CS 628: Full-Stack Development – Web App

City University of Seattle

School of Technology & Computing

Professor Sam Chung

## HOS08: Node, Express, and Express Router

Samantha Hipple

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# PLEASE NOTE

Screenshots in this guide may differ from your environment (e.g., directory paths, version numbers, etc.). When choosing between a stable or most recent release, we advise you install the stable release rather than the best-testing version. Additionally, there may be subtle discrepancies along the steps, please use your best judgment to complete the tutorial. If you are unfamiliar with terminal, command line, and bash scripts, we recommend watching [this video](https://youtu.be/Dp7uw9c6QH8) prior to moving forward with this guide. Not all steps are fully explained. Lastly, we advise that you avoid copy-pasting code directly from the guide or GitHub repositories. Instead, type out the code yourself to improve familiarity.

More information on this guide can be found under the related module in [this repository](https://github.com/samchung0117/cs628-examples).

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1. Accessing GitHub Codespaces
2. Project initialization
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# SECTION 1. ACCESSING GITHUB CODESPACES

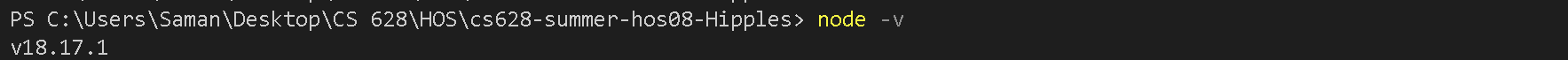
GitHub Codespaces is an online cloud-based development environment that allows users to easily write, run and debug code. Codespaces is fully integrated with your GitHub repository and provides a seamless experience for developers. In order to access Codespaces, users only need a GitHub account and an active internet connection.

After downloading the current HOS assignment, in the top-right corner of the repo, click on the **<> Code** drop-down menu and select **Create codespace on main** as shown in the following image. The free and pro GitHub subscriptions include free use of GitHub Codespaces *up to a fixed amount of usage each month*. In order to avoid unexpected charges, please review the [billing information](https://docs.github.com/en/billing/managing-billing-for-github-codespaces/about-billing-for-github-codespaces).

# SECTION 2. PROJECT INITIALIZATION

Node.js is an open-source, server-side, runtime environment that enables JavaScript (JS) code execution on the server. Node is designed to assist developers in building scalable and efficient network applications. In this guide, we will be creating the backend for an application. Let us first check the node version installed in your development environment.

1. Use the command, **node -v** , in your terminal to see the current version in use:



1. Create a backend folder under the root directory using the following terminal commands:

**>> mkdir backend**

**>> cd backend**

1. Install the required dependencies with the following terminal commands:

**>> npm install mongodb express cors dotenv**

The installation of **mongodb** includes the MongoDB database driver, enabling your node.js applications to establish connections with the database service and manage your data effectively. Installing **express** adds the node.js web framework to your environment. Express is a rapid, versatile, and streamlined platform that equips developers with a set of tools and features to easily create web and API applications. The **cors** package enables cross-origin resource sharing, providing a secure way to share resources across different origins. Lastly, installing **dotenv** adds a module that automatically loads environment variables from a **.env** file into the **process.env** object. This practice of separating configuration information from the code fosters a cleaner and more organized development approach.

1. View the installed dependencies by checking your **package.json** file:

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1. Create a file called **server.mjs** and add the following code:

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For those curious about the **.mjs** extension, it's essential to recognize that both **.js** and **.mjs** extensions are used in Node.js to execute JavaScript code. However, they handle modules differently. The **.js** files adopt the CommonJS module system in Node.js, using **require()** for importing modules and **module.exports** for exporting them. On the other hand, **.mjs** files employ the ES Modules (ESM) system, leveraging the **import** and **export** statements for module operations. In the code provided above, we are importing **express** and **cors**. The statement **const port = process.env.port** retrieves the **PORT** variable from **config.env**.

# SECTION 3. CONNECTING TO MONGODB ATLAS

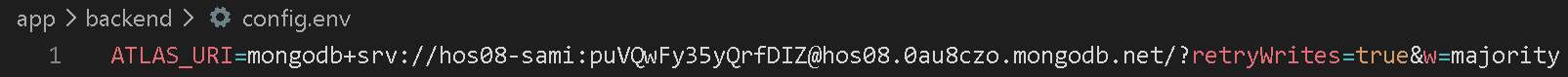
In order to connect to MongoDB Atlas, we first need a connection string.

1. Log in to your MongoDB Atlas account.
2. Head to the overview section and click on **CONNECT**, then **Drivers**.

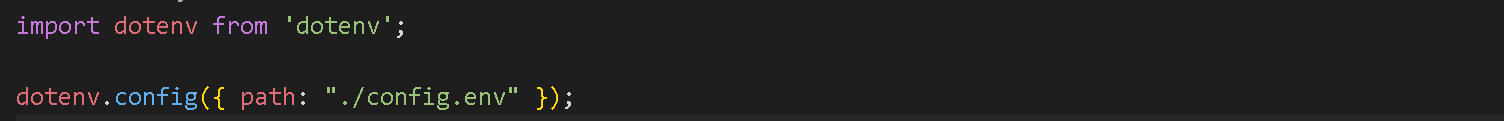
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1. Copy and paste the connection string, then update the password.
2. Create a file called **config.env** and store the updated connection string as shown:



1. Next, create a file called **load-environment.mjs** and add the following code:



1. Within **backend**, create a new directory called **db**.
2. Within **db**, create a new filed called **conn.mjs** and add the following code:

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# SECTION 4. DEFINING SERVER API ENDPOINTS

1. Within **backend**, create a new directory called **routes**.
2. Within **routes**, create a new file called **records.mjs** and add the following code:

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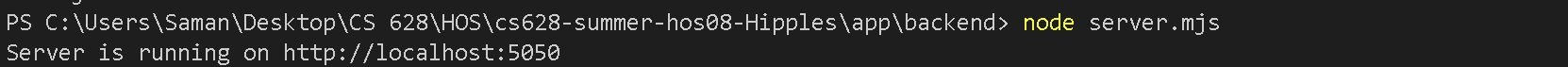
This code defines a **router** that allows for CRUD (Create, Read, Update, Delete) operations on a collection named **records**, leveraging the Express Router feature from the Express web application framework in Node.js.

The **router** is composed of several routes: the first route retrieves all records from the **records** collection in response to a GET request at the root path (**"/"**). The second route handles a GET request with a parameterized route (**"/:id"**) and fetches a single record based on the provided ID. The third route accommodates a POST request, facilitating the addition of a new record to the **records** collection. Finally, the fourth route responds to a PATCH request (**"/:id"**), updating a specific record identified by the given ID with the data provided in the request body.

1. Run the server using the following terminal command:

**>> node server.mjs**

1. If everything is working properly, this message will appear in the console:



1. Click on the **Ports** tab next to the terminal and open the local URL in your browser.
2. The following message should be displayed:

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In our **server.mjs** file we are using the slug **/record** to mount the records router to a specific route path within the Express application. This means that whenever a request is made to the **/record** route, the functionality defined in the records router will be executed.

1. Append **/record** to the localhost port and refresh the browser:

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The error should go away, and an empty array will be returned. This is expected as we have not inserted any records into our database.

#### SECTION 5. TESTING API ENDPOINTS WITH POSTMAN

## PUSH YOUR WORK TO GITHUB TO SUBMIT