Arraylist in java

Assignment Solutions

PW SKILLS

Q1. Write a Java program to insert an element into given array list of size n at the first position. (Easy)

Input1:

n = 5

list = {1,2,3,4,5}

x = 0

Expected Output:

0 1 2 3 4 5

Explanation:

- Use the method arraylist_name.add(index, element).

Code:

```
import java.util.ArrayList;
import java.util.Collections;
import java.util.Scanner;
public class Test {
  public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    System.out.println("Enter the length of the arraylist: ");
    int n = scn.nextInt();
    ArrayList<Integer> al = new ArrayList<>();
    System.out.println("Enter the elements of arraylist: ");
    for(int i = 0; i < n; i++){
      al.add(scn.nextInt());
    }
    System.out.println("Enter the element to be inserted: ");
    int x = scn.nextInt();
    al.add(0, x);
    for(int k = 0; k < al.size(); k++){
      System.out.print(al.get(k) + " ");
    }
  }
}
```

```
/Library/Java/JavaVirtualMachines/jdk-19.jdk/C
Enter the length of the arraylist:
5
Enter the elements of arraylist:
1 2 3 4 5
Enter the element to be inserted:
0
0 1 2 3 4 5
Process finished with exit code 0
```

Q2. Write a Java program to remove the third element from given arraylist of size n. (Easy)

Input1:
n = 5
list = {1,2,3,4,5}

Expected Output:
1 2 4 5

Explanation:
- Use the method arraylist_name.remove(index of element to be removed).

Code:
```
import java.util.ArrayList;
import java.util.Scanner;
public class Test {
  public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    System.out.println("Enter the length of the arraylist: ");
    int n = scn.nextInt();
    ArrayList<Integer> al = new ArrayList<>();
    System.out.println("Enter the elements of arraylist: ");
    for(int i = 0; i < n; i++){
      al.add(scn.nextInt());
    }
    al.remove(2);
    for(int i = 0; i < al.size(); i++){
      System.out.print(al.get(i) + " ");
    }
  }
}
```

```
/Library/Java/JavaVirtualMachines/jdk-19.jdk
Enter the length of the arraylist:
5
Enter the elements of arraylist:
1 2 3 4 5
1 2 4 5
Process finished with exit code 0
```

Q3. Write a Java program to swap two elements in an array list of size n. (Easy)

Input1:

n = 5

list = {1,2,3,4,5}

Index = 2, 4

Expected Output:

1 2 5 4 3

Explanation:

- Use the method Collections.swap(arraylist_name, index1, index2).

Code:

```
import java.util.ArrayList;
import java.util.Collections;
import java.util.Scanner;
public class Test {
  public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    System.out.println("Enter the length of the arraylist: ");
    int n = scn.nextInt();
    ArrayList<Integer> al = new ArrayList<>();
    System.out.println("Enter the elements of arraylist: ");
    for(int i = 0; i < n; i++){
      al.add(scn.nextInt());
    }
    System.out.println("Enter the indices to swap the elements of: ");
    int i = scn.nextInt();
    int j = scn.nextInt();
    int temp = al.get(i);
    Collections.swap(al, i, j);
    for(int k = 0; k < al.size(); k++){
       System.out.print(al.get(k) + " ");
    }
  }
}
```

```
/Library/Java/JavaVirtualMachines/jdk-19.jdk/C
Enter the length of the arraylist:
5
Enter the elements of arraylist:
1 2 3 4 5
Enter the indices to swap the elements of:
2 4
1 2 5 4 3
Process finished with exit code 0
```

Q4. Given an input of some integers, sort the integers. (Easy)

Input1:
3 5 1 -4 9 0 -2

Expected Output:
-4 -2 0 1 3 5 9

Explanation:

- Input numbers by checking if next input exists or not by scn.hasNextInt().
- Use the method Collections.sort(arraylist_name).

Code:

```
import java.util.ArrayList;
import java.util.Collections;
import java.util.Scanner;
public class Test {
  public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    ArrayList<Integer> al = new ArrayList<>();
    System.out.println("Enter the elements: ");
    while(scn.hasNextInt()){
      al.add(scn.nextInt());
    }
    Collections.sort(al);
    for(int i = 0; i < al.size(); i++){
      System.out.print(al.get(i) + " ");
    }
  }
}
```

```
/Library/Java/JavaVirtualMachines/jdk-19.jc
Enter the elements:
3 5 1 -4 9 0 -2 .
-4 -2 0 1 3 5 9
Process finished with exit code 0
```

Q5. Given an array of integers, print an arraylist containing only all positive integers present in the array.If no positive integers found, print "NA". (Easy)

Input1:

n = 5

arr[] = {-4, 0, 8, -3, -2}

Expected Output:

0 8

Explanation:

- Traverse through the array, and if element is positive, add it to our created arraylist by arraylist_name.add(element) method.
- Print elements of arraylist in the end.

Code:

```
import java.util.ArrayList;
import java.util.Collections;
import java.util.Scanner;
public class Test {
  public static void main(String[] args) {
    Scanner scn = new Scanner(System.in);
    System.out.println("Enter the length of the array: ");
    int n = scn.nextInt();
    int[] arr = new int[n];
    System.out.println("Enter the elements of array: ");
    for(int i = 0; i < n; i++){
      arr[i] = scn.nextInt();
    }
    ArrayList<Integer> al = new ArrayList<>();
    for(int i = 0; i < n; i++){
      if(arr[i] >= 0){
        al.add(arr[i]);
      }
    }
    if(al.size() == 0){
      System.out.println("NA");
      return;
    }
    for(int i = 0; i < al.size(); i++){
      System.out.print(al.get(i) + " ");
    }
  }
}
```

```
/Library/Java/JavaVirtualMachines/jdk-19.jdk/C
Enter the length of the array:
5
Enter the elements of array:
-4 0 8 -3 -2
0 8
Process finished with exit code 0
```