

HTML/CSS/Javascript Technical Questions

Why is indentation and spacing important? What benefit is there to ensuring it's consistent?

In HTML, the beginning and ending tags of an element on multiple lines should always be left-aligned for readability. You should be able to visually scan the page straight down to find its closing tag.

When do we indent? How many spaces should make up one indent?

When elements are nested within another element, they should be indented two spaces.

What is hypertext?

Another word for a link.

What is Markup language?

A system for adding distinct instructions for how text should be formatted. HTML is an example.

What does CLI stand for?

Command-line interface

How are the local .git repository, and the repository created on Github 'connected'? What is the difference between the local .git repository, and your Github repository?

In Git terms, local means located on the device that you are using, while a remote repository is located on Github's servers. They are connected through the initialization of the Git repository.

What does is a global configuration in the context of the CLI?

A configuration option that refers to every directory in every location of the device.

What is the difference between a div and a span?

The <div> and tag does nothing on their own. A <div> is just a place to add a class that is then applied to everything that is nested within it. A tag does the same thing, but for inline elements.

What is the Box model? How would you describe the 4 elements of the box model? (Margin, Border, Padding, and Content)?

A model that shows the properties of how the space around an element is assigned and manipulated with CSS. Margin and **padding** both refer to white space around text or an image. Margins are spaces between one object and its surrounding elements. Paddings are spaces inside the border between the border and the actual image or text.

Define Inheritance.

The process by which children elements share the properties of their parent elements.

What are the rules of specificity? How do they effect CSS selectors?

In the instance that two styles conflict, the style that is applied will be the most specific of the two. For example, a style for a paragraph tag would not be applied if there was a style for a link within a paragraph. The link within the paragraph reference is more specific than paragraph.

What is a media query and what are some of its benefits?

A block of CSS applied only when certain conditions about the size or type of screen/window a user is viewing our content with are true. (ie: CSS associated with a media query with a max-width of 500px would only apply its styles when the viewport width is below 500px).

What does the term viewport mean?

The tool a user is viewing content with. Usually a browser window on a computer, phone, or tablet.

What is a framework?

A foundation of pre-built tools, software, code, and other resources we can use to create a project more easily than if we created it from scratch.

What is an operator? Name 5 common types of operators.

An operator is a special character (or characters) that indicates an action to be performed. +, -, *, /, and %.

What is the % operator? How is the action it performs different than simply dividing?

The modulo returns the remainder of one number divided by another.

What is a string?

A data type that represents the exact text of whatever is enclosed in the quotes

What is an argument? How do you provide one to a method?

A method is an action run on a piece of data; you can think of it as a message you send to a piece of data, and the result is the response. Some methods take one or more arguments that provide the method with additional information to help it perform its action.

What is the difference between an assignment operator and a comparison operator?

An assignment operator changes the value of the variable on the left of the operator.

A comparison operator does not change any values, but returns a boolean (true or false) depending on whether the statement evaluates as true or false.

Name 4 common assignment operators and 4 common comparison operators.

Assignment Operators: =, +=, -=, and /=

Comparison Operators: ===, !==, >, and <=

What is the difference between the =, ==, ===, and !== operators?

= is an assignment operator, == compares similar but different data types, === is a strict comparison operator for similar data types, and !== is a comparison type that tells you if something is not equal.

How is the += operator different than the + operator?

The += operator is the same as saying $x = x + y$

What data type is NaN? What about Infinity?

NAN represents nothingness. Infinity is a type of number.

Define literal notation.

To create an object by typing in the literal characters that are used to identify these classes.

What are 5 common data types?

number, string, boolean, undefined, null

How do we tell what data type something is?

The typeof method.

What is a function? What is the difference between calling and returning a function?

A function is a block of code that performs an action and returns a result; optionally takes arguments. Executing a function on a thing is often referred to as calling a function. Once called, many functions will provide a result of some kind. This is known as returning, and the result is often referred to as a return value.

What is the difference between an argument and a parameter?

An argument is what you pass into a function or method; a parameter is a variable that's assigned to the argument.

What is a callback function?

A function passed as an argument to another function and executed at a particular time. One use of callback functions is that they are passed into event handlers to be executed at a future time.

What is an event handler? Give an example?

