

Language Map for JavaScript

Variable Declaration <i>Is this language strongly typed or dynamically typed? Provide at least three examples (with different data types or keywords) of how variables are declared in this language.</i>	JavaScript is dynamically typed. Examples: <ol style="list-style-type: none">1. <code>let x = 10; // Number</code>2. <code>const name = "Felix"; // String</code>3. <code>var isTrue = true; // Boolean</code>
Data Types <i>List all of the data types (and ranges) supported by this language.</i>	<ol style="list-style-type: none">1. Primitive:<ul style="list-style-type: none">○ Number (e.g., 42, 3.14)○ String (e.g., "Hello")○ Boolean (true, false)○ Null○ Undefined○ Symbol (ES6+)○ BigInt (ES11+)2. Non-primitive:<ul style="list-style-type: none">○ Object (e.g., {}, [])○ Functions Ranges: <ul style="list-style-type: none">• Numbers: IEEE 754 double-precision ($\pm(2^{-1022}$ to 2^{1023})• BigInt: Arbitrary precision integers.
Selection Structures <i>Provide examples of all selection structures supported by this language (if, if else, etc.) Don't just list them, show code samples of how each would look in a real program.</i>	if (x > 10) { console.log("x is greater than 10"); } If-Else if (x > 10) { console.log("x is greater than 10"); } else { console.log("x is 10 or less"); } Switch Statement switch (color) { case "red": console.log("Color is red");

	<pre> break; case "blue": console.log("Color is blue"); break; default: console.log("Color is unknown"); } </pre>
Repetition Structures <i>Provide examples of all repetition structures supported by this language (loops, etc.) Don't just list them, show code samples of how each would look in a real program.</i>	For-loop <pre> for (let i = 0; i < 5; i++) { console.log(i); } </pre> While loop <pre> let i = 0; while (i < 5) { console.log(i); i++; } </pre> Do-while loop <pre> let i = 0; do { console.log(i); i++; } while (i < 5); </pre> ForEachLoop <pre> [1, 2, 3].forEach((item) => console.log(item)); </pre>
Arrays <i>If this language supports arrays, provide at least two examples of creating an array with a primitive or String data types (e.g. float, int, String, etc.)</i>	Creating an array of numbers: <pre> const numbers = [1, 2, 3, 4, 5]; </pre> Creating an array of strings: <pre> const fruits = ["apple", "banana", "cherry"]; </pre>
Data Structures	Standard Data Structures: <ol style="list-style-type: none"> 1. Array (Access: O(1), Search: O(n), Insert/Delete: O(n)) 2. Set (Add/Delete/Check: O(1))

<p><i>If this language provides a standard set of data structures, provide a list of the data structures and their Big-Oh complexity.</i></p>	<ol style="list-style-type: none"> 3. Map (Insert/Delete/Search: $O(1)$) 4. Object (Key-based Access: $O(1)$)
<p>Objects</p> <p><i>If this language support object-orientation, provide an example of how you would write a simple object with a default constructor and then how you would instantiate it.</i></p>	<pre>class Person { constructor(name, age) { this.name = name; this.age = age; } greet() { console.log(`Hello, my name is \${this.name}`); } }</pre> <p>// Instantiate an object: const john = new Person("John", 30); john.greet();</p>
<p>Runtime Environment</p> <p><i>What runtime environment does this language compile to? For example, Java compiles to the Java Virtual Machine.</i></p> <p><i>Do other languages also compile to this runtime?</i></p>	<p>JavaScript runs on the V8 JavaScript Engine (used in Chrome and Node.js). Other languages that compile to this runtime include TypeScript and WebAssembly.</p>
<p>Libraries/Frameworks</p> <p><i>What are the popular libraries or frameworks used by programmers for this language? List at least three (3) and describe what they are used for..</i></p>	<p>Popular Libraries/Frameworks:</p> <ol style="list-style-type: none"> 1. React.js - For building user interfaces. 2. Node.js - For running JavaScript on the server. 3. Express.js - A web application framework for Node.js.
<p>Domains</p> <p><i>What industries or domains use this programming language? Provide specific examples of companies that use this language and what they use it for. E.g. Company X uses C# for its line of business applications.</i></p>	<p>Industries or Domains:</p> <ol style="list-style-type: none"> 1. Web Development: Facebook uses JavaScript (React.js) for front-end development. 2. Backend Development: Netflix uses Node.js for server-side scripting. 3. Game Development: Phaser is a popular framework for game development using JavaScript.