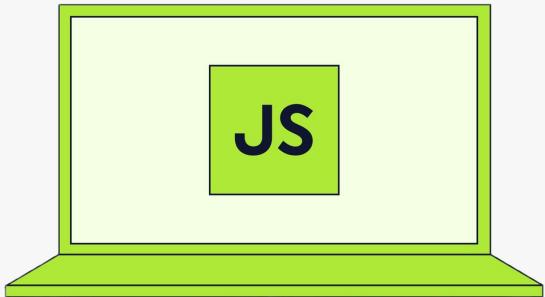




The Complete Javascript Course



@newtonschool

Lecture 1: Basics of Javascript

-Bhavesh Bansal

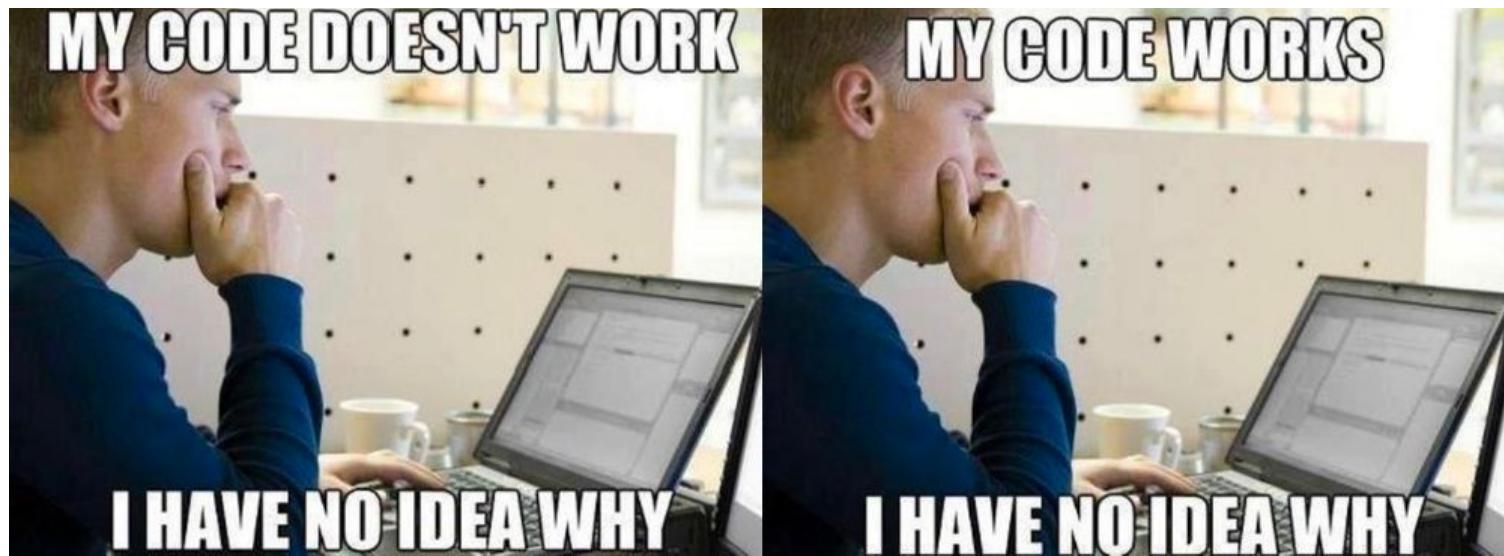


Table of Contents

- What is Javascript?
- Variable Declaration: var, let and const
- Differences between let, var and const
- Example of variable usages in real world scenarios

Considerations before we start...

In first few sections **don't stress about why code works** and how to write efficient code, or clean code. **Just start learning and eventually you will understand everything.**



Let's Start

What is Javascript?

JAVASCRIPT

The language that makes web
pages come alive.



Create web,
mobile, or desktop
apps.

Animate elements
and make pages dynamic.

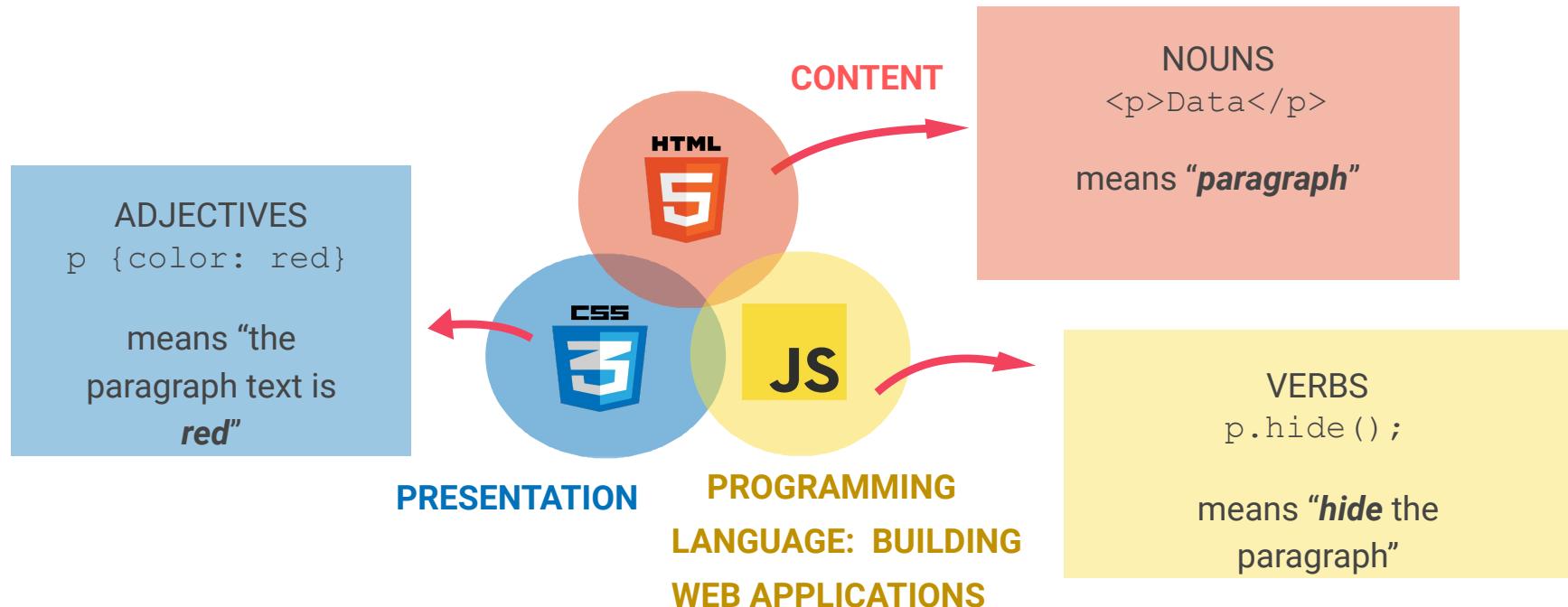
Run
back-end
code with
Node.js.



