

5. Writing a program in Java to verify implementations of collections.

Source Code:

```
package FirstPackage;

import java.util.ArrayList;
import java.util.HashMap;
import java.util.HashSet;

public class CollectionDemo {

    public static void main(String[] args) {

        // creating and adding elements to an ArrayList

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

        list.add("Volvo");

        list.add("Maruti");

        list.add("Honda");


        // iterating over the ArrayList using for-each loop

        System.out.println("ArrayList:");

        for (String item : list) {

            System.out.println(item);

        }


        // creating and adding elements to a HashSet

        HashSet<Integer> set = new HashSet<>();

        set.add(10);
```

```
set.add(20);

set.add(30);

set.add(10); // adding a duplicate element


// iterating over the HashSet using forEach method

System.out.println("HashSet:");

set.forEach(item -> System.out.println(item));


// creating and adding elements to a HashMap

HashMap<String, Integer> map = new HashMap<>();

map.put("Volvo", 1);

map.put("Maruti", 2);

map.put("Honda", 3);


// iterating over the HashMap using forEach method

System.out.println("HashMap:");

map.forEach((key, value) -> System.out.println(key + " -> " + value));

}

}
```

Output:

The screenshot shows the Eclipse IDE interface. The Package Explorer on the left lists the project structure, including 'FirstPackage' and 'CollectionDemo.java'. The main editor displays the code for 'CollectionDemo.java', which uses HashSet and HashMap. The Console at the bottom shows the output of the program, which prints the contents of the HashSet and HashMap.

```
19
20
21 // creating and adding elements to a HashSet
22 HashSet<Integer> set = new HashSet<>();
23 set.add(10);
24 set.add(20);
25 set.add(30);
26 set.add(10); // adding a duplicate element
27
28 // iterating over the HashSet using forEach method
29 System.out.println("HashSet:");
30 set.forEach(item -> System.out.println(item));
31
32 // creating and adding elements to a HashMap
33 HashMap<String, Integer> map = new HashMap<>();
34 map.put("Volvo", 1);
35 map.put("Maruti", 2);
36 map.put("Honda", 3);
37
38 // iterating over the HashMap using forEach method
39 System.out.println("HashMap:");
40 map.forEach((key, value) -> System.out.println(key + " -> " + value));
41
42 }
43
44 }
45
```

Console Output:

```
<terminated> CollectionDemo [Java Application] C:\Users\pc\p2\pool\plugins\org.eclipse.justi.openjdk.hotspot.jre.full.win32.x86_64_19.0.2.v20230129-1123\jre\bin\javaw.exe (06-11-2023 13:35)
HashMap:
Volvo -> 1
Maruti -> 2
Honda -> 3
```