Collection in Java

Framework that provides an architecture to store and manipulate the group of objects.

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

What is Collection framework in Java?

* Provide readymade architecture.
* Represents a unified architecture for storing and manipulating group of objects. It has:
  + Interfaces and its implementations, classes
  + Algorithm

Hierarchy of Collection Framework

* The java.util package contains all the classes and interfaces for the Collection framework.

Iterator Interface

Iterator <T> = new Iterator

Collection Interface

List Interface

* The child interface of Collection interface
* Implemented by the classes ArrayList, LinkedList, Vector, and Stack.
* List <data-type> list1 = new ArrayList();

ArrayList

* Implements List

LInkList

* Implements the Collection interface
* It uses doubly linked list internaly to store the elements
* It can store the duplicate elements
* It maintains the insertion order and is not synchronized
* Manipulation is fast while no shifting is required

Vector

* Uses dynamic array to store the data elements.
* It is similar to arraylist
* It is synchronized and contains many method

Stack

* Subclass of Vector
* It implements the last-in-firstout data structure, i.e., Stack.
* The stack contains all of the methods of Vector class

Queue Interface

* Maintains the first-in-first-out order
* It can be defined as an ordered list that is used to hold the elements which are about to be processed.
* There are various classes like PriorityQueue, Dequeue, and ArrayDeque which implements the Queue interface

PriorityQueue

* Implements queue interface
* It holds the elements or objects which are to be processed by their priorities.
  + Priority Queue doesn’t store null values to be queued.,.

Deque Interface

* Extends the Queue interface
* Remove and add the element from both sides
* No priotity

Set Interface

* Presents in java.util package
* It extends the Collection Interface
* It represents the unordered set of elements which doesn’t allow us to store the duplicate items.
* Store at most one null value in Set.
* Implemented by HashSet., LinkedHashSet

HashSet

* Implements Set Interface
* It represents the collection that uses a hash table for storage
* Unique

LinkedHashSet

* Contains unique elements
* Maintain insertion order

SortedSet Interface

* Provide total orderiign on its elemetnts
* Elements are sorted in increasing order

TreeSet

* Implements the Set interfadce that uses a tree for storage