Fetch and process data dynamically.

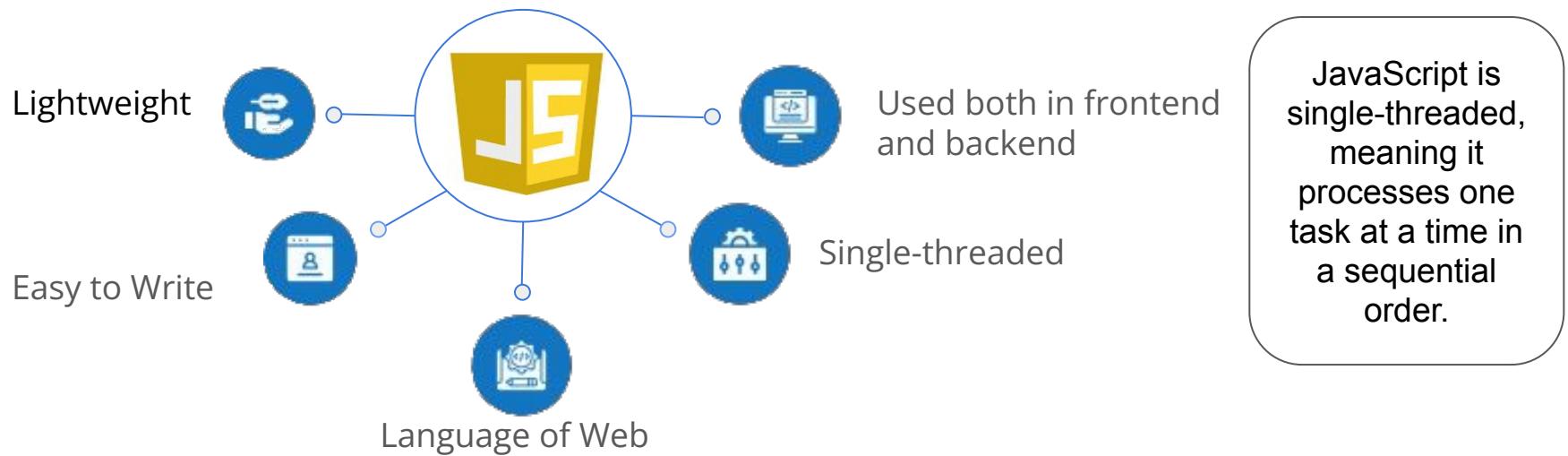
Javascript Role in Web Development

Javascript adds logic to our web pages:-



Features of Javascript

JavaScript is a programming language that makes websites interactive, like adding buttons, animations, and live updates.



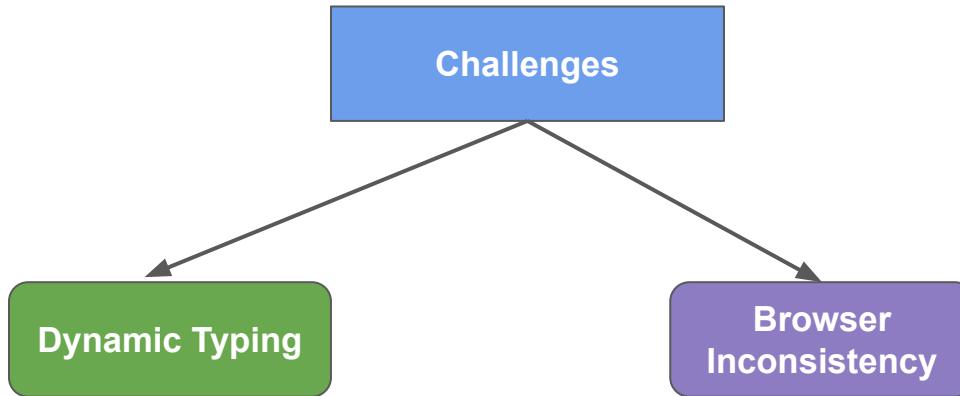
Comparing with other languages

Let's compare javascript with other languages:-

	JavaScript	C#	Java	Ruby	Python
Front-End	✓	✗	✗	✗	✗
Back-End	✓	✓	✓	✓	✓
Mobile Apps	✓	✓	✓	✓	✓
Desktop Apps	✓	✓	✓	✓	✓
Easy to learn	✓	✗	✗	✓	✓

Challenges in Javascript

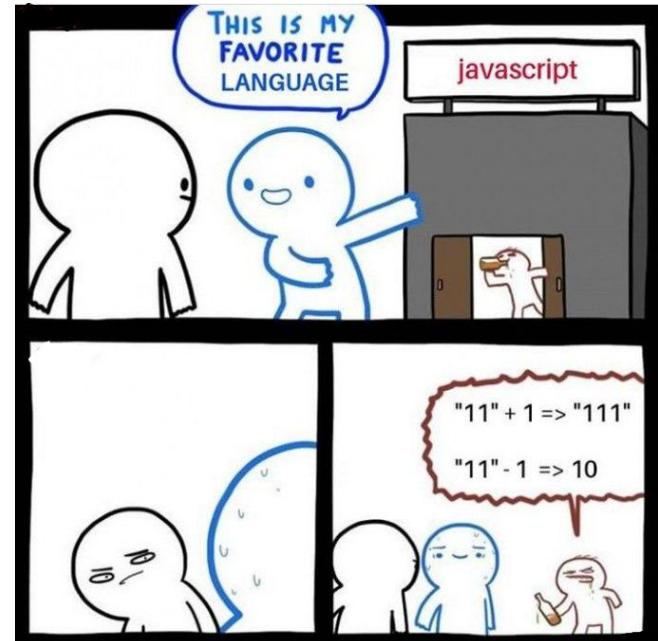
JavaScript's dynamic typing can cause bugs, and browser inconsistencies require extra effort for compatibility.



