Experiment 4. Iterator Interface

I. Experiment purpose

For this lab, you will learn about what is the iterator and practic the iterator by writing a java program

II. Use instruments and materials

Eclipse2020-06 (4.16.0)

III. Experiment content

In main:

• Create an array list and use it to store a list of Integer objects.

• Create an iterator over the elements of the array list.

• Iterate through the list, print each object. Optionally, you can remove the object after it is printed.

• Check the size of the array list. If no objects were removed, the size should remain the same.

Otherwise, the size should be changed.

IV. Test steps and process records

Step1: Creat a arraylist to store integers.

Step2: Use random class to generate integers.

Step3: Add ten random integers into arraylist by using for loop.

Step4: Use iterator and while loop to display integers by order. Remove the number after each display.

Step5: After step4, use hasnext() and size() to show result.

Graph 1 Result

Ⅴ. Experimental gains and experiences

1. Learn about the iterator interface.
2. Get familiar with iterator through practice.
3. Practice the methods in iterator, such as next(), hasnext() and remove().

Ⅵ. Codes

```
package Lab4;

import java.util.ArrayList;
import java.util.Iterator;
import java.util.List;
import java.util.Random;
/**
* Program for lab4
* @author Letao Han
* @version 1.0
*/
public class lab4
{
	/**
	* Create an array list and use it to store a list of Integer objects.
	* Create an iterator over the elements of the array list.
	* Iterate through the list, print each object. Optionally, you can remove the object after it is printed.
	* Check the size of the array list. If no objects were removed, the size should remain the same. Otherwise, the size should be changed.
	* @param array The array to store integers
	*/
	public static void main(String[] args)
	{
		List<Integer> list = new ArrayList<>();

		// use random to generate integer
		Random random = new Random();

		// Add ten random integers into the array list.
		for(int i = 0; i < 10;i++)
		{
			list.add(random.nextInt(100));
		}
```

```
        // Get the iterator of the array list.
        Iterator<Integer> iterator = list.iterator();

        // Iterate the list and display the elements.
        while (iterator.hasNext())
        {
            System.out.println(iterator.next());
            // The most recently returned element from next call is removed.
            iterator.remove();
        }

        //No more elements.
        System.out.println("If has the next item:" + iterator.hasNext());

        //The size of the array list is 0 if remove is called.
        System.out.println("The size of array is:" + list.size());
    }
}
```