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Course : Object Oriented Programming

Array List, Vector

Session 4

ArrayList Class

- ArrayList made to overcome the **problems faced by the Array in determining its size** because it is a **dynamic ArrayList**
- The **following methods** are frequently used in the ArrayList class
  - add(element) → adding element to the list
  - clear() → delete all element in the list
  - clone() → returns the copied object in the list
  - contains(element) → searching element contains in the list
  - get(index) → take a certain element at index in list
  - isEmpty() → to check whether the list is empty or not
  - remove(index) → to remove the designated element in the list
  - size() → number of element in the list
  - set(index, element) → fill an element in the list in accordance with the designated position

Declaration :

ArrayList al = new ArrayList();

Vector Class

- Inheritance and **same implement with ArrayList**
- Also **dynamic in size (growable)**
- Each vector tries to **optimize storage management by maintaining its capacity**
- Including one part of java framework collection
- Declaration :

Vector v = new Vector();

Methods in Vector Class

- The following **methods are frequently** used in the vector class
  - addElement(element) → adding element to the final sequence of the vector
  - capacity() → restore the capacity vector
  - clone() → restore objek coppied in that vector
  - containts(element) → searching element in the vector
  - copyInto(element[]) → copy element ke specific array
  - elementAt(index) → take the element of the designated index
  - insertElementAt(element , index) → add an element to the designated index
  - isEmpty() → check whether the vector is empty or not
  - remove(index) → remove the designated element in the vector
  - size() → number of elements in vector
  - set(index, element) → fills a vector element in accordance with the designated position

- Almost **all function in Vector are the same with functions in class List, because Vector mostly implement from class List (interface).** And also identically the same with ArrayList.

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ArrayList Vs Vector

EXECUTION IN THE THREAD

- Each method **Vector given keyword “synchronized”,** so that when **executed in the Thread**, it will not happen Thread congestion.
- In **ArrayList every method not given keyword “synchronized”,** so when executed in Thread, this can **resulted unsafe Thread**, in other words **collision of Thread can occur**, when Thread try to call ArrayList Method.

TIME USED

- **Time used by ArrayList is shorter** as compared to Vector.
- If we want to **create dynamic array run using a Thread, use Vector**. Whereas if indeed the process that we do not need to use threads, then **use the ArrayList to faster processing of dynamic arrays.**