

## Technical Interview Questions

### ### HTML Questions and Answers

1. **What are semantic HTML elements, and why are they important?**

Semantic HTML elements clearly define their meaning to both the browser and the developer. Examples include `<header>`, `<footer>`, `<article>`, and `<section>`. They improve accessibility, SEO, and readability of the code.

2. **What is the purpose of the `<doctype>` declaration?**

The `<doctype>` declaration specifies the HTML version used in the document, ensuring consistent rendering across browsers.

3. **Explain the difference between inline, block, and inline-block elements.**

- Inline: Elements like `<span>` flow with text and don't start on a new line.
- Block: Elements like `<div>` start on a new line and take up the full width.
- Inline-block: Combines features of both; elements flow inline but respect block-level width and height properties.

4. **What is the difference between `<div>` and `<span>` elements?**

`<div>` is a block-level container used for grouping content, while `<span>` is an inline container used for styling specific text.

5. **What are meta tags, and why are they important for SEO?**

Meta tags provide metadata about a web page, such as description, keywords, and author. They improve search engine rankings and enhance sharing on social media.

## Technical Interview Questions

6. **What is the difference between absolute and relative URLs?**

- Absolute URL: Specifies the full path (e.g., `https://example.com/page`).
- Relative URL: Specifies a path relative to the current page (e.g., `./page`).

7. **What is lazy loading, and how is it implemented in HTML for images?**

Lazy loading defers the loading of images until they are needed. It is implemented using the `loading="lazy"` attribute on the `<img>` tag.

8. **What are the new input types introduced in HTML5?**

Examples include `email`, `url`, `number`, `date`, `range`, `color`, and `search`.

9. **How do the `async` and `defer` attributes work on a `<script>` tag?**

- `async`: Downloads the script in parallel and executes it as soon as its ready.
- `defer`: Downloads the script in parallel but executes it after the HTML is fully parsed.

10. **What is the purpose of the `alt` attribute in the `<img>` tag?**

The `alt` attribute provides alternative text for images, improving accessibility and aiding SEO.

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## ### CSS Questions and Answers

1. **What is the difference between relative, absolute, fixed, and sticky positioning in CSS?**

- `relative`: Positioned relative to its normal position.

## Technical Interview Questions

- ``absolute``: Positioned relative to the nearest positioned ancestor.
- ``fixed``: Positioned relative to the viewport and doesn't move on scrolling.
- ``sticky``: Toggles between relative and fixed, depending on the scroll position.

### 2. **How does the CSS box model work?**

It consists of four areas: content, padding, border, and margin. This determines the size of elements on a webpage.

### 3. **What is the difference between ``em``, ``rem``, and ``px`` units in CSS?**

- ``px``: Absolute unit.
- ``em``: Relative to the parent's font size.
- ``rem``: Relative to the root element's font size.

### 4. **What is the difference between ``visibility: hidden`` and ``display: none``?**

- ``visibility: hidden``: Element remains in the layout but is invisible.
- ``display: none``: Element is removed from the layout.

### 5. **What is the z-index in CSS, and how does it work?**

The ``z-index`` controls the stack order of elements. Higher values appear in front of lower values.

### 6. **What are pseudo-classes and pseudo-elements? Provide examples.**

- Pseudo-classes: Define the state of an element (e.g., ``:hover``).
- Pseudo-elements: Style specific parts of elements (e.g., ``::before``).

### 7. **Explain the difference between CSS Grid and Flexbox.**

## Technical Interview Questions

- Grid: Two-dimensional layout system for rows and columns.
- Flexbox: One-dimensional layout system for either rows or columns.

8. **How are CSS Grid and Flexbox used together?**

CSS Grid can define the main structure of a page, while Flexbox can manage layout inside individual grid items.

9. **What are media queries in CSS, and how are they used for responsive design?**

Media queries apply styles based on device properties like width and orientation (e.g., `@media (max-width: 768px)`).

10. **What are keyframes in CSS, and how are they used for animations?**

Keyframes define intermediate steps in an animation. Example:

```
```css
@keyframes slide {
  from { transform: translateX(0); }
  to { transform: translateX(100px); }
}
```

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## ### JavaScript Questions and Answers

1. **What is the difference between `var`, `let`, and `const` in JavaScript?**

## Technical Interview Questions

- `var`: Function-scoped and can be re-declared.
- `let`: Block-scoped and cannot be re-declared.
- `const`: Block-scoped and immutable.

2. **What is the difference between `==` and `===`?**

- `==`: Compares values with type coercion.
- `===`: Compares values without type coercion.

... (rest of questions and answers continue in similar format)