Understand Loop iteration

Example:

int array [] = {7, 3, 5, 6, 1} 🡪array length is 5

for (int i=0; i<array.length; i++) {

System.out.println (array[i] + “”);

}

First Iteration

i=0 i<5 i++

i=0 0<5(T)

After it print in sysout statement array [0] index value.

Output: 7

Second iteration

Now I value increment to 1

I=1, 1<5 (true) and print array [1] index value in sysout and then again I value increase

Output: 7, 3

Third iteration

Now I value increment to 2

I=2, 2<5 (true) and print array [2] index value in sysout and then again I value increase

Output: 7, 3, 5

Fourth iteration

Now I value increment to 3

I=3, 3<5 (true) and print array [4] index value in sysout and then again I value increase

Output: 7, 3, 5, 6

Fifth iteration

Now I value increment to 4

I=4, 4<5 (true) and print array [4] index value in sysout and then again I value increase

Output: 7, 3, 5, 6, 1

Sixth iteration

Now I value increment to 5

I=5, 5< 5 (false) and exist loop

Understand Inner Loop and Outer Loop

Example: int array [] = {7, 3, 5, 6, 1} 🡪array length is 5

for (int i = 0; i < array.length; i++) {

for (int j = i + 1; j < array.length; j++) {

if (array[i] > array[j]) {

temp = array[i];

array[i] = array[j];

array[j] = temp;

}

}

}

Outer loop First Iteration:

I=0 0<5(true) i++

It will go inner loop

J=i+1(1) 1<5(true) j++

7 > 3 🡪 true if (array[i] > array[j]) i=0 and j=1

Output: {3, 7, 5, 6, 1}

Inner loop second iteration

J =2 2<5(true) j++

3 > 5🡪 False

Output: {3, 7, 5, 6, 1}

Inner loop third iteration

J=3 3<5(true) j++

3 > 6 🡪False

Output: {3, 7, 5, 6, 1}

Inner loop fourth iteration

J=4 4<5 j++

3 > 1 🡪True and swap done

Output: {1, 7, 5, 6, 3}

After completing first iteration of outer loop Small value placed at 0th index.

Outer loop Second Iteration

I=1 1<5(true) i++

It will go inner loop

J=1+1(2) 2<5(true) j++

7 > 5🡪 true if (array[i] > array[j]) i=1 and j=2

Output: {1, 5, 7, 6, 3}

Inner loop second iteration

J =3 3<5(true) j++

5 > 6🡪 False

Output: {1, 5, 7, 6, 3}

Inner loop third iteration

J=4 4<5(true) j++

5 > 3 🡪true

Output: {1, 3, 7, 6, 5}

Inner loop fourth iteration

J=5 5<5 j++ 🡪False

Exist Inner Loop

Output: {1, 3, 7, 6, 5}

After completing second iteration of outer loop Small value placed at 0th and 1st index.

Outer Loop Third Iteration

I=2 2<5(True) i++

Enters into inner loop

J=3 3<5(true) j++

7 >6 🡪True it will swap.

Output: {1, 3, 6, 7, 5}

Inner Loop second iteration

J=4 4 <5(true) j++

6 > 5 🡪true it will swap

Output: {1, 3, 5, 7, 6}

Inner Loop third iteration 🡪J=5 5<5 (False) after completing third iteration of outer loop Small value placed at 0th, 1st , 2nd index.

Outer Loop Fourth Iteration

i=3 3<5(true) i++

Enters Inner loop

J=4 4<5 j++

7 > 6 🡪true it will swap

Output: {1, 3, 5, 6, 7}

Inner loop second iteration

J=5 5< 5 (False) 🡪Exist inner loop

After completing fourth iteration of outer loop Small value placed at 0th, 1st, 2nd, 3rd, 4th index.

Outer Loop Fifty iteration

I=4 4<5(true) i++

Enters inner loop

J=5 5<5(False)

After completing fifty iteration of outer loop Small value placed at 0th, 1st, 2nd,  3rd, 4th index.

Outer loop sixth iteration

I=5 5<5 (False) 🡪Exist outer loop also and print output.

Output :{ 1, 3, 5, 6, 7}