

Looping/Iteration statement

Looping statements are the statements execute one or more statement repeatedly several number of times. In java programming language there are three types of loops:while, for and do-while.

Why use loop?

When you need to execute a block of code several number of times then you need to use looping concept in Java language.

Advantage with looping statement

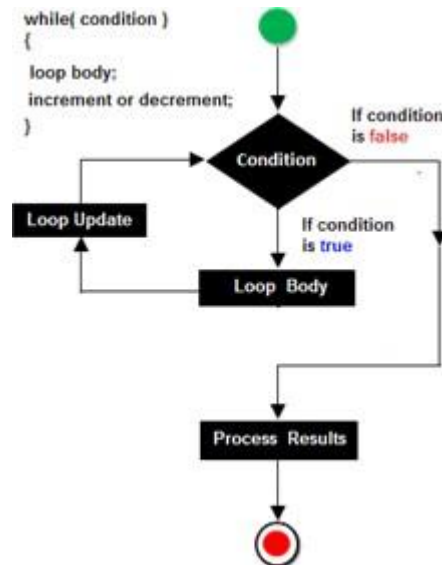
- Reduce length of Code
- Take less memory space.
- Burden on the developer is reducing.
- Time consuming process to execute the program is reduced.

Difference between conditional and looping statement

Conditional statement executes only once in the program where as looping statements executes repeatedly several number of time.

While loop

- In while loop first check the condition if condition is true then control goes inside the loop body otherwise goes outside of the body. while loop will be repeats in clock wise direction.



Syntax

```
while(condition)
```

```
{  
Statement(s)  
Increment / decrements (++ or --);  
}
```

Example while loop

```
class whileDemo  
{  
public static void main(String args[])  
{  
int i=0;  
while(i<5)  
{  
System.out.println(+i);  
i++;  
}  
}
```

Output

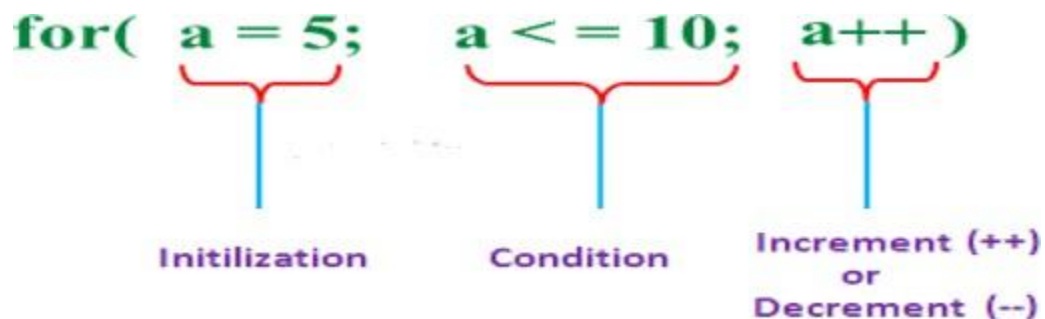
1
2
3
4
5

for loop

for loop is a statement which allows code to be repeatedly executed. For loop contains 3 parts Initialization, Condition and Increment or Decrements

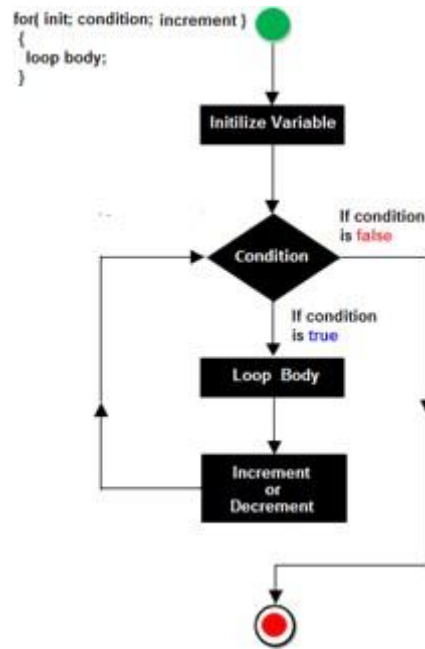
Syntax

```
for ( initialization; condition; increment )  
{  
    statement(s);  
}
```



- Initialization: This step is executed first and this is executed only once when we are entering into the loop first time. This step is allowed to declare and initialize any loop control variables.
- Condition: This is next step after initialization step, if it is true, the body of the loop is executed, if it is false then the body of the loop does not execute and flow of control goes outside of the for loop.
- Increment or Decrements: After completion of Initialization and Condition steps loop body code is executed and then Increment or Decrements steps is execute. This statement allows updating any loop control variables.

