**Internship Report**

**Front-End Development**

**CETAS Information Technology**

**Duration: 13-01-2025 to**

**Selection Process**

The selection process consisted of two rounds – Aptitudes and Interview.

**Round – 1: Aptitude**

I attended an online aptitude round, consisting of 30 questions from general aptitude, basic programming, HTML/CSS, JavaScript and database management. Time duration given was 1 hour.

**Round – 2: Interview**

Following the aptitude round, an interview was conducted. I was assessed on my knowledge of the basics required for Front-End Development - HTML, CSS, JavaScript and Bootstrap. My performance in both rounds was evaluated and I was selected for the internship for a duration of 30 – 45 days.

**Day 1: 13-01-2025**

**Internship Orientation:**

On the first day after reporting to the office, I met with Ms. Abarna, HR at CETAS. An orientation session was conducted, describing the various activities and projects undertaken by CETAS, and what my role will be as an intern.

**Introduction to the Front – End Team:**

I was introduced to the front-end development team, under the lead of Mr. Mohammed Sujaludeen and Mr. Gnanakumar. I was briefed on the activities of the team at CETAS and the activities that I will be taking part in. I was introduced to Ms. Sarah, frontend developer and graphic designer at CETAS. My sessions on HTML, CSS, Javascript and JQuery were to by conducted and tasks to be assigned by her.

**Task Assignment – Recreating a Bootstrap Template:**

To assess my skills with Bootstrap, I was given an assignment to recreate the following bootstrap template from scratch: [ELearning - Themewagon](https://themewagon.com/themes/elearning-free-bootstrap-5-css3-education-website-template/).

**Day – 2: 15/1/25**

**Session on HTML:**

To begin with the fundamentals of frontend development, an introductory session on HTML was conducted. During this session, I learned about the core structure of a webpage and the significance of HTML in web development. Various elements, tags, and attributes were covered in detail, including their purpose and proper usage. Topics such as semantic HTML, forms, tables, and multimedia elements were also explored.   
  
**Tasks Assigned:**

Since the nature of front – end development lies in hands on experience, I was given three tasks to practice and refresh my skills in HTML.  
1. Creating a blog with the various HTML semantic and non – semantic elements

2. Creating a simple HTML form utilising the various types of input fields

3. Creating a table in HTML and experimenting with column – spanning and row – spanning properties.

**Day – 3: 16/1/25**

**Completion of HTML Tasks:**

The tasks given to practice HTML were completed and submitted. My tasks were reviewed and the areas where I could improve my code discussed.

**Completion of Bootstrap Task**

The task given to assess my knowledge of the Bootstrap framework was completed and submitted. My recreation of the template was reviewed for its accuracy and functionality and additional inputs to enhance my template were given.

**Day - 4: 17/1/25**

**CSS Session**

My first session on CSS focused on understanding the fundamentals of styling web pages. Various CSS selectors, including element selectors, class selectors, ID selectors, and pseudo-selectors, and how they are used to target specific HTML elements were explored. The basic CSS properties applicable to different HTML elements, such as text styling (color, font, size), box model properties (margin, padding, border), and layout techniques (display, position, float, and flexbox) were also discussed.

The different methods of including CSS in an HTML page were also explored. I learned about inline CSS, internal stylesheets, and external stylesheets, along with their advantages and best practices for maintaining clean and scalable code. To reinforce my understanding, I experimented with different styling techniques through hands-on coding exercises, applying various properties and selectors to modify the appearance of web elements effectively.

**Day – 5: 20/1/25**

**CSS Session – 2:**

The second session delved into more advanced and niche topics in CSS, building upon the foundational concepts covered earlier. One key area of focus was pseudo-classes, which allow styling of elements based on their state. I learned how pseudo-classes like :hover, :focus, :nth-child(), and :checked enable dynamic styling without JavaScript, improving user interaction and accessibility.

