```
1
2
3     def Class   =     ("CMSC 447")
4     Subject     = "Final Presentation"
5
6
7
8     Authors     = {"Ankeet Patel",
9                    "Ashin Mathew Thomas",
10                   "David Daugherty",
11                   "Steven Ryan",
12                   "Zamyad Golpayegan"}
13
14    def Group   = 4
```

What is the project about?

Our product is a web application that uses data tables to display a heat map that shows the frequency of COVID-19 cases in prisons around the United States. Our program uses an interactive map that changes based on what is selected to be displayed.

Tools Used

- Draw.io for diagrams
- VSCode for the software
- Mysql workbench for the database
- Jira Board for project management
- Github for up-to-date software
- Microsoft Teams for team communication

Software Components

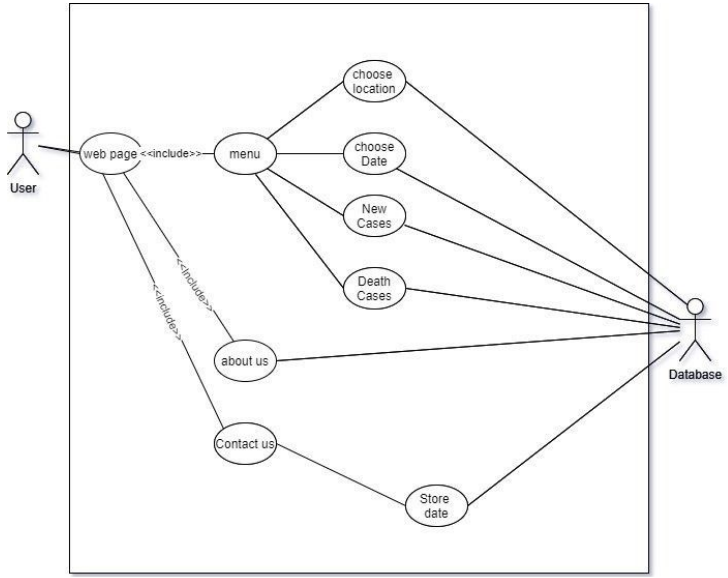
- Our Database server (MySQL Workbench)
- Node.js (Our Javascript runtime environment)
- AXIOS

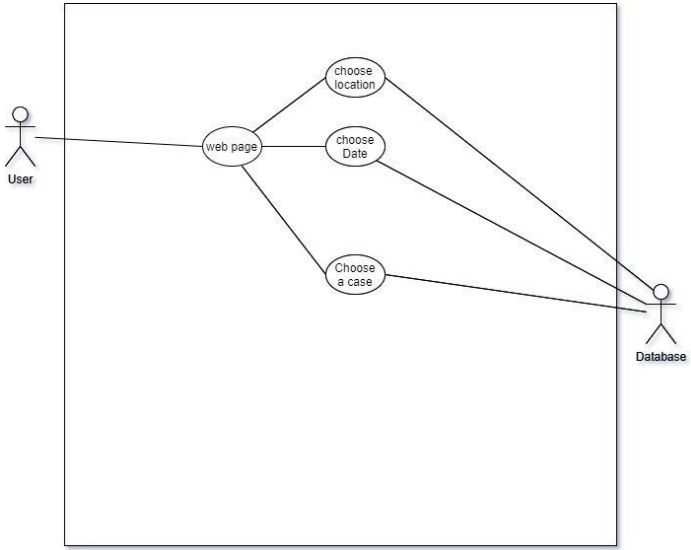
Choice of Technology

- We chose mysql workbench because it was preferred for the delivery and sql is a language we understood.
- We chose Node because it made managing dependencies easier and we could also use node scripts to help manage the startup of the server.

