

# Lesson:

## Loop (While and Do While Loop)



# Topics Covered

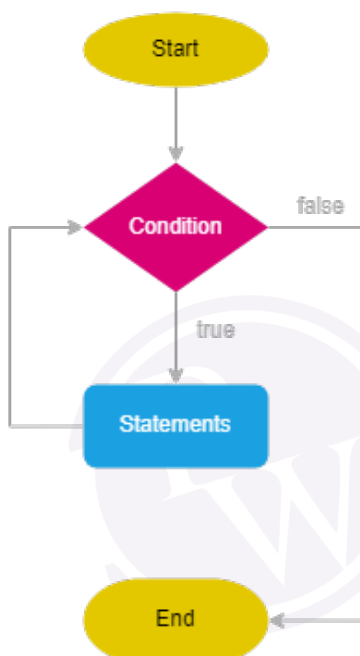
1. While Loop
2. DoWhile Loop
3. While vs Do While

## While loop

While loop is kind of Loop, that we will study in this lesson.

```
JavaScript
while (condition) {
    // body of loop
}
```

### Understanding Flow



1. Loop starts
2. Condition is evaluated
  - a. If the condition is false, the while loop will terminate.
  - b. If the condition is true, the while loop's statements run, and continue until the condition evaluates to false.
3. Loop Ends

**Example 1:** To print numbers from 1 to 10 using while loop

```
JavaScript
let i = 1, n = 10;
while (i <= n)
{
    console.log(i);
    i=i+1;
}
```

/\*  
Output

```
1
2
3
```

```
4
5
6
7
8
9
10
*/
```

**Example 2 :** To print numbers from 10 to 1 in decreasing order.

```
JavaScript
let i = 1, n = 10;
while (n>=i)
{
    console.log(n);
    n=n-1;
}
```

/\* Output

```
10
9
8
7
65
4
3
2
1
*/
```

**Example 3:** Draw following pattern using while loop,

```
Unset
*
**
***
****
*****
```

```
JavaScript
let row = 1;
while (row <= 5) {
    let pattern = '';
    let col = 1;
    while (col <= row) {
        pattern += '*';
        col++;
    }
    console.log(pattern);
    row++;
}
```

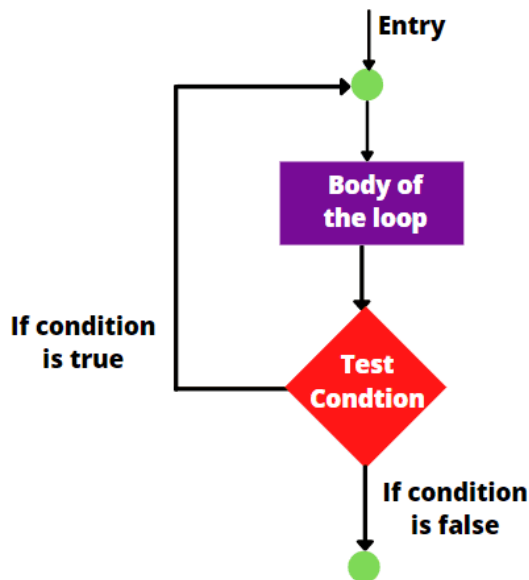
## Do while Loop

Do While loop is another kind of Loop that we will study in this lesson.

Do while is similar to while loop with one difference that the 1st iteration runs always, and later iterations run after the condition evaluates to true.

```
JavaScript
do {
    // body of loop
} while(condition);
```

## Understanding Flow



1. Loop Starts
2. Loop Body is executed first.
3. Condition is accessed
  - a. If Condition is false
  - b. If the condition is true, the while loop's statements run, and continue until the condition evaluates to false.
4. Loop Ends

**Example 1 :** Write a program to print numbers from 1 to 7 in a line using do-while loop,

```
JavaScript
let result = '';

let i = 0;
do {
    i = i + 1;
    result = result + i;
} while (i < 7);
console.log(result);

/* Output
1234567
*/
```

For and while loop are used interchangeably, although they have different syntax they have equal capability, developer use different loops in different scenarios.

## For vs While vs Do While

Use a **for** loop when:

- Used when you know the number of iterations or the range of values you want to iterate over.
- The loop variable is automatically updated by the loop structure.

Use a **while** loop when:

- Ideal for scenarios where the number of iterations is not known in advance or when the termination condition is based on a dynamic condition.
- You want to execute the code block only if the initial condition is true.
- The loop may not need to run at all if the condition is initially false.
- The loop termination depends on the condition being evaluated at the beginning of each iteration.

Use a **do-while** loop when:

- You want to execute the code block at least once, regardless of the initial condition.
- The loop termination depends on the condition being evaluated at the end of each iteration.

