

HTML – 20 Interview Questions with Answers

1. What is HTML?

Answer: HTML (HyperText Markup Language) is the standard language for creating and structuring web pages and web applications using elements represented by tags.

2. What are tags and attributes in HTML?

Answer: Tags define elements in an HTML document (e.g., <p>, <div>), while attributes provide additional information about elements (e.g., href, src, alt).

3. What is the difference between block and inline elements?

Answer: Block elements occupy the full width and start on a new line (<div>, <p>), whereas inline elements occupy only as much width as necessary and do not break lines (, <a>).

4. What are semantic elements?

Answer: Semantic elements clearly describe their meaning (e.g., <article>, <section>, <header>), improving accessibility and SEO.

5. Explain the structure of an HTML document.

Answer:

```
<!DOCTYPE html>
<html>
  <head>
    <title>Page Title</title>
  </head>
  <body>
    <h1>Hello</h1>
  </body>
</html>
```

6. What is the purpose of the <!DOCTYPE> declaration?

Answer: It tells the browser the version of HTML used so it can render the page correctly.

7. What is the use of <meta> tag?

Answer: Provides metadata such as charset, viewport settings, description, and keywords.

8. What is the difference between and ?

Answer: Both make text bold, but `` also conveys semantic importance.

9. What is the use of the `<a>` tag? What attributes can it have?

Answer: It creates hyperlinks. Attributes: `href`, `target`, `rel`, etc.

10. Difference between ``, ``, and `<dl>`?

Answer:

- ``: Unordered list
- ``: Ordered list
- `<dl>`: Description list

11. What are void (self-closing) elements in HTML?

Answer: Elements that don't have a closing tag (e.g., `
`, ``, `<input>`).

12. How do you embed images and videos in HTML?

Answer:

- Image: ``
- Video: `<video controls><source src="video.mp4" type="video/mp4"></video>`

13. How do you create a table in HTML?

Answer:

```
<table>
  <tr><th>Header</th></tr>
  <tr><td>Data</td></tr>
</table>
```

14. What are HTML forms?

Answer: Forms are used to collect user input. Defined using `<form>` tag and input types.

15. Explain form input types.

Answer: Examples include: `text`, `password`, `email`, `radio`, `checkbox`, `submit`.

16. What is the purpose of the `action` and `method` attributes in forms?

Answer:

- `action`: URL where form data is sent.
- `method`: HTTP method (GET or POST).

17. Difference between `GET` and `POST` methods?

Answer:

- GET appends data to the URL (less secure).
- POST sends data in the request body (more secure).

18. What is the purpose of the `<iframe>` tag?

Answer: Embeds another HTML page or document inside the current page.

19. How is accessibility handled in HTML?

Answer: Through semantic tags, `aria-*` attributes, proper form labeling, and keyboard-friendly navigation.

20. What are `data-*` attributes?

Answer: Used to store custom data on HTML elements, accessible via JavaScript (`data-user`, `data-id`, etc.).

CSS – 20 Questions and Answers

1. What is CSS?

CSS (Cascading Style Sheets) is used to style and layout HTML elements, including design, colors, fonts, and responsiveness.

2. What are the types of CSS?

- Inline CSS
- Internal CSS
- External CSS

3. What is specificity in CSS?

Specificity determines which CSS rule applies when multiple rules match. It's calculated using inline styles > IDs > classes > elements.

4. What is the Box Model in CSS?

It consists of `content`, `padding`, `border`, and `margin`.

5. What are pseudo-classes?

Special states of elements (e.g., `:hover`, `:focus`, `:nth-child()`).

6. What are pseudo-elements?

Used to style parts of elements (e.g., `::before`, `::after`).

7. Difference between `em`, `rem`, `px`, %?

- em: relative to parent
- rem: relative to root
- px: absolute pixels
- %: relative to parent

8. **How do you center a div?**

```
display: flex; justify-content: center; align-items: center;
```

9. **What is the difference between relative, absolute, fixed, and sticky?**

- relative: relative to itself
- absolute: relative to nearest positioned ancestor
- fixed: relative to viewport
- sticky: toggles between relative/fixed

10. **What are media queries?**

CSS techniques to apply styles based on device width or resolution.

