Collection(I) vs Collections(Class)

Collection is a interface in java that contains many methods without body.

These many methods which are inside Collection interface gives so much of flexibility to develop java applications.
sorting, searching, deleting, ...

List Interface(Methods)

=> We should use list interface whenever we want insertion order to be preserved / maintained.
==> List interface allows duplicate elements to be stored.

Ex: Shopping Cart ==> Add a Laptop, Add a Mobile(3), Add a Book,.....50 items

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Ex: Playlist feature in your music app => Set Playlist (add 10 songs) ==> No duplicated

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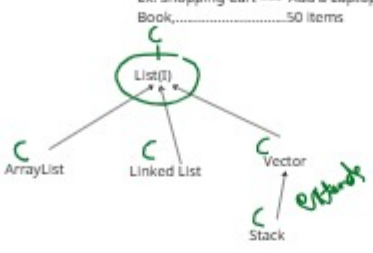

All these classes which are implementing various interfaces, uses various data structures and algorithms

1) ArrayList

use data struture is Resizeable Array

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2) Dupliacte elements are allowed.
3) Same tyope of data or different type of data.
4) Array list stores the data internally inside an RESIZEABLE ARRAY.

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      al.add(20);
      al.add(30);
      al.add(20);
al.add(10);
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      al.add(20);
al.add(40)
al.add("Hello")
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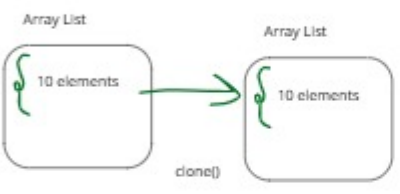
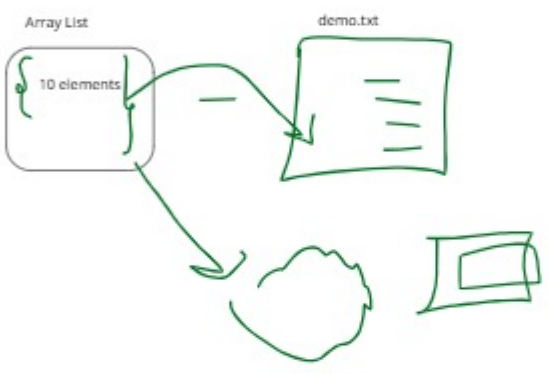
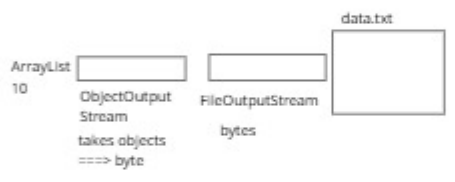
Old Cpaacity * 1.5 + 1
10 * 1.5 + 1 ==> 16

```
Class ArrayList implements Serializable, Cloenable, RandomAccess
{


}
```

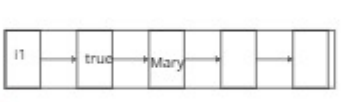


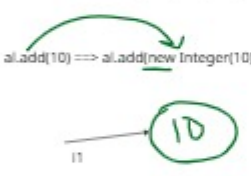




All the classes inside collection will store the data in object format

```
al.add(10)
al.add(true)
al.add("Mary")
```

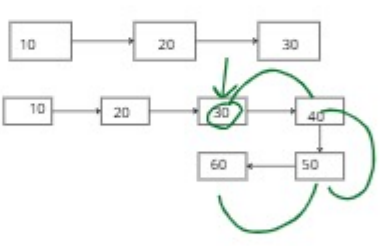




Wrapper Classes
Byte
Short
Integet
Float
Double
Boolean
Character
String
.....

converting primitive data in to a object formar

1) Maintain insertion order
2) Add duplicates



2) ArrayList is best used when we want to do read / retrieve operation.
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Linked List

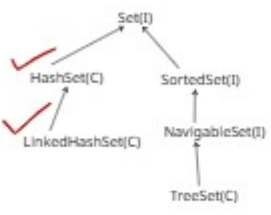
1) Maintain insertion order
2) Add duplicates
3) Linked List Internally uses Doubly Linked List
4) Linked List is usesful when the operation is insertion and deletion
5) Linked List is not useful when the operation is Reading

Vector
==> It is 99.99% same as ArrayList
==> ArrayList is not thread safe and vector is thread safe.

I want to create an application which should contain all the names starting with all the alphabtes

```
ArrayList<String> data = new ArrayList<String>();
data.add("A...");
data.add("A...");
data.add(100);
```

Set
=> No insertion order maintained
=> No duplicated allowed



HashSet
=> It is a class
=> It cannot store duplicate elements
=> Insertion order is not maintained
=> It can store both homogeneous and heterogenous types of data.
=> HashSet uses HashMap(Dict) internally

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HashSet hs = new HashSet();
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public HashSet()
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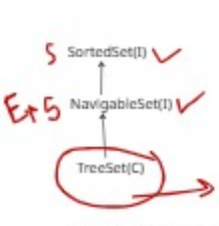

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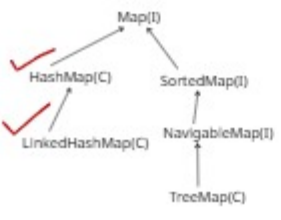
If we want the TreeSet to follow custom sorting order, then we need to use Comparator(I) ==> compare()



