

Language Map for JavaScript

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| <p>Variable Declaration</p> <p><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></p> | <p>Variable Declaration:</p> <p>The language is dynamically typed.</p> <ul style="list-style-type: none"> Examples: <ul style="list-style-type: none"> const tax = 0.10 let total = tax * subtotal var subtotal = 17 announcement = "Hello, world!"; |
| <p>Data Types</p> <p><i>List all of the data types (and ranges) supported by this language.</i></p> | <p>Data Types:</p> <ul style="list-style-type: none"> string (" " or ' ') number $(-(2^{53}-1)$ to $2^{53}-1$; outside the range becomes +Infinity or -Infinity) boolean (true or false) null (null) undefined (undefined) Symbol (sym) |
| <p>Selection Structures</p> <p><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></p> | <p>Selection Structures:</p> <ul style="list-style-type: none"> IF: <ul style="list-style-type: none"> if (theVar > 2) { theVar=1; } IF-ELSE: <ul style="list-style-type: none"> if (rowNumber == 1) { color = "gray"; } else { color = "white"; } ELSE IF: <ul style="list-style-type: none"> if (grade >= 90) { document.write ("You got an A"); } else if (grade >= 80) { |

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| | <pre> document.write ("You got a B"); } else { document.write ("You have to retake this course!"); } </pre> <ul style="list-style-type: none"> • SWITCH: <ul style="list-style-type: none"> ○ switch (n) { case 0: document.write ("zero"); break; case 12: document.write ("a dozen"); break; case 13: document.write ("baker's dozen"); break; default: document.write ("any other number"); break; } |
| <p>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></p> | <p>Repetition Structures:</p> <ul style="list-style-type: none"> • WHILE: <ul style="list-style-type: none"> ○ var number = 1; while (number < 10) { document.write ("one lap down"); number++; } • FOR: <ul style="list-style-type: none"> ○ for (var number = 10; number > 11; number--) { document.write ("are you ready?"); } • DO...WHILE: <ul style="list-style-type: none"> ○ var num = 0; do { document.write ("The number is " + num); num++; } while (num < 10); |
| <p>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></p> | <p>Arrays:</p> <ul style="list-style-type: none"> • Arrays are supported • Examples: <ul style="list-style-type: none"> ○ const cars = ["saab", "volvo", "lexus"]; |

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| | <ul style="list-style-type: none"> ○ <code>const ages = [12, 29, 32, 40];</code> |
| Data Structures <i>If this language provides a standard set of data structures, provide a list of the data structures and their Big-Oh complexity.</i> | Data Structures (Big-Oh Complexity): <ul style="list-style-type: none"> • <i>LinkedList ($O(n)$)</i> • <i>Doubly LinkedList ($O(n)$)</i> • <i>Queue ($O(n)$)</i> • <i>Stack ($O(n)$)</i> • <i>Hash Table ($O(n)$)</i> • <i>Heap ($O(\log(n))$)</i> • <i>Priority Queue ($O(n)$)</i> • <i>Trie ($O(n)$)</i> • <i>Binary Search Tree ($O(\log(n))$)</i> • <i>AVL Tree ($O(\log(n))$)</i> • <i>Red-Black Tree ($O(\log(n))$)</i> • <i>Segment Tree ($O(\log(n))$)</i> • <i>Binary Indexed Tree ($O(\log(n))$)</i> • <i>Graph ($O(n)$)</i> • <i>Disjoint Set ($O(n)$)</i> • <i>Bloom Filter ($O(1)$)</i> |
| Objects <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> | Objects: <ul style="list-style-type: none"> • <i>This language is supported by object orientation</i> • <i>Example:</i> <ul style="list-style-type: none"> ○ <pre>class Vehicle { constructor (year, make, model) { this.year = year; this.make = make; this.model = model; } }</pre> ○ <pre>let carA = new Vehicle (2012, 'Audi', 'A3'); let carB = new Vehicle (2022, 'Chevrolet', 'Blazer');</pre> |
| Runtime Environment <i>What runtime environment does this language compile to? For example, Java compiles to the Java Virtual Machine.</i> <i>Do other languages also compile to this runtime?</i> | Runtime Environment: <ul style="list-style-type: none"> • <i>JavaScript does not need a compiler for source code.</i> <ul style="list-style-type: none"> ○ <i>JavaScript uses a JavaScript Engine that works within a web browser</i> ○ <i>JavaScript uses Node.js as a runtime environment</i> • <i>Node.js only supports JavaScript</i> |
| Libraries/Frameworks | Libraries & Frameworks: <ul style="list-style-type: none"> • <i>ReactJS</i> |

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| <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> | <ul style="list-style-type: none"> ○ <i>ReactJS is a library used for building user interfaces. As your data changes, ReactJS allows developers to prepare updates and rendering for specific components.</i> • Angular <ul style="list-style-type: none"> ○ <i>Angular is a framework used to extend HTML vocabulary within designed applications; Angular is extensible and will work with other libraries while each feature can be modified or replaced depending on the developer's needs and workflow.</i> • Vue <ul style="list-style-type: none"> ○ <i>Vue is a framework used to build user interfaces for developers and/or companies. The framework builds on top of HTML, CSS, and JavaScript while providing a declarative and component-based programming model. One of the biggest features for VueJS is reactivity, allowing it to track JavaScript state changes and update the DOM as things change.</i> |
| <p>Domains <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>Domains:</p> <ul style="list-style-type: none"> • Companies: <ul style="list-style-type: none"> ○ <i>Paypal: JavaScript is used on the front-end of the website through NodeJS, because of the success, Paypal decided to use it in production and build the client-facing applications with NodeJS as well.</i> ○ <i>Walmart: JavaScript was first introduced for their mobile site (walmart.com) and uses NodeJS. As a result of this usage, Walmart was able to implement JavaScript to other web applications that require multiple users to be able to access management interfaces simultaneously.</i> ○ <i>LinkedIn: JavaScript is used specifically for its mobile site. Use of NodeJS allowed LinkedIn to solve its scaling problem while allowing the mobile site to perform quicker and developers to be able to share data & build APIs easier.</i> |