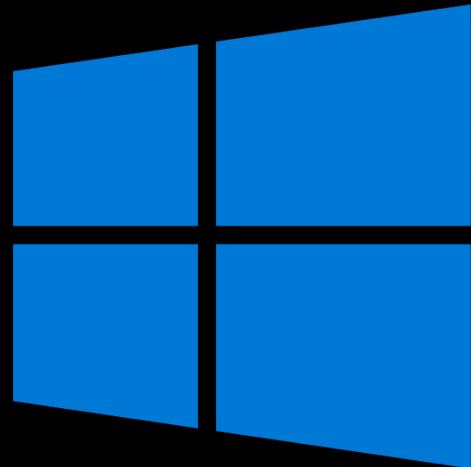
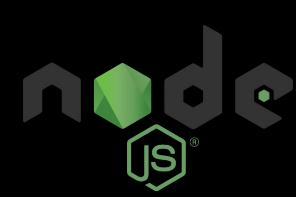


NodeJS Windows Setup



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A screenshot of the Visual Studio Code interface. The main area shows a file named 'serviceWorker.js' with code related to service workers. A code completion dropdown is open over the line `navigator.serviceWorker.ready.then(() => {`. The dropdown lists various properties and methods of the service worker object, such as 'product', 'storage', and 'userAgent'. The left sidebar displays the 'EXTENSIONS: MARKETPLACE' section with several popular extensions listed, each with a preview image, name, version, size, rating, and an 'Install' button. The extensions include Python, GitLens, C/C++, ESLint, Debugger for Chrome, Language Support, vscode-icons, Vetur, and C#. The bottom status bar shows the current file path ('master'), line and column numbers ('Ln 43, Col 19'), character encoding ('UTF-8'), and the current language ('JavaScript').

NodeJS MAC Setup





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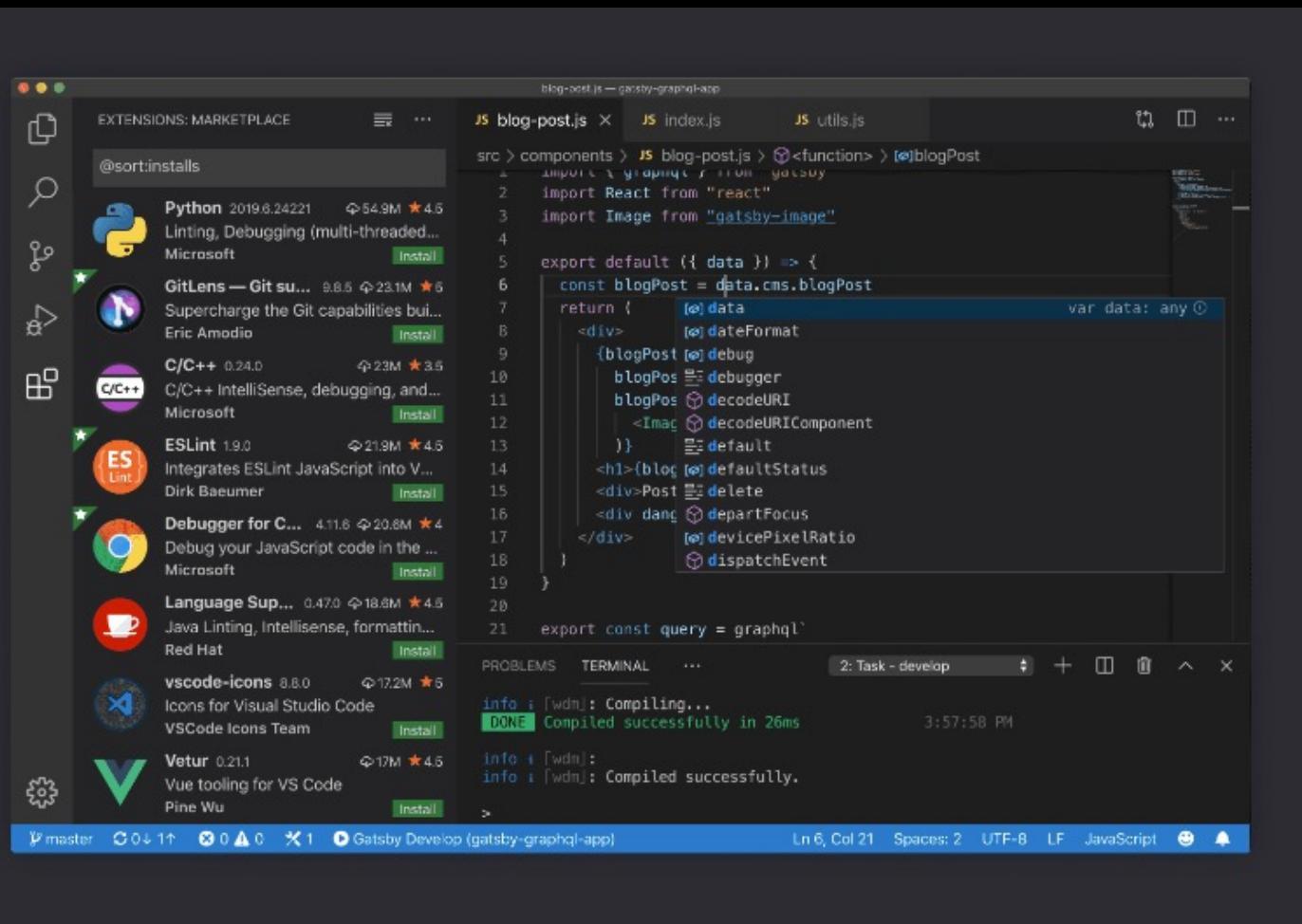
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Executing first .js file

