- | --- |
| 1 | Internal Implementation | ArrayList internally uses a dynamic array to store its elements. | LinkedList uses Doubly Linked List to store its elements. |
| 2 | Manipulation | ArrayList is slow as array manipulation is slower. | LinkedList is faster being node based as not much bit shifting required. |
| 3 | Implementation | ArrayList implements only List. | LinkedList implements List as well as Queue. It can acts as a queue as well. |
| 4 | Access | ArrayList is faster in storing and accessing data. | LinkedList is faster in manipulation of data. |

Example of ArrayList vs LinkedList

**Ques) What is the difference between iterator and listiterator?**

**Ans**) **Iterator is a universal interface used to traverse any collection, while ListIterator is specific to lists and provides bidirectional iteration. Iterator supports only forward iteration with next(). On the other hand, ListIterator supports both forward and backward iteration with next() and previous().**

**Ques) What is the difference between iterator and Enumeration.**

**Ans)** **Iterator is a universal cursor as it is applicable for all the collection classes. Enumeration is not a universal cursor as it applies only to legacy classes. Using Iterator you can read and remove the elements in the collection. Using Enumeration you can only read the elements in the collection**.

**Ques) What is the difference between list and Set?**

**Ans) The primary difference between list and set is that a list allows duplicate elements and maintains their order, while a set ensures element uniqueness without any guaranteed order. Since lists are ordered, position indexing is allowed in them. However, in unordered items like sets, positional indexing is not possible**.

**Ques) What is the difference between HashSet and TreeSet?**

**Ans**) Hash set and tree set both belong to the collection framework. HashSet is the implementation of the Set interface whereas Tree set implements sorted set. Tree set is backed by TreeMap while HashSet is backed by a hashmap

**Ques) What is the difference between Array and ArrayList?**

**Ans) arrays are fixed in size, meaning once they are created, you cannot change their size, whereas ArrayLists are dynamic, allowing elements to be added or removed after initialization**.