Let's dive right in:

1. **What is HTML? Differences between HTML & HTML5? Advantages of HTML5?** HTML stands for HyperText Markup Language and is used to create web pages. HTML5 is the latest version , offering new elements like <video>, <audio>, and <canvas>. It improves performance, supp orts multimedia without plugins, and provides better error handling.
2. **What is the difference between HTML and XHTML?** HTML is forgiving with errors, while XHT ML (Extensible HyperText Markup Language) is stricter and must be well-formed XML.
3. **What is the role of DOCTYPE in HTML?** It tells the browser which version of HTML you're usi ng, ensuring the page is rendered correctly.
4. **Difference between Head & Body in HTML? Where to place JS link reference?** The <head> c ontains metadata, like the title and links to stylesheets. The <body> contains the content disp layed to users. Place JS link references just before the closing </body> tag for better loading performance.
5. **What is Title Tag in HTML?** The <title> tag sets the title of the web page, shown in the brows er tab.
6. **What are different HTML heading tags?** They range from <h1> to <h6>, with <h1> being the most important and <h6> the least.
7. **What are Meta Tags?** These provide metadata about the HTML document, like author, descri ption, and keywords. They're placed in the <head>.
8. **What are HTML Elements? What is the difference between Element & Tag?** An element co mprises a start tag, content, and an end tag, while a tag is just the start or end part. Example: Paragraph is an element; is a tag.
9. **What are the roles and uses of the** **element in HTML?** is a block-level container used to group elements for styling or layout purposes.
10. **What is the difference between** **and** **element?** is block-level, used for large sections; is inline, used for small sections within text.
11. **What is the use of** <label> **Tag?** It associates a text label with an input element, improving ac cessibility.
12. **What is the role of** <a>**,**
, <hr>**,** **,** <img>**,** <input>**, &** <button> **elements?**
    - <a>: Creates hyperlinks.
    -
: Inserts a line break.
    - <hr>: Creates a horizontal rule.
    - : Emphasizes text.
    - <img>: Displays images.
    - <input>: Creates input controls.
    - <button>: Creates a clickable button.
13. **What is the role of** <header>**,** <main>**,** <section>**,** <footer>**, &** <address> **elements in HTML?**

- <header>: Contains introductory content or navigation links.
- <main>: Denotes the main content of the document.
- <section>: Groups related content.
- <footer>: Contains footer information.
- <address>: Provides contact information.

14. **What are Root, Parent, Child, & Nested elements?**
    - Root: The top-level element (usually <html>).
    - Parent: An element that contains another element.
    - Child: An element contained within a parent.
    - Nested: An element within another element.
15. **What are Empty Elements?** Elements that don't have content and are self-closing, like <img> and
.
16. **What are Semantic Elements in HTML?** Elements that convey meaning about their content, like <article>, <nav>, and <footer>.
17. **Can HTML tags be written in Uppercase?** Yes, but lowercase is recommended for consistency and readability.
18. **What are the 3 differences between Block-Level & Inline Elements?**
    - Block-level elements start on a new line; inline elements do not.
    - Block-level elements can contain other blocks and inlines; inline elements typically contain text or other inline elements.
    - Block-level elements take up the full width; inline elements take up only as much width as necessary.
19. **List all Block-Level & Inline Elements in HTML.**
    - Block-level: , <h1> to <h6>, <p>, <ul>, <ol>, <li>, <table>, <section>, <header>, <footer>, etc.
    - Inline: <a>, , , , <img>, <input>, <label>, etc.

20. **What are HTML Attributes? What are the Types of HTML attributes?** HTML attributes provid e additional information about elements. Types include: global attributes (e.g., class, id, style), event attributes (e.g., onclick, onmouseover), and specific attributes for elements (e.g., src for <img>, href for <a>).

21. **What are the id, style, & class attributes of an element? When to use what?**

    - **id**: Unique identifier for an element, used for CSS and JS targeting.
    - **style**: Inline CSS to apply specific styles.
    - **class**: A way to group multiple elements for styling and JS targeting.

Use id for unique elements, class for groups of elements, and style for quick, specific styling.

22. **What will happen if two elements have the same ids?** IDs should be unique. If two elements have the same ID, it can cause unexpected behavior and issues in CSS and JavaScript, as ID s electors expect unique matches.