`"1" + 2 => 12`
`1 + 2 => 3`

Such issues due to dynamic typing leads unpredictable code behaviour

Behaviour of javascript code varies depending on which browser is loading your web page.



The Origin of JavaScript

A Browser Ahead of Its Time

In the 1990s, Netscape Navigator changed the web. It was the first widely-used browser, capable of beautifully displaying HTML and CSS



NetScape Browser



Early HTML/CSS website

A World of Static Websites

But there was a problem – web pages were static. They couldn't respond dynamically to user actions



Apple Computer...Features

Apple Computer Names Gilbert F. Amelio Chairman and Chief Executive Officer

CUPERTINO, California—February 2, 1996—Apple Computer, Inc. today announced that it was in the best interest of Apple Computer to have a transition in leadership. The Board of Directors has appointed Dr. Gilbert F. Amelio, formerly Chairman, President and Ch

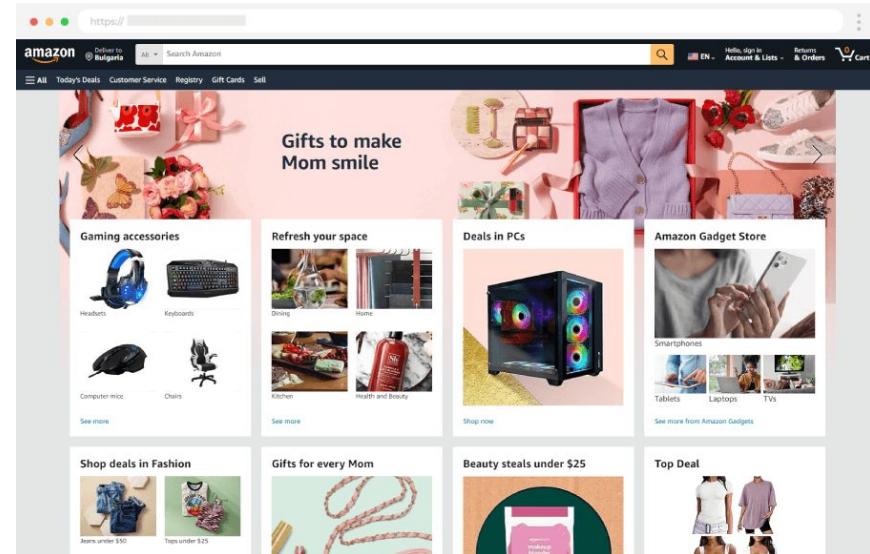
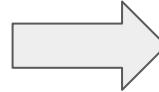
Brainchild: Brendan Eich

To solve the issue, Brendan Eich was tasked with creating a Java-like scripting language for the web, and amazingly, he accomplished it in just 10 days!



JavaScript Revolutionizes the Web

With Brendan Eich's creation of JavaScript, websites transformed from static pages into dynamic, interactive experiences.



Apple Computer...Features

Apple Computer Names Gilbert F. Amelio Chairman and Chief Executive Officer
 CUPERTINO, California--February 2, 1996--Apple Computer, Inc. today announced agreed that it was in the best interest of Apple Computer to have a transition in lead Directors has appointed Dr. Gilbert F. Amelio, formerly Chairman, President and Ch

Advancements in Javascript

1995



- 👉 Brendan Eich creates the **very first version of JavaScript in just 10 days.**



1996



- 👉 Mocha changes to LiveScript and then to JavaScript, in order to attract Java developers. `👉



1997



- 👉 ECMA releases ECMAScript 1 (ES1), the first **official standard for JavaScript**



2009



- 👉 ES5 (ECMAScript 5) is released with lots of great new features;

2015



- 👉 ES6/ES2015 (ECMAScript 2015) was released: **the biggest update to the language ever!**

2016 - ∞



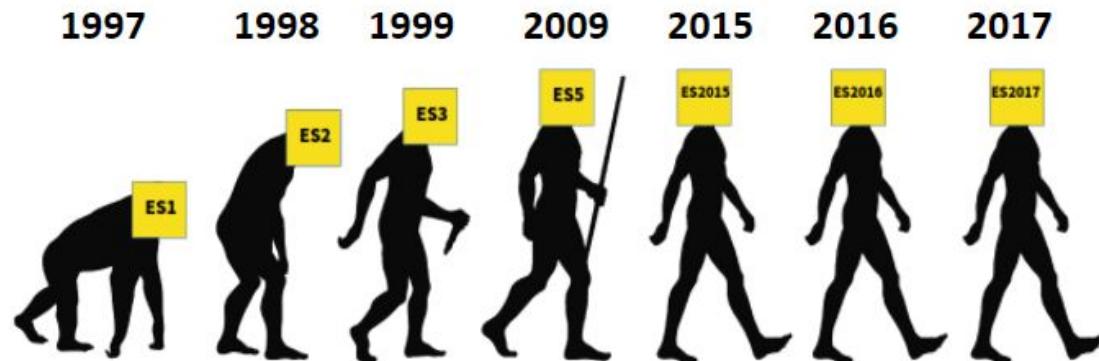
- 👉 Release of ES2016 / ES2017 / ES2018 / ES2019 / ES2020 / ES2021 / ... / ES2089



Javascript
was named
'Mocha'
earlier.

ECMA: Architect Behind Javascript

ECMA(European computer manufacturers association) plays a vital role in standardizing and advancing JavaScript for modern development.



ECMA is a Committee which regularly releases standards for JavaScript updates making javascript more powerful and efficient.

ES6: The Game Changer for JavaScript

ES6 introduced modern features like classes, modules, arrow functions, and promises, making JavaScript more structured, concise, and easier to work with. And not to forget let and const.



Most of the javascript which we use today is ES6.

