

Choice of Web front end development:

1. Angular
2. React
3. Vue

Component:

I Choose React for the front end development

First React is the most popular used front-end framework for Java script compare to Angular and Vue.

For Vue, since not a lot of people use it, it's hard to find the resources that I need for learning. Since I am still new to web development, learning the most popular front-end framework is a good foundation to future web development. However, Vue is relatively small and clean.

Second, react is really easy to use Compare to the other two. I just need the basic knowledge for HTML. As for Angular, I need to study a lot about TypeScript and its wired syntax.

Third, it's really flexible. We can basically create every component we want in React. However, although it gives a good flexibility, but developer still can follow the rule that narrow down their design decision. On the other hand, Vue gives too much freedom to the developer, so sometime when building for large project, it is possible to get lost.

Forth, Virtual DOM Can bring HTML, XHTML, XML in to a tree structure. Hence, it's really similar to the browser view. Hence, it's easy to understand.

Fifth, React is easy for future development, it's easy to transfer from lower version React to latest version (Facebook provides "codemods" to automate it) However, Angular is difficult to transfer.

Sixth, most importantly, React is 100% open source. Hence, it gets update every single second, hence it's up to date.

Choice of Web back end development

1. Java
2. Python
3. Node JS

I Choose Node JS

First Node JS is really fast. When comparing their speed, you will find that node JS is much faster than the other two. Node JS is based on Google V8. Hence, it's much faster.

Second, Node JS support both front end and back end. Since this time the web application is relatively simple. Hence I actually don't need to have a total separation in the front and back end. Since Javascript support front end and back end. Hence, it's actually simple to combine them together.

Third, I would rather learn more about Node JS. Java and Python, both are really popular programming language in today's world. They probably the first choice in both data analysis and web development. However, I did both of them during my former CS courses, hence, I would want to spend more time on something that relatively new to me. Hence. That's also an important reason.

Fourth, Ease of development. Both Java and Python are Object Oriented Programming. On the other Hand, Node JS can be viewed as a functional Programming, it's another field or programming, which I am interested and willing to learn.

Just to make note, for testing my web application, I choose to use JEST rather than MOCHA or JASMINE is because JEST is highly preferred for React (the framework I am using) and JEST also easy to implement and works good with REDUX as well.

Choice of CI/CD

1. FireBase
2. Github Action
3. Circle CI

I choose Circle CI

All three tools allow tasks to be run concurrently on the same machine, support common tools like Slack notifications and various VCS platforms, and have community support. GitHub Actions and Circle CI has a continuous delivery pipeline, that is, automated builds, tests and deployments are orchestrated as one release workflow. The most convenient feature I found about circle CI is that it works so good with other applications. I can Just set up some environment variable on the config file and it will automatically get deployed on Heroku and it is so simple, not even need to create a new remote. Another part I prefer about CircleCI is that runs clear and it's easy to go with JEST(the one I used). Compared to Github Action, you need to use the work flow that they set up in advance.

Just another note I did both CI and CD in my project and has invited the TAs, I found out that in Heroku, you can just click on a check box and it can runs the CI/CD always before, it's really clever.

Choice of Database:

1. MongoDB
2. SQL
3. Json file

In this app, I personally prefer just simple Json file, since there is not so much Table nor data to store(I only use JSON file to store Coupon code). However, Mongo DB and SQL take a lot of spaces to organize the tables and Data, but the thing needed to get stored is not even a lot. However, undeniably, SQL and Mongo DB are the most common ways to store data in an actually large application.

Besides, Mongo DB and SQL needs a server, so it gonna take a long time to retrieve the Data. Moreover, JSON file is very easy to convert into JavaScript object, they basically look the same. Hence it also helps me to speed up the logic for retrieving data. Moreover, JSON is not just a simple text file. It's actually one of the most common way to store Data in web design and API, have more knowledge in JSON will be beneficial in not just storing data, but do the work faster.

How to Run and Function my web Application

I used Heroku to deploy my web application. Here is the Link:

<https://shopping-cart-301.herokuapp.com/> pls feel free to check it out ^^