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# OOP Assignment 4

## JAVA CODE

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QUESTION 1

Updating specific array element by given element and can search an element in an array list.

JAVA CODE:

```
import java.util.*;
 public class Test {
 public static void main(String[] args) {
 // Creae a list and add some colors to the list
 List<String> list_Strings = new ArrayList<String>();
 list_Strings.add("Red");
 list_Strings.add("Green");
 list_Strings.add("Orange");
 list_Strings.add("White");
 list_Strings.add("Black");
 // Print the list
 System.out.println(list_Strings);
 // Update the third element with "Yellow"
 list_Strings.set(2, "Yellow");
  // Print the list again
 System.out.println(list_Strings); }}
```

Output:

[Red, Green, Orange, White, Black]

[Red, Green, Yellow, White, Black]

QUESTION 2 (A)

Sorting a given array list.

JAVA CODE:

```
import java.util.*;
public class ArrayListOfInteger  {

        public static void main(String args[]){
          ArrayList<Integer> arraylist = new ArrayList<Integer>();
          arraylist.add(11);
          arraylist.add(2);
          arraylist.add(7);
          arraylist.add(3);
          /* ArrayList before the sorting*/       System.out.println("Before Sorting:");
          for(int counter: arraylist){                    System.out.println(counter);}
          /* Sorting of arraylist using Collections.sort*/          Collections.sort(arraylist);
System.out.println("After Sorting:");
for(int counter: arraylist){
System.out.println(counter);}}}
```

Output:

```
Before Sorting:
11
2
7
3
After Sorting:
2
3
7
11
```

QUESTION 2 (B)

Cloning an arraylist to another arraylist

JAVA CODE:

```
import java.util.ArrayList;
public class Details {

  public static void main(String a[]){
    ArrayList<String> al = new ArrayList<String>();

    //Adding elements to the ArrayList
    al.add("Apple");
    al.add("Orange");
    al.add("Mango");
    al.add("Grapes");
    System.out.println("ArrayList: "+al);

    ArrayList<String> al2 = (ArrayList<String>)al.clone();
    System.out.println("Shallow copy of ArrayList: "+ al2);

    //add and remove on original ArrayList
    al.add("Fig");
    al.remove("Orange");

    //Display of both ArrayLists after add & remove
    System.out.println("Original ArrayList:"+al);
    System.out.println("Cloned ArrayList:"+al2);
  }
}
```

Output:

ArrayList: [Apple, Orange, Mango, Grapes]

Shallow copy of ArrayList: [Apple, Orange, Mango, Grapes]

Original ArrayList:[Apple, Mango, Grapes, Fig]

Cloned ArrayList:[Apple, Orange, Mango, Grapes]

QUESTION 3

Retrieve but does not remove, the last element of a linked list

JAVA CODE:

```
import java.util.*;
public class Exercise21 {
 public static void main(String[] args) {
  // create an empty linked list
  LinkedList <String> c1 = new LinkedList <String> ();
           c1.add("Red");
         c1.add("Green");
         c1.add("Black");
         c1.add("White");
         c1.add("Pink");         System.out.println("Original linked list: " + c1);
     // Retrieve but does not remove, the last element of a linked list
        String x = c1.peekLast();
    System.out.println("Last element in the list: " + x);    System.out.println("Original linked list: " + c1); }}
```

Output:

```
Original linked list: [Red, Green, Black, White, Pink]
Last element in the list: Pink
Original linked list: [Red, Green, Black, White, Pink]
```

QUESTION 4

Convert a priority queue to an array containing all of the elements of the queue

JAVA CODE:

```
import java.util.*;

 public class Example10 {
 public static void main(String[] args) {

  // Create Priority Queue
        PriorityQueue<String> pq1 = new PriorityQueue<String>();
  // use add() method to add values in the Priority Queue
       pq1.add("Red");
       pq1.add("Green");
       pq1.add("Black");
       pq1.add("White");
   System.out.println("Original Priority Queue: "+pq1);

  //Convert a linked list to array list
  List<String> array_list = new ArrayList<String>(pq1);
  System.out.println("Array containing all of the elements in the queue: "+array_list);

  }
}
```

Output:

```
Original Priority Queue: [Black, Red, Green, White]
Array containing all of the elements in the queue: [Black, Red, Green, White]
```