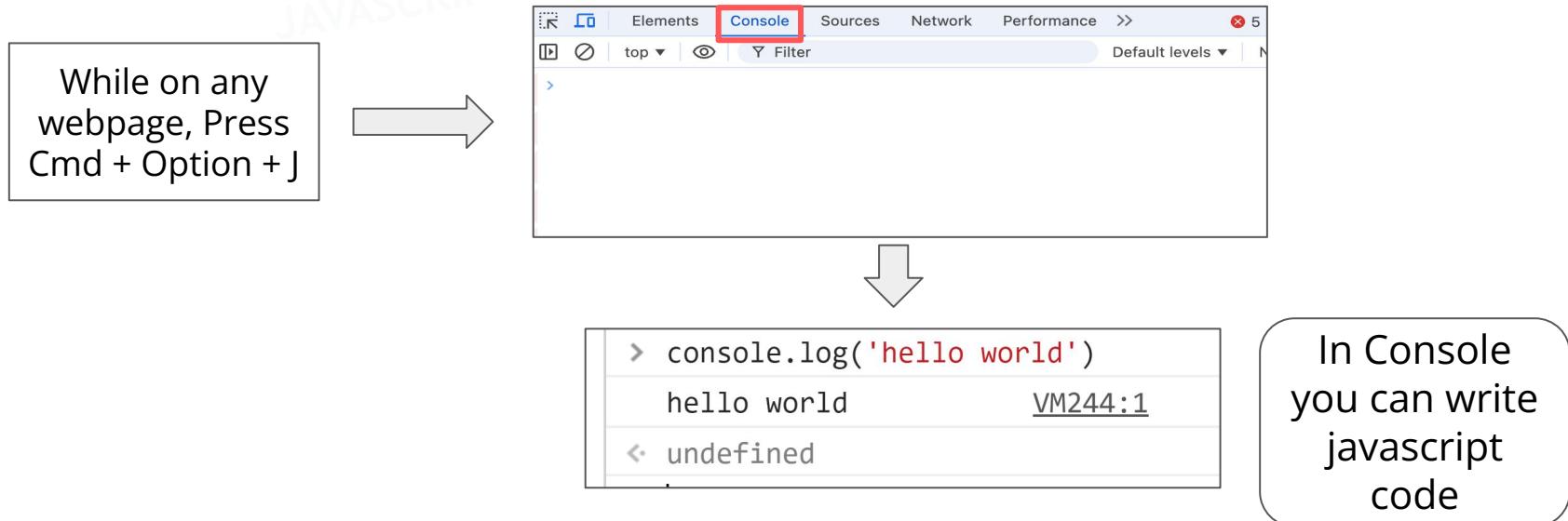
How to run Javascript code?

You can run JavaScript directly in a browser using the Developer Console or by embedding it in an HTML file with <script> tags.

1. Developer Console
2. Embedding in HTML(<script>...</script> tags)

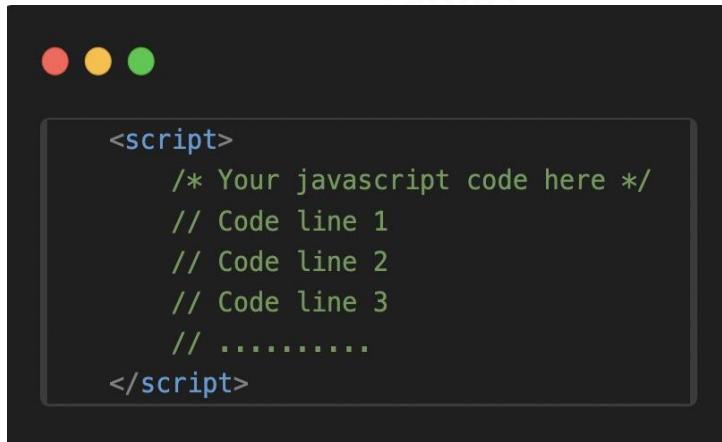
Running javascript in Developer Console

Open the Developer Console in Chrome on Mac using Cmd + Option + J. Type your JavaScript code in the Console tab and press Enter to execute it.



Run javascript: script tag

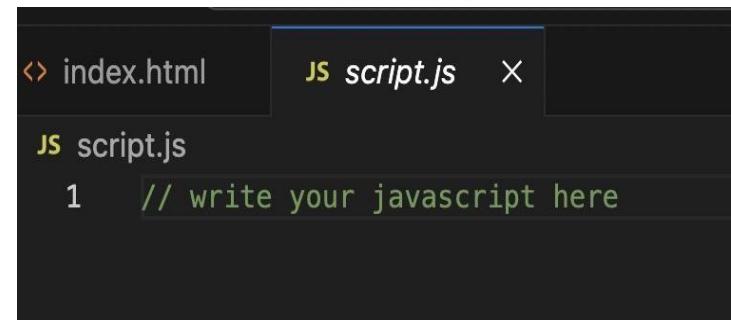
We use script tag to either embed code inside it or link code:-



```
<script>
    /* Your javascript code here */
    // Code line 1
    // Code line 2
    // Code line 3
    // .....
</script>
```

Embedding Code

```
<script src="script.js"></script>
```

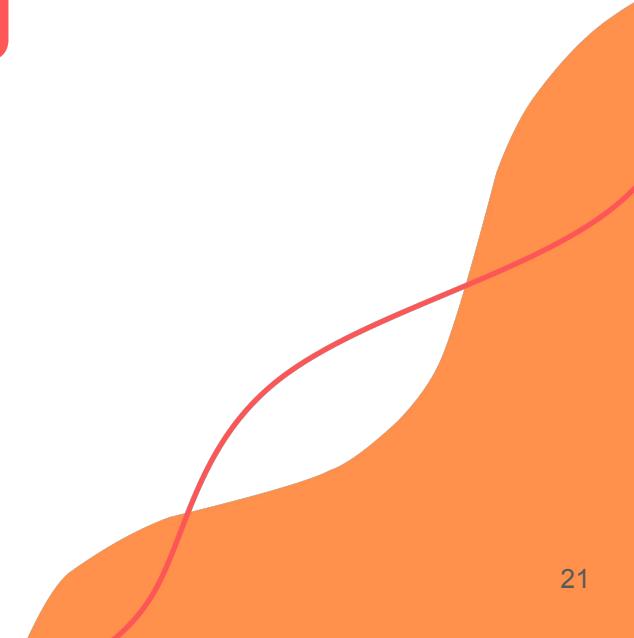
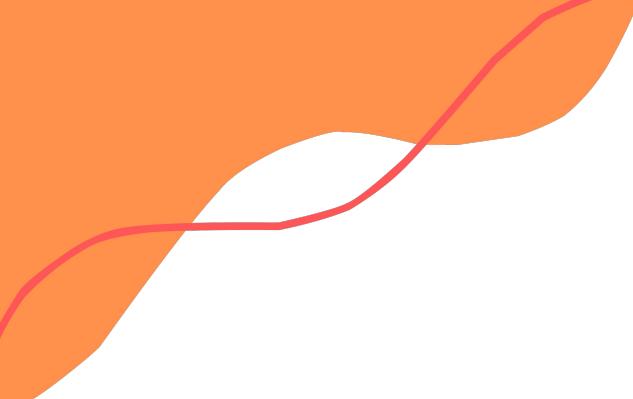


