INTRODUCTION TO: BACK-END DEVELOPMENT

This outline is a work-in-progress, and may change in the future – medatech@medasf.org

MONDAY THROUGH FRIDAY 9AM-1PM @ GOOGLE MEET

MEDA Cohort Spring 2021; Instructor Eduardo Garcia

DESCRIPTION

This is an eight week course that is designed to take a student that has zero knowledge on how to write computer code, and take them to a level that allows them to handle most aspects of building websites. This is an introductory course that will cover a couple of technologies involved with creating web pages for the Internet. **If you miss attendance for a total of four days, you are automatically dropped from the class!**

PREREQUISITES

While this is an introductory class to *computer coding*, there are a few things that you should have a foundational understanding of in order to have the best experience in this class. Keep in mind I do not cover any of these topics during class. You should have a basic understanding of math including addition, subtraction, multiplication, and division. Geometry-level math knowledge is *highly* recommended! The focus of this class is learning how to write code, which means you should feel comfortable using either a Mac or Windows computer and include: opening and saving files, transferring a file between computers, using email, and using a web browser.

PENALTIES

- ➔ A total of four attendance calls missed is grounds for being dropped from the class. Attendance is crucial to your learning to write code is similar to learning Math, you miss one day and you will be completely lost the next day. I frown upon tardiness and if you arrive to class after 9:05AM you are marked absent. It is better to be thirty minutes early than thirty minutes late! If you are aware of future absences, please speak to me so we can work out the days missed.
- ➔ A total of three unsubmitted projects by their respective deadlines is grounds for being dropped from the class. The student is responsible to schedule their work on projects outside of class time.

➔ Any type of disrespect toward other people or MEDA property may be grounds for being dropped from the class. Any offensive comments or arguments based on racial or religious background toward another person is grounds for being dropped from the class and the student will be asked to leave the class immediately.

(OPTIONAL) RECOMMENDED BOOKS

The following two books are out of date as of 2014 but are still highly recommended for their unique and visual way of showing how code works. Many computer code and programming books are very dry and theoretical but these two books may ease the difficulty into getting started with web design.

➔ HTML and CSS: Design and Build Websites by Jon Duckett

➔ JavaScript and JQuery: Interactive Front-End Web Development by Jon Duckett

CLASS GOALS

- Understand how the web is built.
- The ability to creates web pages that can be seen through any modern web browser, are interactive, and easy to use.
- Have a clear understanding how computer code is written and handled.
- Learn the tools needed to create a website, including Git, GitHub, Cloud9, the Terminal, SSH, and Apache.
- Develop visual design for websites and other media.
- Have a basic skill in writing HTML, CSS, and JavaScript.

WEEK 1

Introduction to the MEAN Stack

➔ What the MEAN stack is and what each letter represents.

➔ Give an overview of each technology that goes into a MEAN stack.

➔ Comparing the MEAN stack to the LAMP stack.

➔ What we will expect to learn and do in the final 8 weeks.

➔ Review HTML, CSS, and JavaScript. Have a solid foundation on these as we will depend on these to use the upcoming technologies.

➔ Catch up and polish on previous Projects

At the end of this week, we will have a “mid-term” quiz that will cover HTML, CSS, JavaScript, JQuery, and Terminal.

WEEK 2

Create, Read, Update, and Destroy files with Node.js

- ➔ What Node.js is and how it compares to the older LAMP stack.
- ➔ Setting up and using Node.js on your computer and other computers.
- ➔ Using Node.js to debug your JavaScript, and an introduction to nodemon and repl.
- ➔ Learn what npm is and how to use others people code instead of writing your own.
- ➔ Exploring built-in modules like fs and exporting your own.
- ➔ Using Node.js to create files using your JavaScript Code!

The project that we will get started on this week will be a To-Do list application that the user interacts with through the Terminal. This application will allow us to save and load data, which can be modified by the user.

WEEK 3

Introduction to Express.JS, a server-side JavaScript Framework.

- ➔ Installing the Express.js NPM module.
- ➔ Setting up your Node.js projects to use Express.js.
- ➔ Understanding Express.js Routes.
- ➔ How to use SSH to use the Terminal on another computer!
- ➔ Project 6: A single web page application for your hobby guide

We will be updating our To-Do list application so that it can be loaded into a web browser and have the same functionality through a web page.

WEEK 4

And introduction to MongoDB, the JavaScript Database solution.

- ➔ Why use a database over individual files.

- ➔ Learn how to create and use a MongoDB database.
- ➔ How MongoDB compares to older database standards (You don't need to learn another computer language!).
- ➔ Installing and using the Mongoose Node.js module.
- ➔ Learn how MongoDB stores data using flexible JSON-like documents.
- ➔ Learn how to use C.R.U.D. commands to modify your data on a MongoDB database.
- ➔ An introduction on how to structure your database for future use.
- ➔ Create an official Entity Relationship Diagram for your database.

Plan a project to create a website that solves a common problem using MongoDB.

WEEK 5

During this week we will be taking a look at additional tools that can give an extra boost to your web design skills. We will also be looking at planning, structuring, designing, and implementing a fictional company's website. We will go over some tips on how to find and engage clients to open the opportunity to freelancing.

- ➔ Practice using Google Fonts and understanding how it works and why font choice is very difficult (for legal reasons) to work with for web projects.
- ➔ Introduction of data sanitization and securing your website from potential security holes.
- ➔ Look at a CSS library called FontAwesome, which stores icons in a font to be used on your website (similar to WingDings).
- ➔ Take a look at the basics of Color Theory, tools that can help you develop colors, and take a look at Adobe Color and Flat UI. Look at the Flat UI replacement Material Design, a set of rules set by Google for user experience.
- ➔ Plan our website project using everything we learned so far to create a usable website for our fictional client. How to create deliverables and work with a schedule to meet deadlines.

This weeks project is to work on the fictional website to be presented next week.

WEEK 6

[DATASET PROJECT] [REACT PROJECT]

WEEK 7

Helping the community, planning and working on a Non-Profit website project.

- ➔ Finding a potential non-profit client and avoid ones that can cause issues. Explaining the basic technologies to your clients and what expenses cannot be avoided (domain name and web hosting).
- ➔ Communicating their needs and wants, and providing your services and capabilities. Learn about scope creep and how to avoid or minimize it.
- ➔ Planning out a rough draft to creating your project, delegating who is in charge of what.
- ➔ Create a skeleton of the project using technologies learned so far in this course.
- ➔ Asking for help and suggestions from your peers, from the internet, others, how to implement their code, and avoid blindly copying and pasting.
- ➔ A quick introduction to legalities in copyright and trademarks, and making your website friendly for everyone using Disability Assistance technologies.
- ➔ Continuation of working with your non-profit project (Helping The Community) and what to do after completion of this cohort.
- ➔ Sampling Programming Interview Questions

• Project 9 Setup: Helping The Community.

WEEK 8

For this week we will update, finish, and polish any work that has been worked on in the back-end class. Will be having a celebration at the end of the week, we will be presenting our projects that were created during class to MEDA's top employees.

NOTES
