**ORAL QUESTIONS:**

**1. JSON Data Types**

JSON supports the following basic data types:

- String: Enclosed in double quotes, e.g., "Hello, World!".

- Number: Integer or floating point, e.g., 10, 20.5.

- Boolean: true or false.

- Null: Represents a null value, null.

- Array: An ordered list of values, e.g., [1, "two", true].

- Object: An unordered collection of key-value pairs, e.g., {"firstName": "John", "lastName": "Doe"}.

**Example:**

json

{

"name": "John Doe",

"age": 30,

"isStudent": false,

"courses": ["Math", "Science"],

"address": {

"street": "123 Main St",

"city": "Anytown"

}

}

**2. Difference between HTML and HTML5**

HTML5 introduces a set of enhancements and new features compared to its predecessors:

- New Semantic Elements: such as <header>, <footer>, <article>, <section>, and <nav> for better document structure.

- Form Controls: New form types for date, time, email, url, and more.

- Graphics: <canvas> for drawing, and <svg> for scalable vector graphics.

- Media Elements: <audio> and <video> tags for embedding sound and video without third-party plugins.

- Web Storage: More powerful than cookies, including local storage and session storage.

- WebSockets: Enables communication over a single long-held connection.

- Geolocation: Allows the user to provide their location to web applications.

**Example of HTML vs HTML5:**

- HTML: <div id="header"></div>

- HTML5: <header></header>

**3. Regex for Email**

A regular expression to validate an email address might look like this:

regex

^[a-zA-Z0-9.\_%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}$

This ensures the email starts with alphanumeric characters (including .\_%+-), followed by an @ symbol, then more alphanumeric characters, a period, and a 2+ character domain suffix.

**4. What is DOM**

The Document Object Model (DOM) is a programming interface for web documents. It represents the page so that scripts can change the document structure, style, and content. The DOM represents the document as nodes and objects; that way, programming languages can interact with the page.

**Example of using the DOM:**

javascript

document.getElementById("demo").innerHTML = "Hello, World!";

This JavaScript finds an HTML element with the ID demo and changes its content to "Hello, World!".

**5. Web Accessibility**

Ensuring web accessibility means making sure that websites are usable by people of all abilities and disabilities. This practice benefits individuals, businesses, and society. Important accessibility features include:

- Text Alternatives: Provide alt texts for images.

- Keyboard Access: Ensure all functions can be performed via a keyboard.

- Aria Roles: Use ARIA roles to help with screen readers.

**Example of an accessible image:**

html

<img src="logo.png" alt="Company Logo">

**6. What is XML**

XML (Extensible Markup Language) is designed to store and transport data. It is both human-readable and machine-readable. Its design goals emphasize simplicity, generality, and usability across the Internet.

**Example of an XML document:**

xml

<note>

<to>User</to>

<from>Admin</from>

<heading>Reminder</heading>

<body>Don't forget the meeting at 10am.</body>

</note>

**7. How is XSLT Used**

XSLT (Extensible Stylesheet Language Transformations) is used to transform XML documents into other formats like HTML, text, or other XML documents. It is commonly used for document transformation and presentation.

**Example of an XSLT stylesheet:**

xml

<xsl:stylesheet version="1.0"

xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

<xsl:template match="/">

<html>

<body>

<h2>My CD Collection</h2>

<table border="1">

<tr bgcolor="#9acd32">

<th>Title</th>

<th>Artist</th>

</tr>

<xsl:for-each select="catalog/cd">

<tr>

<td><xsl:value-of select="title"/></td>

<td><xsl:value-of select="artist"/></td>

</tr>

</xsl:for-each>

</table>

</body>

</html>

</xsl:template>

</xsl:stylesheet>

This XSLT transforms an XML document containing a catalog of CDs into an HTML table.

**8. What is XSLT**

As previously explained, XSLT is a language for transforming XML documents into other document types, which makes it an invaluable tool for rendering XML data in user-friendly formats like HTML or for converting XML data into a format better suited for another application.

**9. What is ES6**

ECMAScript 2015, also known as ES6, brought significant changes and improvements to JavaScript, making it more powerful and easier to use:

- Let & Const: More robust ways of declaring variables.

- Arrow Functions: Shorter syntax for writing functions.

- Template Literals: Enhanced string literals that allow embedded expressions.

- Destructuring: Easier way to extract data from arrays and objects.

**Example using ES6 features:**

javascript

const greet = (name) => Hello, ${name}!;

console.log(greet("Alice")); // Outputs: Hello, Alice!