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String name = "Raju"
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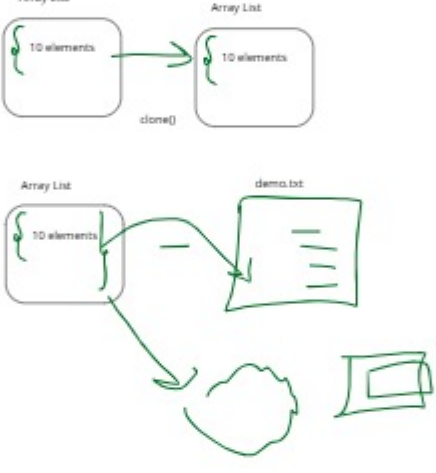

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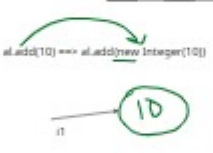

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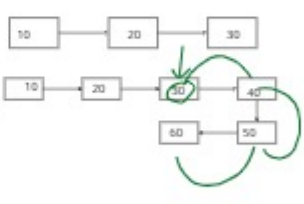

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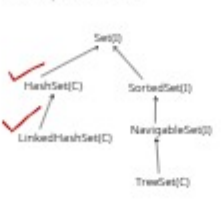

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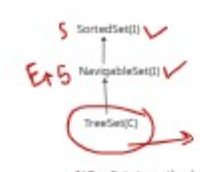

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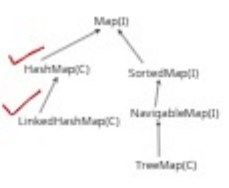

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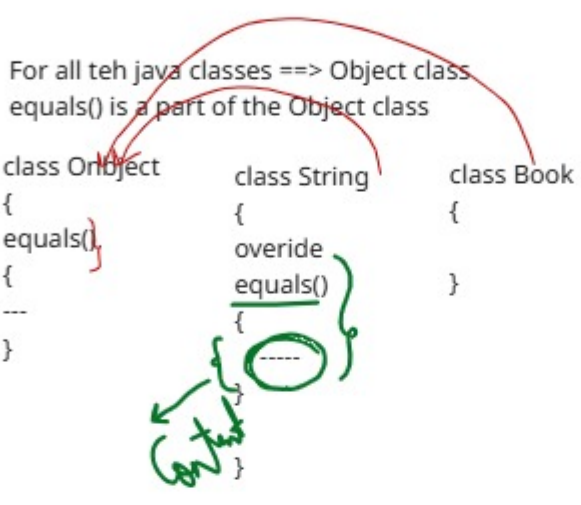
Comparator

=> It is a interface.
=> Using comparator we can implement custom sorting order on any no of fields.

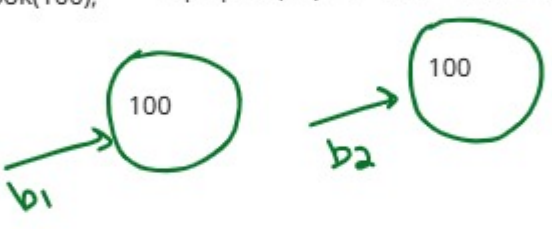
Comparable

=> It is a interface.
=> Using comparator we can implement custom sorting order on only one field.



Book b1 = new Book(100);
Book b2 = new Book(100);

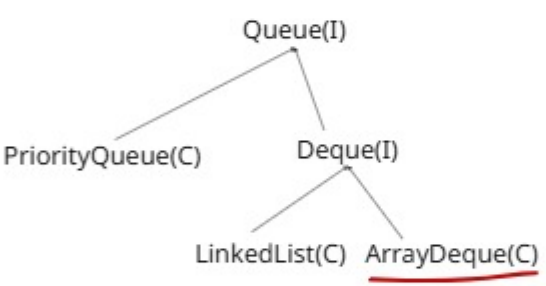
equals() ==> content
bq.equals(b2) ==> 100 == 100 ==> true



Hash Code
498931366

Hash Code
2060468723

HashSet ==> [b1, b2]

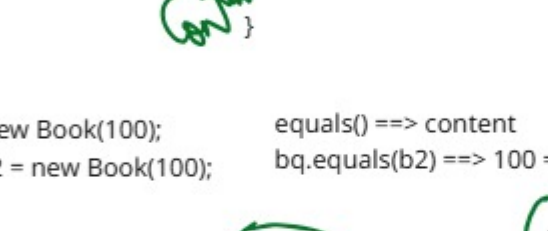


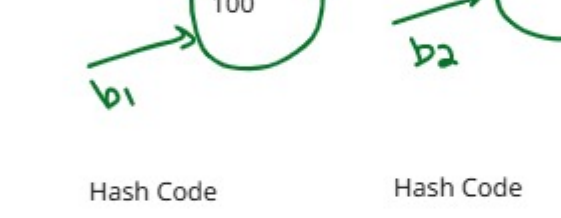
Queue(FIFO)
=> Scheduling tasks(The task that comes first, that task only should be taken care first).
=> Printing tasks(First Come First Server)
=> Tasks can be added in Queue always in the end.

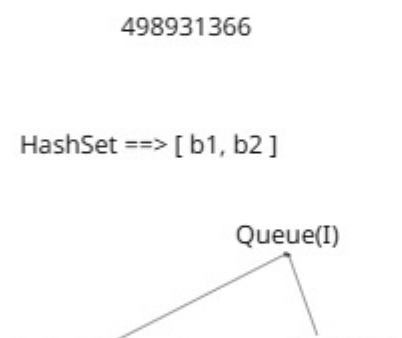
De(Double Ended)Queue
==> Tasks can be added in the last or evening the beginning

Priority Queue
=> It is a class that implements Queue interface.
=> This stores the data based on the priority
=> It interally uses min-heap
=> Priority Queue always keeps the element with most priority in the starting.

100, 50, 150, 25, 75, 125, 175







[25, 50, 125, 100, 75, 150, 175]

["stepsTaken": 1000, "CalrouesBurned": 30]