**IM3080 Design and Innovation Project (AY2021/22 Semester 1)**

**Individual Report**

Name: Choo Yu Wei, Patricia

Group No: 2

Project Title: Float

**Contributions to the Project** (1-2 page)

UI/UX

* Conceptualised storyline of the app.
* Completed wireframes for Explore, Guides: Meditation, Sleep (, Move and Focus) pages for 1.0 version.
  + Updated Rewards page, Login page and created the Sign-Up page.
  + Created sub-pages for Guides.
* Created drag-and-drop components for ease of use, improving productivity.
  + And added variations of components for different states.
* Completed UI design with details for pages above in 1.0 version.

Backend

* Decided to use GraphQL to implement ‘data persistence’ of the rewards and avatar.
  + Using it to allow frontend to fetch data and update data in the backend database.
* Wrote code snippets for frontend team to read and write to database.
  + Made use of AWS AppSync GraphQL API, under the Amplify framework.
  + Wrote and tested GraphQL codes in the AppSync Management Console to ensure that it fetched the correct data, and that the backend database was updated accurately.
  + Converted the GraphQL queries and mutations to React Native code and tested in the app.
  + Updated group’s API requirements document so that frontend can simply take the code snippet and implement it where necessary in the app.

**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:**

1. Engineering knowledge
2. Problem Analysis
3. Investigation
4. Design/development of Solutions
5. Modern Tool Usage
6. The Engineer and Society
7. Environment and Sustainability
8. Ethics
9. Individual and Team Work
10. Communication
11. Project Management and Finance
12. Lifelong Learning

Point 1: Engineering knowledge & Problem Analysis

I decided to join the backend team even though I did not know much about implementing the backend functionalities of an app because I wanted to challenge myself and learn more about it. Through this project, I have learnt a lot about Amazon Web Services (AWS). AWS is a cloud services platform which developers can use to build reliable, scalable applications without worrying about managing infrastructure. AWS uses a serverless architecture, which means that developers only focus on building and running the application, while the server management (provision, scale and maintain servers to run the application, database and storage system) is done by AWS. It was very challenging to grasp the services provided as AWS has a very comprehensive set of services for all aspects of cloud computing, or hosting your app on the cloud. Personally I found it difficult to see the big picture initially of how the various services worked with each other, which then made it tough to understand the role of each service and which service to choose. However, through doing more research, listing down the options and understanding the requirements of the task I had, it became easier to narrow down the options and finally allow me to settle on one. I had to understand the requirements of ‘data persistence’ in the app in relation to AWS services. We needed the changes to the avatar to be consistent throughout the app, as before, it was only updating within the Rewards page, but once the user left the page, the avatar’s looks returned to its original form. To do this, we had to create the functionality to write to the database (DynamoDB) when the user purchased a new item, and when the user updated their equipped item. Then, the other areas of the app that displayed the avatar had to read data from the database to display the updated avatar look. This meant that we needed a database (which we were already using DynamoDB) and a protocol to read and write data to it. We decided to use GraphQL in the end as we only required the basic services, and did not need offline or caching capabilities (which uses DataStore). Next came the implementation. After figuring out the GraphQL commands which were tested in one of AWS’s Web UI (AWS AppSync), I also had to understand React Native code and how to convert the GraphQL code to something usable in our project. To do this, I studied the codes others had written and ultimately managed to write the code and tested it to work in the app.

Point 2: Communication

An important skill I developed further during this project is communication with others. Undoubtedly, this project requires teamwork from everyone as we all need to play our part to deliver the project in time. Also, everyone had different backgrounds and strengths and weaknesses. I learnt to communicate and work with others that I have not worked with, for both in the initial stages of brainstorming and designing, to working with the code and implementing backend. Jumping into backend mid-project was challenging, and having to grasp the implementation of backend, I learnt to ask questions and clarify my doubts where needed. Learning to communicate with others is important as this can reduce any possible misunderstandings and help the group to progress along. Through asking questions and seeking help where necessary, it helped me to persevere and complete my parts of the project ultimately.