

Introduction	
Tell us a bit about yourself	My name is Himmat Chawla, I'm a student at BCIT. I speak English, Punjabi, Hindi, and understand some French. I enjoy technology, travel, and music production. I am familiar with HTML, CSS, JavaScript, Python, and Java. I want to strengthen my knowledge of JavaScript to become a stronger web developer.
What is the difference between absolute path and relative path? Could you provide examples?	<p>An absolute path is the file full path from the file system root to the target file/directory. For example, C:/Users/Name/Documents/Website/file.html.</p> <p>A relative path is based on the current directory. For example, if you are in the Documents folder, and you want to access C:/Users/User/Documents/Website/file.html, your relative file path is Web/file.html</p>
What is path translation of a web server?	Path translation is how the web server maps URL path to a resource on the server. For static requests the path is translated into a local file path, and for dynamic requests the path translation can point to an internal or external resource.
What are the sequences of steps for each HTTP request from a client to the server?	<ul style="list-style-type: none"> - Get IP address from local cache or DNS server - Request full URL from browser - Read + parse Http request message (get resource) - Translate URL to file name - Determine if request is allowed - Generate and transmit response to show status info
What is Web Stack? LEMP vs. LAMP	<ul style="list-style-type: none"> - Web stack: collection of software used for web development (OS, programming language, DB, web server) to make frontend, backend, and database layers - LAMP stack - Linux OS, Apache server, MySQL, PHP - LEMP stack - Linux OS, Nginx, MySQL, PHP
What is the JavaScript console used for?	Developer Tools Console can display error messages, console logs for developer (not user), and other useful information
Internal vs. External vs. Embedded JavaScript	<p>Internal (Inline) Javascript - written inside HTML tag as attribute (not recommended)</p> <p>External Javascript - written in separate .js file, loaded to HTML page with src tag</p> <p>Embedded Javascript - written in HTML head or body tags using <script> tag.</p>
Async vs defer	<p>Defer attribute for script tag - load script as soon as possible, while parsing HTML, but execute only after full DOM is loaded</p> <p>Async attribute for script tag - load script as soon as possible, but unlike defer attribute, it does not wait for DOM to finish loading to get executed</p>

Variables, Constants, Operators, and Decisions	
What is a variable?	Variable - container to store data values
Let vs const vs var	Let - variable will only be accessible within the block Var - variable can be function or global scoped, and can be updated and redeclared into scope Const - block level only and cannot be updated (constant)
local variable vs global variable	Local variable - declared inside function/block and only accessible within that scope Global variable - declared outside function and accessible anywhere within code
What is operator precedence in JavaScript?	Similar to order of operations in math. Which operator will be processed first in a single line? Generally the rules of left-to-right BE(DM)(AS)/PE(MD)(AS) are followed, with shifts and comparison operators coming after that.
What is the difference between for and while loops in JavaScript?	For loop - iterates while condition is satisfied. Built-in initializer, condition statement, and incrementer. While loop - executes while condition is true
What is the difference between == and === operators in JavaScript?	== - equal to === - equal to and same data type
How does a do...while loop differ from a while loop?	Do...while loop runs at least one time guaranteed no matter what, but a while loop will not run at all if condition is not satisfied.
How do break and continue statements work in loops?	Break - ends/stops loop fully Continue - skips current iteration, moves on to next
What is the difference between null and undefined?	Null - assignment that represents no value, absence of object (manual) Undefined - variable declared but no value yet (automatic)

String and Array	
How do you declare an array in JavaScript?	const words = ["hi", "hello"] OR const words = new Array("hi", "hello")
shift vs. unshift and pop vs. push vs. splice	Array methods Shift - remove first element from array + return removed Unshift - add one or more element to beginning of array + return added Pop - remove last element from array Push - add element to end of array Splice - follow format of splice(start, deleteCount, newItem1, newItem2)

How do you remove a specific element from an array by value?	Get index of element using <code>.indexOf()</code> , then use <code>splice(index, 1)</code>
How do you check if a variable is an array? Example?	Use <code>Array.isArray(variable)</code> method. <code>const words = ["hi", "hello"]</code> <code>console.log(Array.isArray(words))</code> <- boolean return
How do you combine elements of an array into a single string with a specified separator?	<code>.join(separator)</code> method <code>const words = ["hi", "hello"]</code> <code>let joinedWords = words.join(", ")</code> <- return: hi, hello
How do you find the smallest number in an array? Do not use the builtin method.	You can use a for loop to iterate <code>let numbers = [9,6,5,3]</code> <code>let min = numbers[0]</code> <code>for (let i=0; i < numbers.length; i++){</code> <code>if (numbers[i] < min {</code> <code>min = numbers[i]</code> <code>}}</code>