11. **What is a class selector vs. ID selector?**

- Class: reusable (.class)
- ID: unique (#id)

12. **How does z-index work?**

Determines the stack order of overlapping elements.

13. **Difference between visibility: hidden; and display: none;?**

- hidden: occupies space
- none: does not

14. **What is Flexbox?**

A layout module that allows for easy alignment and spacing.

15. **What is Grid in CSS?**

Two-dimensional layout system for rows and columns.

16. **What are transitions in CSS?**

Smooth animation between property changes.

17. **What are animations in CSS?**

Allows property changes over time using @keyframes.

18. **What is the calc() function?**

Performs calculations inside CSS.

19. **How do you import CSS in a file?**

```
@import url("styles.css");
```

20. **What is the !important declaration?**

Overrides all other styles, but should be used sparingly.

□ JavaScript – 20 Questions and Answers

1. **What is JavaScript?**

A high-level, interpreted scripting language used to create dynamic web content.

2. **Difference between `var`, `let`, and `const`?**

- `var`: function-scoped
- `let`: block-scoped
- `const`: block-scoped and read-only

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

- `==`: compares values
- `===`: compares value and type

4. **What is a closure?**

A function that retains access to variables from its lexical scope even when executed outside that scope.

5. **What is the DOM?**

Document Object Model – a tree structure of HTML elements for JavaScript to interact with.

6. **What is an event listener?**

A function in JavaScript that waits for events like clicks or keypresses.

7. **What is a callback function?**

A function passed as an argument to another function.

8. **What is hoisting?**

Variable and function declarations are moved to the top of their scope before code execution.

9. **What is the difference between `null` and `undefined`?**

- `null`: intentional absence of value
- `undefined`: uninitialized variable

10. **What are arrow functions?**

Short syntax for writing functions and don't bind `this`.

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

11. **What is `this` keyword?**

Refers to the object from where it was called.

12. **What is `async/await`?**

Syntactic sugar for promises to handle asynchronous operations.

13. **What is a `promise`?**

An object representing eventual completion or failure of an asynchronous operation.

14. **What are `template literals`?**

Syntax using backticks `` to embed variables:

```
`Hello, ${name}`
```

15. **What are `spread` and `rest` operators?**

- Spread: expand (...arr)
- Rest: gather arguments (function(...args))

16. **What are `ES6` modules?**

Syntax for importing and exporting JavaScript code:

```
import something from './file.js';
```

17. What is `localStorage` and `sessionStorage`?

- `localStorage`: persists until manually cleared
- `sessionStorage`: lasts for a session

18. How to manipulate DOM elements?

Use methods like `getElementById`, `querySelector`, `innerHTML`.

19. What is **debouncing in JS**?

Limits function execution rate — useful for optimizing performance.

20. What is an **Immediately Invoked Function Expression (IIFE)**?

A function that runs as soon as it's defined:

```
(function() { /* code */ })();
```

□ Bootstrap – 20 Questions and Answers

1. What is Bootstrap?

A front-end framework for building responsive websites using HTML, CSS, and JS components.

2. How do you include Bootstrap?

Via CDN or by downloading Bootstrap files.

3. Explain the grid system in Bootstrap.

12-column grid that supports responsive layouts.

4. Difference between `.container` and `.container-fluid`?

- `.container`: fixed width
- `.container-fluid`: full width

5. What are breakpoints in Bootstrap?

Predefined screen sizes like `sm`, `md`, `lg`, etc.

6. What is a card in Bootstrap?

Flexible and extensible container for content.