**10. Regex for Password**

A regex to validate a password (minimum eight characters, at least one uppercase letter, one lowercase letter, and one number):

regex

^(?=.\*[a-z])(?=.\*[A-Z])(?=.\*\d)[a-zA-Z\d]{8,}$

Let's continue with the detailed explanations, examples, and in some cases, code snippets for the remaining oral questions:

**11. Difference Between JSON and CBOR**

JSON (JavaScript Object Notation) and CBOR (Concise Binary Object Representation) are both data formats used for data serialization. JSON is text-based, highly readable, and widely used in web applications. CBOR is binary and more efficient in size, which makes it suitable for applications where performance and bandwidth are critical.

- JSON Example: {"name": "John", "age": 30}

- CBOR: This format would encode data similarly to JSON but in a binary form, which isn't human-readable like JSON.

**12. JSON for Array**

A JSON array is an ordered list of values. Arrays in JSON are versatile and can contain objects, strings, numbers, etc.

- Example: ["Red", "Green", "Blue"]

**13. Basics of React**

React is a JavaScript library for building user interfaces, primarily for web applications. It allows developers to create reusable UI components. React uses a virtual DOM to optimize updates to the real DOM, improving performance.

- Example:

javascript

function Hello() {

return <h1>Hello, world!</h1>;

}

**14. Basics of CSS**

CSS (Cascading Style Sheets) is used to style and layout HTML elements on a web page. It controls colors, fonts, positions, and more.

- Example:

css

body {

font-family: Arial, sans-serif;

color: navy;

}

h1 {

color: red;

}

**15. Why Do We Need Validation**

Validation is essential in both client-side and server-side programming to ensure that data entered by users is correct and useful. It prevents malformed, malicious, or inappropriate data from entering the system.

- Example: Checking an email input field to ensure it contains a valid email format before submission.

**16. Validation for Email Using HTML**

HTML5 provides a simple way to validate email addresses using the type="email" attribute in an input element, which automatically checks for a valid email format.

**- Example:**

html

<input type="email" name="email" required>

**17. Full Form of CBOR**

CBOR stands for Concise Binary Object Representation. It's designed to efficiently encode data in a machine-readable way that is more compact than JSON.

**18. Advanced CSS Attributes**

Advanced CSS attributes enable sophisticated styling and effects:

- transform: Allows rotation, scaling, and moving elements.

- transition: Facilitates smooth changes from one CSS style configuration to another.

- animation: Lets elements gradually change from one style to another.

**- Example:**

css

div {

transition: all 0.3s ease;

animation: slidein 3s ease;

}

**19. What is Parse**

Parsing is the process of analyzing a string of characters or a text and breaking it into tokens to determine its grammatical structure. It is commonly used in converting strings in a specific format (like JSON or XML) into a data structure in a programming language.

**- Example:**

javascript

const obj = JSON.parse('{"name":"John", "age":30}');

**20. JSON Functions**

JSON offers functions like parse() to convert JSON strings into JavaScript objects and stringify() to convert JavaScript objects back into JSON strings.

**- Example:**

javascript

const jsonStr = JSON.stringify({name: "John", age: 30});

**21. Advantages of React**

- Modularity: React's component-based architecture makes development organized and reusable.

- Performance: Virtual DOM minimizes direct manipulations of the DOM, which speeds up the process.

- Ecosystem: Strong community, vast libraries, and regular updates.

- Flexibility: Works well with other frameworks and libraries.

22. What is DOM (As previously explained in detail)

**23. What is XML Parsing**

XML parsing refers to the process of converting XML document data into an accessible format suitable for programming operations. Parsers traverse the XML file and convert its data into a structured format.

- Example: Using DOMParser in JavaScript to parse XML:

javascript

var parser = new DOMParser();

var xmlDoc = parser.parseFromString(xmlString, "text/xml");

**24. Different Ways to Implement JSON**

JSON can be implemented in various ways depending on the requirement, such as:

- Storing Data: Use JSON to store data in databases or in client-side storage like localStorage.

- APIs: Transmit data between a server and a client.

- Configuration Files: Store configuration settings.

**25. Difference Between div and Class in CSS**

- <div>: An HTML tag used to define a division or a section in an HTML document. It is used to group block-elements to format them with CSS.

- class: An attribute used within HTML tags to apply specific CSS rules set under that class.

- Example:

html

<div class="header">

Hello World!

