

Web Application Development

COSI 152A



Your Instructor

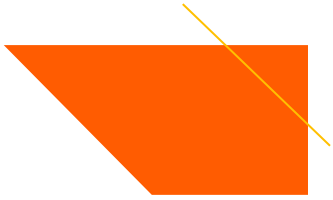
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The team

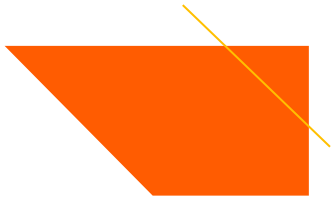
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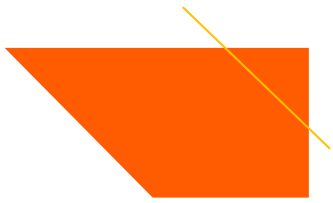


Introduction and software set up



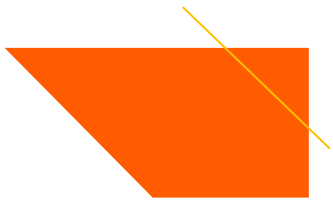
What is COSI 152A about?

- A complete introduction to web application development.
- A gate to the world of Node.js for everyone!.



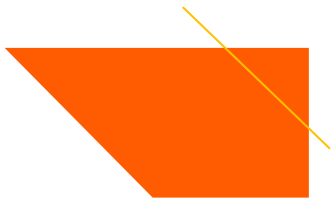
Course topics

- This course covers:
 - Basic client-side languages and tools, including HTML, CSS and JavaScript.
 - Node.js for both client-side and server-side programming.
- The course also discusses security and scaling/optimization.
- Database connectivity will be applied through MongoDB.
- It is a project-based course.



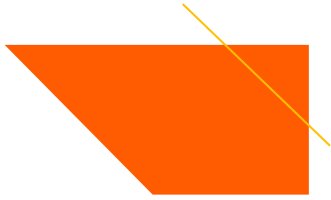
Learning goals

- Design, develop, debug, and deploy web servers and web applications.
- Showcase your practical skills in HTML, CSS, JavaScript, Node.js, Express.js and MongoDB.
- Build an entire dynamic web application using a single platform.
- Work effectively individually, or in a team, to create web applications.

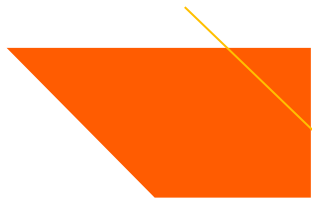


Road map

- Throughout this course you'll build your knowledge and skills incrementally until you become a competent web developer.
 - This means that each unit aims to build on the concepts and development skills of the last.
-
- Tip: Make sure that you go through each lesson carefully and write all the code examples yourself to get the most out of this course.

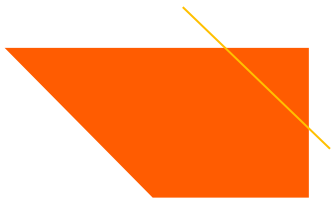


For detailed topics, course requirement, assignments and projects
please refer to the course **syllabus**



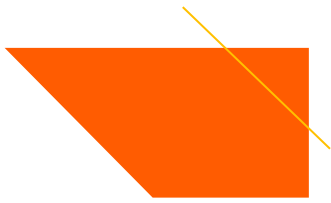
Activity: Introduce yourself!

- Everyone please take 5 minutes to introduce yourselves in Mastery App.
- **Sign up for COSI 152 Mastery App**
 - Mastery Learning app <https://mastery.cs.brandeis.edu/>
 - Sign up for our course with the Student PIN: 8827513



Installations and configurations

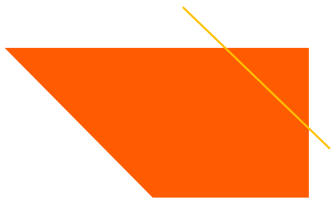
- To build a web application using Node.js and run it on the internet, we need to install/configure the following tools:
 - Install Node.js
 - Check with the Node.js REPL in terminal
 - Install a text editor
 - Set up SCM and deployment tools
 - Install MongoDB



Installing Node.js

Node.js is platform-independent, you can download and install it on your Mac, Windows, or Linux computer and expect full functionality.

- Download the latest stable version of Node.js installer by following the instructions and prompts at <https://nodejs.org/en/download>
- When the installer file is downloaded, double-click the file. Follow the prompts to click through the installation.
- Alternatively, you may want to use the Node.js Version Manager (NVM) to handle your Node.js installation and manage one or multiple versions of Node.js on your computer. Follow the instructions at <https://github.com/creationix/nvm>



Installing Node.js

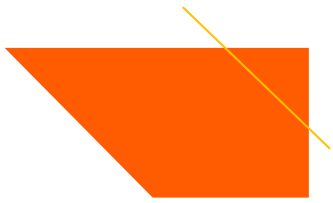
- To make sure your installation is successful, execute the CLI command:

```
node -v
```

- When you install Node.js, you also get Node Package Management (npm), the Node.js package manager that help JavaScript developers share packaged modules of code.

