Intermediate Programming: JavaScript

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CS 233JS

Topics

- Intro to the CS 233 JS

Overview

Course Description

This is the second in a sequence of 2 courses that teaches students to develop client-side or front-end code for browser based applications. The course introduces intermediate level programming concepts and skills as well as JavaScript syntax, tools and frameworks required for modern front-end development.

Learning Outcome

The intention of the course is to enable you to use modern technologies and tools to create sophisticated front-end components that might be part of any web site.

Technologies

Bootstrap	CSS Flexbox	HTML 5 Canvas
JavaScript	ECMAScript 6 (2015)	Json
Node.js and npm	Babel	Webpack
Clientside WebAPI	AJAX with Fetch/Axios	

Skills

Explain the relationship between presentation layer, client-side programming and server-side programming in modern web applications. Explain the usage of JavaScript in modern web applications.
Effectively use intermediate and advanced syntactical elements of modern Javascript (ES 6) including: variable scope (let and const) template literals, objects, destructuring assignment, anonymous functions, arrow functions, classes, modules.
Effectively use JavaScript tools, modules, libraries and frameworks that are typical in modern JavaScript development including: codepen and jsfiddle, node.js, npm, babel, webpack, fetch, axios.
Design and implement a variety of sophisticated JavaScript applications including: a ToDo list, a Bookmarking application, a Meme Creator, a Meetup application with charting and mapping features, a Weather application.

Texts

There is no text for the course. The content of the course centers on the development of several relatively sophisticated web applications using modern features of JavaScript. In the process of building the applications the course will illustrate the usage of JavaScript modules, libraries and frameworks that are typical of modern JavaScript development environment. I will provide reading material and video on a variety of topics. I will also provide screencasts that demonstrate all of the concepts and skills required for completion of each lab. Starting files for each lab assignment will be hosted on github beginning with the 2nd lab.

Software

The hardware and software required for modern JavaScript programming are required for the course. Additional JavaScript tools are introduced throughout the course. The ideal development platform involves a web client machine running:

- An appropriate operating system. Window 11 is installed on the machines on campus but you can use an older version of Windows or a version of the Mac OS or Linux to do your work for class.

- A text editor to edit and/or create your JavaScript files. Visual Studio Code and Notepad++ are both installed on the machines on campus. VS Code can be used on any hardware and OS platform. Notepad ++ is available only for Windows machines.

- At least 2 browsers for testing, debugging and running your scripts. Chrome, Firefox and Internet Explorer (and several other browers) are installed on the machines on campus and Chrome will be used as the primary browser in class. Chrome is available free for Windows, Mac and Linux machines. You can use any browser available for your hardware and OS platform for your work in class.

- FTP software to transfer your completed labs to citstudent.lanecc.net for grading. CoreFTP is installed on the machines on campus and is available free for Windows machines. You can use any ftp client available for your hardware and OS platform that supports the sftp protocol to do your work for class.

- Git command line tools and a github account for version control.

Assessment Tasks

The learning outcomes will be demonstrated by these tasks that progressively build on each other:

- Lab 1 – Design, implement and test 3 web applications using JavaScript language features from 133JS and Bootstrap.

- Lab 2 - Rewrite the 3 applications from lab 1 using new features available in modern JavaScript (ES 6).

- Lab 3 – Design, implement and test 2 web applications JavaScript tools including node, npm, babel and webpack. Use HTML 5 local storage as well as ES6 language features from lab 2.

- Lab 4 – Design, implement and test 2 web applications using CSS Flexbox, HTML 5 Canvas. Continue using ES6 language features from labs 2 and 3.

- Lab 5 – Design, implement and test 2 web applications that integrate client-side and server-side code by making AJAX calls.

- Lab 6 – Design, implement and test a more complex web applications that integrates client-side and server-side code by making AJAX calls. Use regular expressions and HTML 5 form fields to validate input from the user. Use google maps api and geolocation to add mapping features to the application. Use chart.js to add charting features to the application.

- Project – Design, implement and test a web application of your own choosing that makes an AJAX call and demonstrates your understanding of several other tools and technologies introduced in the course.

More Assessment

The learning outcomes will be demonstrated by these tasks that progressively build on each other:

- Reading Quizzes 1 – 6 – Independently answer multiple choice, matching or short answer questions based on the reading each week.

- Participation Scores 1 – 6 – Choose from any of the following ways to participate in class each topic:
    - ask a question in a zoom class session
    - answer a question in a zoom class session
    - ask a question in the topic forum
    - answer a question in a topic forum
    - record a video describing your solution to a problem from the lab
    - complete a peer evaluation for another student for a problem from the lab.

Assessment and Grading

Assessment Tasks	Points
Labs 1 - 6	180
Reading Quizzes 1 - 6	60
Participation Scores 1 - 6	30
Project	80
Course Total	350

What's Next

- Javascript Review
  - Lab 1 – 3 problems that you might have solved at the end of CS 133JS
    - I'll do the first problem with you. I'll do much of the 2nd problem with you but will leave you to do some of it yourself. I'll point out a couple of things in the 3rd problem that are difficult. I'll leave the rest of the problem for you to do on your own.
    - I'll give you a zip file for each problem to get you started. I'll give you the html that you need too. You'll be responsible for the css.
  - Reading Quiz 1
  - Participation Score 1