

Introduction to Frontend

Course Code: CSC 4182 Course Title: Advanced Programming In Web Technologies



Dept. of Computer Science
Faculty of Science and Technology

Lecture No:	1	Week No:	08	Semester:	
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Lecture Outline



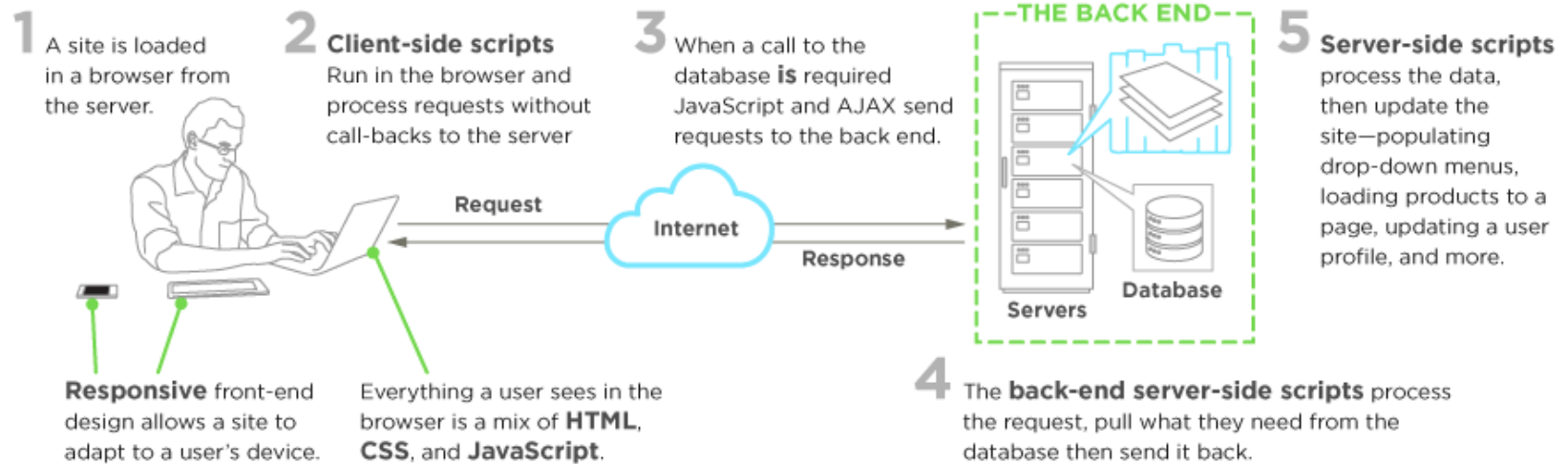
- What is frontend
- How Web Works
- CSS Frameworks, Libraries, and Preprocessors
- JavaScript libraries and frameworks
- What is DOM?
- Rendering User Interfaces

WHAT IS FRONTEND



- Frontend: client-facing part of a web app or in browser
- Built using HTML, CSS, and JavaScript
- Responsible for rendering UI and enabling user interaction
- Runs in user's web browser
- Communicates with backend running on a server
- Sends requests to backend, which processes and sends back responses
- Can be divided into three main components:
 - **HTML**: structure the content of the web page
 - **CSS**: style the page and make it visually appealing
 - **JavaScript**: add interactivity and functionality to the page

How Web Works



CSS Frameworks, Libraries, and Preprocessors



- Bootstrap
- Tailwind CSS
- Bulma
- Materialize
- Semantic UI

JavaScript libraries and frameworks



React: React is a popular JavaScript library for building user interfaces, developed by Facebook.

Angular: Angular is a popular JavaScript framework for building complex, large-scale web applications, developed by Google.

Vue.js: Vue.js is a progressive JavaScript framework for building user interfaces, designed to be flexible and easy to learn.

jQuery: jQuery is a popular JavaScript library that simplifies HTML document traversal, event handling, and animation.

Backbone.js: Backbone.js is a lightweight JavaScript framework that provides a simple and flexible structure for building web applications.

