22. Collections in Java - Part 1 | Java Collections Framework in depth.

Q) What is Java Collections Framework?

A)
- Collections is nothing but a group of Objects.
- Frameworks provide us the architecture to manage these "group of Objects"
- present in `java.util` package.

Q) Why did we need JCF [Java Collection Framework]?

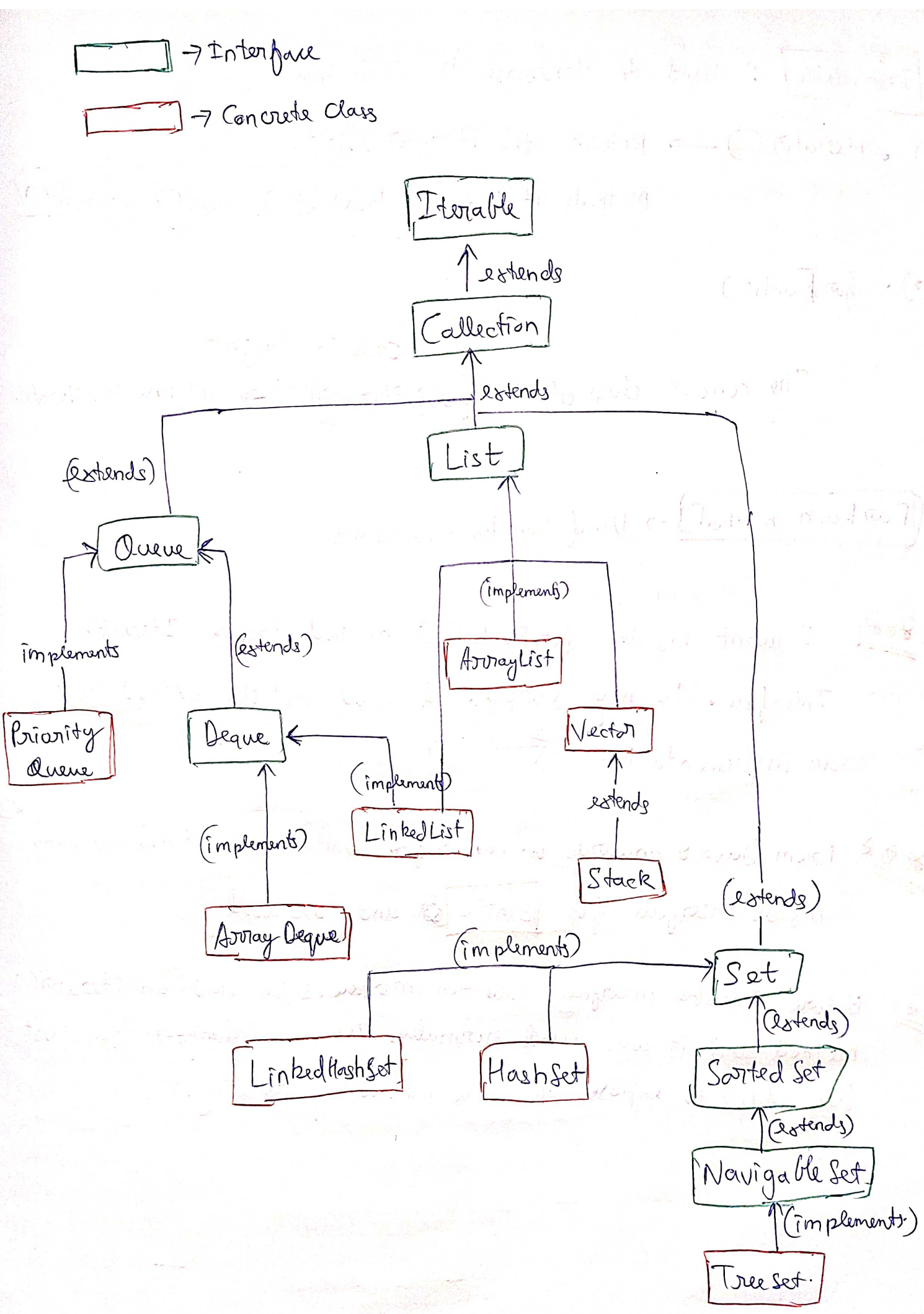
A)
- Before JCF there was Vector, Array, Hashtables only.

No common interface, hence methods were hard to remember.

Collection Hierarchy

- There are two main interfaces

`Collection` and `Map`. All the rest of the interfaces or Concrete Class are branching from these two Interfaces.


→ Interface
→ Concrete Class
Iterable
extends
Collection
extends
List
(extends)
Queue
(implements)
ArrayList
implements
(extends)
Priority Queue
Deque
Vector
(implements)
extends
LinkedList
(implements)
Stack
(extends)
Array Deque
(implements)
Set
(extends)
LinkedHashSet
HashSet
Sorted Set
(extends)
Navigable Set
(implements)
Tree Set.

Iterable : Used to traverse the Collection

1) . iterator() ⟶ Returns the iterator Object.

Methods it has **hasNext(), next(), remove()**

2) . forEach()

The concrete class object **obj.iterator()** ⇒ returns the iterator.

Code in Project

For Each method → Use of Lamda Expressions.

(***) I went inside forEach() method inside Iterable Interface. To my surprise I saww that the method had an implementation.

(***) From Java 8 onwards we can ~~define~~ write method implementations inside Interface for **static** and **default**

(***) Before Iterable interface, Collection interface still had an iterator() method and it was used normally. The new interface has just been added to expose the new methods of iterating.

(***) Important Interface

Collection

- stream()
- parallelstream()

→ Imp method. Discussed is separate vided.

Collection vs Collections.

Collection: It is a part of Java Collection Framework (JCF). And its an interface which exposes various methods

Collections: It is a **utility class** and provides static methods, which are used to operate on collections like swapping, reversing, searching, sorting.

(***)
Since Its a Utility Class, All the methods in it are static.

Methods :-

sort()
binarySearch
reverse
shuffle
swap
copy
min
max
rotate.