**LAB # 03**

**Linear Array Implementation Using ArrayList ADT**

**Object**

Linear Array Implementing using ArrayList ADT in Java.

**Theory**

## **Array ADT in java**

The **java.util.ArrayList** class provides resizable-array and implements the **List** interface. Following are the important points about ArrayList:

* It implements all optional list operations and it also permits all elements, includes null.
* It provides methods to manipulate the size of the array that is used internally to store the list.

## **ArrayList Class declaration**

* Following is the declaration for **java.util.ArrayList** class:
* public class ArrayList<E> extends AbstractList<E> implements List<E>, RandomAccess, Cloneable, Serializable
* Here **<E>** represents an Element. For example, if you're building an array list of Integers then you'd initialize it as

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

## **ArrayList Constructor /methods**

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| **Class Name : ArrayList** | **Super Class: Java.util Package** |
| **Responsibilities** | **Collaborations** |
| ArrayList()  Create an empty list with the default size 10, if initial capacity is not mentioned |  |
| ArrayList(int initialCapacity)  Create an empty list according to the initial capacity |  |
| [**boolean add(E e)**](http://www.tutorialspoint.com/java/util/arraylist_add.htm)  Add elements at the end of the list if Index is not mentioned |  |
| [**void add(int index, E element)**](http://www.tutorialspoint.com/java/util/arraylist_add_index.htm)  Add elements at the specific Index number |  |
| [**void clear()**](http://www.tutorialspoint.com/java/util/arraylist_clear.htm)  Remove all the elements from the list |  |
| [**E get(int index)**](http://www.tutorialspoint.com/java/util/arraylist_get.htm)  Returns the element at the specified position in the list |  |
| [**E remove(int index)**](http://www.tutorialspoint.com/java/util/arraylist_remove.htm)  Removes the element at the specified position in the list |  |
| [**int size()**](http://www.tutorialspoint.com/java/util/arraylist_size.htm)  **Returns the number of elements in the list** |  |

**Classes inherited by ArrayList**

This class inherits methods from the following classes:

* java.util.AbstractList
* java.lang.AbstractCollection
* java.util.Object
* java.util.List

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| **Methods inherited from class java.util.AbstractList** |
| equals, hashCode, iterator, listIterator, listIterator, subList |

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| **Methods inherited from class java.util.AbstractCollection** |
| containsAll, remove, removeAll, retainAll, toString |

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| **Methods inherited from class java.lang.Object** |
| clone, finalize, getClass, notify, notifyAll, wait |

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| **Methods inherited from interface java.util.List** |
| containsAll, equals, hashCode, iterator, listIterator, listIterator, remove, removeAll, retainAll, subList |

**Task**

1. Write a program to maintain a employee record of any reputed company by ArrayList Class. Employ information details are First Name,Last Name,Joining Date,Position Title,Company ID,Gender: M / F,Date of Birth,Address Mobile,Email Address, Status of employee permenant/contract etc.

(Hint: Employ class ,EmployRecord class and the main class where we can perform different operations :add employ,delete employ,search employ(by name and id) ,traverse and print employ list (by name and id))

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