**Language Map for JavaScript**

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| **Variable Declaration**  *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.* | JavaScript is a dynamically typed language.  var a = 7;  let b = "Hopefully JavaScript is fun.”;  const c = true;  var x;  let y;  const z; |
| **Data Types**  *List all of the data types (and ranges) supported by this language.* | Primitive   * String: Integer values representing UTF-16 code units * Number: -(2^53 - 1) to 2^53 - 1 (MIN\_SAFE\_INTEGER to MAX\_SAFE\_INTEGER)   + BigInt: Values only constrained by memory space * Boolean: true or false * Undefined: undefined (only undefined) = absence of value * Null: null (only possible value) = absence of an object * Symbol: immutable, a.k.a. “atoms” – can be used with Object property   Non-Primitive   * Object: referenced by identifier – the only mutable values; functions are objects   + Array: objects for which there’s a relationship b/w integer-keyed and length properties |
| **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.*** | If Statement  let x = 12;  if (x > 1) {  console.log('x is greater than 1');  }  If-Else Statement  let x = 12;  if (x > 1) {  console.log('x is greater than 1');  } else {  console.log('x is not greater than 1');  }  If-Else If-Else Statement  let x = 12;  if (x > 1) {  console.log('x is greater than 1');  } else if (x == 1) {  console.log('x is equal to 1');  } else {  console.log('x is less than 1');  }  Switch Statement  let residence = 'house';  switch (residence) {  case 'house':  console.log('They live in a house');  break;  case 'apartment':  console.log('They live in an apartment');  break;  default:  console.log('They live in a condo');  } |
| **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 < 7; i++) {  console.log(i);  }  While Loop  let i = 0;  while (i < 7) {  console.log(i);  i++;  }  Do-While Loop  let i = 0;  do {  console.log(i);  i++;  } while (i < 7);  For-In Loop  let thisObj = {a: 3, b: 2, c: 1};  for (let thisProp in thisObj) {  console.log(`${thisProp}: ${thisObj[thisProp]}`);  }  For-Of Loop  let thisArray = [3, 2, 1];  for (let value of thisArray) {  console.log(value);  } |
| **Arrays**  *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.)* | Integers  let thisArray = [1, 2, 3];  console.log(thisArray);  Floats  let thisArray = [1.8, 3.1, 5.9];  console.log(thisArray);  Strings  let thisArray = ['I', 'love', 'coding'];  console.log(thisArray); |
| **Data Structures**  *If this language provides a standard set of data structures, provide a list of the data structures and their Big-Oh complexity.* | Average Big-Oh complexity:  **Data** **Structure** Access Search Insertion Deletion  **Array** Θ(1) Θ(n) Θ(n) Θ(n)  **Queue** Θ(n) Θ(n) Θ(1) Θ(1)  **Stack** Θ(n) Θ(n) Θ(1) Θ(1)  **Linked List** Θ(n) Θ(n) Θ(1) Θ(1)  **Doubly Linked List** Θ(n) Θ(n) Θ(1) Θ(1)  **Skip List** Θ(log n) Θ(log n) Θ(log n) Θ(log n)  **Hash Table** N/A Θ(1) Θ(1) Θ(1)  **Binary Search Tree** Θ(log n) Θ(log n) Θ(log n) Θ(log n) |
| **Objects**  *If this language supports object-orientation, provide an example of how you would write a simple object with a default constructor and then how you would instantiate it.* | //Constructor  class myObject {  constructor() {  this.householdMembers = 3;  }//end default constructor  // Instantiating  let thisObject = new myObject(); |
| **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?* | JavaScript is executed in a JavaScript runtime environment, usually in an internet browser.  Node.js also compiles JavaScript, along with TypeScript, CoffeeScript, Elm, PureScript, and Scala.js. |
| **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..* | React.js (JS library): used for building UIs & handling the view layer in web/mobile applications.  Angular.js: used for building web apps that make easy-to-use components.  Vue.js (progressive framework): used for building UIs, focusing on on the view layer only for easy integration with other libraries. |
| **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.*** | JavaScript is used in every industry for web, mobile, and game development, and more.  Microsoft: used JavaScript to build Microsoft Edge (the web browser) – it also uses Node.js.  PayPal: uses JS for their website’s front end & uses Node.js.  Netflix: uses JS for almost everything, transitioning into their cloud service. The platform runs on Node.js. |