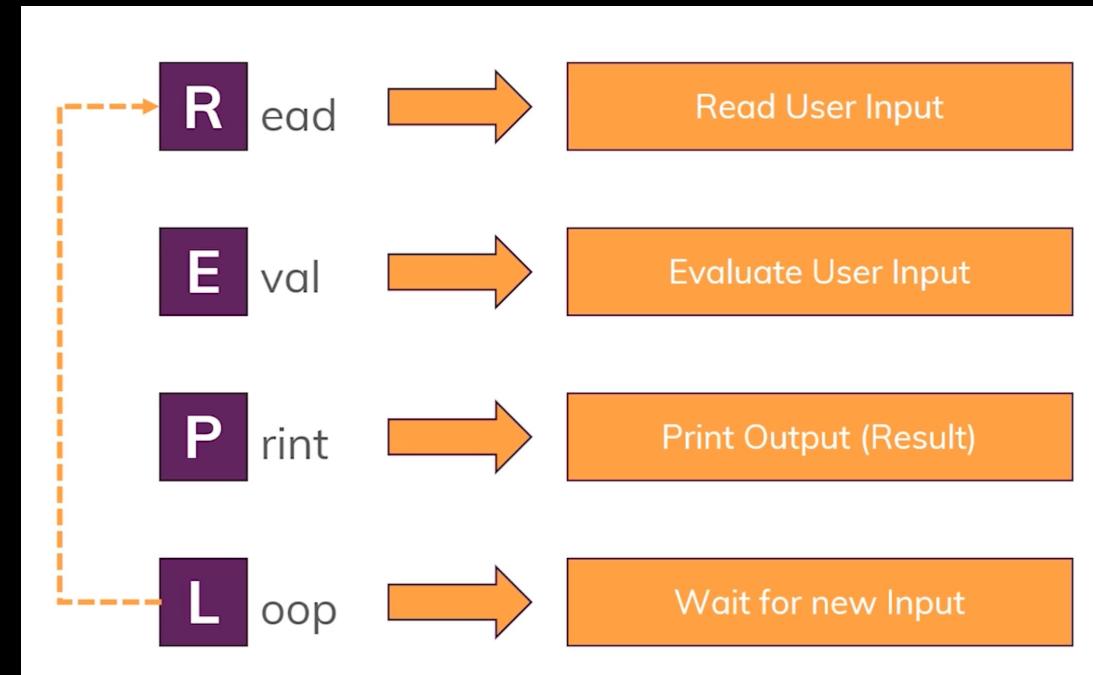
```
1 const fs = require('fs');
2
3 // Define two variables
4 let a = 10;
5 let b = 5;
6
7 // Basic arithmetic operations
8 let sum = a + b;
9 let product = a * b;
10
11 // Prepare data to write
12 let data = `Sum: ${sum}\nProduct: ${product}`;
13 console.log(data);
14
15 // Write data to a local file
16 fs.writeFile('output.txt', data, (err) => {
17   if (err) throw err;
18   console.log('Data written to file');
19 });
```

```
prashantjain@Mac-mini Desktop % node test.js
Sum: 15
Product: 50
Data written to file
```

