Loops : A set of code which continue to execute until a particular condition becomes false is called loop

There are 3 types of loop:

1. while loop

2. do-while loop

3. for loop

1. while loop:

Syntax:

// syntax:

// while(boolean\_condition)

// {

// Actions

// }

**int** i =0;

**while**(i<=10)

{

System.***out***.println(i);

i= i+1;

}

}

}

Output:

0

1

2

3

4

5

6

7

8

9

10

Example 2: Even number program:

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

**int** i = 1;

**while**(i<=20)

{

**if**(i%2==0)

{

System.***out***.println("Even number is "+i);

}

i = i + 1;

}

}

}

Output:

Even number is 2

Even number is 4

Even number is 6

Even number is 8

Even number is 10

Even number is 12

Even number is 14

Even number is 16

Even number is 18

Even number is 20

Do-while loop: This loop gets execute first the actions before checking the condition.

Example:

/ syntax:

// do

// {

// actions

// }

// while(boolean\_condition);

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

**int** i =1;

**do**

{

System.***out***.println("do block is executing");

}

**while**(i>2);

}

}

Output:

do block is executing

ForLoop:

//syntax: 1 2, 5, 8 4, 7

// for(intialization\_statement; boolean\_condition; increment/decrement\_operator)

// { 3, 6, 9

// Actions

// }

Example:

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

{

System.***out***.println("Value of i is "+i);

}

}

Output:

Value of i is 1

Value of i is 2

Value of i is 3

Value of i is 4

Value of i is 5

Value of i is 6

Value of i is 7

Value of i is 8

Value of i is 9

Value of i is 10

Star pattern program:

1. \*\*\*\*\*

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

**for**(**int** i = 1; i<=5; i++)

{

System.***out***.print("\*");

}

}

Note: println will provide the output of every line to the console window always in the new line but print provides the output in the same line.

Output:

\*\*\*\*\*

2.

// \*\*\*\*\*

// \*\*\*\*\*

// \*\*\*\*\*

// \*\*\*\*\*

// \*\*\*\*\*

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

**for**(**int** j=1; j<=5; j++)// outer for loop

{

**for**(**int** i = 1; i<=5; i++)// inner for loop

{

System.***out***.print("\*");

}

System.***out***.println();

}

}

}

3. // \*

// \* \*

// \* \* \*

// \* \* \* \*

// \* \* \* \* \*

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

**for**(**int** i=1; i<=5; i++)// outer for loop

{

**for**(**int** j = 1; j<=5; j++)// inner for loop

{

**if**(j<=i)

{

System.***out***.print("\*");

}

**else**

{

System.***out***.print(" ");

}

}

System.***out***.println();

}

}

}

Logic steps:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| I / J | 1 | 2 | 3 | 4 | 5 |  | **step 2** | I | J |
| 1 | \* |  |  |  |  |  |  | 1 | 1 |
| 2 | \* | \* |  |  |  |  |  | 2 | 1, 2 |
| 3 | \* | \* | \* |  |  |  |  | 3 | 1, 2, 3 |
| 4 | \* | \* | \* | \* |  |  |  | 4 | 1 , 2, 3, 4 |
| 5 | \* | \* | \* | \* | \* |  |  | 5 | 1, 2, 3, 4, 5 |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| Step 3 | I | J |  | Step 4 | I | J |  |  |  |
|  | 1 | j<=1 |  |  |  |  |  |  |  |
|  | 2 | j<=2 |  |  | j<=i |  |  |  |  |
|  | 3 | j<=3 |  |  |  |  |  |  |  |
|  | 4 | j<=4 |  |  |  |  |  |  |  |
|  | 5 | j<=5 |  |  |  |  |  |  |  |