

What is JavaScript?

JavaScript is a **high-level, interpreted programming language** that is mainly used to make web pages **interactive and dynamic**.

Here are the key points about it:

- **Web Focused:** It runs in web browsers and allows developers to add behaviors to websites (e.g., dropdown menus, pop-ups, sliders, animations).
- **Event-Driven:** Reacts to user actions like clicks, typing, or scrolling.
- **Client-Side:** Primarily executes on the user's device inside the browser (though with Node.js, it can also run on the server side).
- **Interpreted Language:** Doesn't need to be compiled separately; browsers execute it directly.
- **Works with HTML & CSS:** HTML structures the content, CSS styles it, and JavaScript adds logic/interaction.

Example:

If you press a button on a webpage and a message pops up, that's usually JavaScript at work.

How do you include JavaScript in an HTML file?

There are two way to include js file in HTML file

1. Internal javascript

When you including internal js file then you need to use `<script>` tag only and inside the body but at last .

2. External javascript

When you including internal js file then you need to use `<script>` tag only and inside the body but at last .

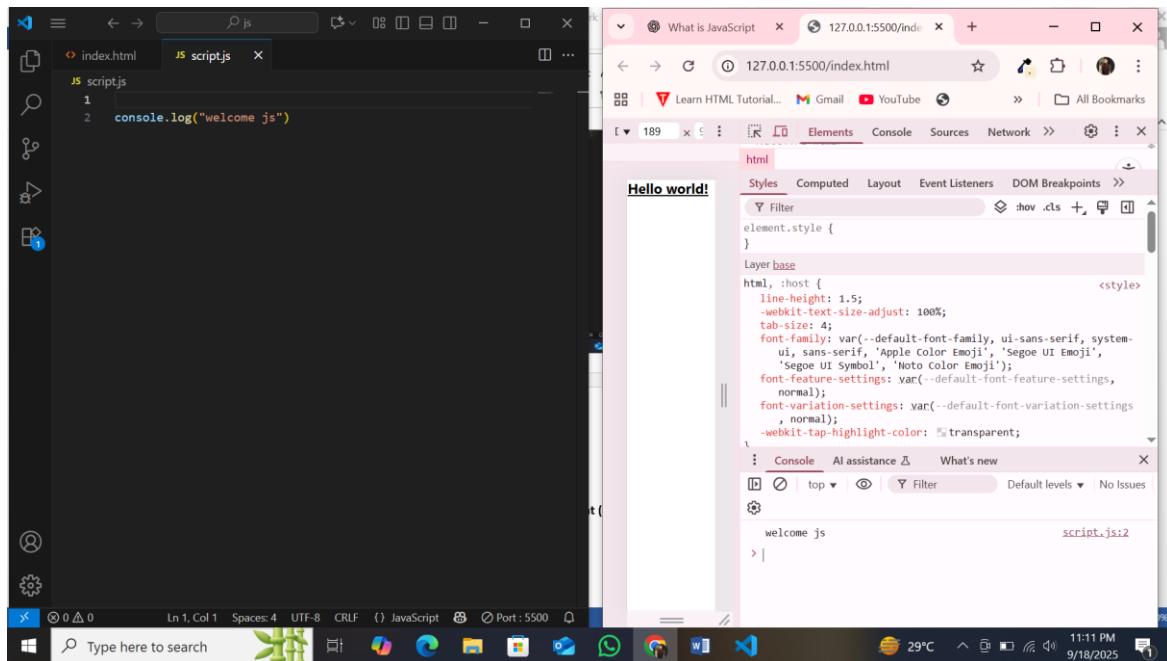
The screenshot shows a code editor on the left and a browser window on the right. The code editor displays an HTML file named 'index.html' with the following content:

```
<!DOCTYPE html>
<html>
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <script src="https://cdn.jsdelivr.net/npm/@tailwindcss/tailwindicss@1.0.0/dist/tailwindicss.min.js" />
  </head>
  <body>
    <h1 class="text-3xl font-bold underline">
      Hello world!
    </h1>
    <!-- internal js -->
    <script>
      alert("This is internal JavaScript!");
    </script>
    <!-- external js -->
    <script src="script.js">
    </script>
  </body>
</html>
```

The browser window shows the rendered HTML with the message "Hello world!" and an alert box from the internal script containing the text "This is internal JavaScript!".

