Assignment -08 Java Collections

Q1. Write a program to traverse (or iterate) ArrayList.

```
public class ArrayListTraversal
{
   public static void main(String[] args)
{
      // Creating an ArrayList
      ArrayList<String> arrayList = new ArrayList<>();

      // Adding elements to the ArrayList
      arrayList.add("Element 1");
      arrayList.add("Element 2");
      arrayList.add("Element 3");
      arrayList.add("Element 4");

      // Traversing using enhanced for loop
      System.out.println("Traversing using enhanced for
loop:");
      for (String element : arrayList) {
         System.out.println(element);
      }

      // Traversing using iterator
      System.out.println("\nTraversing using iterator:");
```

```
        Iterator<String> iterator = arrayList.iterator();
        while (iterator.hasNext()) {
            String element = iterator.next();
            System.out.println(element);
        }
    }
}
```

Output:

```
Traversing using enhanced for loop:
Element 1
Element 2
Element 3
Element 4

Traversing using iterator:
Element 1
Element 2
Element 3
Element 4
```

Q2 Write a program to convert List to Array.

```
import java.util.ArrayList;
import java.util.List;

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

```
        // Creating a List
        List<String> stringList = new ArrayList<>();

        // Adding elements to the List
        stringList.add("Element 1");
        stringList.add("Element 2");
        stringList.add("Element 3");
        stringList.add("Element 4");

        // Converting List to Array
        String[] stringArray = new String[stringList.size()];
        stringArray = stringList.toArray(stringArray);

        // Displaying the elements of the Array
        System.out.println("Elements in the Array:");
        for (String element : stringArray) {
            System.out.println(element);
        }
    }
}
```

OUTPUT:

```
Elements in the Array:
Element 1
Element 2
Element 3
Element 4
```

Q3. Write a program to traverse(or iterate) HashSet?
Hint:You can traverse the HashSet using an iterator or without using an iterator as well.

```
import java.util.HashSet;
import java.util.Iterator;

public class HashSetTraversal {
    public static void main(String[] args) {
        // Creating a HashSet
        HashSet<String> stringHashSet = new HashSet<>();

        // Adding elements to the HashSet
        stringHashSet.add("Element 1");
        stringHashSet.add("Element 2");
        stringHashSet.add("Element 3");
        stringHashSet.add("Element 4");

        // Traversing using enhanced for loop
        System.out.println("Traversing using enhanced for loop:");
        for (String element : stringHashSet) {
            System.out.println(element);
        }

        // Traversing using iterator
        System.out.println("\nTraversing using iterator:");
```

```
        Iterator<String> iterator = stringHashSet.iterator();
        while (iterator.hasNext()) {
            String element = iterator.next();
            System.out.println(element);
        }
    }
}
```

OUTPUT:

```
Traversing using enhanced for loop:
Element 4
Element 1
Element 2
Element 3

Traversing using iterator:
Element 4
Element 1
Element 2
Element 3
```

Q4 Given an element, write a program to check if element(value) exists in ArrayList?

```
import java.util.ArrayList;
import java.util.Scanner;

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

```
        // Creating an ArrayList
        ArrayList<String> arrayList = new ArrayList<>();

        // Adding elements to the ArrayList
        arrayList.add("Element 1");
        arrayList.add("Element 2");
        arrayList.add("Element 3");
        arrayList.add("Element 4");

        // Taking input for the element to check
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the element to check: ");
        String elementToCheck = scanner.nextLine();

        // Checking if the element exists in the ArrayList
        boolean elementExists =
arrayList.contains(elementToCheck);

        // Displaying the result
        if (elementExists) {
            System.out.println(elementToCheck + " exists in the
ArrayList.");
        } else {
            System.out.println(elementToCheck + " does not exist
in the ArrayList.");
        }
```

```
    }
}
```

OUTPUT:

```
Enter the element to check: Element 3
Element 3 exists in the ArrayList.
```

Q5 Given an element, write a program to check if an element exists in HashSet?

Hint:You can check if element(value) exists in HashSet using the contains() method.

```
import java.util.HashSet;
import java.util.Scanner;

public class CheckElementInHashSet {
    public static void main(String[] args) {
        // Creating a HashSet
        HashSet<String> stringHashSet = new HashSet<>();

        // Adding elements to the HashSet
        stringHashSet.add("Element 1");
        stringHashSet.add("Element 2");
        stringHashSet.add("Element 3");
        stringHashSet.add("Element 4");

        // Taking input for the element to check
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter the element to check: ");
        String elementToCheck = scanner.nextLine();

        // Checking if the element exists in the HashSet
        boolean elementExists = stringHashSet.contains(elementToCheck);

        // Displaying the result
```

```
        if (elementExists) {
            System.out.println(elementToCheck + " exists in the HashSet.");
        } else {
            System.out.println(elementToCheck + " does not exist in the HashSet.");
        }
    }
}
```

OUTPUT:

```
Enter the element to check: Element 5
Element 5 does not exist in the HashSet.
```