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Collections in Java

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- ① frame → architecture → store & Manipulate the group of object.
- ② Achieve → operations → Data → Searching, sorting, insertion, manipulation, & Deletion.
- ③ Single unit of obj :-
 1. Interfaces → Set, List, Queue, Deque.
 2. Classes :- ArrayList, Vector, LinkedList, Priority Queue, HashSet, Linked HashSet, TreeSet).

Framework in Java (Java T Point)

- Platform of prewritten codes used by java Developers to develop Java Applications & web applications.
- Collection of predefined classes & functions → process input, manage H/w device Interface with system S/w.
- We can use framework by calling its methods, inheritance & supplying callbacks, etc.
- Popular frameworks:- Spring, Hibernate, Grails, Play, JSF (Java Server Faces), Quarkus.

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WEDNESDAY • WK 02 (010-355)

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Advantages of framework!

Security :- if we found any security hole in an application, we can directly move to the official website of framework to fix the security Related issue.

Support :- It provide large forums & groups where we can put our problem for solution.

Efficiency .

Expenses:- Maintenance Cost of framework is low.

- Collection is an example of framework

Collection frame Work

Architecture → Storing & Manipulating group of objects. It has -

- ① Interfaces & its implementation & close
- ② Algorithm.

Hierarchy of Collection framework

- Java.util → Package contain all the classes & interfaces for collection framework

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Iterator Interface

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- Iterating elements in forward direction only.
- Public boolean hasNext()
- public object next()
- public void remove()
- Root Interface for all the collection classes.
- All Subclasses of ~~not~~ Collection Interface also implement the Iterable interface.
- It contains only one abstract Method

iterator < T > Iterator()

Return iterator over elements of type T

Collection Interface :- is the interface which is implemented by all the classes in collection interface.

List Interface :- List Data Structure can store ordered collection of objects, it can have duplicate values.

- Implemented by classes → ArrayList
→ LinkedList
→ Vector
→ Stack

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List < data-type > list1 =
new ArrayList();

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- List < data-type > list2 = new LinkedList();
- List < data-type > list3 = new Vector();
- List < data-type > list4 = new Stack();

- There are methods to insert, delete, and access elements in the List.

ArrayList:

The ArrayList class implements the List interface. It uses a dynamic array to store duplicate element of different data type.

- Random Access (Index)

Random Access List is implemented by ArrayList class.

Random Access List is implemented by ArrayList class.

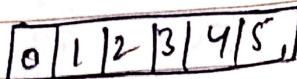
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ArrayList

- ArrayList is a concept of collection framework.
- ArrayList - Continuous memory chunk.

Properties

- data is stored in continuous memory locations.
- Size of array is fixed.

Problem

If new elements has to be added we need to make a new array.

To avoid this problem → ArrayList.

Properties

- Size of ArrayList is variable.
- Elements are stored in non-continuous form.



- ArrayList can store Primitive Data types like (int, float, char).
- ArrayList can also store obj.
- But In ArrayList we only store objects (Integer, string).

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This is because as objects are created they are added to **ArrayList** 20

- But in case of primitive datatype we need to reserve some memory.

- ArrayList is implemented in Heap

- In Datastructure - There are 2 ways to store values

- (1) Stack
- (2) Heap

ArrayList are stored in Heap

- Basic properties of ArrayList (operations)

- (1) Add. → To add element
- (2) Get → To access element that are added.

- (3) Modify → To change added value, To remove added value.

- (4) Delete/Remove
- (5) iterate

- To implement ArrayList easily use Package.

In Java we can't use Integer class
JANUARY MONDAY • WK 04 (022-343) use Float, String, Boolean

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Import java.util.ArrayList
class ArrayLists

{

{

public static void main (String args[])

{

ArrayList

ArrayList <Integer> list = new ArrayList<Integer>;

// ArrayList<String> list = new ArrayList<String>();

Boolean

// add elements

list.add(0);

list.add(2);

list.add(3);

System.out.println(list);

] all element
at end of
array.

// get elements

list.get(0);

int element = list.get(0);

System.out.println(element);

// add el in between

list.add(1, 1);

System.out.println(list);

// set element index

list.set(0, 5);

new element.

] change already
stored value
at a particular
index

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// delete element

list.remove(3);

index

System.out.println(list);

// Size.

int size = list.size();

System.out.println(size);

] we can also implement loop using size

// loop

for (int i=0; i<list.size(); i++)

System.out.println(list.get(i));

System.out.println();

// sorting

Collection.sort(list);

System.out.println(list);

class import this class at

start .

import java.util.

collection

function