1. Streamlines Node Command: Use node `filename.js` to execute a JavaScript file in the Node.js environment.
2. Require Syntax: Use `require('module')` to include built-in or external modules, or other JavaScript files in your code.
3. Modular Code: `require` helps organize code into reusable modules, separating concerns and improving maintainability.
4. Caching: Modules loaded with `require` are cached, meaning the file is executed only once even if included multiple times.

What is REPL

1. Streamlines Interactive Shell: Executes JavaScript code **interactively**.
2. Quick Testing: Ideal for **testing and debugging code snippets** on the fly.
3. Built-in Help: Offers help commands **via .help**.
4. Session Management: Supports saving (**.save**) and loading (**.load**) code sessions.
5. Node.js API Access: Provides **direct access** to Node.js APIs for experimentation.
6. Customizable: Allows **customization of prompt** and behaviour settings.



Executing Code via REPL

```
prashantjain@Mac-mini Desktop % node
Welcome to Node.js v20.9.0.
Type ".help" for more information.
> 5 + 6
11
> console.log('KG Coding is the best');
KG Coding is the best
undefined
> fs.writeFile('output.txt', 'Writing to file', (err) => {
...     if (err) throw err;
...     console.log('Data written to file');
... });
undefined
> Data written to file
```

JavaScript with Node



1. **JavaScript Runtime:** Node.js is an **open-source, cross-platform** runtime environment for executing **JavaScript code outside of a browser.**
2. **NodeJs** is a **JavaScript in a different environment** means **Running JS on the server or any computer.**
3. **Built on Chrome's V8 Engine:** It runs on the **V8 engine**, which **compiles JavaScript directly to native machine code**, enhancing performance.
4. **V8** is written in **C++** for speed.
5. **V8 + Backend Features = NodeJs**

JavaScript with Node

JS math.js X

```
1 // Basic arithmetic operations and console output
2 console.log("5 + 3 =", 5 + 3);
3 console.log("10 - 6 =", 10 - 6);
4 console.log("7 + 2 =", 7 + 2);
5 console.log("20 - 4 =", 20 - 4);
```