Flow Diagram



Control flow of for loop

① ② ④

```
for ( a = 1;    a <= 5;    a ++ )  
{  
    System.out.println("Hello World")    ③  
}
```

- First initialize the variable
- In second step check condition
- In third step control goes inside loop body and execute.
- At last increase the value of variable
- Same process is repeated until condition not false

Display any message exactly 5 times.

Example of for loop

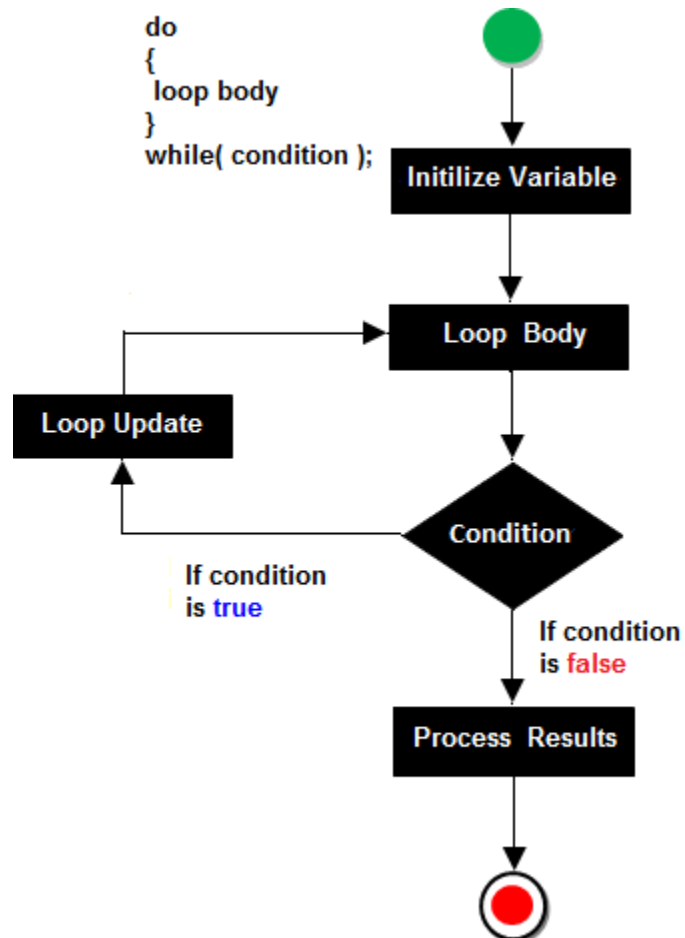
```
class Hello  
{  
  public static void main(String args[])  
  {  
    int i;  
    for (i=0; i<5; i++)  
    {  
      System.out.println("Hello Friends !");  
    }  
  }  
}
```

Output

Hello Friends !
Hello Friends
!Hello Friends
!Hello Friends !
Hello Friends !

Do while

A do-while loop is similar to a while loop, except that a do-while loop is executed at least one time. A do-while loop is a control flow statement that executes a block of code at least once, and then repeatedly executes the block, or not, depending on a given condition at the end of the block (in while).



When use do..While loop

When we need to repeat the statement block at least one time then use do-while loop. In do-while loop post-checking process will be occur, that is after execution of the statement block condition part will be executed.

Syntax

```
do
{
Statement(s)
```

```
increment/decrement (++ or --)
```

```
}while();
```

In below example you can see in this program i=20 and we check condition i is less than 10, that means condition is false but do..while loop execute once and print Hello world ! at one time.

Example do..while loop

```
class dowhileDemo
```

```
{
    public static void main(String args[])
    {
        int i=20;
        do
        {
            System.out.println("Hello world !");
            i++;

```

```
    }
    while(i<10);
}
```

```
}
```

Output

Hello world !

Example do..while loop

```
class dowhileDemo
{
    public static void main(String args[])
    {
        int i=0;do
        {
            System.out.println(+i);i++;
        }
        while(i<5);
    }
}
```

Output1

2

3

4

5