

1. Define Typography.

****Answer:****

Typography refers to the style, arrangement, and appearance of text. In web development, it involves selecting fonts, adjusting font size, line spacing, and letter spacing to create a visually appealing and readable text on a webpage. Proper typography is crucial for effective communication and enhancing the user experience.

2. Compare CSS2 with CSS3.

- ****CSS2:****

- Introduced in 1998.
- Limited capabilities for styling and layout.
- Lack of advanced selectors.
- Limited support for animations and transitions.

- ****CSS3:****

- Introduced in 1999 but modules have been developed over time.
- Extensive features for styling, layout, animations, and transitions.
- Advanced selectors for more precise targeting.
- Improved support for responsive design through media queries.

3. Define the purpose of Media Queries in CSS3.

****Answer:****

Media Queries in CSS3 are used to apply styles based on the characteristics of the device or viewport, allowing developers to create responsive designs. By using media queries, different styles can be applied depending on factors like screen size, resolution, or device orientation, ensuring that a webpage looks good and functions well across various devices and screen sizes.

4. List the advantages and disadvantages of CSS3.

****Advantages:****

- Rich set of features for styling and layout.
- Flexibility and modularity with various modules.
- Better support for animations and transitions.
- Improved selectors for precise targeting.
- Enhanced support for responsive design.

****Disadvantages:****

- Compatibility issues with older browsers.
- Learning curve for mastering new features.
- Potential for increased file sizes due to additional features.
- Complexity in managing and organizing large stylesheets.

5. What is Bootstrap?

****Answer:****

Bootstrap is a popular open-source front-end framework developed by Twitter. It provides a collection of pre-designed HTML, CSS, and JavaScript components, such as navigation bars, buttons,

forms, and more. Bootstrap simplifies and accelerates the process of web development by offering a responsive grid system and a variety of customizable UI elements.

6. List some features of Bootstrap.

- Responsive grid system.
- Pre-styled components (buttons, forms, etc.).
- Responsive utilities for hiding/showing elements.
- Navigation components (navbar, breadcrumb, etc.).
- JavaScript plugins for enhanced functionality.
- Extensive documentation and community support.

7. Write two ways to start Bootstrap.

1. ****Download and Include Locally:****

- Download Bootstrap from the official website.
- Include Bootstrap CSS and JS files in your project.
- Reference the files in your HTML.

```
```html
<link rel="stylesheet" href="path/to/bootstrap.min.css">
<script src="path/to/bootstrap.min.js"></script>
```
```

2. ****Use CDN (Content Delivery Network):****

- Include Bootstrap directly from a CDN in your HTML.

```
```html
<!-- CSS -->
<link rel="stylesheet"
href="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/css/bootstrap.min.css">

<!-- JS (Optional: Bootstrap JavaScript requires jQuery and Popper.js) -->
<script src="https://code.jquery.com/jquery-3.3.1.slim.min.js"></script>
<script
src="https://cdn.jsdelivr.net/npm/@popperjs/core@2.9.2/dist/umd/popper.min.js"></script>
<script src="https://stackpath.bootstrapcdn.com/bootstrap/4.3.1/js/bootstrap.min.js"></script>
```
```

8. What is the `rounded-circle` class?

****Answer:****

The `rounded-circle` class in Bootstrap is used to create a circular-shaped element by applying rounded corners to an element. It's often used with images or avatars to give them a circular appearance.

```
```html

```
```

9. Write different alerts in Bootstrap.

```
``html
<!-- Success Alert -->
<div class="alert alert-success" role="alert">
  This is a success alert.
</div>

<!-- Warning Alert -->
<div class="alert alert-warning" role="alert">
  This is a warning alert.
</div>

<!-- Danger Alert -->
<div class="alert alert-danger" role="alert">
  This is a danger alert.
</div>

<!-- Info Alert -->
<div class="alert alert-info" role="alert">
  This is an info alert.
</div>
``
```

10. Mention how text colors work in Bootstrap.

In Bootstrap, you can use contextual classes to style text with different colors. Here are a few examples:

```
``html
<!-- Primary Text Color -->
<p class="text-primary">This is a primary-colored text.</p>

<!-- Secondary Text Color -->
<p class="text-secondary">This is a secondary-colored text.</p>

<!-- Success Text Color -->
<p class="text-success">This is a success-colored text.</p>

<!-- Danger Text Color -->
<p class="text-danger">This is a danger-colored text.</p>
``
```

These classes apply the specified color to the text, allowing for consistent and visually appealing styling.

UNIT-4

1. List out the features of jQuery.

****Answer:****

- DOM manipulation: jQuery simplifies the process of manipulating the DOM.
- Event handling: It provides an easy-to-use interface for handling events.
- AJAX support: Simplifies AJAX requests and responses.
- Animation effects: Offers built-in animation methods.

- Cross-browser compatibility: Handles inconsistencies across different browsers.
- Plug-ins: A vast collection of plugins available for extended functionality.
- Method chaining: Allows chaining multiple methods in a single statement.
- Selectors: Powerful and concise CSS-style selectors for element selection.
- Utilities: Provides utility functions for common tasks.

2. Describe the ways to use jQuery in your webpage.

****Answer:****

- Download and host: Download the jQuery library and host it on your server.
- CDN: Include jQuery directly from a Content Delivery Network (CDN) in your HTML.

```
```html
<script src="https://code.jquery.com/jquery-3.6.4.min.js"></script>
```
```

- npm: Install jQuery using npm (Node Package Manager) and bundle it with a module bundler like Webpack.