index.html

script.js

```
1 // write your javascript here
```

Linking External Code

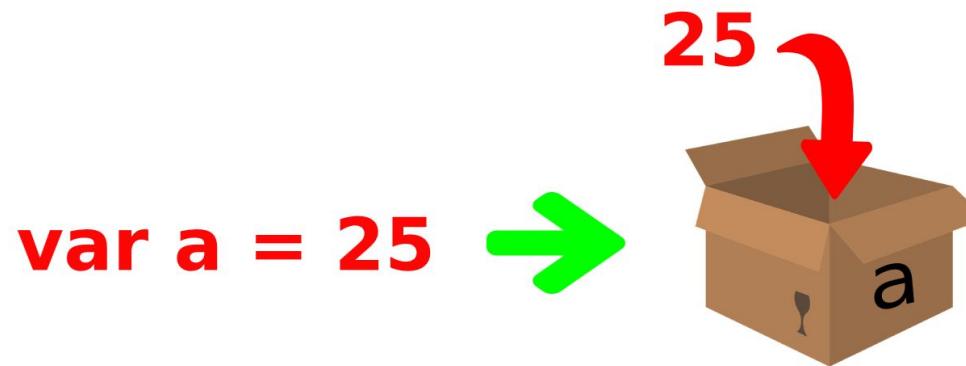


Let's Start Learning

Javascript Syntax

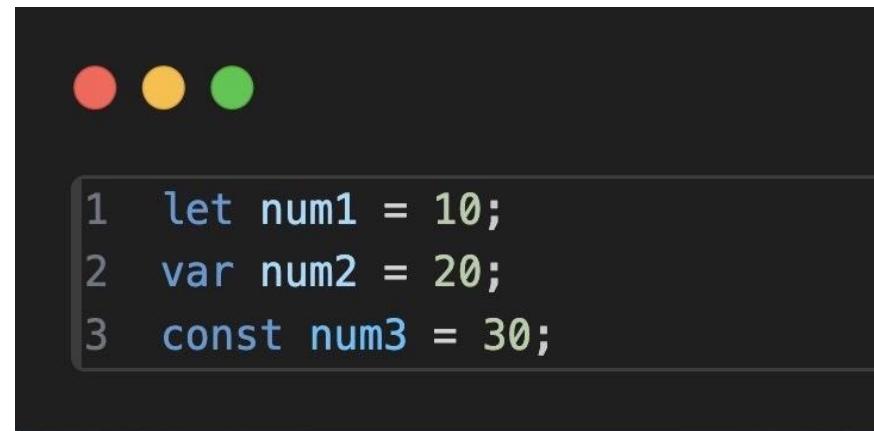
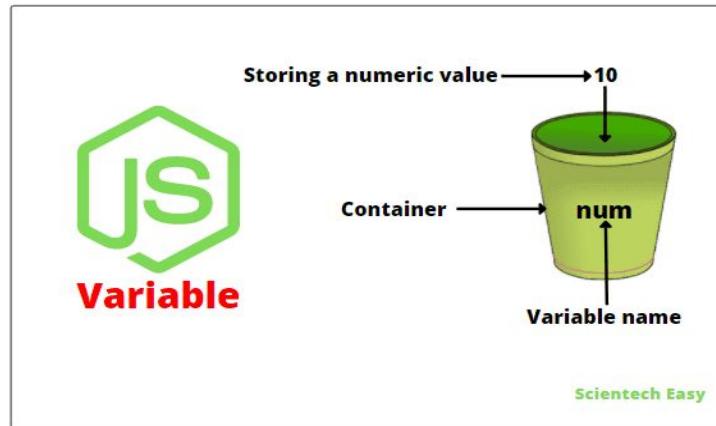
Variables in Javascript

Variables in JavaScript are containers for storing data values. They allow developers to label and reference data in their programs,



Storing Values in Javascript

JavaScript provides three keywords to declare variables: **let**, **var**, and **const**. These can be used to declare and store values.



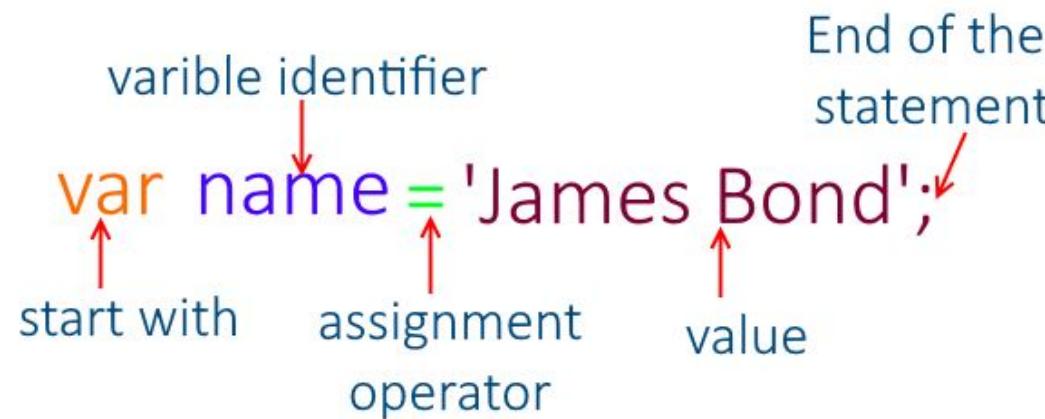
A screenshot of a terminal window on a dark background. At the top, there are three colored circles: red, yellow, and green. Below them, three lines of code are displayed in blue text:

```
1 let num1 = 10;
2 var num2 = 20;
3 const num3 = 30;
```

Syntax for variable declaration

Variables in JavaScript are declared using `let`, `const`, or `var`, followed by a variable name.

