Language Map for JavaScript

Variable Declaration	JavaScript is dynamically typed

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.	let x = 5;
	const pi = 3.14;
	let person = "John Doe";

Data Types *List all of the data types (and ranges) supported by this language.*	- String - Number - Bigint: no limit - Boolean : true or false - Undefined : N/A - Null : null is the only value - Symbol Any of the numeric-related types have a range from $-(2^{53} - 1)$ to $(2^{53} - 1)$, except for Bigints which can go higher than this

Selection Structures
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.***
	Conditional operator (basically same as if-else): (condition) ? exec_if_true : exec_if_false;
	
	If-Else Statement:
	
	if(condition)
	
	{
	
	    statement(s);
	}
	else
	{
	    statement(s);
	}
	
	Switch Statement:
	
	switch(variable)
	{
	    case value:
	        statement(s);

| | ```
                    break;
              case value:
                    statement(s);
                    break;
              ...
              default:
                    statement(s);
}
``` |
| **Repetition Structures**
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.*** | **For loop:**

```
for (let i = 0; i < cars.length; i++) {
  text += cars[i] + "<br>";
}
```

For-in loop:

```
const person = {fname:"John", lname:"Doe", age:25};

let text = "";
for (let x in person) {
  text += person[x];
}
```

For-let loop:

```
let language = "JavaScript";

let text = "";
for (let x of language) {
text += x;
}
```

While loop:

```
while (i < 10) {
  text += "The number is " + i;
  i++; }
``` |
| **Arrays** | const cars = ["Saab", "Volvo", "BMW"]; |

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.)	myArray[0] = Date.now;
	myArray[1] = myFunction;
	myArray[2] = myCars;
	
	(Arrays can be objects and store multiple types)

Data Structures *If this language provides a standard set of data structures, provide a list of the data structures and their Big-Oh complexity.*	• Array: O(1) for access, O(n) for everything else • LinkedList: O(1) for insert and remove, O(n) for access and search • Queue: O(1) for insert and remove, O(n) for access and search • Stack: O(1) for insert and remove, O(n) for access and search • Hash Table: O(1) for most, O(n) worst case • Graph: O(nlog(n)) • Tree: O(log(n)) average • Binary Search Tree: O(log(n)) average

Objects
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.
	const person = {
	  firstName: "John",
	  lastName: "Doe",
	  age: 50,
	  eyeColor: "blue"
	};
	
	OR to instantiate:
	
	const person = new Object();
	person.firstName = "John";
	person.lastName = "Doe";
	person.age = 50;
	person.eyeColor = "blue";

Runtime Environment *What runtime environment does this language compile to? For example, Java compiles to the Java Virtual Machine.* *Do other languages also compile to this runtime?*	A couple examples of popular JavaScript runtime environments: Node.js is the most well-known and is only used for JavaScript, and Deno is another runtime that is used for JavaScript, TypeScript, and WebAssembly
Libraries/Frameworks *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..*	• jQuery is a minimalistic library that uses a similar syntax to CSS and is easy to learn. It supports multiple browsers and can be used for things like creating events and animations. • React.js is an open-source library that is useful for saving developers time by doing selective rendering. It's made by a Facebook engineer and used by the site. • Underscore.js is a utility library that provides functions used to manipulate objects, arrays, and other functions.

Domains *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.***	• Facebook uses JavaScript by making each interface collections of JavaScript apps that work together. As mentioned above, Facebook is heavily involved in the creation and usage of React. • Google uses JavaScript in many different products like its search engine, Gmail, Google Docs, and Chrome. Google has helped develop AngularJS and Node JS, a framework and runtime environment. • Microsoft used JavaScript to build its web browser Edge. The company has integrated Visual Studio support for Node and has developed its own version of the runtime environment.