</div>

26. What are Semantic Elements

Semantic elements clearly describe their meaning in both the human-readable source code and to the browser. Examples include <article>, <aside>, <details>, <figcaption>, <figure>, <footer>, <header>, <main>, <mark>, <nav>, <section>, <summary>, and <time>.

27. Is JavaScript Frontend or Backend

JavaScript was originally designed as a frontend language but has become versatile. With Node.js, JavaScript is extensively used on the backend as well.

28. Explain CSS Box Model

The CSS Box Model is a box that wraps around every HTML element. It includes margins, borders, padding, and the actual content. The model allows us to place a border around elements and space elements in relation to other elements.

- Illustration:

plaintext

+-------------------------+

| Margin |

| +-------------------+ |

| | Border | |

| | +-----------+ | |

| | | Padding | | |

| | | +-------+ | | |

| | | | Content| | | |

| | | +-------+ | | |

| | +-----------+ | |

| +-------------------+ |

+-------------------------+

29. Name JSON Data Types (As previously detailed)

30. Function of border-radius

The border-radius CSS property defines the radius of an element's corners. This property allows you to create rounded corners on elements.

- Example:

css

div {

border-radius: 10px;

}

31. What is Web Accessibility? (As previously detailed)

32. Examples of Markup Languages

Examples include HTML (HyperText Markup Language), XML (Extensible Markup Language), and XHTML (Extensible HyperText Markup Language).

33. Why is HTML Called a Hypertext Language?

HTML is termed "hypertext" because it allows the creation of hyperlinks, which are links from one page to another. Through these links, users can easily navigate between pages on the internet.

34. Why is HTML Called a Markup Language?

HTML stands for HyperText Markup Language. It is called a markup language because it uses various tags to define elements within a web page. These tags tell the web browser how to display the content.

35. What is Event Handling?

Event handling in programming refers to the mechanism that responds to events like mouse clicks, key presses, or touch gestures. In web development, JavaScript provides event handlers that execute code in response to events triggered by the user or other sources.

- Example:

javascript

document.getElementById("myButton").addEventListener("click", function() {

alert("Button clicked!");

});

36. Inline CSS Color Property

If an incorrect value like 'rde' is input instead of 'red', the browser will default to its initial color setting because 'rde' is not recognized as a valid color.

37. Padding in CSS

Negative values for padding are invalid in CSS. If a negative value like -5px is given, it will be ignored, and the padding will default to 0 or revert to another specified value.

38. Code to Display Table

To display a simple table using HTML:

html

<table border="1">

<tr>

<th>Name</th>

<th>Age</th>

</tr>

<tr>

<td>John</td>

<td>30</td>

</tr>

</table>

39. What are Semantic Elements (As previously detailed)

40. How is Section Tag Different from Div and P Tag

- <section>: Represents a thematic grouping of content, typically with a heading.

- <div>: A generic container with no semantic meaning, used for styling purposes or as a layout tool.

- <p>: Represents a paragraph.

41. Why is Aside Tag Used

The <aside> element is

used to mark up content that is related to the surrounding content but can be considered separate or tangential. It often appears as a sidebar.

42. JSON Objects

A JSON object is an unordered set of name/value pairs enclosed in curly braces. Each property of an object can hold values of any data type.

- Example:

json

{

"name": "John",

"age": 30,

"isStudent": false

}

43. HTML Scroll Behavior

The scroll-behavior CSS property specifies whether to smoothly animate the scroll position, rather than a straight jump, in response to user navigation. Example:

css

html {

scroll-behavior: smooth;

}

44. Can You Make a Div Inside a Div?

Yes, HTML allows nesting of <div> elements. This is commonly used for layout and styling purposes.

- Example:

html

<div>

<div>This is a nested div</div>

</div>

45. How to Add Two Numbers in JS

You can use JavaScript to perform arithmetic operations like addition.

- Example:

javascript

let sum = 3 + 5; // sum is 8

console.log(sum);

46. Why Do We Use "Controls" in Audio Tag

The controls attribute in the <audio> tag adds the user interface elements like play, pause, and volume controls directly in the browser, allowing the user to control playback.

47. Use of JSON

JSON is primarily used for storing and exchanging data between a server and a web client (browser). It is lightweight and easy to parse, making it ideal for network transmissions.

48. What is DOM and Its Use (As previously detailed)

49. Difference Between Span, Div, and Section

- <span>: An inline container used for text-level semantics and is used for applying styles to inline elements without causing a line break.

- <div>: A block-level element used for grouping larger chunks of code or styling larger sections.

- <section>: A semantic element that represents a standalone section within the document, used for organizing thematically related content.