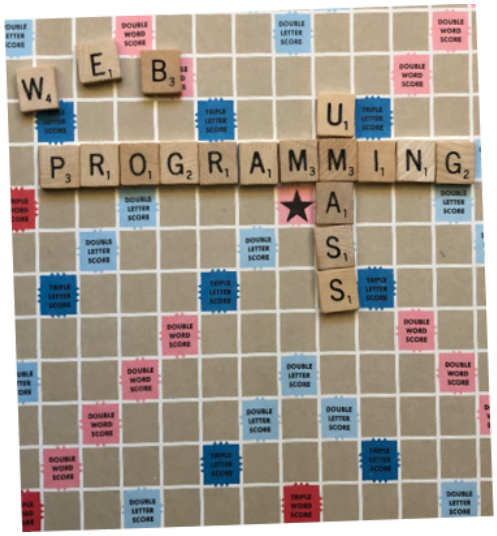
# COMPSCI 326 - Web Programming
# Homework 10 - DBMS & Heroku - *individual assignment*
# due November 22, 2021, 11pm EST

**(*GitHub classroom link: [https://classroom.github.com/a/I6XMp6We](https://classroom.github.com/a/I6XMp6We)*)**




This is the last (!) part of a series of assignments around the game of Scrabble. We hope that it will be a fun experience in progressively learning all pieces of modern web development, so as to engineer a fully functional game. In this assignment, you will set up a DBMS (SQL or NoSQL) and use it instead of our JSON flat file, as well as make your application available on the web.

Please submit this assignment on GitHub Classroom. It will be helpful to come up with test cases, and we encourage you to share them amongst each other; this will make everyone's code better and is actually how Quality Assurance (QA) can work in practice. However, this is an individual assignment and you **cannot share code**; submissions will be run against plagiarism detection tools. Additionally, we will be spot checking the code for good coding practices. It is expected your code **does not** contain (1) extraneous variables/code, (2) missing semicolons, (3) missing curly braces, (4) use of double equals, (5) use of `let` when a `const` would suffice, (6) use of `var`, (7) inconsistent return values. Furthermore, you should use whitespace consistently and to make the code legible. Now that you've learned how to use ESLint, it should be easy to satisfy these requirements.

You should import the files you used for the previous homeworks (or of course use the solution posted on Slack). **Please do not rename any of the existing files or change the directory structure.** You are free to create more files and import them. However, you **cannot** use any external modules beyond those provided without prior permission.

## 0. Favicon

As some of you have noticed in the last assignment, we don't have a favicon for our Scrabble game. It's a nice touch to have one. Read the Wiki article linked, and add one of your choice.

## 1. Deploy on Heroku

In this first step, you will deploy your current work on Heroku. You can follow the guide here to install Heroku on your machine, and here to deploy your current app. This will essentially consist of the following.

1. Install the Heroku CLI
2. Login to Heroku through the CLI (`heroku login`)
3. Create a new Heroku app (`heroku create`)
4. Add the newly created app as a remote of your current work (`git remote add heroku` *`your-heroku-git-repository-url-goes-here`*)
5. Create a `Procfile` (saying what should be run to start the application)
6. Change port to `process.env.PORT || 8080`.
7. Push your work to the `heroku` remote (`git push heroku master`).

## 2. DBMS

You have a choice between SQL or NoSQL. Choose *one* of the two options for this step.

## 2a. Install PostgreSQL

In this second step, you will install PostgreSQL on your Heroku app. You can install it by clicking the button here, and follow the instructions here if you want to use the CLI. To connect SQL to your Node.js code, we will use `pg-promise`, which you can install through NPM. As can be found in the Heroku documentation, you should use `process.env.DATABASE_URL` as your SQL connection URL.

## 2b. Install MongoDB

In this alternative second step, you will set up MongoDB to be used in your app. To do so, you will use MongoDB Atlas. You will need to sign up, create a "cluster", add a database user, allow connections from your Heroku application, and retrieve the connection URL. You will find useful information in the MongoDB Atlas documentation.

## 3. Implement a DBMS in your application

Finally, you will use either DBMS to save the scores instead of the JSON file we've been using so far. Your application should no longer read or write to the local file system. You should add a link to your deployed Heroku application in a `README` file. Include a screenshot of your application running on Heroku and commit this file to your repository with the name `myScrabbleGame.jpg`.