Training Title: Collection Framework

Trainer Name: Jaynam Sanghvi

Date: 29/08/2022

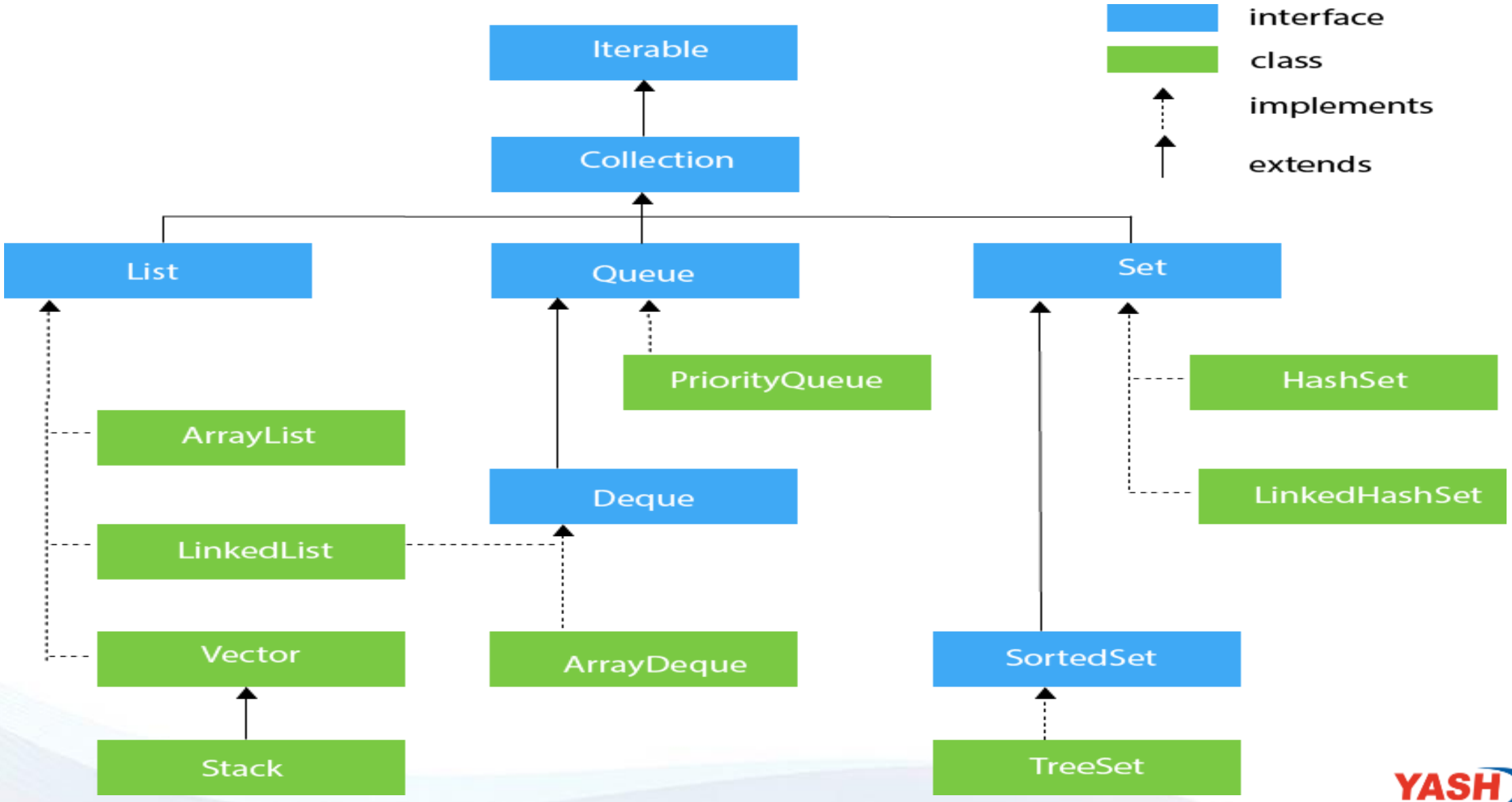
Collection Framework

- Collection is the single entity or object which can store multiple data.
- Framework represents the library.
- Collection Framework :- It is the set of predefined classes and instances which is used to store the multiple data.
- It contains 2 main parts
  - java.util.Collection(directly store the data)
  - java.util.Map(In the form of key value pair)

Collection Framework, Collection and Collections

- Collection Framework(API):- It is an API which contains predefined classes and interfaces.
- Collection(Interface) :- It is the root interface (present in java.util package) of all the collection objects
- Collections(Utility Class):- It is the utility class which contains only static methods.

Hierarchy Collection



Arrays vs Collection

Arrays can store primitive and non primitive(objects) type of data

Collection can contain non primitive type of data

Array can store homogenous type data

Collection :-it can store heterogenous type of data

Array size is fixed

Collection we can increase or decrease the size at runtime

Array built in feature in java

Collection framework is an API which provides the classes interfaces and methods

Iterator vs List Iterator

Iterator

- We can get iterator cursor by iterator method
    - Iterator i=al.iterator();
- Iterator cursor can be used with any collection object.
- Iterator methods are:-
    - hasNext(),next(),remove()
- By using iterator cursor we can retrieve the elements only in forward direction
- Using iterator cursor, We can read and remove the elements

List Iterator

- We can get Listiterator cursor by Listiterator() method
    - ListIterator li=al.Listiterator();
- ListIterator cursor can be used only with **List implemented classes** that is arraylist,linkedlist,vector,stack
- ListIterator Methods are:-
    - hasNext(),next(),hasPrevious(),previous(),remove(),set()
- ListIterator cursor we can reterive the elements in forward and backward direction
- By Using Listiterator cursor, We can read,remove,replace and add the elements

List Vs Set

List is an index based data structure(0,1,2..)