Keyword used to declare a variable:-



The diagram shows the syntax of a variable declaration in JavaScript. The code is `var name = 'James Bond';`. Various parts of the code are labeled with arrows pointing to specific tokens:

- "variable identifier" points to the word "name".
- "start with" points to the "v" in "var".
- "assignment operator" points to the "=" symbol.
- "value" points to the string "'James Bond'".
- "End of the statement" points to the final ";" character.

Similarly we can declare for let and const

Variables in JavaScript are declared using `let`, `const`, or `var`, followed by a variable name, `let` is a better alternative of `var`

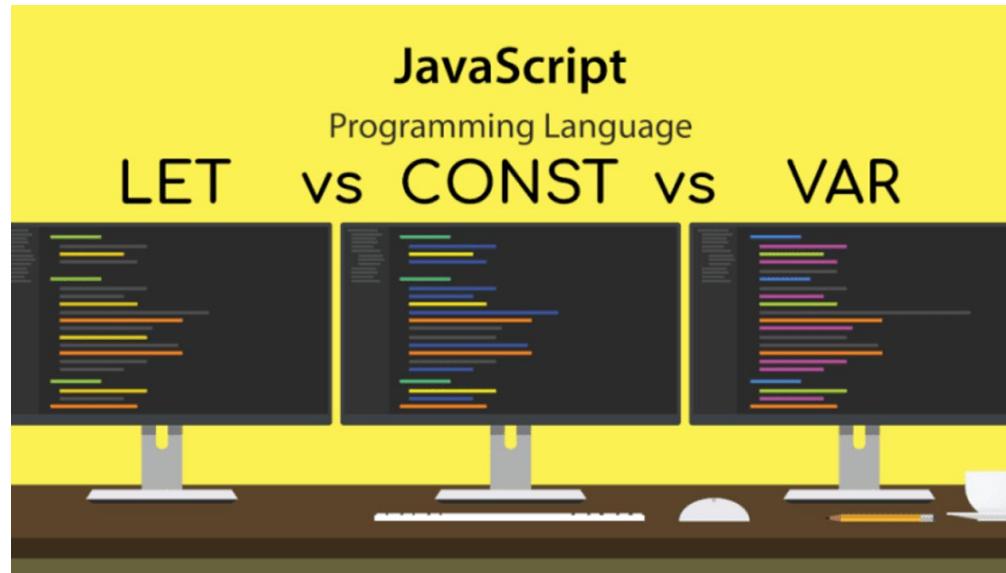


```
1 let firstName = "Alice"; //can be reassigned
2 firstName = "Bob"; //reassignment is allowed
3
4 const age = 25; //can't be reassigned
```

Once assigned,
the value of a
`const` variable
cannot be
changed or
reassigned.

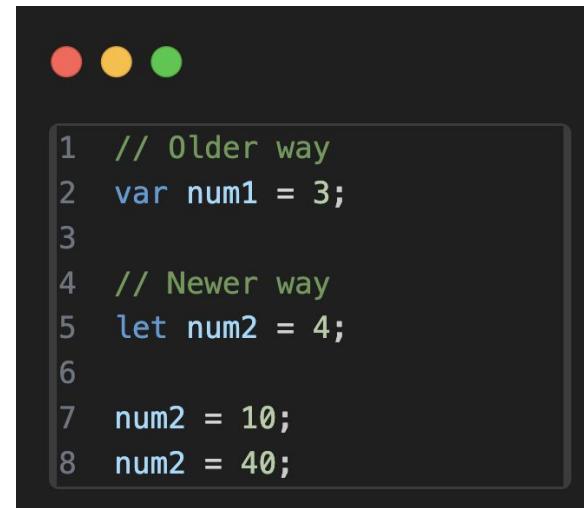
Why three keywords to store values?

Why does JavaScript need three different ways—`var`, `let`, and `const`—just to store values? Is there really a big difference between them?



Difference between var and let

`let` is the newer and preferred way to declare variables in JavaScript, offering better control and safety compared to the older `var`.



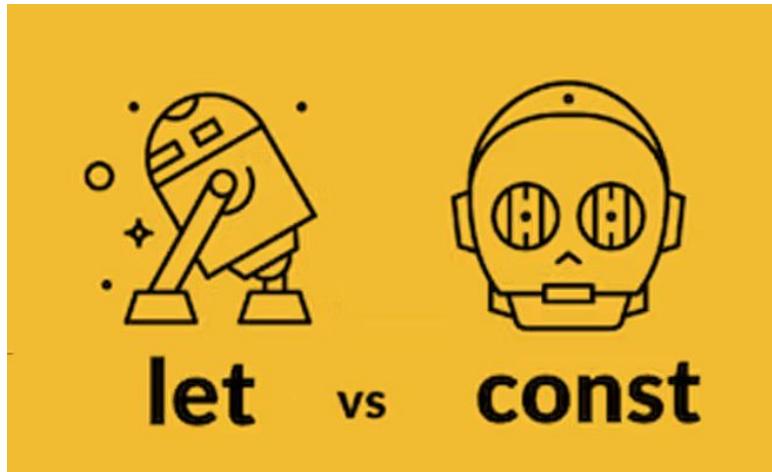
```
1 // Older way
2 var num1 = 3;
3
4 // Newer way
5 let num2 = 4;
6
7 num2 = 10;
8 num2 = 40;
```

A screenshot of a terminal window on a Mac OS X system (indicated by the red, yellow, and green window controls). The window displays a block of JavaScript code. Lines 1 and 2 show the declaration of a variable named 'num1' using the 'var' keyword. Lines 4 through 8 show the declaration of a variable named 'num2' using the 'let' keyword, followed by assignments to different values.

