

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 because variables can hold different data types. Example: Let x = 5; x = "Hello World"; x = [1, 2,3];
Data Types <i>List all of the data types (and ranges) supported by this language.</i>	Numbers (integers and floating-point) a range of $-2^{53} - 1$ to $2^{53} - 1$ String (limited to size of memory) Boolean true or false Null Undefined Symbol BigInt -2^{63} to $2^{63}-1$ Int -2^{31} to $2^{31}-1$ SmallInt -2^{15} to $2^{15}-1$ TinyInt 2^0-1 to 2^8-1
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 statement: let age = 18; if(age >= 18){ console.log("You can vote!"); } If-else statement let temperature = 25; if(temperature > 20){ console.log("It's warm today."); }

	<pre> else{ Console.log("It is cold today."); } switch statement let day = "Monday"; switch(day){ case "Monday": console.log("It is the start of the week."); break; case "Friday": console.log("It is almost the weekend!"); break; default: console.log("It's a weekday."); } </pre>
<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>	<pre> For loop: for(let i = 0; i<5; i++){ console.log("Iteration:", i); } While loop: let count = 0; while(count < 5){ console.log("Count:", count); count ++; } Do- while loop let x = 0 ; do{ console.log("x:", x); x++ ; } while (x < 5) ; For-in loop : const person = {name : « Alice », age: 30}; </pre>

	<pre>for(let key in person){ console.log(key + ":" + person[key]); }</pre> <p>For-of loop:</p> <pre>const numbers = [1,2,3,4,5]; for(let number of numbers){ console.log(number); }</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>	<pre>const stringArray = ["apple", "banana", "cherry"]; const floatArray = [3.14, 2.71, 1.618];</pre>
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>	<pre>Array O(1) LinkedList O(1) Stack O(1) Queue O(1) Tree O(1)</pre>
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>	<pre>let firstName = ""; let lastName = ""; let age = 0; let eyeColor = ""; function Person(first, last, age, eye){ this.firstName = first; this.lastName = last; this.age = age; this.eyeColor = eye; } const myWife = new Person("Cecilia", "Cantone", 27, "brown");</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>	<p>Front-end JavaScript applications are executed in the browser's runtime environment</p> <p>Back-end JavaScript applications are executed in the Node runtime environment</p> <p>Some other languages also compile to a web browser's runtime environment but JavaScript is the primary language to do so.</p>
Libraries/Frameworks	<p>JQuery: used to simplify the HTML DOM tree traversal and manipulation</p> <p>Bootstrap: Used for mobile-first front-end web development. Contains handy templates</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>React: Used as a lightweight library for developing modern web applications.</p>
<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>JavaScript is often used for web, application, and browser-based game development.</p> <p>Microsoft uses JavaScript for its Edge web browser, PayPal uses JavaScript for the front-end of its website, and Uber uses JavaScript to best handle loads of data in real time.</p>