IM3080 Design and Innovation Project (AY 2021/2022 Semester 1)

Individual Report

Name: Huang Bin Melville

Group No: 4

Project Title: BusMeet

Contributions to the Project (1-2 page)

Week 1 to Week 3:

During the initial stages of the project, I was in charge of planning what is required for the application itself, as well as some of the initial prototypes of the application. I started out by setting up a google sheet to plan out the required items and an initial mirro board to map out what is required of us. This module required me to think of the requirements on my own based on the project my group wanted to pursue and is unlike traditional modules where the objectives are laid out for us. Furthermore, a gantt chart was also set up to be used to track the timeline of our project itself.

Week 4 to Week 5:

This period is where I focused more on prototyping static designs for the applications itself together with my group members. An initial Figma prototype was created by me to ideate and create some of the static designs from the existing bus applications. Thereafter, a more comprehensive design was created and I was in charge of creating a functional prototype on Figma. This includes buttons to visualize the idea, overall layout of the page as well as deciding on the fonts and colors of the application. After this, I handed over a base design for my UI/UX team to improve on.

Week 6 to Week 8:

Up until the recess week I coded an initial version of the BusMeet application, which involved many front-end components. This process started out by first learning how to set up the Expo and React Native environment. After that, I started to code out front-end components of the app. This includes an initial version of the app, ranging from features like

- Navigation (stack and drawer navigation)

- Choosing of destination, time and location
- Displaying Google Maps and User Route (using Google's Maps API)
- Searching for Nearby areas (Google Geolocation API)
- Adding Friends Page

Week 8 to Week 11:

After our third presentation, I moved on to implementing a serverless architecture of the application using the AWS services. Services I tapped into are AWS Amplify,AWS DynamoDB, AWS AppSync, GraphQL as well as AWS Lambda. This allowed me to write less code to retrieve real time information. I did this by first creating a table using a custom.js file to save the user into DynamoDB. After that, I created a GraphQL file to write the database schema which included users information like their username, email, longitude and latitude. After that, I configured the table on the Amplify console itself, which allowed me to pull real time information from dynamoDB using Javascript and display it on google maps itself.

Week 11 to Week 13:

After the serverless architecture was set up, I also made significant updates on the front end part of the application. This include:

- A mock animation to bring user to the destination to test out the application
- An alert function to remind user that they have reached their destination
- Integrating a Chat function
- Integrating a Nearby Bus Stops page

I was also in charge of setting up the README page on github, adding all the different components (poster, video etc) done up by my group members. Furthermore, I am also involved in the report writing, which includes a majority of the report writing itself.

Conclusion:

All in all, I am involved in all aspects of the project itself. Whether it is on the planning, coding or report side, I am involved in the project at every point of time. You can check out my work and contributions here:

1. Planning:
    a. Google Sheet
    b. Google Doc
    c. Mirro Board
2. Coding
    a. Github Contributions

3. Documents
    a. Report (before handing over to group)
    b. Different parts of the slides (Week 2,6,8,11,13)

Reflection on Learning Outcome Attainment

Reflect on your experience during your project and the achievements you have relating to at least two of the points below:

(a) Engineering knowledge

(b) Problem Analysis

(c) Investigation

(d) Design/development of Solutions

(e) Modern Tool Usage

(f) The Engineer and Society

(g) Environment and Sustainability

(h) Ethics

(i) Individual and Team Work

(j) Communication

(k) Project Management and Finance

(l) Lifelong Learning

Point 1: (b) Problem Analysis

I have learnt a lot from analysing a problem through building this application. At many times, I doubted myself on whether or not our solution was a good one to tackle our problem statement. To correctly analyse a problem is to understand the problem from many different perspectives. I felt that I truly improved in my ability to plan for a strategy

to tackle a problem, by looking at the problem through multiple perspectives. This perspectives included:

1. User Perspective
2. Market Fit
3. My Own Perspective

User perspective stems from understanding if our application would be appealing for a user. This was done by understanding a problem many students faced in their daily transport routine and from feedback given to us along the weeks. Market fit allows me to understand what it is like creating an application that has a place in the current mobile application landscape. As for my own perspective, this really was the beginning of the application as we first thought of what application we wanted to create by thinking about an application we would want in our lives.

Point 2: (e) Modern Tool Usage

Throughout the course of the entire project, I have picked up multiple technological tools. This includes:

- Figma
- Javascript
- React Native
- Github
- AWS Services (Amplify, Appsync, DynamoDB, Lambda)
- VScode (more proficient in shortcuts/ developer environment)
- Terminal (Command Prompt)

This is picked up via a project where we aimed to create a production level mobile application. Even though our application is not perfect, I still managed to quickly pick up all these tools within a span of 13 weeks with my busy semester schedule. The range of different tools used to create a project like this will surely be valuable to me as I embark on learning new technologies along the way.

Point 3: (i) Individual and Team Work

Through this project, I understood the importance of teamwork and individual contributions. While all of us were busy with our own school work, I have noticed that

self management is the most important part of an individual. If many individuals do not contribute to the project itself and wait for delegated work to be assigned to them instead of suggesting the work they can do, it will be a very tough process. Especially for me as the leader, trying to get 11 people together is not easy, and having to think about what each one of them can contribute to the project is not easy as well. It should always have been a two way relationship where group members suggest ideas and we all learn together rather than a top down approach where it emphasises a directive leadership, one where all the power lies in the group leader to delegate the work.

At many times, it was difficult to get responses from everyone, and with the tight deadlines, we went about splitting the teams into different groups to resolve the issue and this paved a way for us to understand what each other needs to do in the project itself. Through this project it has really been an eye opening experience for me as even in my internship, I have not had to deal with a big group of individuals working on something we are all unfamiliar with.