

Day 4



Javascript
THE LANGUAGE OF THE WEB

For loops in JavaScript:

What are Loops in JavaScript?

Loops are used to repeat a block of code as long as a specific condition is true. They help reduce repetition and make code more efficient.

Types of Loops in JavaScript

Loop Type	Description	Common Use Case
for	Runs a block of code a specific number of times.	When you know how many times to loop.
while	Repeats code while a condition is true.	When you don't know how many times to loop.
do...while	Runs code once, then repeats while condition is true.	When you want to run the loop at least once.
for...in	Loops through object properties (keys).	Used with objects.
for...of	Loops through iterable values (arrays, strings, etc.).	Used with arrays or strings.

What is a for Loop in JavaScript?

A for loop is used to run a block of code multiple times — automatically and efficiently. It is one of the most common looping structures in JavaScript.

Syntax:

```
for (initialization; condition; update) {  
    // code to be executed repeatedly  
}
```

Example: a basic for loop to print 0 to 4

```
3 //For loop
4
5 for (let i = 0; i < 5; i++) {
6   console.log(i);
7 }
```

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0
1
2
3
4

Example: a basic for loop to print from 0 to 5 with the same above code

```
3 //For loop
4
5 ✓ for (let i = 0; i <=5; i++) {
6   console.log(i);
7 }
```

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0
1
2
3
4
5

Example: to print from 1 to 5

```
3 //For loop
4
5 ✓ for (let i = 1; i <=5; i++) {
6   console.log(i);
7 }
```

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1
2
3
4
5

Example: what if we wrote $i+1$ in 6th line and $i = 0$ in 5th?

```
4
5  for (let i = 0; i <=5; i++) {
6      console.log(i+1);
7  }
```

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1
2
3
4
5
6

Example: sum of n natural number

```
9  //Sum of n natural number
10 let sum = 0;
11 let n = 5;
12 for (let i = 0; i < n; i++) {
13     sum += i + 1;
14 }
15 console.log(sum); // 15
16
```

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Example: sum of n natural number where n is the input from the user (say he entered 5)

```
> let sum = 0;
   let n = prompt("Enter the value of n: ");
   n = Number.parseInt(n);
   for (let i = 0; i < n; i++) {
       sum += i + 1;
   }
   console.log(sum);
15
```

Example:

```
9   let sum = 0;
10  let n = 3;
11  for (let i = 0; i <= n; i++) {
12    sum += i + 1;
13  }
14  console.log(sum);
```

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Example:

```
9   let sum = 0;
10  let n = 3;
11  for (let i = 1; i <= n; i++) {
12    sum += i + 1;
13  }
14  console.log(sum);
```

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Example:

```
9   let sum = 0;
10  let n = 3;
11  for (let i = 1; i < n; i++) {
12    sum += i + 1;
13  }
14  console.log(sum);
15
```

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Example: factorial of 5

```
16  //factorial using loops
17  let n = 5;
18  let fact = 1;
19  for (let i = 1; i <= n; i++) {
20    fact *= i;
21  }
22  console.log(fact);
```

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Example: for... in loop

```
25 //For ... in loop
26 let obj = {
27   a: "Aditya",
28   b: "Banana",
29   c: "Cat",
30   d: "Date"
31 };
32 //For...in
33 for (let keyword_name in obj) {
34   console.log(keyword_name);
35 }
```

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a
b
c
d

Example: to print both key and value using the for ... in loop

```
37 //To print both key and value
38 let obj = {
39   a: "Aditya",
40   b: "Banana",
41   c: "Cat",
42   d: "Date"
43 };
44 //For...in
45 for (let keyword_name in obj) {
46   console.log(keyword_name + " equals " + obj[keyword_name]);
47 }
```

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a equals Aditya
b equals Banana
c equals Cat
d equals Date

Example: for...of loop

```
49 //For...of loop
50 for (const b of "Aditya") {
51   console.log(b);
52 }
```

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A
d
i
t
y
a

Difference between for...in and for... of:

Feature	for...in	for...of
Iterates over	Object keys	Iterable values
Works on	Objects	Arrays, Strings, Maps, Sets
Example	for (key in obj)	for (value of arr)

Best Practices

1. Use for when the number of iterations is known.
2. Use while when the number of iterations depends on a condition.
3. Use do...while when you need at least one execution.
4. Use for...in for objects, and for...of for arrays or strings.
5. Always include a condition that stops the loop — avoid infinite loops!

--The End--