TCS Full Stack Web Developer Interview Questions

1. What do you know about Full stack Web Development?

Answer: Full stack web Development refers to the development of both front end and back end of web application. They work on the frontend, backend, database, and debugging of web applications.

2. Which Tools are used for Full stack web development?

Answer: Some of the important Full stack development tools are:

1. Code editors like Visual Studio Code, IntelliJ IDEA, and Sublime Text.
2. Browser Developer Tools
3. Frameworks like Angular, React, and Vue.js
4. CSS Preprocessors like Sass and LESS
5. Responsive Design Tools like Bootstrap.

3. What is the difference between Front-end and Back-end development?

Answer: Front end is the visible part of web application or website, in which the user interacts directly. Whereas, back end is server-side development of web application or website. It contain all the code required for the application to run, including integrations with data systems, communicating with other applications, and processing data.

4. Which languages are required for front end web development?

Answer: HTML, CSS, JavaScript are the most common front end languages.

5. Can you write the basic structure of HTML.

Answer: Basic structure of HTML is as follows:

```
<html>

<head>
<title>Page Title</title>
</head>

<body>
<h2>Heading</h2>
<p>Hello World</p>
</body>
```

```
</html>
```

6. How to create a table in HTML? Show an example.

Answer: An *HTML table* is created with an opening <*table*> tag and a closing </*table*>

```
<html>

<head>
<title>Page Title</title>
</head>

<body>

<h2>Heading</h2>
<p>Hello World</p>

<table>
<tr>
<th>Name</th>
<th>Age</th>
</tr>

<tr>
<td>John</td>
<td>34</td>
</tr>

<tr>
<td>Williams</td>
<td>42</td>
</tr>

</table>
</body>

</html>
```

Output:

Heading

Hello World

Name	Age
John	34
Williams	42

7. What is the difference between <th> tag and <td> tag

Answer: <th> tag is used for table header cells while <td> tag is used for table data cells.

8. What is colspan and rowspan in HTML? What is its syntax?

Answer: Colspan Allows a single table cell to span the width of more than one cell or column. While Rowspan allows a single table cell to span the height of more than one cell or row.

Syntax:

```
<tr>
<th colspan=”2">Alice</th>
<th colspan=”2">Bob</th>
<th colspan=”2">Julie</th>
</tr>

<tr>
<th rowspan=”3">Marks</th>
<th rowspan=”3">Percentage</th>
</tr>
```

9. How to add CSS to HTML?

Answer: To add CSS to HTML, there are 3 primary methods:

- **Inline CSS**: Apply styles directly to HTML elements using the style attribute.
- **Internal CSS**: Use a <style> tag within the <head> section of the HTML document.
- **External CSS**: Link to an external CSS file using a <link> tag within the <head> section.

10. How to add JavaScript externally?

Answer: To add JavaScript externally to an HTML document, we should create a separate JavaScript file and then link to that file from your HTML document using the <script> tag with the ***src*** attribute.
Syntax: <script src = “script.js”></script>

11. What is PHP?

Answer: · PHP is an acronym for “*Hypertext Preprocessor*“. PHP is an open source server side scripting language specifically used for web development.

12. What are the differences between CSS Grid and Flexbox.

- CSS Grid provides two-dimensional layout capabilities. This means it can handle both rows and columns. Flexbox was designed for layout in one dimension. It handles either a row or a column at a time.
- CSS Grids helps you create the outer layout of the webpage. You can build complex as well responsive design with this. This is why it is called ‘layout first’. Flexbox mostly helps align content & move blocks.

13. What is virtual DOM and what are its benefits

The virtual DOM (VDOM) is a programming concept where an ideal, or “virtual”, representation of a UI is kept in memory and synced with the “real” DOM by a library such as ReactDOM.

Benefits of the Virtual DOM

1. **Performance Optimization:**
   - The virtual DOM reduces the number of direct manipulations of the real DOM, which can be slow and resource-intensive. By batching updates and applying only the necessary changes, React improves overall performance.
2. **Declarative UI:**
   - Developers can write declarative UI code, focusing on how the UI should look based on the current state rather than managing the UI updates manually. React handles the efficient updates behind the scenes.
3. **Simplified Development:**
   - The virtual DOM allows developers to think in terms of component states and props, abstracting away the complexity of direct DOM manipulation. This makes the development process more intuitive and less error-prone.
4. **Cross-Platform Consistency:**
   - The virtual DOM provides a consistent way to describe the UI, regardless of the platform. This makes it easier to create applications

that work across different environments, such as web, mobile, and desktop.

5. **Improved Debugging:**
   - Since the virtual DOM maintains a representation of the UI in memory, it can be used for debugging purposes. Tools like React DevTools allow developers to inspect the virtual DOM and understand how state changes affect the UI.
6. **Component-Based Architecture:**
   - The virtual DOM complements React's component-based architecture, enabling reusable, self-contained components. Each component manages its own state and virtual DOM, promoting modularity and maintainability.

14. What are the main differences between Angular, React, and Vue.js?

Angular, React, and Vue.js are three of the most popular JavaScript frameworks and libraries for building web applications. Here are the differences:

Angular

- Angular is a full-fledged framework for building client-side applications.
- It primarily uses TypeScript, a statically typed superset of JavaScript. This offers strong typing and advanced features for large-scale applications.
- It follows a component-based architecture but with a more opinionated structure. It uses modules, components, services, and dependency injection.
- It is suitable for large-scale enterprise applications where a comprehensive solution and strong typing are beneficial.

React

- React is a JavaScript library focused on building user interfaces, particularly single-page applications.
- It primarily uses JavaScript (often with JSX, a syntax extension for embedding HTML within JavaScript). TypeScript is also commonly used.
- It follows a component-based architecture with a focus on a unidirectional data flow. It uses functional or class components.
- It is suitable for applications where flexibility is needed, such as dynamic user interfaces, single-page applications, and mobile apps (using React Native).

Vue.js

- Vue.js is a progressive framework for building user interfaces. It can function as a library or a full-fledged framework depending on your needs.
- It primarily uses JavaScript, with support for TypeScript.
- It follows a component-based architecture similar to React and Angular. It provides a reactive and declarative approach to building UIs.

- It is suitable for both small and large applications. It’s particularly popular in the community-driven development space and for projects where quick development and ease of integration are important.

15. Explain the concept of RESTful services and how they work.

RESTful services, or RESTful APIs (Application Programming Interfaces), are a way to provide interoperability between computer systems on the internet. REST stands for Representational State Transfer, which is an architectural style that dictates how web services should be designed to facilitate communication and data exchange.

How RESTful Services Work

1. **Client Request:**
    - The client sends an HTTP request to the server. The request includes the method (e.g., GET, POST), the URL identifying the resource, and potentially additional data in the request body (for POST, PUT, PATCH) or query parameters.
2. **Server Processing:**
    - The server receives the request, processes it, and interacts with the backend, such as databases or other services, to retrieve or modify the resource as needed.
3. **Response:**
    - The server sends an HTTP response back to the client. The response includes a status code indicating the result of the request (e.g., 200 OK, 201 Created, 404 Not Found), and optionally a body containing the resource representation or error message.