CSA0992 - PROGRAMMING IN JAVA

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Assignment - 5

Collection classes in Java:-

* Java collections refer to a collection of individual objects that are represented as a single unit. We can perform all operations such as searching, sorting, insertion, manipulation, deletion etc.

⇒ Java collection framework:

A Java collection framework provides an architecture to store and manipulate a group of objects. A Java collection framework includes the following:

* Interfaces
* classes
* Algorithm

INTERFACES:

Interface in Java Refers to the abstract data types.

⇒ They allow Java Collections to be manipulated independently, from the details of their Representation. Also they form a hierarchy in object oriented programing languages

⇒ Iterator is an interface that iterates the elements. It is used to transverse the list and modify the elements. Iterator interface has three methods.

`public boolean hasNext();`

This method returns true if the iterator has more elements.

`public object Next();`

It returns the element and moves the cursor pointer to the next element.

`public void remove();`

This method removes the last elements returned by the iterator.

LIST:

A list is an ordered collection of elements which may contain duplicates. It is an interface that Extends the collection interface.

* Lists are further classified into the following

→ ArrayList
→ LinkedList
→ Vectors

Array list:

Array list is the implementation of List Interface where the elements can be dynamically added or removed from the list.

Syntax:-

*ArrayList object = new ArrayList();

Linked list:

Linked list is a sequence of links which contains items. Each link contains a connection to another

link.

Syntax:

* LinkedList object = new LinkedList();

Java linked list class uses two types of linked list to store the elements

→ Singly linked list
→ Doubly linked list

SETS:-

A set refers to a collection that cannot contain duplicate Elements. It is mainly used to model the mathematical set abstraction.

* Set has its implementation in various classes such as

→ Hashsets
→ Treeset
→ Linked Hashset.

Examples:-

ArrayList:

⇒ The ArrayList maintains the insertion order and is non synchronized. The elements stored in the ArrayList class can be randomly Accessed.

```
import java.util.*;
class Test JavaCollection1 {
public static void main(String[] args) {
ArrayList <String> list=new ArrayList <String> ();
List.add("Venny");
List.add ("priya");
List.add ("mani");
List.add ("KIran");
Iterator itr = list.iterator();
while (itr. hasNext()) {
System.out.println (itr.next());
}
}
}
```

Linked List:-

⇒ Linked List implements the Collection interface. It uses a doubly linked list internally to store the elements. It maintains the insertion order and is not synchronized. In linked list, the manipulation is fast because no shifting is required.

```
import java.util.*;
public class TestJavaCollection2{
public static void main(String[] args){
LinkedList<String> al=new LinkedList<String>();
al.add("Venny");
al.add("arjun");
al.add("mani");
al.add("Kiran");
Iterator<String> itr=al.iterator();
while(itr.hasNext()){
System.out.println(itr.next());
}
}
}
```