Question 1: Explain the different types of loops in JavaScript (for, while, do-while). Provide a basic example of each.

**🔹 Different Types of Loops in JavaScript**

Loops in JavaScript allow you to **execute a block of code repeatedly** as long as a certain condition is true. There are **three main types of loops**:

**✅ 1. for Loop**

Used when you **know how many times** you want to run the loop.

**🔸 Syntax:**

for (initialization; condition; increment) {

// code to be executed

}

**🔸 Example:**

*for (let i = 1; i <= 5; i++) {*

*console.log("Number: " + i);*

*}*

**🔍 Output:**

Number: 1

Number: 2

Number: 3

Number: 4

Number: 5

**✅ 2. while Loop**

Used when the **number of iterations is not known in advance**. The loop continues **as long as the condition is true**.

**🔸 Syntax:**

while (condition) {

// code to be executed

}

**🔸 Example:**

*let i = 1;*

*while (i <= 5) {*

*console.log("Count: " + i);*

*i++;*

*}*

**🔍 Output:**

Count: 1

Count: 2

Count: 3

Count: 4

Count: 5

**✅ 3. do...while Loop**

This loop is **guaranteed to run at least once**, because the **condition is checked after** the code block executes.

**🔸 Syntax:**

do {

// code to be executed

} while (condition);

**🔸 Example:**

*let i = 1;*

*do {*

*console.log("Value: " + i);*

*i++;*

*} while (i <= 5);*

**🔍 Output:**

Value: 1

Value: 2

Value: 3

Value: 4

Value: 5

Question 2: What is the difference between a while loop and a do-while loop?

**🔹 while vs do...while Loop in JavaScript**

| Feature | while Loop | do...while Loop |
| --- | --- | --- |
| Condition Check | Before the loop starts | After the loop runs at least once |
| Minimum Executions | May not run if condition is false | Always runs at least once |
| Syntax | while (condition) { ... } | do { ... } while (condition); |
| Use Case | When you're unsure if the loop should run | When the loop must run at least once |
| Example Condition False | Doesn’t execute the block | Executes the block once |
| Common Use | Validating before entering the loop | Running code before checking a condition |