23. **What are Data Attributes in HTML?** Custom attributes that store extra information. Prefixed with data-, they are useful for storing data to be accessed via JavaScript.

24. **What are the 5 Types of Links in HTML?**

    - Internal links: Navigate within the same page.
    - External links: Navigate to another website.
    - Email links: Open an email client to send a message.
    - Phone links: Make a call.
    - File links: Download a file.

25. **What is the difference between Absolute & Relative URLs?**

    - **Absolute URL**: Full path including the domain, e.g., https://example.com/page.
    - **Relative URL**: Path relative to the current domain, e.g., /page or ../page.

26. **What is the purpose of the** <nav> **element in HTML?**

    It groups navigation links, making it easier to identify and style main navigation areas of a pa ge.

27. **How do you add an external stylesheet in your HTML?** Use the <link> tag inside the <head>:

    html

    Copy

    <link rel="stylesheet" href="styles.css">

28. **How do you open a link in a new tab?** Use the target="_blank" attribute in the <a> t ag:

    html

    Copy

    Link

29. **How do you create an Email Link?** Use the mailto: scheme in the <a> tag:

    html

    Copy

    Email Us

30. **What are the different Types of Lists in HTML?**

    - Ordered List (<ol>): Numbered items.
    - Unordered List (<ul>): Bulleted items.
    - Definition List (<dl>): Terms and descriptions.

31. **What is a Nested List in HTML?** A list within another list. Example:

32. **What are** <table>**,** <tr>**,** <th>**,** <td> **elements?**

- <table>: Creates a table.
- <tr>: Table row.
- <th>: Table header cell.
- <td>: Table data cell.

33. **What is the colspan attribute in HTML?** It allows a cell to span multiple columns. For exampl e:

html

Copy

<td colspan="2">This spans two columns</td>

34. **What is the best way to add a border to a table, column, and cell?** Use CSS:

css

Copy

```
table, th, td {
  border: 1px solid black;
  border-collapse: collapse;
}
```

35. **What is CSS? What are the 3 ways to Implement CSS in HTML?** CSS (Cascading Style Sheets) styles HTML elements. You can implement it in:
    - Inline: Directly within the HTML tag.
    - Internal: Inside a <style> tag in the <head>.
    - External: Linked via a <link> tag to an external stylesheet.

36. **What is Inline Style in CSS? When to use it in real applications?** Applied directly within an H TML element:

    html

    Copy

    This is blue text

    Use for quick, specific changes.

37. **What is Internal Stylesheet in CSS? When to use it in real applications?** Defined within a <st yle> tag in the <head>:

    html

    Copy

    <style>

    p { color: blue; }

    </style>

    Use for styling a single document.

38. **What is External Stylesheet in CSS? When to use it in real applications?** Linked using a <link > tag:

    html

    Copy

    <link rel="stylesheet" href="styles.css">

    Use for styling multiple documents.

39. **What are CSS Selectors and what are their types?** Selectors target HTML elements to apply s tyles. Types include:

    - Element: p { }
    - ID: #id { }
    - Class: .class { }
    - Attribute: [type="text"] { }
    - Pseudo-classes: a:hover { }
    - Pseudo-elements: p::after { }

40. **How do you Include CSS in a webpage or HTML?**

    - Inline: style="property:value;"
    - Internal: <style>...</style> in the <head>
    - External: <link rel="stylesheet" href="styles.css"> in the <head>

41. **Explain Box Model in CSS.** The box model represents the layout of elements, comprising:

    - Content: The actual content.
    - Padding: Space inside the border.
    - Border: Surrounds the padding (optional).
    - Margin: Space outside the border.

42. **Explain Padding, Margin, and Border.**

- **Padding**: Space between the content and the border.
- **Margin**: Space outside the border, separating elements.
- **Border**: Surrounds the padding and content, like a frame.

Let's make these clear and straightforward:

each.