Development Process: Modeling

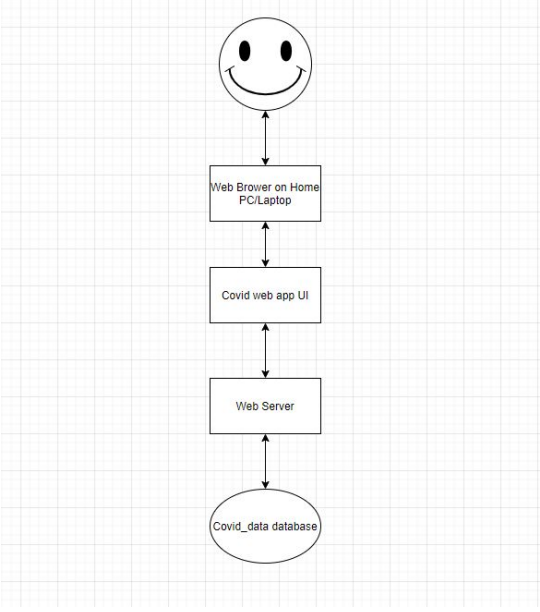
Use Case Diagrams: These were used to plan out the actions that the user will do and the relationships between the desired functionality on the website

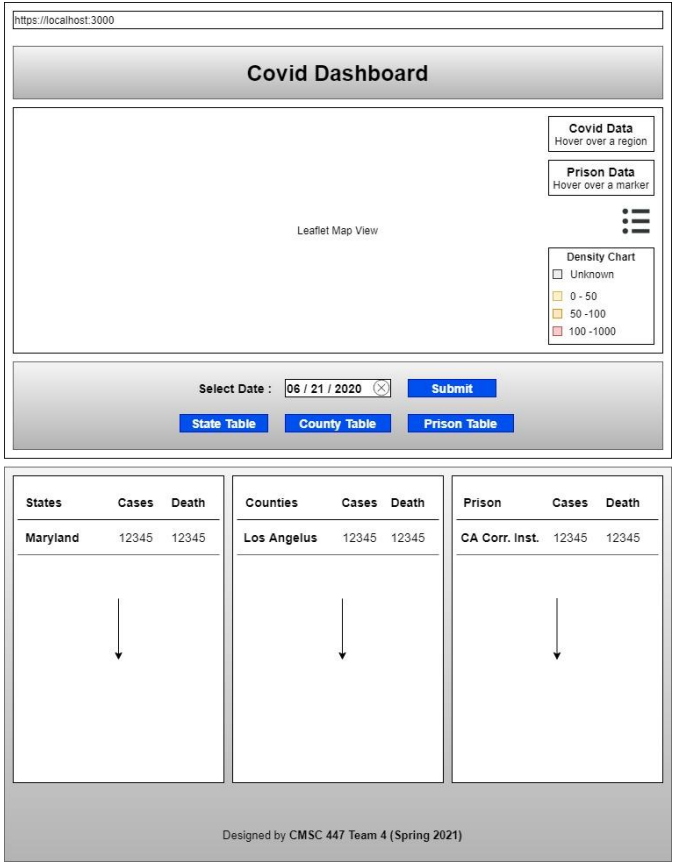




Development Process: Modeling

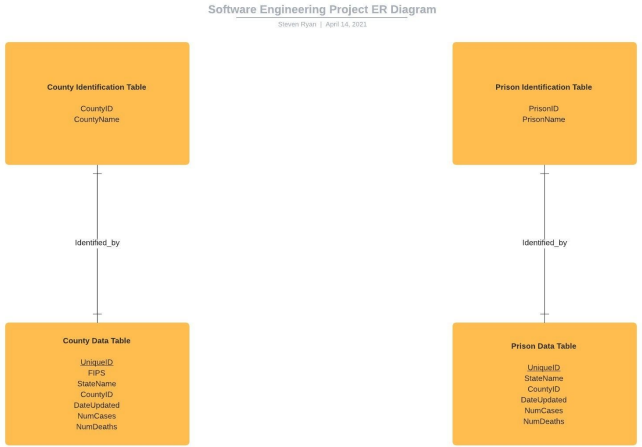
Architecture and UI Diagram: We made these diagrams to show the layers in our architecture and to plan out how the web app and its elements will be laid out on the page