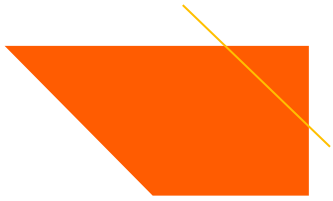
```
npm -v
```

The installer will add these directory locations to your system's PATH variable.



REPL environment

- You can use Node.js from terminal through the Node.js REPL environment.
- The interactive Node.js shell is the Node.js version of Read-Evaluate-Print Loop (REPL).
- This shell is a space in which you can write pure JavaScript and evaluate your code in the terminal window in real time.
- You can get to REPL by entering the **node** keyword in your terminal window.
- This action takes you in the interactive Node.js shell.
- To exit REPL, type `.exit` or press Ctrl-C twice.



Installing text editor

- Text editors come in many forms, install your favorite one!
- For this course VSCode is recommended.
- To install VSCode:
 - Go to <https://code.visualstudio.com/download#> and select your favorite OS to download VSCode.
 - Follow the prompts to install the software on Windows.
 - For Mac, add VSCode application to your application folder.



SCM and deployment tools

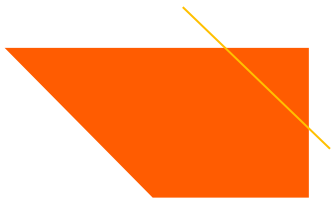
- Deployment is the migration of your application from your computer to a place where it can be accessed and used publicly online.
- Software configuration management (SCM) is the process of managing your application in its different environments as new features and changes are applied to the code.
- You can use Git and the Render together to deploy your code from development to production and manage your application.



- Git is a version-control tool used to separate layers of your application's code evolution.
- On Mac, Git should already be installed.
- On Windows, if you've installed Git Bash, Git came packaged and installed too.
- You can check if Git is installed by executing the following command in terminal: `git --version`
- Otherwise, download git directly from <https://git-scm.com/downloads> selecting your operating system. The downloaded file opens a graphical interface through which you can install Git on your machine.

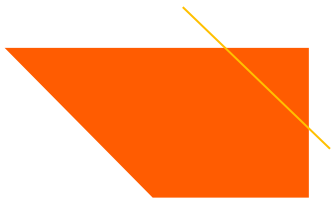


- Having Git installed, you can use it by initializing your project in terminal with: `git init`
- Now you can add individual project files to your new version by running:
`git add <followed by the relative path to the file>`
- To confirm adding files, run: `git commit -m "some message"`
where the message in quotations describes changes that you made.
- Learn more about using Git through videos and documentation at <https://git-scm.com/doc>.



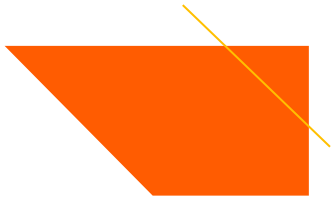
Render

- Render is a unified cloud to build and run all your apps and websites
- Automatically deploy from Git or GitHub



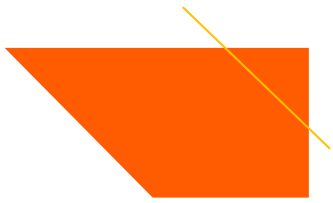
Installing MongoDB

- MongoDB is an open-source database program that organizes data by using documents.
- On Mac use Homebrew to install MongoDB:
 - For macOS earlier versions:
 - brew install mongod
 - Create a folder called db within another folder called data at your computer's root level. `mkdir -p /data/db` in a terminal window.
 - You may need to give permissions to your user account to use this folder. To do so, run: `sudo chown <your_username> /data/db`.



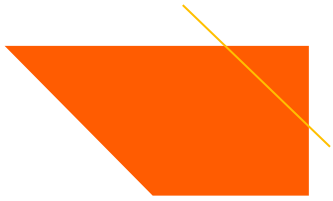
Installing MongoDB

- For macOS Catalina and later:
 - `brew tap mongodb/brew`
 - `brew install mongodb-community@6.0`
 - `brew services start mongodb-community@6.0`
 - Mongosh



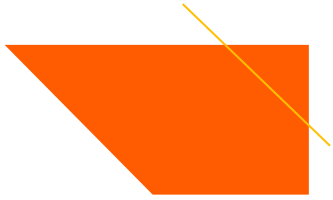
Installing MongoDB

- On Windows:
 - Go to <https://www.mongodb.com/download-center#community> in your browser.
 - Download MongoDB for Windows (.msi).
 - When the download is complete, open the file, and click through the default installation steps.
 - When the installer completes, go to your C:\ drive, and create a new folder called data and a folder within it called db.
 - add the MongoDB folder path to your environment's PATH variable.



Installing MongoDB

- If you have issues installing MongoDB locally, consider:
 - Installing MongoDB using Docker. See [here](#) for how to install it.
 - Creating and using MongoDB atlas online account.



Thank You!