What is console.log() used for?

console.log() is a **JavaScript function** used to print (or display) messages in the browser's **console**



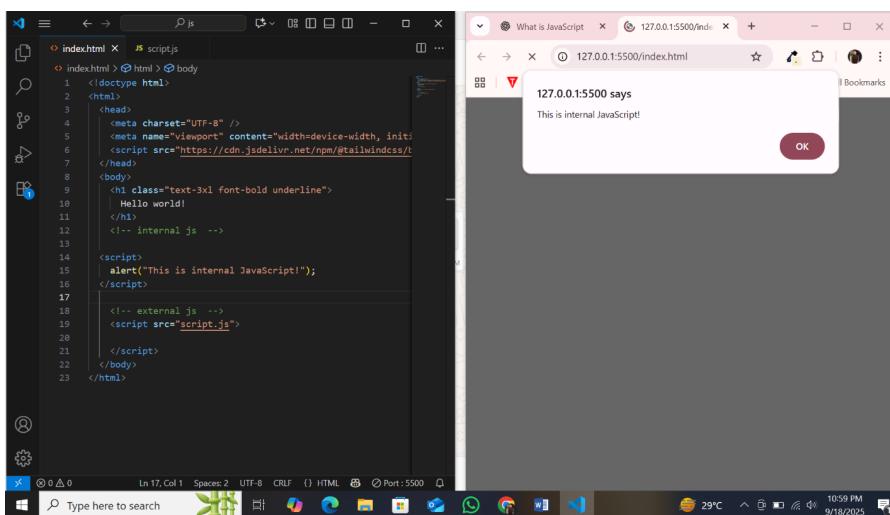
What is an alert box in JavaScript?

An **alert box** in JavaScript is a **popup dialog box** that shows a message to the user. It is created using the `alert()` function.

Key points:

- Displays a message in a small popup window.
- Only has an **OK** button (user must click it to continue).
- Often used for giving information or warnings.

Write a script to display an alert box with the message "Welcome to JavaScript!"



Name some popular JavaScript frameworks and their uses.

popular JavaScript frameworks and libraries with their main uses ↗

1. React.js (library, often treated like a framework)

- Developed by Facebook.
- Used for building **user interfaces (UI)**, especially **single-page applications (SPA)**.
- Component-based, fast, and widely used.

2. Angular

- Developed by Google.
- A **full-fledged framework** for building large, complex web applications.
- Supports **two-way data binding** and **MVC architecture**.

3. Vue.js

- Lightweight, easy-to-learn framework.
- Used for **interactive UIs** and **single-page apps**.
- Combines features of React and Angular.

4. Node.js (runtime environment, not exactly a framework)

- Allows JavaScript to run on the **server-side**.
- Used for **backend development**, APIs, and real-time applications.

5. Express.js (built on Node.js)

- A **backend framework** for building web servers and APIs.
- Simple, minimal, and fast.

What is the MERN stack?

The **MERN stack** is a popular set of technologies used for **full-stack web development**. It includes **four main components**:

M – MongoDB

- A **NoSQL database**.
- Stores data in JSON-like format (documents).

E – Express.js

- A **backend web framework** built on Node.js.

- Used for building APIs and handling server logic.

R – React.js

- A **frontend library** for building user interfaces.
- Creates dynamic and interactive web pages.

N – Node.js

- A **runtime environment** that allows JavaScript to run on the server side.
- Handles server requests and executes backend code.

Compare JavaScript and PHP.

1. Language Type

- **JavaScript** → Scripting language, mainly used for **client-side** (browser) but also works on server-side with Node.js.
- **PHP** → Scripting language, mainly used for **server-side** development.

2. Execution

- **JavaScript** → Runs inside the web browser (client), or on the server with Node.js.
- **PHP** → Runs only on the server, generates HTML which is sent to the client.

3. Use Cases

- **JavaScript** → Interactive websites, frontend logic, dynamic content, animations, real-time apps.
- **PHP** → Server-side logic, form handling, database interaction, building web apps like WordPress.

4. Database Handling

- **JavaScript** → Uses Node.js with databases like MongoDB, MySQL, PostgreSQL.
- **PHP** → Commonly paired with MySQL or MariaDB.

5. Syntax

- **JavaScript** → Syntax is C-like, flexible for frontend + backend.
- **PHP** → Syntax is more similar to C but designed for embedding in HTML.

short answer:

JavaScript is mainly a **client-side language** (can also run on server with Node.js) used for interactivity.

- **PHP** is a **server-side scripting language** used for backend tasks like database handling and dynamic page generation.