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| **1. Variables & Data Types**   * **Declaring Variables**:   javascript  Copy  let x = 10; // variable that can be reassigned  const y = 5; // constant, cannot be reassigned  var z = 20; // function-scoped (not recommended, use let/const)   * **Data Types**:   + **Primitive types**: string, number, boolean, undefined, null, symbol, bigint   **Complex types**: object, array, function  **2. Operators**   * **Arithmetic Operators**:   javascript  Copy  let sum = 5 + 3; // 8  let difference = 7 - 3; // 4  let product = 4 \* 2; // 8  let quotient = 8 / 2; // 4  let remainder = 8 % 3; // 2  let power = 2 \*\* 3; // 8 (exponentiation)  **Comparison Operators**:  javascript  Copy  5 == 5 // true  5 === 5 // true (strict equality)  5 != 6 // true  5 !== "5" // true (checks type as well)  5 < 10 // true  5 > 10 // false  **Logical Operators**:  javascript  Copy  true && false // false (AND)  true || false // true (OR)  !true // false (NOT)  **5. Functions**   * **Function Declaration**:   function greet(name) {  return `Hello, ${name}`;  }  greet("Alice"); // "Hello, Alice"  **Arrow Functions**:  const add = (a, b) => a + b;  add(3, 4); // 7  **6. Arrays**   * **Accessing Elements**:   let arr = [10, 20, 30];  arr[0]; // 10  **Array Methods**:  javascript  Copy  arr.push(40); // Adds 40 to the end  arr.pop(); // Removes the last element  arr.shift(); // Removes the first element  arr.unshift(5); // Adds 5 to the start  **Array Iteration**:  javascript  Copy  arr.forEach(item => console.log(item)); // Iterates through each item   **Creating Objects**:  javascript  Copy  let person = {  name: "Alice",  age: 25,  greet: function() { return `Hello, ${this.name}`; }  };   **Accessing Object Properties**:  javascript  Copy  person.name; // "Alice"  person['age']; // 25  **Iterating Over Objects**:  javascript  Copy  for (let key in person) {  console.log(key, person[key]); // key and value  }  Event Handling **Example 1: Button Click to Change Background Color**  Let's create a button that changes the background color of the page when clicked:  **HTML:**  html  Copy  <!DOCTYPE html>  <html lang="en">  <head>  <meta charset="UTF-8">  <meta name="viewport" content="width=device-width, initial-scale=1.0">  <title>Event Handling Example</title>  </head>  <body>  <button id="colorButton">Click me to change color</button>  <script src="app.js"></script>  </body>  </html> | **3. Control Flow**   * **If-Else**:   javascript  Copy  let a = 10;  if (a > 5) {  console.log("Greater than 5");  } else {  console.log("Less than or equal to 5");  }  **Ternary Operator** (shortened if-else):  javascript  Copy  let result = a > 5 ? "Greater" : "Lesser";  **Switch Case**:  javascript  Copy  let color = "red";  switch (color) {  case "red":  console.log("Red color");  break;  case "blue":  console.log("Blue color");  break;  default:  console.log("Other color");  }  **4. Loops**   * **For Loop**:   for (let i = 0; i < 5; i++) {  console.log(i); // 0 to 4  }  **While Loop**:  let i = 0;  while (i < 5) {  console.log(i); // 0 to 4  i++;  }  **ForEach** (for arrays):  const nums = [1, 2, 3, 4];  nums.forEach(num => {  console.log(num); // 1, 2, 3, 4  });  **8. String Methods**   * **Concatenation**:   javascript  Copy  let fullName = "John" + " " + "Doe"; // "John Doe"  **Template Literals**:  javascript  Copy  let name = "Alice";  let message = `Hello, ${name}!`; // "Hello, Alice!"  **Common String Methods**:  javascript  Copy  "hello".toUpperCase(); // "HELLO"  "HELLO".toLowerCase(); // "hello"  "hello".includes("he"); // true  "hello".indexOf("e"); // 1  **9. DOM Manipulation**   * **Selecting Elements**:   javascript  Copy  const element = document.querySelector("#id"); // By ID  const elements = document.querySelectorAll(".class"); // By class  **Changing Text/HTML**:  javascript  Copy  element.textContent = "New text"; // Change text content  element.innerHTML = "<p>New HTML</p>"; // Change HTML content  **Appending HTML**:  javascript  Copy  const div = document.getElementById("my\_div");  div.insertAdjacentHTML("beforeend", "<p>New Content</p>");  // Get the button element by its ID let button = document.getElementById("colorButton");  // Define the function to change the background color function changeBackgroundColor() { // Random color generator const randomColor = `hsl(${Math.floor(Math.random() \* 360)}, 100%, 75%)`;  // Change the background color of the body document.body.style.backgroundColor = randomColor; }  // Add an event listener to the button button.addEventListener("click", changeBackgroundColor);  // Get the button and message container elements  let button = document.getElementById("messageButton");  let messageContainer = document.getElementById("messageContainer");  // Define the function to display the message function displayMessage() { // Add a message inside the message container messageContainer.textContent = "Hello, you've clicked the button!"; }  // Add an event listener to the button button.addEventListener("click", displayMessage); |