D3.js: D3.js is a JavaScript library for data visualization, which allows developers to create interactive and dynamic data visualizations.

What is DOM?



- 1.DOM stands for Document Object Model
- 2.It is a programming interface for web documents
- 3.The DOM represents the page so that programs can change the document structure, style, and content
- 4.The DOM provides a way to access and manipulate HTML elements on a web page
- 5.Developers can use JavaScript to change the content, style, and structure of the page
- 6.With the DOM, developers can create dynamic web applications that respond to user input

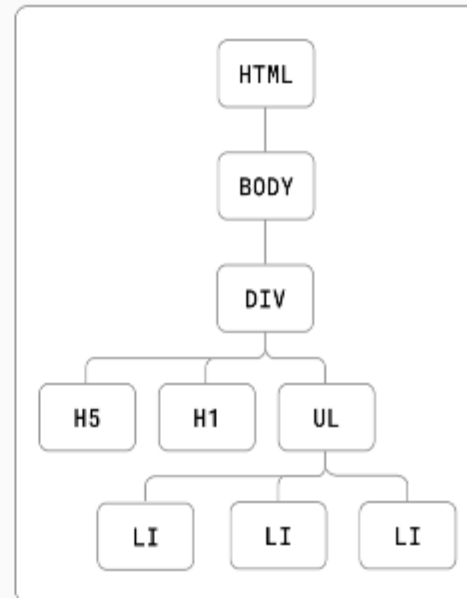
Rendering User Interfaces



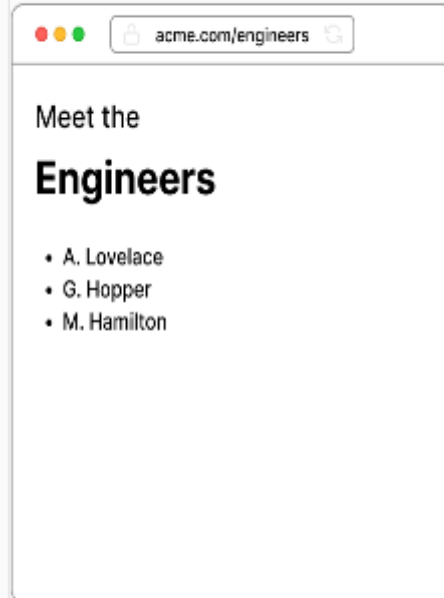
HTML

```
index.html
1 <html>
2   <body>
3     <div>
4       <h5>Meet the</h5>
5       <h1>Engineers</h1>
6       <ul>
7         <li>A. Lovelace</li>
8         <li>G. Hopper</li>
9         <li>M. Hamilton</li>
10      </ul>
11    </div>
12  </body>
13 </html>
```

DOM



UI



JavaScript and DOM Methods



Plain HTML

```
<!-- index.html -->
<html>
  <body>
    <div></div>
  </body>
</html>
```

Add JavaScript to HTML

```
<!-- index.html -->
<html>
  <body>
    <div id="app"></div>

    <script type="text/javascript">
      const app = document.getElementById('app');
    </script>
  </body>
</html>
```

Example given here:

https://www.w3schools.com/js/tryit.asp?filename=tryjs_dom_method

HTML vs the DOM



DOM

```
Elements
1 <html>
2   <head></head>
3   <body>
4     <div id="app">
5       <h1>Develop. Preview.
6 Ship. 🚀</h1>
7     </div>
8     <script type="text/
9 javascript">...</script>
10   </body>
11 </html>
```

SOURCE CODE (HTML)

```
index.html
1 <html>
2   <head></head>
3   <body>
4     <div id="app"></div>
5     <script type="text/
6 javascript">...</script>
7   </body>
8 </html>
9
10
11
```



References

1. W3Schools Online Web Tutorials, URL: <http://www.w3schools.com>
2. Next.js, URL: <https://nextjs.org/>
3. Mozilla Developer Networks, URL: <https://developer.mozilla.org/>



Thank You!