Set is not an index based data structure.It stores the data according to Hashcode

List can store duplicate elements

Set doesnot allow to store duplicate elements

List can store any number of nulls

Set can store only one null value

List follows the insertion order

Set doesnot follows the insertion order

We can iterate →Iterator and ListIterator(List)

We can iterate→Iterator(Set)

Enumeration Cursor

- Enumeration is the cursor which is used to retrieve collection objects one by one.
- Enumeration cursor can be used only with legacy classes that is vector and stack
- Enumeration cursor can be get by elements() method
  - Enumeration e=vec.elements();
- Methods of enumeration cursor are:-
  - hasMoreElements(),nextElement()
- Enumeration cursor can be used to reterive the elements only in forward direction
- Enumeration cursor can be used for only read operations

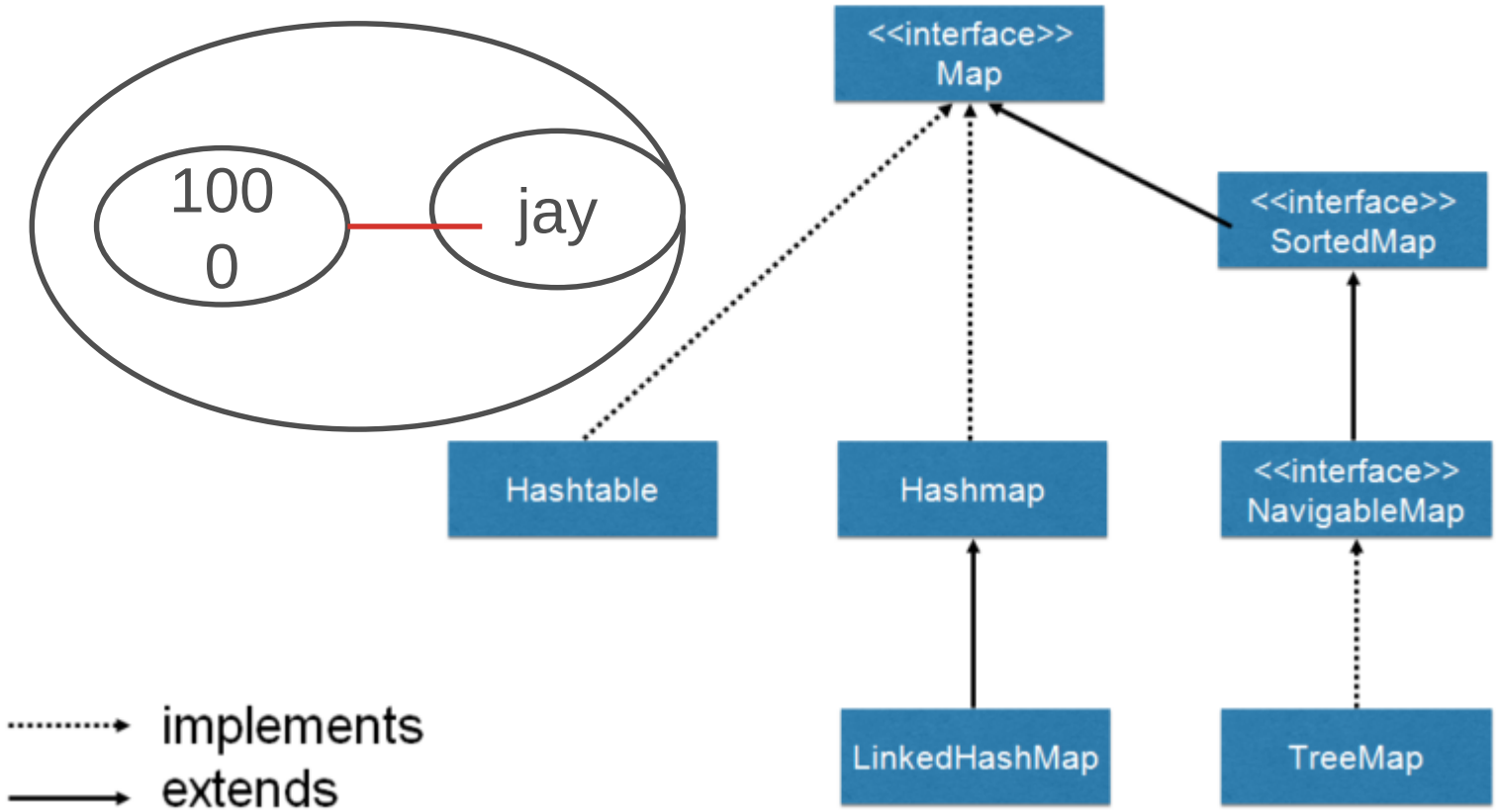
Queue

- Queue is interface in java.util. extends collection interface.
- FIFO(first in first out).
- Insert elements,delete elements,iterator
- Queue<Integer> q=new LinkedList();
- q.add()
- Remove first element
- q.peek();//head of the queue
- q.size();//
- Operations:-Adding elements,Removing elements,iterating the queue(iterator)
- Priority queue:-it should be processed according to the priority
- Queue<Integer> pq=new PriorityQueue<Integer>(); pq.peek() pq.poll()

Map Interface

- Map contains values on the basis of key and value pair.
- Key-value pair is known as Entry.
- A map doesn’t allow duplicate keys but you can have duplicate values
- HashMap and LinkedHashMap allow null keys and values but TreeMap doesn’t allow any null key value.
- Hashmap :- It doesn’t maintain any order.
- LinkedHashMap:-It maintains insertion order
- TreeMap:- Ascending order

Map Interface



YASH Technologies

More than what you think.

Thank you!