PROBLEMS

OUTPUT

DEBUG CONSOLE

TERMINAL

PORTS

● prashantjain@Mac-mini test % node math.js

5 + 3 = 8

10 - 6 = 4

7 + 2 = 9

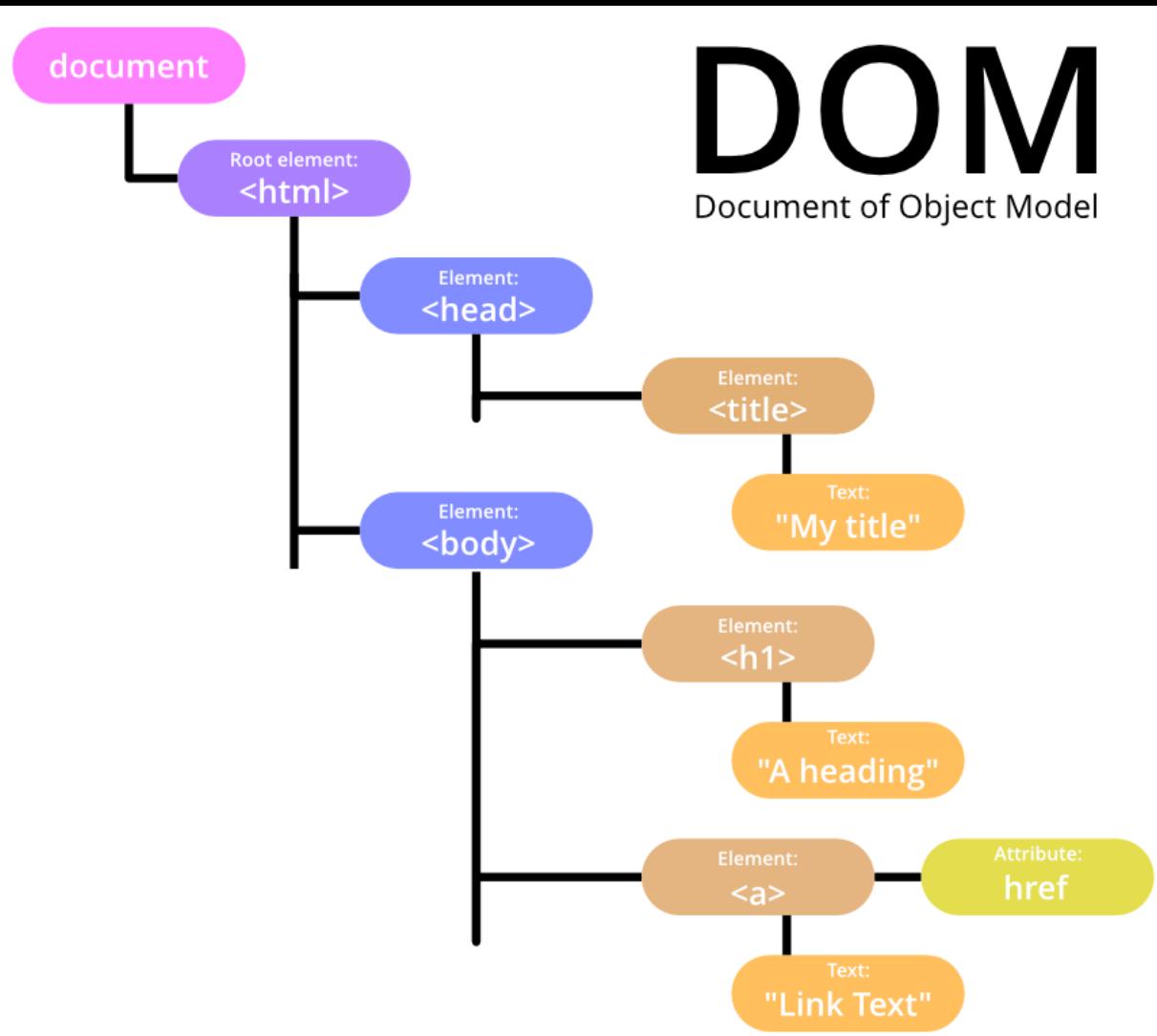
20 - 4 = 16

○ prashantjain@Mac-mini test % █

JavaScript in Webpage

```
<!DOCTYPE html>           Defines the HTML Version  
<html lang="en">          Parent of all HTML tags / Root element  
    <head>                  Parent of meta data tags  
        <title>My First Webpage</title> Title of the web page  
    </head>  
    <body>                  Parent of content tags  
        <h1>Hello World!</h1> Heading tag  
    </body>  
</html>
```

JavaScript in Webpage



- 1. Structure Understanding:** Helps in understanding the **hierarchical structure** of a webpage, crucial for applying targeted CSS styles.
- 2. Dynamic Styling:** Enables learning about dynamic styling, allowing for **real-time changes** and interactivity through CSS.

JavaScript in Webpage

(Script Tag)

1. **Embed Code:** Incorporates JavaScript into an HTML file, either **directly or via external files.**
2. **Placement:** Commonly placed in the **<head> or just before the closing </body> tag** to control when the script runs.
3. **External Files:** Use **src** attribute to link external JavaScript files, like **<script src="script.js"></script>**.
4. **Console Methods:** **log, warn, error, clear**