I explored pseudo-elements, which are used to style specific parts of an HTML element. I worked with ::before and ::after, which allow for the insertion of decorative content without modifying the actual HTML structure, making them useful for adding icons, background elements, or other enhancements purely through CSS.

Beyond pseudo-selectors, I explored special selectors, such as attribute selectors, which target elements based on attributes and values, and combinators, which define relationships between selectors. These techniques help in crafting more precise and efficient CSS rules.

The session also introduced advanced CSS properties like transform, transition, and animation. I explored transform functions such as scale(), rotate(), and translate() to manipulate element positioning and size. I also learned how transition allows smooth property changes, and how keyframe animations (@keyframes) can be used to create dynamic effects, such as fading, sliding, and bouncing animations.

Finally, the session covered responsive design using CSS media queries, which enable web pages to adapt to different screen sizes and devices. I explored how to write media queries to adjust layouts, typography, and visibility of elements based on breakpoints, ensuring a seamless user experience across desktops, tablets, and mobile devices.

**CSS Tasks Assigned:**

To engage with all the concepts discussed in the CSS sessions, I was given 5 tasks to analyse and improve my understanding of CSS:

1. Designing a Bento Grid Layout
2. Recreating a Chat Application Layout
3. Designing a chess board
4. Designing a movie booking page with seat selection functionality
5. Creating a HTML table and making it look better with CSS

**Day – 6: 21/1/25**

I utilised this day to complete my CSS tasks. I ran into some issues with the Bento Grid Layout as it was a complex grid layout that I had not experimented with before. I discussed the possible ways of implementing the Bento Grid using various CSS grid layout properties such as row and column spanning, grid areas and templating. I chose to go with grid areas and templating as it provided a definite yet flexible way to design the Bento Grid. After completing the Bento Grid, I moved on to complete my other tasks and explored the various CSS properties and selectors that were discussed in my sessions during the process.

**Day – 7: 22/1/25**

**Completion of CSS Tasks:**

I completed and submitted the 5 CSS tasks assigned. My task submissions were reviewed and areas of improvement were recommended. There are many ways to achieve a particular design with CSS, but there are some ways that are usually preferred for cleaner and more maintainable CSS code. Some of these were discussed, such as when I need to apply an overlay to an image or centering an object using absolute positioning.

**JavaScript Session:**

An introductory session on JavaScript was conducted, covering the fundamental concepts essential for front-end development. The session began with an overview of JavaScript's role in web development, highlighting its ability to add interactivity and dynamic functionality to web pages.

I started by learning about variable declaration using var, let, and const, understanding their scope differences and best practices for usage. I explored function declaration, including traditional function syntax and arrow functions, which provide a more concise way to write functions. Various operators were also discussed, including arithmetic operators, comparison operators, and logical operators. I learned how to use these operators to perform calculations and make decisions in my code.

The session further introduced objects and arrays, two essential data structures in JavaScript. I explored object literals, key-value pairs, and array methods like .push(), .pop(), .map(), and .filter(), which help in manipulating and processing data efficiently.

To control the flow of execution, I learned about loops and conditional statements. Conditional statements (if, else if, else, and switch) were covered to make decisions based on conditions. Loops, including for, while, and do-while, were explored to iterate over arrays and execute code repeatedly based on conditions. The forEach() method was also introduced as a functional approach to iterating over arrays.

**Day – 8: 23/1/25**

**JS Session – 2:**

The second session covered some advanced concepts in JavaScript, building upon the basics from the previous session. An introduction to asynchronous functions and callbacks was given. I learned how JavaScript handles asynchronous operations using callbacks, which are functions passed as arguments to be executed later. This concept is crucial for handling tasks like fetching data from a server or executing delayed actions using setTimeout() and setInterval().

Maps were introduced as a more efficient way to store key-value pairs compared to regular JavaScript objects. I learned how to create a Map, add and retrieve values using the set() and get() methods, and iterate through a Map using forEach().

