**JavaScript for Loops Explained for automation testing :**

The for loop is used to repeat a block of code a specific number of times. It consists of three parts:

1. **Initialization** → Set a starting value.
2. **Condition** → Runs the loop while the condition is true.
3. **Increment/Decrement** → Updates the value after each iteration.

**1️. Basic for Loop**

The most common loop in JavaScript.

**Syntax:**

for (initialization; condition; update) {

// Code to execute

}

**Example: Print numbers from 1 to 5**

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

console.log(i);

}

**Output:**

1

2

3

4

5

🔹 **How it works?**

1. i = 1 → Start from 1.
2. i <= 5 → Run the loop while i is ≤ 5.
3. i++ → Increase i by 1 after each loop.

**2️. for...in Loop (Used for Objects)**

This loop is used to iterate **over the properties (keys) of an object**.

**Example: Loop through an Object**

const person = { name: "John", age: 30, city: "New York" };

for (let key in person) {

console.log(key + ": " + person[key]);

}

**Output:**

name: John

age: 30

city: New York

🔹 **When to use?**

* When you need **keys of an object**.

**3️. for...of Loop (Used for Arrays & Strings)**

This loop is used to iterate **over the values** of an array, string, or iterable object.

**Example: Loop Through an Array**

const fruits = ["Apple", "Banana", "Mango"];

for (let fruit of fruits) {

console.log(fruit);

}

**Output:**

Apple

Banana

Mango

🔹 **When to use?**

* When you need **values** (not keys) from an array.

**Example: Loop through a String**

let word = "Hello";

for (let letter of word) {

console.log(letter);

}

**Output:**

H

e

l

l

o

🔹 **Works for strings too!**

**4️ Difference Between for, for...in, and for...of**

| **Loop Type** | **Use Case** | **Iterates Over** | **Example** |
| --- | --- | --- | --- |
| for | Regular loops (numbers, arrays) | Numbers/Indexes | for (let i = 0; i < 5; i++) |
| for...in | Objects | **Keys** of an object | for (let key in obj) |
| for...of | Arrays, Strings | **Values** of an array/string | for (let value of arr) |

**Which Loop Should You Use?**

✅ **Use for** when iterating a known number of times.  
✅ **Use for...in** when looping through **object properties**.  
✅ **Use for...of** when looping through **array values**.