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <meta charset="UTF-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0" />
    <title>Basic JavaScript Example</title>
    <script>
      // This function changes the content of the paragraph with id="demo"
      function changeContent() {
        document.getElementById("demo").innerHTML =
          "Content changed by JavaScript!";
      }
    </script>
  </head>
  <body>
    <h1>Welcome to My Web Page</h1>
    <p id="demo">JavaScript can change HTML content.</p>
    <button onclick="changeContent()">Click me to change content</button>
  </body>
</html>
```

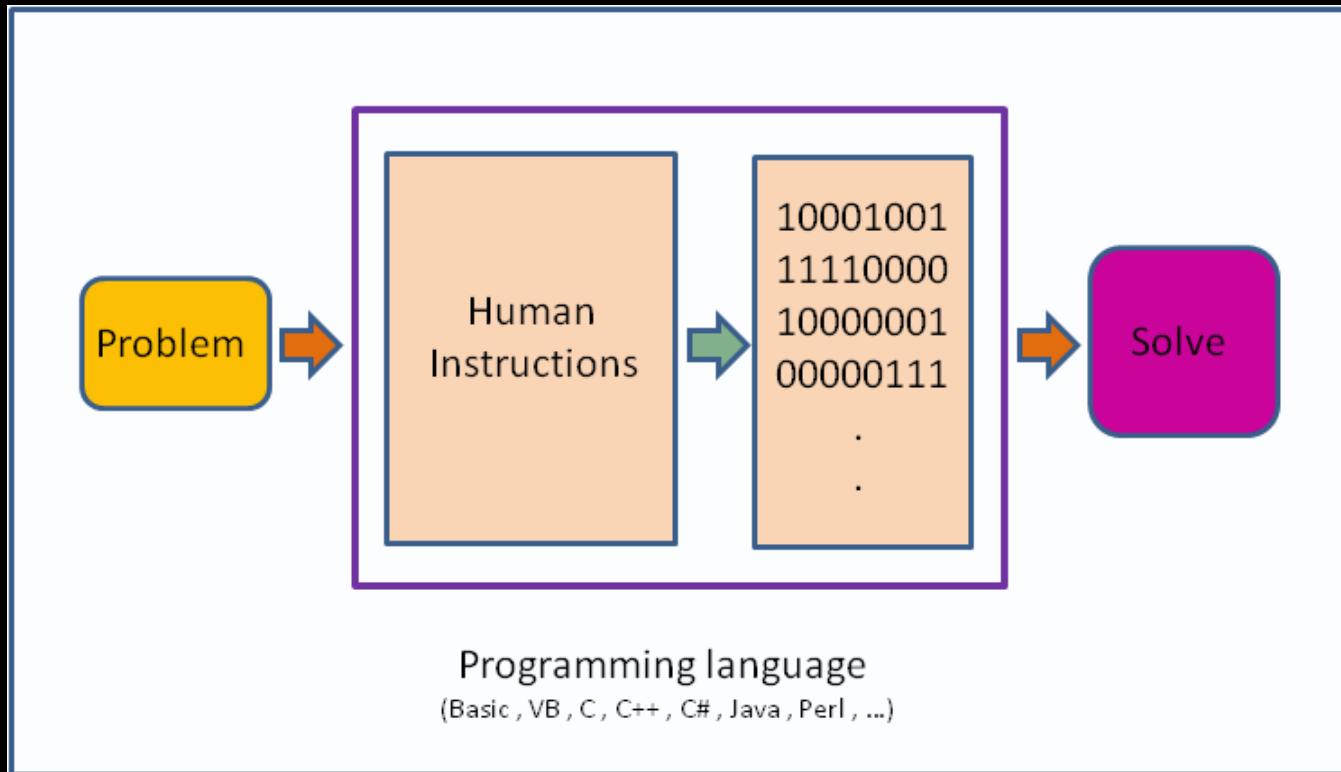
JavaScript in Webpage

(Comments)