Functions/Anonymous Function	
What is a JavaScript function?	Reusable block of code that performs a specific task. They can take inputs in the form of parameters and return an output if needed. You can define them and then invoke/call them as needed.
How do you declare a function in JavaScript?	<code>function sayHelloToName(name) {</code> <code>console.log("Hello" + name);</code> <code>}</code>
Difference between Anonymous and Named functions in JavaScript	Anonymous functions - have no name/identifier. Can only be called after definition. Are not hoisted. Named functions - have a name. Can be called before definition. Are hoisted.
What is the <code>this</code> keyword in functions?	This keyword refers to the object that is executing the function at the moment.
How does the <code>new</code> keyword affect function invocation?	New keyword creates a new object from a class.
What is hoisting in JavaScript?	Calling a function before it is defined (since it is already in memory). Not available for anonymous functions.
What are the different types of errors in JavaScript?	Syntax error - the code has wrong structure Reference error - if a variable that doesn't exist is used Range error - a number is out of the range Type error - the expected data type and the provided data type do not

	match.
What is a callback function in JavaScript?	A function that is passed as a parameter to another function.

Object Oriented Programming	
What is the difference between an array and an object in JavaScript?	An array is an ordered list of items, while an object is an instance of a more complex entity. Objects represent things of a type.
What is Object-Oriented Programming (OOP)?	A programming paradigm that uses objects as instances of complex identities (classes). Objects are building blocks of programs and interact with each other. It is the most commonly accepted paradigm and promotes code organization, encapsulation, modularization, and clean design.
How do you create an object in JavaScript using a constructor function?	<pre>function Car(make, model) { this.make = make; this.model = model; } const myCar = new Car("Honda", "Civic");</pre>
What is a class in JavaScript?	A class is a "blueprint" to make an object. The class stores data and methods/logic that all of its objects use.
What is inheritance in JavaScript OOP?	When a child class extends (inherits) a parent class, all of the parent's parameters and methods are available to the child class too. For example, a Dog is an Animal, so a Dog can do everything the general Animal can. Or, an AdminUser is still a type of User, so it should be able to do regular User things like login() and sendMessage(), but it should have its own extra methods like deleteOtherUser() as well.
What is encapsulation in JavaScript OOP?	Keeping properties and methods private inside the class so that they aren't accessible from outside the class, except as needed for API.
What is polymorphism in JavaScript OOP?	A child class can overwrite/override a method that it inherited from a parent class
What is the prototype chain in JavaScript?	Child classes inherit parent class properties and methods and can use them. When a specific property or method is used JavaScript will first search the current class for it, then its parent class, then its parent class, and so on until it finds it or reaches null.

DOM, Events and Event Handlers	
What are the different events in JavaScript?	Event - action or occurrence that happens in the browser that can be detected/responded to by code HTML events - e.g. HTML page finishes loading, input field is changed, button was clicked
What are the different ways to access an HTML element in JavaScript?	getElementById() - get by HTML ID attribute getElementsByName() - get elements by specific value of class attribute getElementsByTagName() - get elements by specific tag name querySelector() - use CSS selector and return first matching element querySelectorAll() - use CSS selector and return first all elements
What is the DOM in JavaScript?	DOM is a programming interface for web documents such as HTML. Can be manipulated by JavaScript. Represented as a tree of nodes such as the document, HTML elements, text within elements, and HTML attributes.
innerText vs. innerHTML vs. textContent?	innerText - returns visible text of element (respecting CSS display styles) textContent - returns all text within element (regardless of visibility) innerHTML - returns all HTML within a tag (including child tags)
How do you set the href attribute of an anchor tag?	document.getElementById("link-tag").href = " www.google.com ";
Node list vs Array	NodeList - collection of DOM nodes specifically, e.g. by using querySelectorAll() Arrays - generic list of many kinds of datatypes, with a lot of methods available

jQuery	
What is jQuery?	jQuery is a Javascript library that offers a simple way to complete javascript tasks. JQuery is useful for selecting elements, performing tasks, and handling events.
What is the \$ symbol in jQuery?	The \$ symbol is the jQuery function which allows you to select elements and perform tasks on them. The usual syntax is \$(selector).action()
How do you get the HTML content of an element using jQuery?	let htmlContent = \$("#element").html();
What is the difference between \$(document).ready() and \$(window).on('load')?	\$(document).ready() runs as soon as the DOM is fully loaded, while \$(window).on("load") waits for the entire page to load before executing (including CSS, images, etc). The ready() method is faster.

