**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 dynamically typed, and has three declaring keywords: var, let, and const.  let x = 64;  const y = 7;  var f = “Plethora”; |
| **Data Types**  *List all of the data types (and ranges) supported by this language.* | Number – -2^1024 – 2^1024 -1  BigInt – represents arbitrary magnitudes outside of the range of the Number type  String – a combination of characters within a literal  Boolean - true or false  Symbol – non colliding identifiers for other variables  Undefined – variable has not been assigned a value  Null – only the value of null  Object – represents a grouping of data |
| **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.*** | This language has if structures, if else structures, switch case structures, and a conditional statement structure.  if(x==y){  }  if(x>=y){  g=true;  }  else{  g=false;  }  Switch(t){  case 1: x=1; break;  case 2: x=2; break;  .  .  .  default: x=null  }  (condition) ? x=true:x=false;  [depending on whether the statement is true or false the conditional operator chooses which set of statements to execute] |
| **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 loops:  for(i=0, i<5, i++){  console.log(‘i=’ + i);  }  While loops  while(x<5){  x++;  console.log(“you are still looping”);  }  DoWhile loops  do{  x++;  console.log(“you are still looping”);  }while(x>5); |
| **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.)* | const balls = [“basketball”,”baseball”,”tennis ball”];  const years = [];  years[0]=2000;  years[1]=2001;  etc. |
| **Data Structures**  *If this language provides a standard set of data structures, provide a list of the data structures and their Big-Oh complexity.* | Arrays- O(n) for search, instertion and deletion  Stacks – O(n) for search, O(1) for insertion deletion  Queues - O(n) for search, O(1) for insertion deletion  Linked Lists - O(n) for search, O(1) for insertion deletion  Trees - O(log(n)) for search, instertion and deletion |
| **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 = {fname:”Brian”, lName:”Johnston”, age:24};  or  const person = new Object();  person.fName = “Brian”;  etc. |
| **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?* | The Runtime environment for JavaScript is either the browser it is being used in or the Node.js runtime environment. Other languages that use Node.js are CoffeeScript, Dart, and others, but they are not directly supported, as they compile to JavaScript, which is the only language that Node.js supports natively. |
| **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..* | Some popular frameworks for Javascript are AngularJS, React.js, and VueJS.  AngularJS is supported by Google, and is a great baseline for beginners.  React.js is the library that Facebook supports, and was designed to give a better user experience, as well as helping to save time in development.  VueJS is typically used for lighter projects or projects that need to be done quickly. Since it uses HTML syntax, it is considered much easier to learn than other frameworks like Angular. |
| **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.*** | Most webpages use JavaScript to run their web applications that require more than just displaying information.  Facebook/Meta uses it to run their entire platform, as do some of the companies owned by Facebook, like PayPal.  Twitter has also used JavaScript but they use it to reduce loading speed.  Groupon has used JavaScript to increase their scalability. |