3. Explain the document ready event.

****Answer:****

The `document ready` event in jQuery ensures that the DOM is fully loaded before executing JavaScript code. It is often used to initialize or set up functionality when the DOM is ready to be manipulated. The shorthand for this event is `$(document).ready()`. Example:

```
```js
$(document).ready(function() {
 // Your code here
 console.log('Document is ready!');
});
```
```

4. What is `{Element: first}` selector? Give an example.

****Answer:****

The `{Element: first}` selector is not a standard jQuery selector. It seems like a combination of an object and a selector. A correct selector might be `:first` to select the first occurrence of an element. Example:

```
```js
// Selects the first <p> element on the page
$('p:first').css('color', 'blue');
```
```

5. List out the features of Node.js.

****Answer:****

- Non-blocking I/O.
- Asynchronous and event-driven.
- Single-threaded but scalable.
- Cross-platform.
- Open-source.
- Large and active community.
- Fast execution.
- Module-based.

6. Define asynchronous programming in Node.js.

****Answer:****

Asynchronous programming in Node.js refers to the ability to execute non-blocking code. Instead of waiting for I/O operations to complete, Node.js uses callbacks, Promises, and `async/await` to handle asynchronous tasks, allowing the program to continue with other operations while waiting for I/O.

7. Write a simple "Hello World" program using Node.js.

****Answer:****

```

```js
// Filename: hello.js
console.log('Hello, World!');
```

```

Run it using:

```

```bash
node hello.js
```

```

8. What is a module? List out types of modules available in Node.js.

****Answer:****

A module in Node.js is a reusable block of code that encapsulates related functionality. Types of modules:

- Core modules: Built-in modules like `fs`, `http`, and `path`.
- Third-party modules: External modules installed via npm.
- Custom modules: User-created modules to organize and reuse code.

9. Define event listener in Node.js.

****Answer:****

In Node.js, event listeners are functions that listen for specific events and respond when those events are emitted. The `EventEmitter` class is a key component for implementing event listeners. Example:

```

```js
const EventEmitter = require('events');

class MyEmitter extends EventEmitter {}

const myEmitter = new MyEmitter();

myEmitter.on('customEvent', () => {
 console.log('Custom event occurred!');
});

myEmitter.emit('customEvent');
```

```

10. List out the core features of Express.js.

****Answer:****

- Middleware support.
- Routing system.
- Templating engines.
- HTTP utility methods.
- HTTP server capabilities.
- Dynamic view rendering.
- Environment-based configuration.
- Robust routing.

UNIT-5

1. What is React?

React is a JavaScript library for building user interfaces, particularly single-page applications where the UI needs to be dynamic and responsive. Developed and maintained by Facebook, React allows developers to create reusable UI components and efficiently update and render the user interface.

2. Define and expand JSX.

JSX (JavaScript XML) is a syntax extension for JavaScript used with React. It allows developers to write HTML-like code within JavaScript, making it more readable and expressive. JSX is not a requirement for using React, but it provides a concise and familiar syntax for defining React elements.

3. List out the features of React?

Key features of React include:

- **Virtual DOM:** Efficiently updates the real DOM for better performance.
- **Component-Based Architecture:** Encourages building UIs as modular, reusable components.
- **One-way Data Binding:** Ensures a unidirectional flow of data.
- **JSX:** Provides a syntax extension for more readable component structures.
- **Props and State:** Manage component data and behavior.
- **Lifecycle Methods:** Allow developers to execute code at specific points in a component's lifecycle.
- **React Router:** Facilitates client-side routing in single-page applications.

4. Define One-way data-binding.

One-way data-binding in React refers to the flow of data from a parent component to its child components. Data changes in the parent component trigger updates in the child components, but the reverse is not true. This ensures a unidirectional flow of data, making it easier to understand and maintain the state of the application.

5. Differentiate between state and props?

- **State:** Internal data managed within a component. It can change over time in response to user interactions or other factors. It is maintained within the component itself.
- **Props (Properties):** External data passed to a component as attributes. Props are immutable, meaning they cannot be modified within the component receiving them. They are used to customize and configure components.

6. What is the virtual DOM?

The Virtual DOM is a lightweight copy of the real DOM maintained in memory by React. It represents the structure of the actual DOM and allows React to efficiently update the UI by calculating the minimum number of changes needed. React uses the virtual DOM to perform a process called reconciliation, identifying differences between the old and new virtual DOM and updating the real DOM accordingly.

7. Illustrate state in React?

In React, state is a JavaScript object that represents the internal data of a component. It is used to manage and track changes in a component's data over time. The `useState` hook is commonly used in functional components to declare and update state.

Example:

```
``jsx
import React, { useState } from 'react';

const MyComponent = () => {
  const [count, setCount] = useState(0);

  const increment = () => {
    setCount(count + 1);
  };

  return (
    <div>
      <p>Count: {count}</p>
      <button onClick={increment}>Increment</button>
    </div>
  );
};
```

```
};

export default MyComponent;
...

```

8. Explain how lists work in React.

In React, you can render lists of elements using the ``map`` function. For example, to render a list of items from an array:

```
```jsx
import React from 'react';

const MyList = () => {
 const items = ['Item 1', 'Item 2', 'Item 3'];

 return (

 {items.map((item, index) => (
 <li key={index}>{item}
))}

);
};

export default MyList;
...

```

### 9. What is an event in React?

An event in React refers to user interactions with the UI, such as button clicks, mouse movements, or keyboard input. React uses synthetic events, which are wrappers around native browser events, to handle these interactions. Event handlers are functions that respond to specific events and are typically defined within React components.

### 10. How do you write comments in React?

In React, you can write comments inside the JSX using curly braces and the JavaScript comment syntax. For single-line comments:

```
```jsx
{/* This is a single-line comment */}
...

```

For multi-line comments:

```
```jsx
{/*
 This is a
 multi-line comment
*/}
...

```