```
/**  
 * * This is a important comment  
 * ! This is warning comment  
 * ? This is a question comment  
 * TODO: This is a todo comment  
 */
```

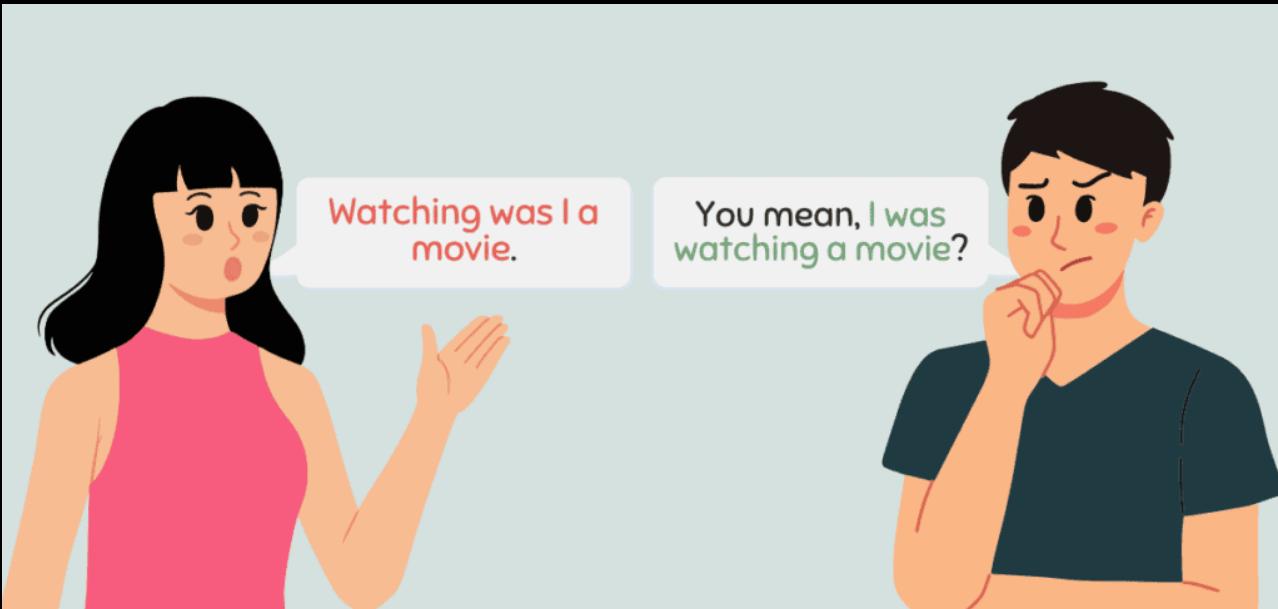
1. Used to add notes in source code in JavaScript or CSS.
2. Not displayed on the web page
3. Syntax: /* comment here */
4. Helpful for code organization
5. Can be multi-line or single-line

What is a Programming Language?



- Giving instructions to a computer
- **Instructions:** Tells computer what to do.
- These instructions are called **code**.

What is a Syntax?



- Structure of words in a sentence.
- Rules of the language.
- For programming exact syntax must be followed.