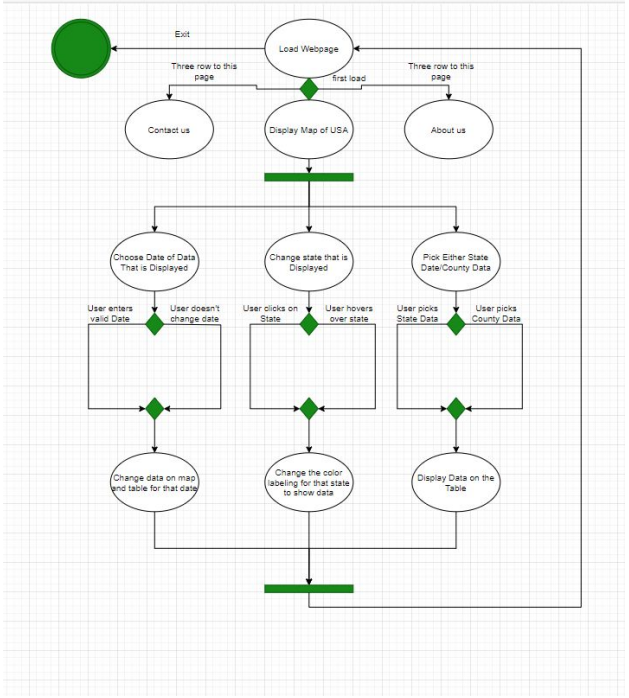




Development Process: Modeling

Activity and E-R Diagram: We made these diagrams to model how the users will be able to interact with the software and the flow of how their actions will affect the software as well as the database tables that will help store the data





Development Process: Development

Our development process was very incremental. We started by attempting to display the UI, then once that was done, we tried to connect it to the database to display the data gathered from the New York Times. Then we had the counties be color coded by frequency of COVID-19 cases, then we added markers to represent the prisons and their data.

Development Process: Code Inspection

While inspecting our code, we wanted to streamline our code by making the installation process easier. Before, we decided to use flask as our api, which required installing more packages and required the use of three command prompts to run our program. After code inspection, we were able to use two command prompts for our installation, and got rid of installing a lot of unnecessary packages such as pip, flask, flask-cors, flask-mySQL, and axios.

Development Process: Testing

For testing, we had some test cases that we used to test our application.

- Checking to see if the UI breaks based on window size
- Testing the range of dates and whether their validity will affect the data
- Checking the counties to see if they show their data when shaded/moused over
- Checking the accuracy of the prison markers to see if they’re in the right location.
- Checking if the legend was organized properly
- Checking if the buttons display the tables properly

Live Demo!

Lessons learned while doing this project

- The amount of information hiding and hidden complexity behind software that is used to make a good, functional program.
- How databases are used to interact with data and how to display the data in certain ways using UI.
- The importance of splitting up work and checking in with the group regularly to share what has been done.

What would we change?

- In the future, we could host our servers in the cloud rather than locally so that the map would be able to handle more data and provide more accurate measurements.
- If we had more time, we could make the UI even sleeker and add the rest of the United States' counties to the application.

Can this assignment be made more effective?

- We could add the vaccine data as well to see the percentage of people who are vaccinated
- Specific hospital data could be added to see how if hospitals are overloaded with covid cases
- The markers the denote the prisons could be color coded to show how severe the COVID-19 outbreak is at each prison just like how the states are.

What did we learn during this course?

- Proper modeling and how to make a diagram for a potential project to be developed
- The importance of working in a group and using scrum to foster a good work environment.
- The steps behind development of web applications and software engineering.
- How to make a UI that is easy to use and understand.

Other comments!