Values declared with `var` and `let` can be changed

Understood!! But what about `let` and `const`

`let` lets you change the value later, while `const` keeps the value fixed once set.



```
1 // Using `let`
2 let firstName = "Alice";
3 // Declare and assign a value
4
5 firstName = "Bob"; // Reassign a new value
6
7 // Using `const`
8 const lastName = "Smith";
9 // Declare and assign a value
10 console.log(lastName); // Output: Smith
11
12 // Attempt to reassign a new value to `const` 
13 // TypeError: Assignment to constant variable
```

But, how can we check the stored values?

We can check stored values in variables using `console.log()`.

JS

console.log()

Understanding console.log in javascript

console.log() is a JavaScript method that outputs messages or data, helping developers debug and monitor code execution.

```
> let firstName = "Alice"
< undefined
> console.log(firstName)
Alice
```

Comments: The Footnotes of Code

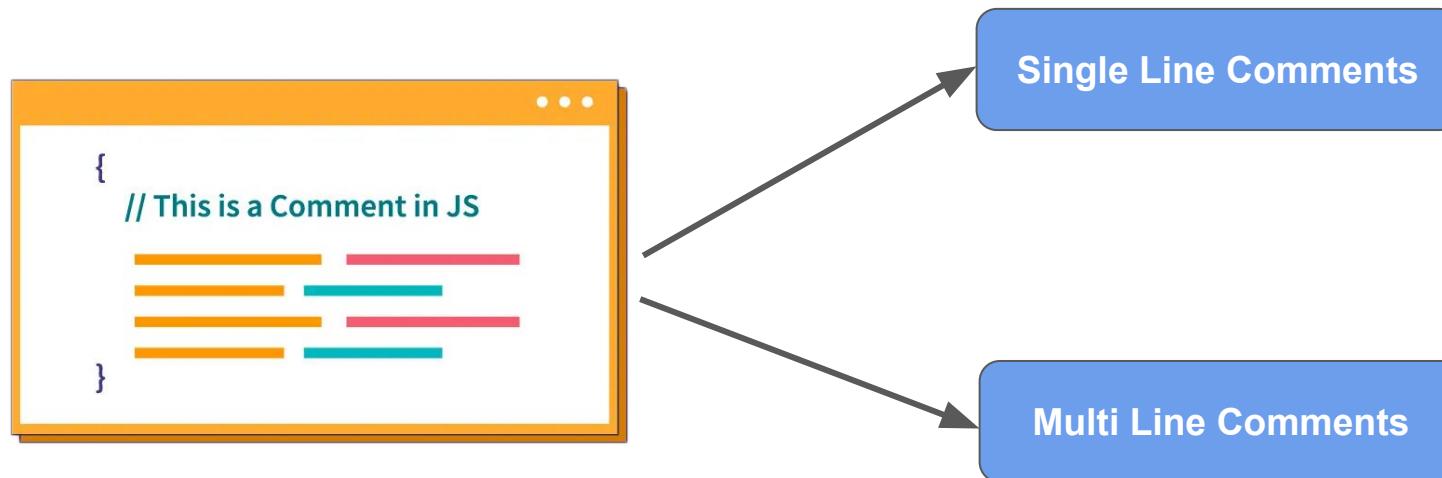
Comments are like notes in a book, offering explanations without affecting the code. Always comment your code, not just for others, but for your future self too.



Comments helps you understand the code better later one.

Types of Comments

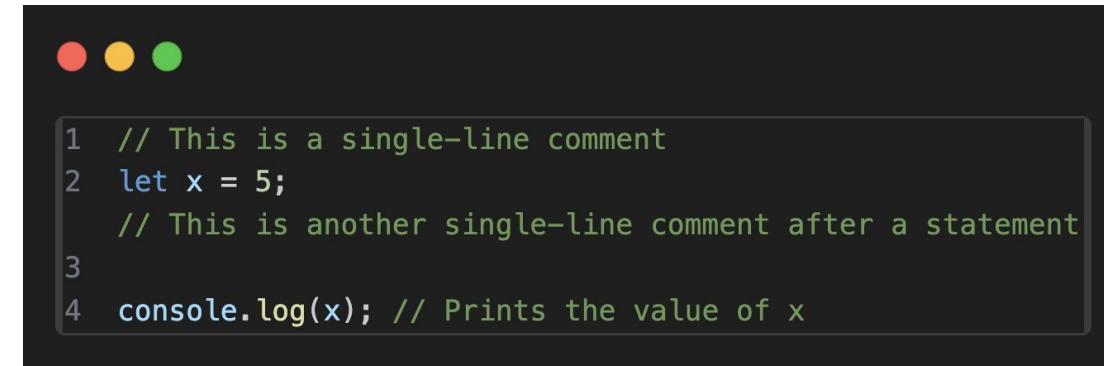
You can use either single line comments or multi-line comments in javascript.



Comments: Single Line

Single-line comments are used to add brief explanations or notes within a single line of code.

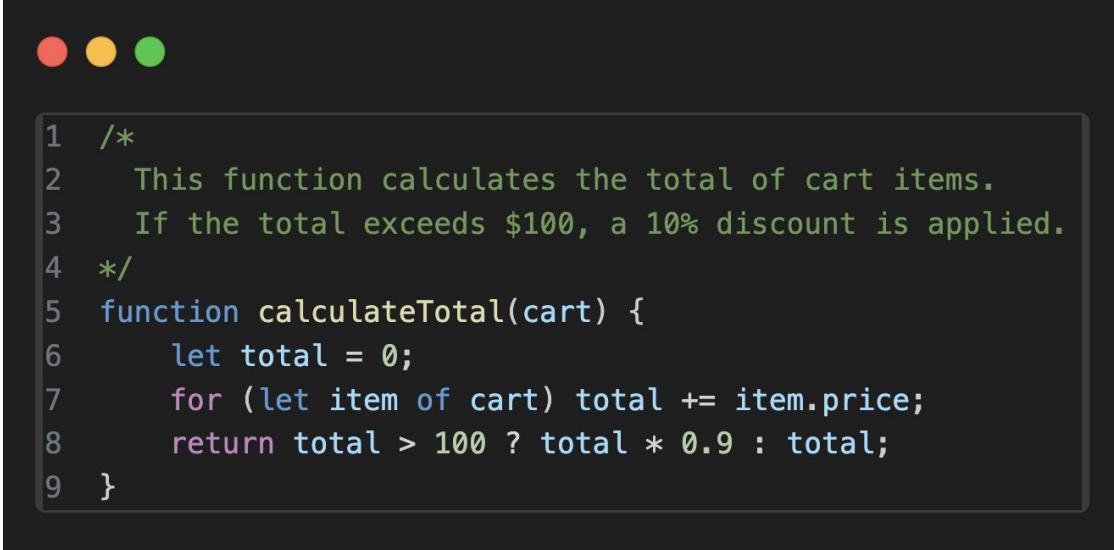
Single line comments start with `//` and end within the line.



```
1 // This is a single-line comment
2 let x = 5;
    // This is another single-line comment after a statement
3
4 console.log(x); // Prints the value of x
```