Event handler: an event handler "listens" to the element(s) to which it's attached and responds when a certain event is triggered. .click() is a click listener, which is a type of event handler that responds when an element to which it's attached is clicked.

What is the DOM? How do we interact with it?

The Document Object Model is your browser's interpretation of the HTML it reads. When JavaScript changes the page, it updates the DOM, not the HTML.

What is the difference between .prepend() and .before()? What about .append() and .after()?

The .prepend() method will insert the text of the argument it's given into to the top of as the first child of the . The .append() method will insert at the bottom as the last child of the . The .before() and .after() methods add the argument before or after the tag as siblings, rather than within it as children.

What is variable scope? Local scope? Global scope? Why does scope matter?

Variable scope is a specific variable's "scope", which refers to where it's accessible and available for use. Local scope is the variable scope of local variables which are declared within a function. Variables with local scope only exist and are available during the execution of the function in which they are defined. Global scope is the variable scope of global variables which are declared outside of a function, allowing all functions the ability to access and use them.

What condition does the following line of code check for? if (blue === true && red === false || purple === true)?

It checks to see if something is blue, but not red, and or just purple.

What is an array and what are 4 common array methods?

A list of things grouped together. .pop(), .push(), .join(), .concat(), .reverse()...

What is a pointer? When might we see one when working with JavaScript arrays?

A reference to an object in memory but not the object itself; for example, a variable that is set to an array does not contain the array itself but rather a pointer to the saved array.

How can we use bracket notation to isolate a single element in an array? What does this notation look like?

```
array = ["thing1", 4, true]
```

```
Array[0] = "thing1"
```

Why is DRY code important? What does DRY stand for?

DRY stands for "Don't repeat yourself!" and refers to code that is well-refactored and efficient, instead of redundant. DRY code has many benefits, including being easier for other developers to pick up, being easier to maintain and update, and easier to debug when issues occur.

What is the difference between forEach() and map(). When might you use one over another?

The important difference between them is that `map` accumulates all of the results into an array, whereas `foreach` returns nothing. `map` is usually used when you want to transform a collection of elements with a function, whereas `foreach` simply executes an action for each element.

What is the initialization parameter, condition parameter, and final expression parameter doing within a for loop?

The initialization parameter initializes a variable with the denoted value. This only happens once, when the loop is first triggered. The condition parameter tells the loop under what conditions to continue running the loop. As long as the condition is true, the loop will continue running. And, the final expression parameter changes the initial value in some way, often by incrementing or decrementing it.

What is BDD and why do we use it?

Rather than thinking about the code first, Behavior-Driven Development gets us to focus on the behaviors that we want to see in our final application. We identify what the program should do before determining how to make it do it.

What are specification tests and why is it important to write them?

Specifications or Specs: Examples of small, isolated behaviors a program should demonstrate, including input and output examples.

What is an object? What is a key-value pair?

A structure for storing data that is comprised of properties including a key which names the property and a value which assigns the value to the key.

What is a prototype? How does it differ from a constructor?

Prototypes store methods to be shared by all objects of the same type. (`String.prototype` is shared by all `String` objects; `Dog.prototype` is shared by all `Dog` objects.) Prototypes store methods that objects of that type inherit, while constructors are more like a blueprint for creating many of the same type objects.

What is an asset pipeline?

A mechanism for efficiently preparing all of your "assets" (HTML, CSS, JS files) for the browser. It takes multiple files and combines them into one file.

What is a runtime environment?

Runtime environment: A collection of software and hardware resources that enable a program to be executed.

What is a flat file?

A flat file is a plain text file with no styling added.

What is a Gulp?

A JavaScript package that automates development tasks such as running browserify or concatenating JavaScript files.

Why is it important to keep automatically-generated production files in a separate build folder, away from development files?

Because it is untidy.

What is a globbing pattern and why would you use it?

Using wildcard characters (such as *) to specify sets of filenames.

For example, we can tell the gulp-concat package to concatenate and browserify all files inside of our js folder that end in the string -interface.js.

```
gulp.task('concatInterface', function() {  
  return gulp.src(['./js/*-interface.js'])  
    .pipe(concat('allConcat.js'))  
    .pipe(gulp.dest('./tmp'));  
});
```

Define minification.

