Module 4 — Overview

Introduction

We have gone over the fundamentals of JavaScript and HTML. We now understand how to set up routes to handle HTTP requests and how to write applications that serve static HTML pages. The pages we can develop though are not pretty and we do not have interactivity in those pages.

In this module, we first learn about CSS to add styling to our pages. We then begin using JavaScript to interact with an HTML page in a browser to make an interactive page. To accomplish this interaction, we are going to learn about several JavaScript objects which are part of the browser environment. We need to be careful when switching from one JavaScript programming context to another. What is available in a browser will not be available when using Node. So it is important to keep clear in our head what features are specific to browsers and which are generally available in JavaScript. Another concept we will be learning about is the Document Object Model or DOM. DOM is a representation of a web page that JavaScript has access to. We can manipulate the DOM using JavaScript and make our webpages interactive.

Module Learning Outcome

After successful completion of this module, you should be able to do the following (in addition to answering the questions listed below):

1. What is CSS and how do we use it in web applications? (CLO 1, CLO 2)
    - What is the need for CSS?
    - What is the general form of a CSS rule?
    - What are CSS selectors, and what are they used for?
    - What are some types of basic CSS selectors?
    - What are location-based CSS selectors?
    - What are pseudo-selectors?
    - What are the different ways of adding styling rules to an HTML document, and what are the pros and cons of these different ways?
    - How is rule precedence determined for CSS rules?
2. What are some of the important CSS properties & what is the CSS box model? (CLO 1, CLO 2)
    - How are some of the common color related properties?
    - How can we specify the value of colors?
    - What are some of the important units for specifying size in CSS?
    - What is the CSS box model?
    - What are the different size properties relevant to the box model?

    - What are the different ways to position elements in the box model?
3. What is the Document Object Model, or DOM? (CLO 1, CLO 2)
    - What are the different types of nodes that commonly occur in DOM trees for HTML documents?
    - How can we traverse elements in the DOM tree?
    - What are the different methods we can use to search for elements in the DOM tree?
4. How can we modify the DOM tree? (CLO 1, CLO 2)
    - What are the properties of DOM nodes that are commonly modified?
    - How can we modify the structure of a DOM tree?
    - How can we insert elements in a DOM tree?
    - How can we remove elements from a DOM tree?
5. What are DOM events and how can we use them to create interactive web applications? (CLO 1, CLO 2)
    - How can we provide interactivity in our web pages using DOM events and event handling?
    - What are some of the most useful types of DOM events?
    - What is involved in event handling?
    - How can we register or remove event handlers?
    - What information is available in an event object?
    - What are load events and what is an important use case for these events?
    - What are timers and how can we use them?
    - How can we prevent default actions from being taken for an event?
    - What is meant by event propagation and how can we stop it if we want?

Explorations

Use the pages within this module to explore the following concepts:

- Exploration — Introduction to CSS and Frontend Design
- Exploration — CSS Methods
- Exploration — The Document Object Model
- Exploration — Modifying the DOM Tree
- Exploration — DOM Events

Task List

Please make sure to complete the following assignments and other tasks:

- Complete the exercises provided in the Explorations.
- Take the Module quiz.
- Start Assignment 4.
- Complete the Module Feedback Survey.

(https://canvas.oregonstate.edu/courses/1879154/modules)