The session also covered regular expressions (RegEx), which are patterns used to match and manipulate strings. I explored basic syntax and learned how methods like .test() and .replace() help in validating and formatting input data.

JSON (JavaScript Object Notation) was explored, which is a widely used format for exchanging data between a client and a server. I learned how to convert JavaScript objects into JSON using JSON.stringify() and how to parse JSON data back into JavaScript objects using JSON.parse().

DOM manipulation using JavaScript was covered, being one of the most important parts of building a dynamic website. I explored methods like getElementById() and querySelector() to select HTML elements, and properties like innerHTML to update content dynamically. Additionally, I learned how to get input values from HTML forms using the .value property and use JavaScript to modify CSS styles dynamically.

Events and event listeners were also discussed. I learned about different types of events like click, mouseover, and keydown, and how to handle them using the addEventListener() method. This allows JavaScript to respond to user interactions and create dynamic, interactive web pages.

**Javascript Task – Form Handling:**

Form submissions can be handled in various customisable ways using Javascript. I was given a task to retrieve data from a form and store it in a data structure. Then, the data must be inserted into a table on the same page to be displayed to the user. Additionally, data entries must be editable and deletable from the table.

**Day – 9: 24/1/25**

**Javascript Task Completion:**

The Form Handling task was completed and submitted. The task submission was reviewed and code improvements were suggested. I came across some peculiarities while making use of event handlers, particularly when using the addEventListener() method as opposed to using the dot properties of an element to define their actions (such as button.onclick). I discussed and clarified my doubts.

**jQuery Session**

Developing modern and dynamic websites can be challenging when using plain HTML, CSS, and JavaScript, as managing interactivity and complex UI behaviors often requires a lot of manual coding. To improve productivity and simplify web development, libraries and frameworks are commonly used. One of the earliest and most widely adopted JavaScript libraries is jQuery, which provides a concise and flexible way to manipulate the DOM, handle events, create animations, and perform AJAX requests. Additionally, jQuery helps ensure cross-browser compatibility, resolving many inconsistencies in JavaScript behavior across different web browsers.

An introduction to jQuery’s syntax was given, where I learned how the $ symbol is used along with a selector to target HTML elements. This makes selecting and modifying elements significantly easier compared to vanilla JavaScript. Various functions that can be performed on selected elements were explored, including hiding and showing elements dynamically. Different event handlers were introduced, such as handling click and hover events, along with the on() function, which allows attaching multiple event listeners efficiently.

Animations and effects were also covered in detail, including functions for fading, sliding, and general animations. The stop() function, which helps control animations by stopping ongoing effects, was also discussed. I learned about callback functions in jQuery, which allow certain actions to be executed only after a previous function has completed. Additionally, jQuery chaining was explored, which enables multiple methods to be applied to the same element in a single statement, making the code more concise and readable.

Further, I learned how to get and modify content dynamically using functions that retrieve or set text, HTML, and input values. Adding new HTML elements to the page, removing existing ones, and manipulating CSS classes were also covered. The session introduced methods for retrieving element dimensions, as well as traversing the DOM using parent, child, and sibling methods. Filtering elements based on specific criteria was also discussed, providing greater flexibility when working with multiple elements.

The session concluded with an introduction to AJAX using jQuery, which enables asynchronous communication with a server without requiring a full page reload. This allows for real-time updates and enhances user experience by making web applications more interactive and responsive.

**Tasks Assigned:**

In order to cover all aspects of Javascript, I was given a task to implement a calculator with the basic arithmetic functions as well as error handling of invalid inputs and computations.

In order to get a hands – on experience with jQuery, I was tasked to create a profile page with an interactive sidebar as well as edit functionality to edit various details of the profile. Additionally, AJAX was to be used to retrieve user data from a JSON file and display it dynamically on the webpage.

**Day – 10: 27/1/25**

Completion of JS Task – Calc

**Day – 11: 28/1/25**

Completion of jQuery Task – Profile Page