

## 5. Loops (For, While, Do-While)

### Q1. Explain the different types of loops in JavaScript (for, while, do-while). Provide a basic example of each.

Loops are used in JavaScript to repeat a block of code multiple times. They help reduce repetition and make programs shorter and easier to manage. There are mainly three types of loops:

#### 1. For Loop

The **for loop** is used when we know how many times we want to repeat a task. It has three parts — initialization, condition, and increment/decrement.

##### Example:

```
for (let i = 1; i <= 5; i++) {  
    console.log("Number: " + i);  
}
```

#### 2. While Loop

The **while loop** runs as long as the condition is true. It is useful when we don't know the number of repetitions in advance.

##### Example:

```
let x = 1;  
  
while (x <= 5) {  
    console.log(x);  
    x++;  
}
```

### 3. Do-While Loop

The **do-while loop** runs the code **at least one time**, even if the condition is false, because the condition is checked **after** the loop body.

**Example:**

```
let y = 1;  
do {  
    console.log("Value: " + y);  
    y++;  
} while (y <= 5);
```

### Q2. What is the difference between a while loop and a do-while loop?

The **while loop** checks the condition before executing the code. That means if the condition is false at the start, the code will never run.

But in a **do-while loop**, the code runs at least once because the condition is checked **after** the execution. So, even if the condition is false, the loop body will run one time.