

How Front-End Web Development Works

Want to Learn to Code?



Front-End Development

When someone goes to a website, everything they see and interact with on the pages is part of the **user interface (UI)** or **front-end**. In front-end development, the user interface is designed and created with the user experience in mind; it is also called the client-side. This includes the fonts, layouts, graphics, and interactive elements on the site. The front-end works in line with the **backend**, which is what the user does not see. The backend entails server management and database management. The two sides work in tandem to ensure the website functions as a whole.

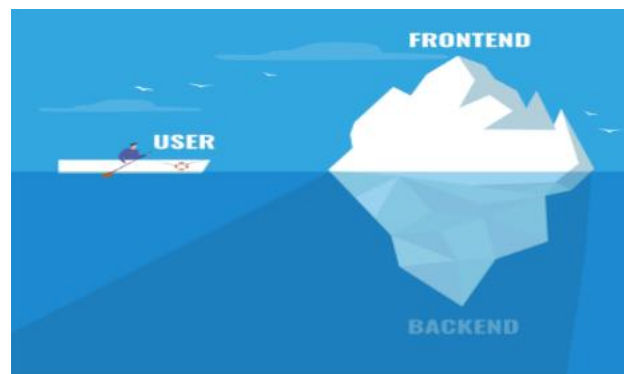


Fig. 1 Web Development Iceberg, WeVenture

The Three Basic Languages

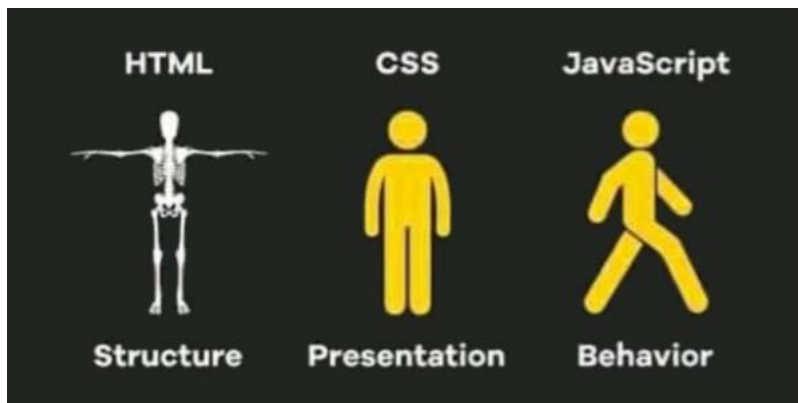


Fig. 2 The 3 Languages, Theta Training

Three fundamental languages form the basis of front-end website development. Starting with HTML as a base, they then build on top of each other to create the user interface. As seen in Figure 2, HTML serves as the structure of a webpage, CSS is used for presentation or styling, and JavaScript enables interaction or behavior.

1. HTML

```
1  <html>
2  |   <head>
3  |   <title>Types of Dogs</title>
4  |   </head>
5  |   <body>
6  |       There are many different types of dogs.
7  |   </body>
8  </html>
```

Fig. 3 HTML code

HTML stands for **Hypertext Markup Language**, which provides the structure and content of a webpage. HTML is one of the easiest coding languages to learn because the fundamentals are so simple and make logical sense. For example, in Figure 3, there is an example of basic

HTML code. The code is structured using tags, such as **<html>**, and usually ends with closing tags, like **</html>**. The tags instruct web browsers on how to render the webpage. This piece of code is contained within the **<html>** tags. Similarly, the **<head>** tag contains the heading, where the **title** (“Types of Dogs”) goes. Then the body of the content (“There are many types of dogs.”) is contained within the **<body>** tags. This is a bare-bones example of HTML code; many other elements can be added, such as images, videos, links, and tables, all of which require their own tags.

2. CSS

```
1  h1, h2{  
2      color: blue;   
3      text-align: center;  
4  }
```

Fig. 4 CSS code

CSS, or **Cascading Style Sheets**, provides information to style a webpage built using HTML code. CSS can be added within the HTML code internally using **<style>** tags, or **inline** tags, within an **element**. However, front-end developers often add a link within the HTML code to an external CSS page to keep things tidier, using a **<link>** element. That way, developers can focus on the CSS code separately, making for a more organized workspace. For example, Figure 4 shows a piece of CSS code written in a file, styling the HTML code. In Figure 4, a piece of CSS code styles the heading elements, h1 and h2, included in the linked HTML code. Using the CSS code, headings 1 and 2 on the corresponding HTML page will be that exact shade of blue in the box, and the text will be centered on the page.

All varieties of elements can be styled using CSS, such as fonts, borders, backgrounds, margins, overflow, and shadows. CSS can also be used to add animations to certain elements. CSS, like HTML, can get increasingly complex- for instance, the CSS Box Model and CSS Flexbox.

3. JavaScript

JavaScript is a programming or scripting language and the third step of the initial front-end development process, focusing on *functionality*. While HTML and CSS create **static** webpages, JavaScript enables **dynamic** webpages, allowing users to interact with the website. JavaScript can be used to perform actions like animating images or updating content.

```
1  const personName = function(){
2    |    personName = Harry;
3    };
4
5  console.log("Hello", personName, ", Welcome!");
```

Fig. 5 JavaScript code

Figure 5 illustrates a basic JavaScript **function**, which is used in various ways. In this instance, the program is used to display a person's name (personName) in the sentence: "Hello ____, Welcome!" The new information that is inserted is the person's name, Harry. Using the **command** "console.log" to run the program, the result is: "Hello Harry, Welcome!" In this instance, the variable (personName) is given the value of Harry.

Since JavaScript is a programming language, it executes programs similar to other programming languages like Python. Like CSS, JavaScript can have internal and inline code within the HTML code, as well as being accessed externally.

Summary

Front-end website development is the client-side of web development, dealing with the user experience, also called the user interface (UI). The front-end works with the backend (the server side) to develop a fully functioning website. HTML provides the foundation of a webpage, providing structure and content. CSS is a language that changes the presentation of the content. CSS is used to add color and finesse to HTML content. Finally, JavaScript adds dynamic elements to the website, building on top of both the HTML and CSS code. HTML, CSS, and JavaScript work together to create a website that is functional and accessible to the user.