Comments: Multi-Line

Multi-line comments are used to add longer explanations or comment out multiple lines of code, enclosed between `/*` and `*/`.



```
1  /*
2   This function calculates the total of cart items.
3   If the total exceeds $100, a 10% discount is applied.
4 */
5 function calculateTotal(cart) {
6     let total = 0;
7     for (let item of cart) total += item.price;
8     return total > 100 ? total * 0.9 : total;
9 }
```

Use multi-line comments for longer explanations, commenting out blocks of code, or providing detailed documentation.

Some Real World Examples

Temperature Changes Over a Day

The temperature of a room or a city changes throughout the day.

In Programming:

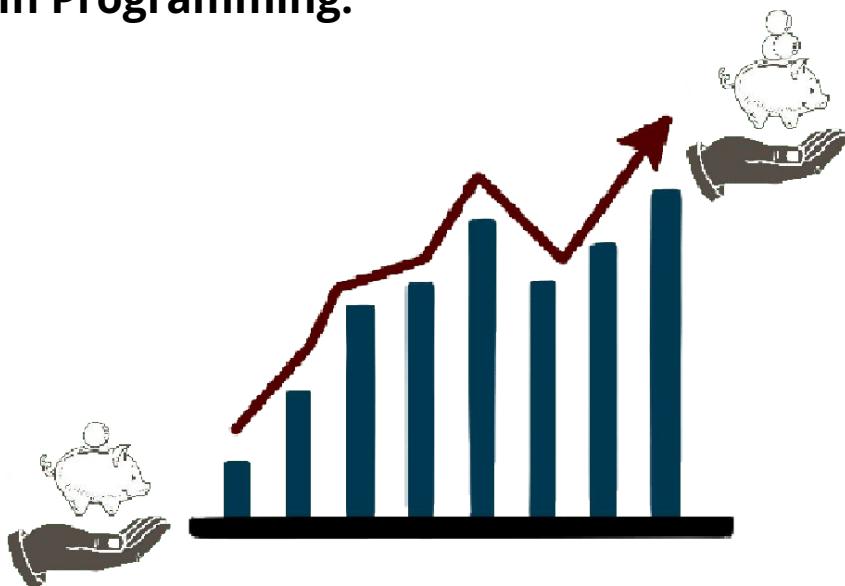


```
1 let temperature;
2 // Declare a variable to store the temperature
3
4 // Morning temperature
5 temperature = 20; // Assign morning temperature
6
7 // Afternoon temperature
8 temperature = 28;
// Update with afternoon temperature
9
10 // Evening temperature
11 temperature = 22;
// Update with evening temperature
```

Bank Account Balance

Your bank account balance fluctuates with deposits and withdrawals.

In Programming:



```
let bankBalance = 1000;
// initial balance in rupees
console.log(bankBalance); // output : 1000

// you make a deposit of $500
bankBalance += 500;
// Adding money to the account
console.log(bankBalance); // output : 1500

// you withdraw $300
bankBalance -= 300;
// subtracting money from the account
console.log(bankBalance); // output : 1200
```

Speed of a Car

A car's speed changes depending on driving conditions and actions.

In Programming:



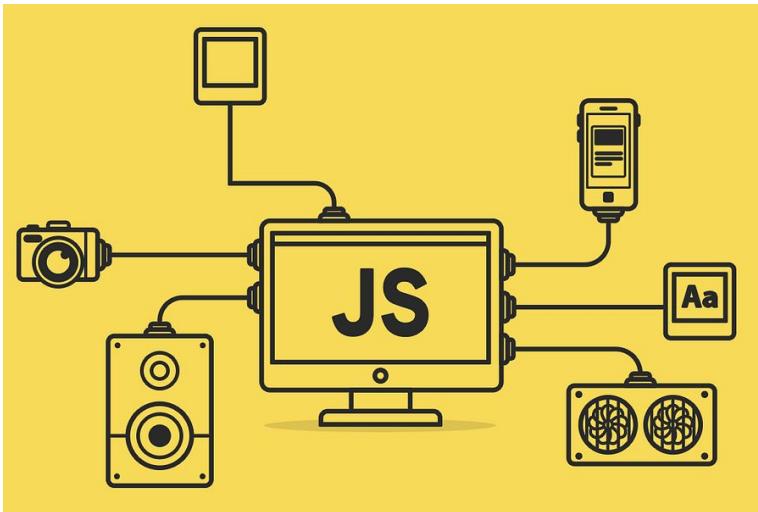
```
1 // Initial speed
2 carSpeed = 0;
3 // The car is stationary
4
5 // Speed after starting
6 carSpeed = 60;
7 // The car is now moving
8
9 // Speed on the highway
10 carSpeed = 100;
11 // The car speeds up on the highway
12
```

In Class Questions

References

1. **MDN Web Docs - JavaScript:** Comprehensive and beginner-friendly documentation for JavaScript.
<https://developer.mozilla.org/en-US/docs/Web/JavaScript>
2. **Eloquent JavaScript:** A free online book covering JavaScript fundamentals and advanced topics.
<https://eloquentjavascript.net/>
3. **JavaScript.info:** A modern guide with interactive tutorials and examples for JavaScript learners.
<https://javascript.info/>
4. **freeCodeCamp JavaScript Tutorials:** Free interactive lessons and coding challenges to learn JavaScript.
<https://www.freecodecamp.org/learn/>

Did you know?



*JavaScript powers over
98% of websites,
making it most popular
programming
language! 🌐 ✨*



**Thanks
for
watching!**