- **String**: Textual data.

```javascript
let name = "John";
```

- **Number**: Numeric data.

```javascript
let age = 30;
```

- **Boolean**: True or false.

```javascript
let isActive = true;
```

- **Object**: Collections of key-value pairs.

```javascript
let person = {name: "John", age: 30};
```

- **Array**: Ordered lists.

```javascript
let fruits = ["Apple", "Banana", "Cherry"];
```

- **Undefined**: Variable without a value.

```javascript
let x;
```

- **Null**: Intentional absence of value.

```javascript
let y = null;
```

- **Symbol**: Unique and immutable value.

```javascript
let sym = Symbol("id");
```

- **BigInt**: Large integers.

```javascript
let bigNum = 1234567890123456789012345678901234567890n;
```

43. **What are the different data types available in JavaScript? Provide examples of each.**

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  javascript

  Copy

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44. **Explain the difference between var, let, and const. When would you use each of these declarations?**
    - var: Function-scoped, can be redeclared, not block-scoped.
    - let: Block-scoped, can be updated but not redeclared within the same scope.
    - const: Block-scoped, cannot be updated or redeclared; used for constants.
45. **What is hoisting in JavaScript? How does it affect variables declared with var, let, and const ?** Hoisting is JavaScript's default behavior of moving declarations to the top. var declarations are hoisted and initialized with undefined, but let and const are hoisted without initialization, leading to a "temporal dead zone."

46. **What is a callback function in JavaScript? Give an example of how and when to use a callback function.** A callback is a function passed as an argument to another function, executed later. Example:

Javascript Copy

```
function greet(name, callback) {
    console.log("Hello, " + name);
    callback();
}

function sayGoodbye() {
    console.log("Goodbye!");
}

greet("John", sayGoodbye);
```

47. **What are arrow functions? How do they differ from traditional functions in JavaScript?** Arrow functions provide a shorter syntax and lexically bind `this`. Example:

Javascript Copy

```
let sum = (a, b) => a + b;
```

Unlike traditional functions, they don't have their own `this`.

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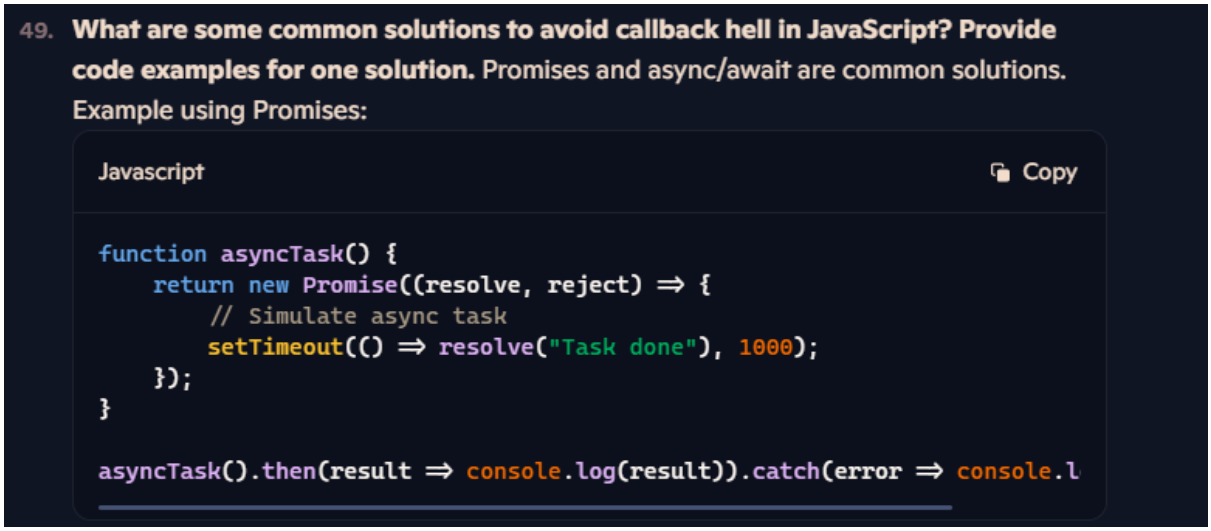
48. **Explain the concept of 'callback hell' in JavaScript. Why does it occur, and what problems d oes it cause?** Callback hell occurs when multiple nested callbacks create complex code, maki ng it hard to read and maintain. It can lead to deeply nested structures and hard-to-follow logic.



