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**Introduction to 'JavaScript' Language**

**Conditional Statements and Looping in JavaScript**

**Module 6 - Introduction to While Loop in JavaScript**

**Loops in JavaScript** are used to execute a block of code repeatedly as long as a specified condition is true. They are essential for performing repetitive tasks like iterating over arrays, processing data, or automating sequences.

**While Loop in JavaScript**

The while loop executes a block of code repeatedly i.e. it execute the code block until the given condition is true else the loop gets terminated.

We use a variable to check the condition. The variable meets the condition at the entrance of the while loop. If the variable does not meet the condition then the loop will not get executed not even for a single time. Due to this, it is possible that statements inside the while loop is never executed. The following flowchart describes the while loop statement.

Below is the **syntax** for the while loop:

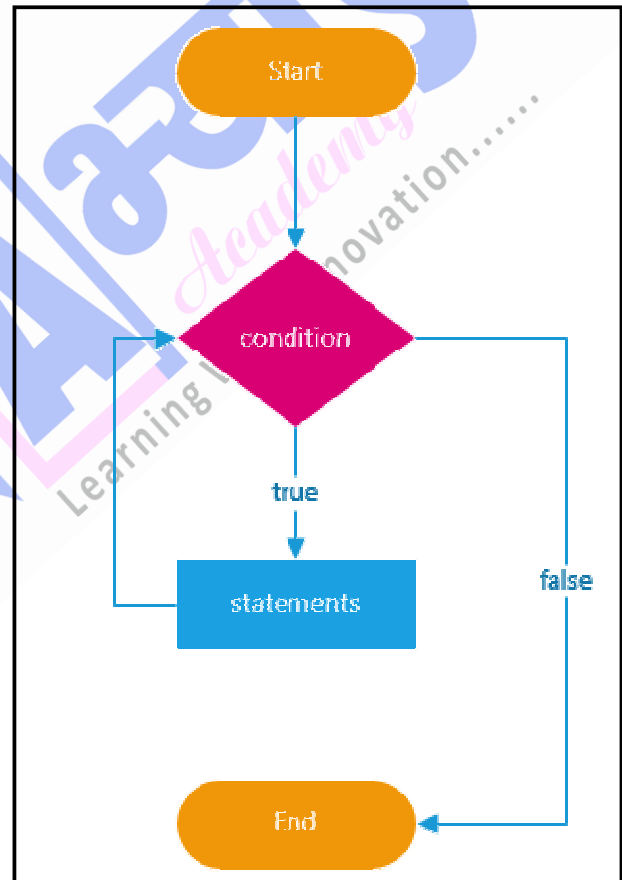
```
while(condition)
{
    // code statements
}
```

**Explanation:**

The condition is evaluated before each iteration.

If it is true, the code block inside the loop runs.

If the condition becomes false, the loop stops executing.



Solved Example 1: Print Numbers from 1 to 5 using While Loop

Solution:

```
<!DOCTYPE html>
<html>
<head>
  <title>While Loop Example</title>
</head>
<body bgcolor="#f0f8ff">
  <script>
    let i = 1; // Initialization
    while (i <= 5) { // Condition
      document.write("Current number is: " + i + "<br>"); // Display the number
      i++; // Increment
    }
  </script>
</body>
</html>
```

OUTPUT:

```
Current number is: 1
Current number is: 2
Current number is: 3
Current number is: 4
Current number is: 5
```

**While Loop  
Output**

Solved Example 2: Sum of Even Numbers Between 1 and 20 using While Loop

Solution:

```
<!DOCTYPE html>
<html>
<head>
  <title>Sum of Even Numbers</title>
</head>
<body bgcolor="#e6f7ff">
  <script>
    let num = 1; // Initialization
    let sum = 0; // Variable to store the sum
```

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## Introduction to 'JavaScript' Language

```
while (num <= 20) { // Condition to loop until 20
  if (num % 2 === 0) { // Check if the number is even
    sum += num; // Add the even number to the sum
  }
  num++; // Increment the number
}
```

```
document.write("<h3>The sum of all even numbers between 1 and 20 is: " +
sum + "</h3>");
</script>
</body>
</html>
```

### Explanation:

Initialization:

- num starts at 1.
- sum is initialized to 0 to store the cumulative sum of even numbers.

Condition:

- The while loop runs as long as  $num \leq 20$ .

Even Check:

- The condition  $num \% 2 === 0$  checks whether the current number is even.

Summation:

- If the number is even, it is added to the sum variable.

Increment:

- The value of num is incremented by 1 in each iteration to avoid an infinite loop.
- When num exceeds 20, the loop ends, and the result is displayed using `document.write()`.

OUTPUT:

The sum of all even numbers between 1 and 20 is: 110

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## Introduction to 'JavaScript' Language

### Assignment

#### Ques 1: Calculate the Factorial of a Number

Write a program that calculates the factorial of a number entered by the user. The factorial of a number  $n$  is the product of all positive integers less than or equal to  $n$ .

Instructions:

- Prompt the user to enter a number.
- Use a while loop to calculate the factorial of that number.
- Display the result using `document.write()`.

#### Ques 2. Display Multiplication Table for a Given Number

Write a program that displays the multiplication table for a number entered by the user.

Instructions:

- Prompt the user to enter a number.
- Use a while loop to display the multiplication table (from 1 to 10) for that number.
- Display the multiplication results using `document.write()`.

#### Ques 3. Count Down from a Number to 1

Write a program that takes a number as input and counts down from that number to 1 using a while loop.

Instructions:

- Prompt the user to enter a number.
- Use a while loop to count down from that number to 1.
- Display each count using `document.write()`.

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