

Module 2 — Overview



Introduction

The first foundational web technologies we will start learning is JavaScript. This module introduces JavaScript. We will continue learning JavaScript over coming modules mixed in with learning other important web technologies.

Note: This module covers a lot of material. As you go through the module, don't worry if you feel you haven't fully grasped all the material presented in the module. The exercises and Assignment 2 will help you understand some of the most important concepts. In later modules of the course, we will use additional concepts from this module. At that time, we will refer back to the relevant explorations in this module, so that you can come back and review these concepts when you need to use them.

Module Learning Outcomes

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



1. Explain the need and uses of JavaScript (CLO 1, CLO 2)
 - What is JavaScript?
 - Where does JavaScript fit among the various web technologies?
 - How to run JavaScript in a web browser?
 - How to run JavaScript using Node.js?
2. Explain data types and their declaration in JavaScript. (CLO 2)
 - What does it mean to say that JavaScript is dynamically typed?
 - What are the basic data types supported by JavaScript?
 - How should we declare variables in JavaScript?
 - How to define functions in JavaScript?
3. Create and use objects, arrays and JSON in JavaScript (CLO 2)
 - How we define objects in JavaScript?

- How to define and use arrays in JavaScript?
- What is JSON and what are its uses?
- 4. Write programs with conditional branching and loops (CLO 2)
 - What are the statements provided in JavaScript for branching?
 - How are conditions evaluated?
 - Why we must not rely on automatic type conversion in conditions?
 - What are the statements provided in JavaScript for looping?
 - What are the different flavors of `for` statement and what are their uses?
- 5. Write programs using the powerful support for functions in JavaScript (CLO 2)
 - What are higher-order functions?
 - What are function expressions?
 - What are the two ways of defining anonymous functions?
 - What are closures and how do we define them?
 - What are exceptions and how should we use them in our programs?
- 6. Write programs that use object-oriented principles (CLO 2)
 - How to create objects with state and behavior?
 - How does JavaScript use prototypes to support objects without classes?
 - What are the features provided by modern JavaScript to define classes and subclasses?

Explorations

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

- **Exploration — Introduction to JavaScript**
(<https://canvas.oregonstate.edu/courses/1879154/pages/exploration-introduction-to-javascript>)
- **Exploration — Variables, Data Types and Simple Functions**
(<https://canvas.oregonstate.edu/courses/1879154/pages/exploration-variables-data-types-and-simple-functions>)
- **Exploration — Objects, Arrays and JSON**
(<https://canvas.oregonstate.edu/courses/1879154/pages/exploration-objects-arrays-and-json>)
- **Exploration — Conditionals and Loops**
(<https://canvas.oregonstate.edu/courses/1879154/pages/exploration-conditionals-and-loops>)
- **Exploration — Functions and Functional Programming**
(<https://canvas.oregonstate.edu/courses/1879154/pages/exploration-functions-and-functional-programming>)
- **Exploration — Object-Oriented Programming**
(<https://canvas.oregonstate.edu/courses/1879154/pages/exploration-object-oriented-programming>)

Required Reading

Read the following chapters from the textbook.

- Chapter 1. You may skip sections 1.13, 1.16, 1.17.
- Chapter 2.
- Chapter 3. You may skip sections 3.7, 3.12, 3.13, 3.14.
- Chapter 4. Read sections 4.1, 4.4, 4.5, 4.7. Skim sections 4.2, 4.8, 4.9, 4.10. You may skip the remaining sections.

Task List

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

- Complete the exercises provided in the explorations
- Complete the Module by Examining the **Review Page**
(<https://canvas.oregonstate.edu/courses/1879154/pages/module-2-review>)
- Complete **Assignment 2**
(<https://canvas.oregonstate.edu/courses/1879154/assignments/8901644>)
- Complete the **Module 2 — Feedback Survey**
(<https://canvas.oregonstate.edu/courses/1879154/assignments/8901654>)



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