JavaScript in HTML (script tags, external files)

Sure, Abhi! Let's dive deep into **how JavaScript is used in HTML**, focusing on:

> ✅ <script> tags
>
> ✅ External JavaScript files
>
> ✅ Best practices

📌 Why Use JavaScript in HTML?

JavaScript is added to HTML pages to:

- Interact with the DOM
- Handle user events (click, input, etc.)
- Perform logic dynamically in the browser

🧩 1. Using `<script>` Tag in HTML

➤ Inline JavaScript (written directly in HTML)

```html
<!DOCTYPE html>
<html>
<head>
  <title>Inline JS Example</title>
</head>
<body>
  <button onclick="alert('Hello from inline JS!')">Click Me</button>
</body>
</html>
```

✅ *Quick and easy*, but not scalable or maintainable.

➤ Internal JavaScript (inside `<script>` tag in HTML)

```html
<!DOCTYPE html>
<html>
<head>
  <title>Internal JS</title>
  <script>
    function greet() {
      alert("Hello from internal JavaScript!");
    }
  </script>
</head>
<body>
  <button onclick="greet()">Click Me</button>
</body>
</html>
```

✅ *Useful for small scripts*, but can clutter your HTML.

➤ External JavaScript (linking a `.js` file)

HTML File:

```html
<!DOCTYPE html>
<html>
<head>
  <title>External JS</title>
  <script src="script.js" defer></script>
</head>
<body>
  <button onclick="greet()">Click Me</button>
</body>
</html>
```

script.js File:

```
function greet() {
  alert("Hello from external JS!");
}
```

✅ Best for **separation of concerns**

✅ Makes HTML cleaner

✅ Easier to maintain and reuse

🏷️ Script Tag Attributes

✅ `src`

- Specifies the path to the JS file

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

✅ `defer`

- Delays execution until the HTML is fully parsed
- Scripts load **in order** and execute after DOM is ready

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

🟢 Recommended when placing `<script>` in `<head>`

✅ `async`

- Loads script **asynchronously** (non-blocking)
- Executes **as soon as it's downloaded**, which can be **out of order**

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

⚠️ Use only for **independent scripts**, like ads or analytics.

🔁 Placement of `<script>` in HTML

✅ Bottom of `<body>` (without `defer`)

```html
<body>
  <!-- HTML elements →
  <script src="script.js"></script>
</body>
```

- Ensures the DOM is fully loaded before the script runs
- Common before ES6 `defer`

✅ Inside `<head>` with `defer`

```html
<head>
  <script src="main.js" defer></script>
</head>
```

- Modern, clean, and avoids blocking

🧠 Best Practices

Practice	Reason
Use **external JS files**	Cleaner code, reusability
Always use `defer` (or put script at end of `<body>`)	Avoid blocking page rendering
Avoid too much inline JS	Hard to maintain/debug
Keep JS logic out of HTML	Follow separation of concerns (HTML = structure, JS = logic)

🔙 Summary

Method	Tag Example	Use When

Inline	`<button onclick="...">`	For very quick scripts
Internal	`<script> JS code </script>`	For short page-specific code
External	`<script src="script.js" defer></script>`	For most real-world projects

Let me know if you want to see this in a live example or need help organizing your HTML + JS files for a real project!