The process of removing all unnecessary characters in JS files to optimize JavaScript execution.

What is the difference between a production and a development environment?

The production environment is live for end users. While the development environment is where code is built.

What is a linter?

A tool that analyzes your code and warns you about parts that don't follow stylistic conventions or could cause bugs in the future.

What does it mean to deploy a project?

Moving a project's files to a web server for use.

What is the difference between Karma and Jasmine? What benefits does Karma provide?

Why is unit testing important?

Karma is a popular test-runner that can be used with many different testing frameworks, including Jasmine, Mocha, and other testing libraries. Karma allows us to run our tests continuously. Each time we save our code, our tests will update, which allows us to quickly pinpoint bugs. Karma executes our application's source code in the browser and then runs it against our test code. We can use this functionality to check if our code is compatible with different browsers. We can also use plugins to extend the functionality of Karma. This allows us to create a highly-customized testing environment that has all the tools we need.

What is the difference between synchronous and asynchronous code?

Synchronous means the code runs right now. Asynchronous means the code will run later. Asynchrony is a cornerstone of JavaScript development. Sometimes we need to implement it in our applications, such as when we make API calls. Sometimes we'll choose to implement it. If a sync function takes a long time to process, for example, it will freeze up our application, so it would be better to make it async and concurrent.

What does it mean for JavaScript to be single-threaded?

JavaScript is single-threaded and non-blocking. Single-threaded means JavaScript can only do one thing at a time. Non-blocking means the JS engine won't necessarily wait until that thing is finished (if it's async code) before moving on to the next thing.

What is concurrency?

Concurrency is the process of interweaving many tasks, doing a little of one and then a little of another, engaging in this process so quickly that it appears as if these tasks are occurring simultaneously.

What is the difference between setInterval() and setTimeout()?

These functions are perfect (and simple) examples of async code. setTimeout() calls a piece of code once, after a set duration of time. setInterval() calls a piece of code multiple times, with a specific interval of time between each call.

What is an exception? Give an example of an exception in a JavaScript application and how would we handle an exception?

An exception is an unusual problem that arises in your code. Exceptions should handle unexpected errors in our code, not anticipated errors like a payBalance() function accidentally charging our customers twice.

What's the purpose of a JavaScript promise? Describe an instance in which you'd use one.

A promise allows us to wrap async code and then wait for the result of that code before moving on. Promises make it much easier to chain together async functions and read and reason about our code. It also keeps us out of callback hell.

Is TypeScript JavaScript? What are the benefits of using TypeScript over JavaScript?

A superset of JavaScript that compiles to plain JavaScript which runs in any browser.

What does it mean when something is a compiled language?

A language which when written is then compiled into a different form when run. For example, TypeScript is written in ES6 and compiles to JavaScript version 5.

What does optional typing allow you to do in TypeScript? How does it differ from a loosely typed language?

A feature of TypeScript that allows the developer to declare the data type of a variable.

What is a Modifier or Access-Level Modifier?

The term private, public or protected that sometimes precede a variable declaration in TypeScript. These control how much of the application is permitted to access certain variables. We'll declare everything public for now.

What does it mean to run something client-side? How does it differ from server-side?

The actions that must occur to run an application are handled primarily by the client instead of the server. Server-Side is where the client's request to view a page triggers the execution of a script that runs on the server to generate dynamic HTML. This HTML is then sent to the client browser.

What is the MVC pattern? Define all 3 elements of an MVC.

The Model-View-Controller pattern is a type of design followed by many frameworks (including Angular) in which application, and all interactions are managed by models, views, and controllers.

Model: Represents data, and how the data is defined. Most applications require some sort of data.

View: The portion of an application the user sees, or views. It represents the user interface of the application.

Controller: Handles input from the user such as clicks or browser events. It is responsible for updating the model when necessary.

In terms of an MVC, what is a component? How do you decide what content should reside in a component, versus what content should reside in a template?

A component is a small, reusable package of both front and back-end code that works together. That means components handle both rendering front-end pieces of user interface and any back-end logic required to make those front-end elements interactive.

What is a Polyfill?

Code that implements a feature on web browsers that don't technically support that feature. This code compensates for any issues older browsers may experience while running an application.

What is two-way binding, and when should it be utilized?