```
> alert 'hello world'  
✖ Uncaught SyntaxError: Unexpected string  
> |
```

FullStack



M E R N



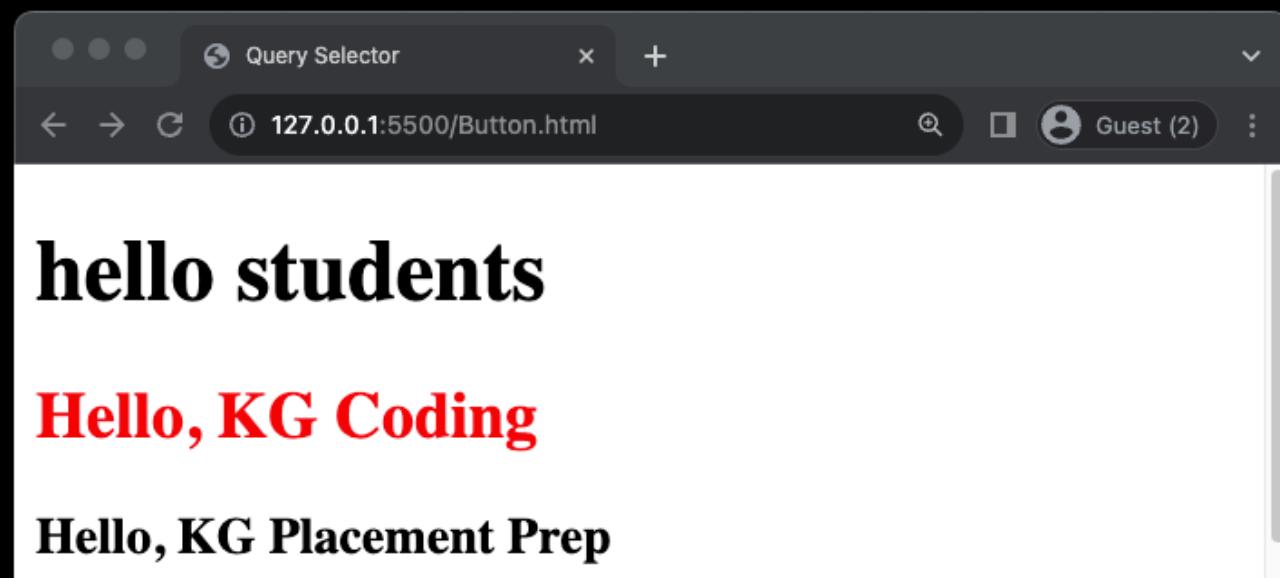
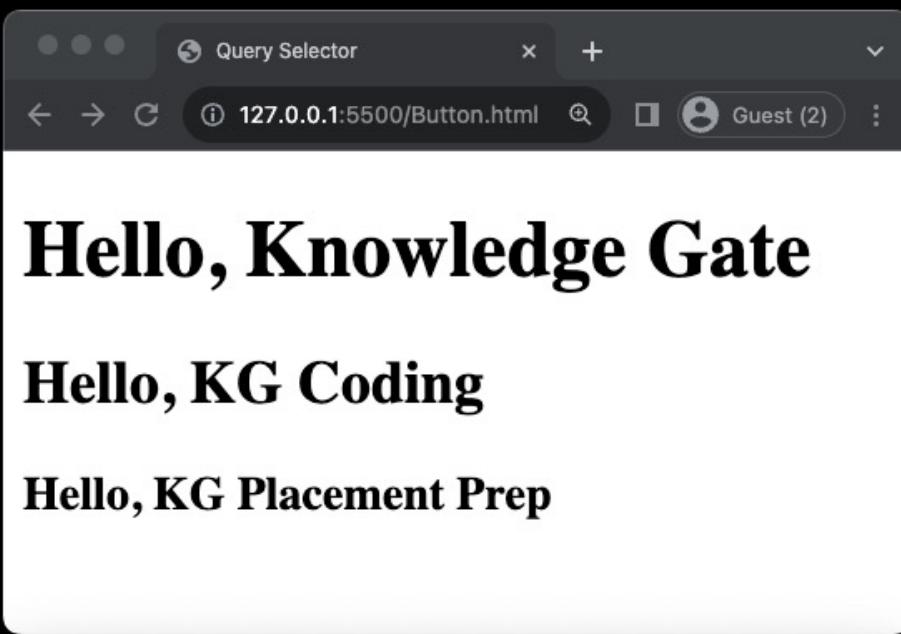
express



Query Selector

1. **getElementById**: Finds one element by its ID.
2. **getElementsByClassName**: Finds elements by their class, returns a list.
3. **querySelector**: Finds the first element that matches a CSS selector.
4. **Purpose**: To interact with or modify webpage elements.

Query Selector



The screenshot shows a code editor window titled "Button.html — testing" with the file "Button.html" open. The code editor displays the following HTML source code:

```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4      <title>Query Selector</title>
5  </head>
6  <body>
7      <h1>Hello, Knowledge Gate</h1>
8      <h2 class="coding">Hello, KG Coding</h2>
9      <h3 id="placement">Hello, KG Placement Prep</h3>
10 </body>
11 </html>
```

The screenshot shows the browser's developer tools with the "Console" tab selected. The console output shows the following JavaScript code being run:

```
> const hElement = document.querySelector('h1');
const hElementCode = document.querySelector('.coding');
const hElementPlacement =
document.querySelector('#placement');

hElement.textContent = 'hello students';
hElementCode.style.color = 'red';

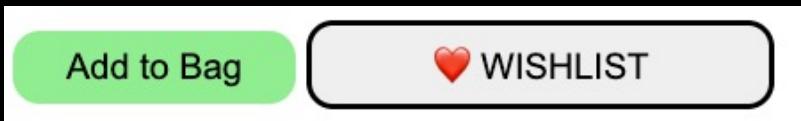
< 'red'

>
```

Practice Exercise

JavaScript With HTML & CSS

1. Create a button with text click
2. Create 2 buttons with class and id
3. Create a paragraph
4. Add colors to two buttons
5. Add proper html structure
6. Change page title
7. Try to copy the given design on the bottom



8. Add script element to page to show welcome alert
9. Add onclick alert on Add to Bag and ❤️ Wishlist buttons