Loops one shot

Loops Introduction:

If we want to perform a similar operation repeatedly then we will use loop there.

Example : If we want to listen a same song repeatedly then we will loop it .

If we want to print a name say "NAZEER" some 1000 times we cannot copy and paste this 1000 times right so, loops have many applications in our day-to-day life.

Types of loops :- 1) for loop 2) while loop 3) do while loop.

While Loop:

while loop, this will be useful mostly when we know the termination condition .

Example :- If I say drive the bike till fuel tank in not emptied , here I am giving a termination condition that you should stop when fuel tank is empty so , here we will use while loop.

Syntax:

//loop iterator initialization

while(condition) {

//statements to execute in while loop

//loop iterator increment or decrement part

}

# Note: It is mandatory that at a point the condition should fail else it will be an infinite loop , which keeps on running until the memory gets filled.

As a good programmer it is our duty to avoid these infinite loops in our program.

Program: Write code in java to print numbers from 1 to n using while loop.

*// Write code in java to print numbers from 1 to n using while loop.*

*// sample input: 6*

*// sample output: 1 2 3 4 5 6*

*// Exaplanation: 1 2 3 4 5 6 are the numbers from 1 to 6.*

import java.util.\*;

public class loops\_3\_print\_one\_to\_n\_numbers {

    public static void main(String *args*[]) {

        Scanner sc = new Scanner(System.in); *// creating object to scanner class to take inputs.*

        System.out.println("Enter value of n ");

        int n = sc.nextInt(); *// taking input from the user.*

        int i = 1; *// loop iterator initialization starts with 1 as we are printing from 1 to n.*

        while (i <= n) { *// condition is iterate till i is less then or equal to n*

            System.out.print(i + " "); *// at each iteration output the value of iterator i.e i*

            i++; *// incrementing the iterator.*

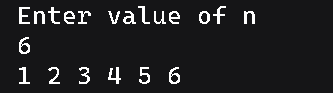
        }

        sc.close(); *// closing the scanner object to prevent data leak.*

    }

}

Sample output:



[Code available here](https://github.com/nazeer-18/java/blob/master/loops/loops_3_print_one_to_n_numbers.java)

Program: Write code in java to print sum of first n natural numbers.

*// Write code in java to print sum of first n natural numbers.*

*// sample input: 6*

*// sample output: 21*

*// Exaplanation: 1+2+3+4+5+6 = 21*

import java.util.\*;

public class loops\_4\_sumOf\_n\_naturalNumbers {

    public static void main(String *args*[]) {

        Scanner sc = new Scanner(System.in); *// creating object to scanner class to take inputs.*

        System.out.println("Enter value of n ");

        int n = sc.nextInt(); *// taking input from the user.*

        int sum = 0, i = 1; *// loop iterator initialization starts with 1 as we are finding sum from 1 to n.*

*// Sum is initialized to 0 as we are adding values to it.*

        while (i <= n) { *// condition is iterate till i is less then or equal to n*

            sum += i; *// adding the value of i to sum*

            i++; *// incrementing the iterator.*

        }

        System.out.println("Sum of first " + n + " natural numbers is : " + sum); *// printing the sum of first n natural*

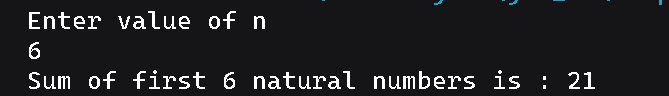
*// numbers.*

        sc.close(); *// closing the scanner object to prevent data leak.*

    }

}

Sample output:



[Code available here](https://github.com/nazeer-18/java/blob/master/loops/loops_4_sumOf_n_naturalNumbers.java)

For Loop:

for loop , the most used loop in programming . This loop is almost similar to while loop but here we will be knowing how many iterations we need to perform before termination

Syntax:

for(initialization; condition ; updation) {

// statements to execute inside loop

}

Example:

for(int i=1; i<10; i++) {

System.out.println(i);

}

In the above example , we are initializing a variable i with value 1 , then we are checking if i is less than 10 , if it is true then we are printing the value of i and then incrementing the value of i by 1 . This process will continue until the condition becomes false . In this case , the loop will run for 10 times and the output will be 1 to 9.

We can also write the above example as below , notice that we are not initializing the variable i in the for loop , we are initializing it before the loop. We can also write the updation part inside the loop.This is just similar to while loop.

int i=1; // initialization

for(; i< 10; ){

System.out.println(i);

i++; // updation

}

Program: Write code in java to reverse a number using for loop.

*// Write a program in java to reverse a number using for loop.*

*// sample input: 1234*

*// sample output: 4321*

*// Exaplanation: 1234 is reversed to 4321.*

import java.util.\*;

public class loops\_6\_reverse\_a\_number {

    public static void main(String *args*[]) {

        Scanner sc = new Scanner(System.in); *// creating object to scanner class to take inputs.*

        System.out.println("Enter a number ");

        int n = sc.nextInt(); *// taking input from the user.*

        int rev = 0; *// initializing rev to 0 to store the reverse of the number.*

        while (n > 0) { *// condition is iterate till n is greater than 0*

            rev = rev \* 10 + n % 10; *// adding the last digit of n to rev*

            n = n / 10; *// removing the last digit of n*

        }

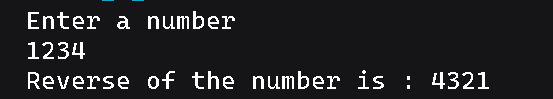
        System.out.println("Reverse of the number is : " + rev); *// printing the reverse of the number.*

        sc.close(); *// closing the scanner object to prevent data leak.*

    }

}

Sample output:



[Code available here](https://github.com/nazeer-18/java/blob/master/loops/loops_6_reverse_a_number.java)