49. **What are some common solutions to avoid callback hell in JavaScript? Provide code examp les for one solution.** Promises and async/await are common solutions. Example using Promis es:

    javascript

    Copy

    function asyncTask() {

      return new Promise((resolve, reject) => {

        // Simulate async task

        setTimeout(() => resolve("Task done"), 1000);

      });

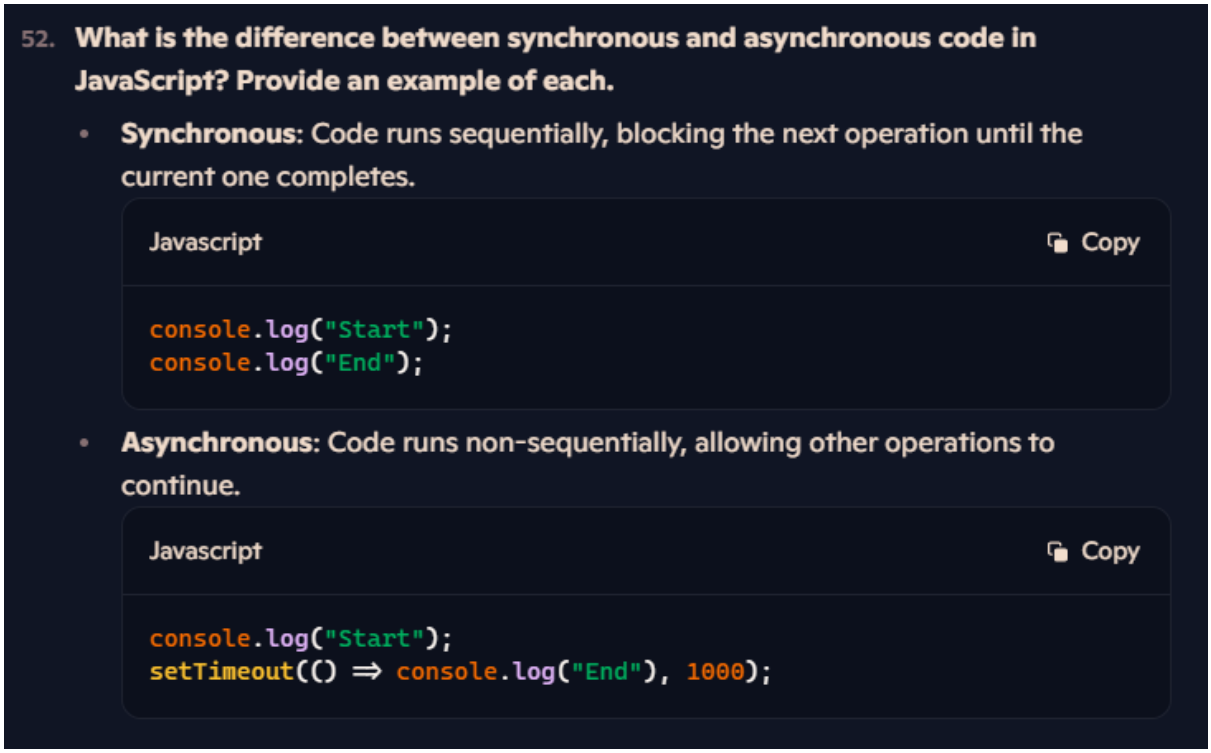
    }

asyncTask().then(result => console.log(result)).catch(error => console.log(error));

50. **Describe the scope of variables in JavaScript. How does the scope differ between variables declared with var, let, and const?**

    - var: Function-scoped.
    - let **and** const: Block-scoped. let and const are not accessible outside of their block, while var is accessible throughout the function.

51. **How does JavaScript handle asynchronous operations? Briefly explain the role of the event loop in this process.** JavaScript uses the event loop to manage asynchronous operations. The event loop continuously checks the call stack and task queue, executing tasks when the call s tack is empty.



52. **What is the difference between synchronous and asynchronous code in JavaScript? Provide an example of each.**

    - **Synchronous**: Code runs sequentially, blocking the next operation until the current o ne completes.

      javascript

      Copy

      console.log("Start");

      console.log("End");

- **Asynchronous**: Code runs non-sequentially, allowing other operations to continue.

  javascript

  Copy

  ```
  console.log("Start");
  setTimeout(() => console.log("End"), 1000);
  ```

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