How do you bind multiple events to a single handler using jQuery?	You can use the on() method to bind multiple events to a single handler with the syntax: <code>\$("#myId").on("mouseenter mouseleave", function() { \$(this).toggleClass("myClass"); })</code>
How do you get the position of an element relative to the document using jQuery?	When you create a new variable with the offset() method as: <code>let position = \$("#myElement").offset();</code> , then you can use <code>position.top</code> and <code>position.left</code> etc, to return the objects with the top/left properties.

Animations	
What is the purpose of the setTimeout() function in JavaScript?	setTimeout() is a method that runs once only, and calls a function after a specified number of milliseconds.
What is the difference between setInterval() and setTimeout() for animations?	setTimeout() only runs once, while setInterval() can run a function repeatedly and specified intervals
How can you use requestAnimationFrame() to create a smooth animation loop?	requestAnimationFrame() repeatedly calls a function that updates the frame
How can you use the transform property to create animations in CSS? Example	The CSS transform property is used to rotate, translate, or skew elements. It can be animated using the CSS transition property. Use the transform on a pseudo-class selector and the transition on the regular selector to create the animation.
Why is requestAnimationFrame() better than setInterval() or setTimeout()?	requestAnimationFrame() only repaints when the browser is ready, meaning that requestAnimationFrame() is much more smooth than setTimeout() and setInterval(). requestAnimationFrame() usually runs at around 60 frames per second.
When should we use JavaScript vs. CSS for animations?	CSS animations are best for simple transitions (hovering, fading, etc). However, when there is more user input involved and the animation needs better logic and control, using Javascript is best practice.

Web Server and Fetch Data from an API	
What is the purpose of the fetch() function in JavaScript?	fetch() allows the webpage to request for data asynchronously while the user interacts with the page, and updates the webpage as needed. fetch() can read data from external resources as well.

What is the difference between a web server and an application server?	A web server handles the presentation layer of the website (HTML,CSS,JS). Examples include Apache and Nginx. An application server handles backend logic, processes, delivers content, and communicates with the database. Examples include JBOSS and Glassfish.
What is SSL/TLS and why is it important for web servers?	SSL and TSL are protocols to encrypt data when it is transferred between the server and the browser, providing a https webpage instead of the unsecured http. TLS is the newer and more secure version of SSL. SSL - Secure Sockets Layer TLS - Transport Layer Security
What is CI/CD?	CI - Continuous Integration. Developers will frequently send code to the repository where it is tested automatically. CD - Continuous Delivery. The tested and functional code is automatically released. CI/CD allows for safe and frequent deployment of code.
POST vs. GET	POST is used to send data to a server. An example would be form data that is completed by the user and sent for submission. GET is used to retrieve data from the server. GET is less secure since the parameters can be included publicly in the URL. They are both HTTP protocol methods for communication between server side and client side.

SASS, Git/GitHub	
What is SASS? What is a SASS variable and how do you define one?	SASS stands for Syntactically Awesome Style Sheets and is a preprocessor and scripting language for CSS. SASS is compiled into CSS at the time of delivery. SASS variables are written in the following syntax: \$variablename: value;
What is a SASS mixin and how do you define one?	When you define a SASS mixin (@mixin mixin-name) and give it style, you can reuse all that style inside another selector by including @include mixin-name as a property, and all the styles from the mixin will be available.
What are SASS functions and how are they different from mixins?	Functions (defined using @function) are used to return (@return) calculations, not for reusing style across your sheet (as mixins do).
What is the purpose of the @import directive in SASS?	SASS' @import allows you to import styles, variables, etc from another file, making your code base more manageable and maintainable
Git vs GitHub	Git is a version control tracking system that exists locally on your device. It tracks changes made to files and handles branches effectively. You can modify files, stage them with gate, and commit the changes into a Git repository. Github is an online service that hosts Git repositories and

	adds collaboration functionality to repositories. Git is used locally, while Github leverages Git to store the Git functionality online.
How do you discard uncommitted changes in a file?	With Git, you can use the “git reset HEAD -- filename” command to unstage the file and “git checkout -- filename” to undo your changes.