7. **How do you create a navbar?**
Use the `.navbar` class and nested elements for links.
8. **How do modals work in Bootstrap?**
Use `.modal` class, triggered with JS or data attributes.
9. **What are utility classes?**
Predefined classes for spacing, coloring, display, etc.
10. **How do you align content in Bootstrap?**
Use Flexbox utilities like `d-flex`, `justify-content-center`.
11. **What is a Jumbotron?**
A large box for showcasing content. (Deprecated in v5)
12. **What are form controls?**
Styled form inputs using `.form-control`.
13. **What are tooltips and popovers?**
UI elements that show information on hover or click.
14. **How do you use Bootstrap validation?**
Add `.was-validated` to form and use feedback classes.
15. **What is a responsive embed?**
Maintains aspect ratio for videos and iframes.
16. **What is a collapse in Bootstrap?**
A collapsible element (e.g., accordion or navbar).
17. **How to add spacing in Bootstrap?**
Use margin/padding utilities like `m-3`, `p-2`.
18. **What are icons in Bootstrap?**
Bootstrap Icons (or use Font Awesome via CDN).
19. **Can we override Bootstrap styles?**
Yes, by writing custom CSS after Bootstrap is loaded.
20. **How does Bootstrap 5 differ from Bootstrap 4?**
No jQuery dependency, improved grid system, and new utilities.

Python – 20 Questions and Answers

1. **What is Python?**
A high-level, interpreted language known for readability and versatility.

2. **What are Python's data types?**
int, float, str, list, tuple, dict, set, bool, NoneType.

3. **What is the difference between list and tuple?**

- o List: mutable
- o Tuple: immutable

4. **What is a dictionary in Python?**
A collection of key-value pairs.

5. **What are functions in Python?**
Blocks of reusable code defined using `def`.

6. **What is a lambda function?**
An anonymous function:

```
lambda x: x + 1
```

7. ****What are *args and kwargs?**

- o *args: variable number of positional args
- o **kwargs: variable keyword args

8. **What is list comprehension?**
Compact way to create lists:

```
[x for x in range(5)]
```

9. **What is a decorator?**
Function that modifies the behavior of another function.

10. **What are Python modules and packages?**
Modules: individual files; Packages: directories with `__init__.py`.

11. **What is exception handling?**
Use `try`, `except`, `finally` blocks.

12. **What is the use of with statement?**
Manages context (like opening files) cleanly.

13. **What is a class in Python?**
Blueprint for creating objects.

14. **What is inheritance in Python?**
Allows a class to derive from another class.

15. **What is __init__ method?**
Constructor method called when object is created.

16. **What is a generator?**
Yields items one at a time using `yield`.

17. **Difference between is and ==?**

- o `is`: identity
- o `==`: equality

18. **What is a virtual environment?**
Isolated environment for Python projects.

19. **How do you connect Python to MySQL?**
Use `mysql-connector-python` or `SQLAlchemy`.

20. What is PEP8?

Style guide for Python code.

□ MySQL – 20 Questions and Answers

- 1. What is MySQL?**
An open-source relational database management system.
- 2. What is a table in MySQL?**
Structure that stores data in rows and columns.
- 3. What is a primary key?**
Unique identifier for table rows.
- 4. What is a foreign key?**
Links one table to another.
- 5. What is normalization?**
Organizing data to reduce redundancy.
- 6. What is a JOIN?**
Combines rows from two or more tables.
- 7. Types of JOINS?**
INNER, LEFT, RIGHT, FULL (not native to MySQL), CROSS.
- 8. What is a view?**
A virtual table based on a query.
- 9. What is an index?**
Improves the speed of data retrieval.
- 10. What is a stored procedure?**
A precompiled SQL block saved in the DB.
- 11. What are triggers?**
SQL that automatically runs when an event occurs.
- 12. What is a subquery?**
A query nested inside another query.
- 13. Difference between DELETE, TRUNCATE, DROP?**
 - DELETE: removes rows
 - TRUNCATE: removes all rows, faster
 - DROP: removes table
- 14. What is a transaction?**
A sequence of SQL statements treated as a unit.
- 15. What are ACID properties?**
Atomicity, Consistency, Isolation, Durability.
- 16. What is a composite key?**
A primary key made of multiple columns.
- 17. How do you prevent SQL injection?**
Use parameterized queries or ORM.
- 18. What is the GROUP BY clause?**
Groups rows with the same values.
- 19. Difference between WHERE and HAVING?**

- WHERE: filters before grouping
 - HAVING: filters after GROUP BY
- 20. How do you connect MySQL with Python?**
Use `mysql.connector` or `pymysql` packages.