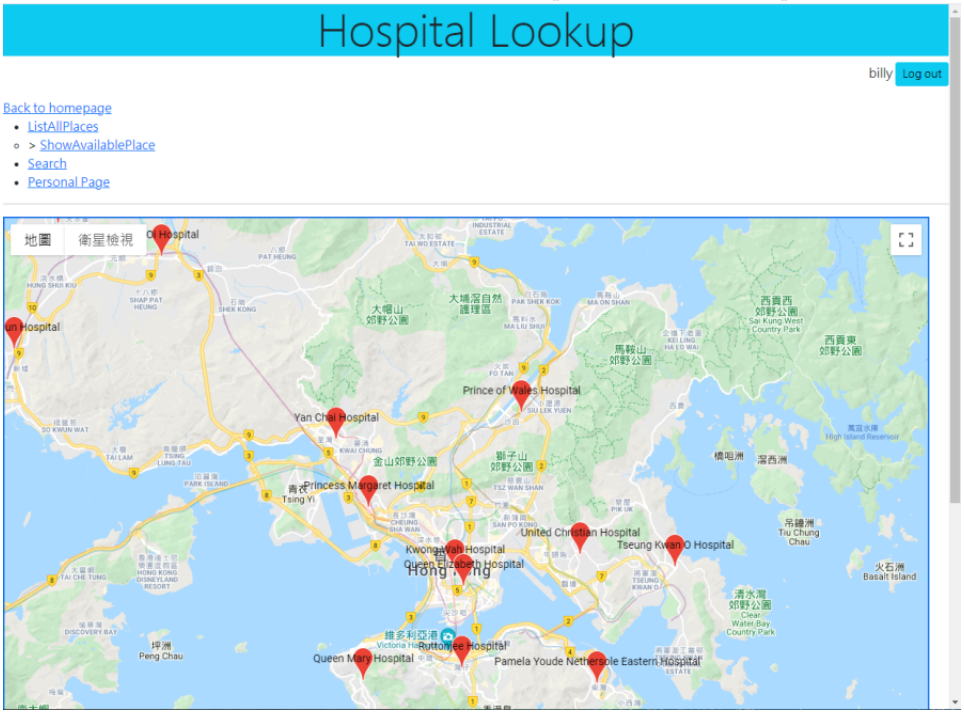
Project Report of CSCI2720

Wei LAI 1155095200 | King Fung LAM 1155108968 | Pak Hei LEE 1155109311 | Ching Yin YUEN 1155110657 | Chung Wun YU 1155110790

1 Abstract

In this project, we built up a hospital lookup system. The front-end is implemented by React imported by CDN links, the back-end is implemented by Node js and the database is based on MongoDB. Besides the basic functionalities listed in the specification, we also put effort into the security part for real usage cases. For example, the methods in server.js and routes in the front-end are protected by authorization verification. In addition, we also made our user interface be responsive in order to provide better user experiences.



2 Methodologies

2.1 Programming Language & important algorithm we have used

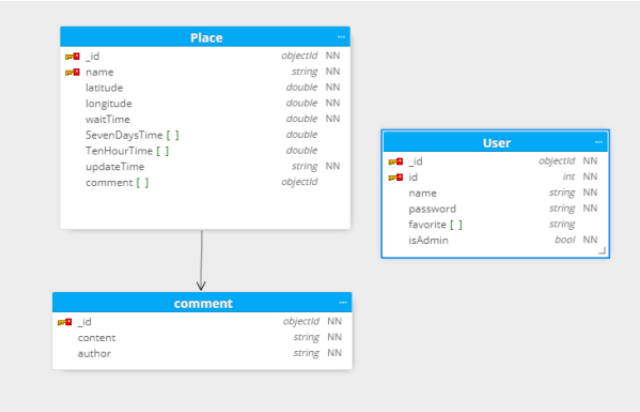
For the programming language part, we purely use Javascript to implement this whole project.

Compared with other popular languages like C++ and Java, Javascript seems to work more naturally with Web development. For example, in Node.js, for each app function, we use nested callbacks to finish a sequence of tasks in a robust and elegant way. Another impressive thing is the concept of middleware. As beginners of a web programmer, we are quite confused that why Javascript allows programmers to define a const variable and assign a function to it. After trying to implement the route protection with authorization verification, we realize its convenience that we only need to implement them as middleware, and insert this const in the way like the code shown below: Then we can use this authAdmin as a plug-in whenever we need it.

For route protection in the front-end, we group all the routes into 3 different classes named public, user-only, and admin-only respectively. When a user types the route manually and tries to jump to that route directly, React.js will check its authorization by the token sent by the backend and stored in the localStorage in the web browser. If the user has the authorization, then it will go to the page, otherwise, it will be

redirected to the login page. And this function is completed by modifying the code of Dennis-Jiang's Github [1].

2.2 Design of data schemas and models of your database



2.3 Compare to other platforms

Advantages that React over Angular:[2]

React	Angular
possible to add JavaScript library to source code	not possible to add source code
Huge variety of tools, architecture and libraries	offer limited amount of flexibility

Disadvantages that React over Angular:[2]

React	Angular
Take long time to set up	short time to set up
Use one way data binding: UI element cannot be changed without update the model state	ensure model state automatically changes Use two-way data binding: when any changes is made

Advantages that MongoDB over MySQL:[3]

MongoDB	MySQL
more flexible by using non-relational database system: store data with no enforced schema	relational database: must define table and columns before storing
no schema definition required so lesser risk of attack due to design	risk of SQL injection attack

Disadvantages that MongoDB over MySQL:[3]

MongoDB	MySQL
Complex transaction since different structures in collections	MySQL uses only SQL to access
No provision for Stored Procedure so cannot implement business logic in datbase level	Provide Stored Procedure

References

[1] Dennis-Jiang, *Dennis-jiang/front-end-knowledges*. [Online]. Available: `https://github.com/dennis-jiang/Front-End-Knowledges/tree/master/Examples/React/react-router-usage/src`.

[2] *React vs angular: 10 most important differences you must know!* [Online]. Available: `https://www.guru99.com/react-vs-angular-key-difference.html#9`.

[3] *Mongodb vs. mysql: What's the difference?* [Online]. Available: `https://www.guru99.com/mongodb-vs-mysql.html`.