

# **IM3180 Design and Innovation Project (AY2023/24 Semester 1)**

## **Individual Report**

Name: Pham Thuy Linh

Group No: 1

Project Title: NTU MART

### **Contributions to the Project (1 page)**

#### **Planning:**

- Created the Use Case Diagram.
- Visualized the result of our survey on online shopping challenges in NTU Hall through a bar chart.

#### **User Interface Design (Figma):**

- Designed the Individual Item screen, "Your Listing" and "Your Reservation" pages (the last two screens are not in use)
- Connected all designed pages to create a functional prototype.

#### **Frontend:**

- Implemented the Individual Item screen and Chatbot screen.
- Enabled contacting sellers via Telegram.
- Integrated Google Maps using the Google Cloud API to show seller locations.
- Designed a taskbar.

#### **Linking Frontend to Backend:**

- API calls for products, users, and interests.
- Displayed products and sellers' information on individual item screens directly from the backend.
- Processed images from stream bytes.
- Linked item cards to detailed individual item screens.
- Showed all existing products on the browse page, and showed only products that fall under the user's categories of interest on the home page.
- Linked category icons to dedicated pages that showcase products exclusively within their respective categories.

**Database:** Expanded the database by adding more users and products

#### **Group Report, Poster, and Presentation Slides:**

- Beautified the poster and presentation slides.
- Wrote "Part 6: Conclusion and Recommendation" and "Appendix D – Final Design Guide"

## 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: Engineering knowledge

Engaging in this group project has expanded my engineering knowledge and technical skill set. For this project, we chose Flutter for the frontend and Java Spring Boot for the backend. This was challenging for me at first as I have never used them before. However, I'm glad that I had a chance to learn new skills since these frameworks are also in demand in the industry. While my primary focus was initially on the frontend, focusing on Flutter, the integration of frontend and backend development provided me with a holistic understanding of Java Spring Boot as well. Moreover, this project introduced me to various industry-standard tools. Designing the user interface using Figma allowed me to explore a new dimension of the development process. Adopting Git and GitHub for version control and Jira for agile project management were crucial components that streamlined our collaborative efforts. The journey from conceptualization to a fully functional app was both challenging and rewarding. This project not only enhanced my technical capabilities but also equipped me with invaluable insights into modern tools. As I reflect on this experience, I am confident that the skills acquired throughout this project will significantly contribute to my future endeavors as a software engineer.

### Point 2: Individual and Team Work

This is my first time working on a project with a big team. Our group consists of 10 individuals with diverse backgrounds and technical expertise. Learning to navigate and leverage the strengths within our team to complement each other's weaknesses became a crucial aspect of our journey. At the start of our project, we divided ourselves into 3 groups: frontend, backend, and full stack. Together, we came up with the idea for our app, and gradually developed and added more features along the way. While the frontend and backend teams operated independently during our personal time, Saturday evenings became dedicated to group meetings. These sessions served as vital checkpoints for progress updates and ensuring alignment between both teams. Regular communication proved to be crucial; without it, mismatches occurred, making it challenging to keep pace and integrate our individual contributions seamlessly. From this project, I have also learned that successful teamwork depends on the dedication of each individual to their tasks. Personally, I devoted 100% effort to my tasks, consistently meeting deadlines and delivering high-quality work. I was proactive in seeking out additional tasks, even before they were assigned to me. I also regularly checked in with my teammates to see if they required any assistance. Finally, I'm truly grateful for my teammates' support, as it has played a pivotal role in achieving the quality outcomes we've produced. Their guidance and feedback have been invaluable in refining my work. I have learned a lot from my teammates, from their coding, writing, and designing skills to their communication skills.

### **Point 3 & 4: Problem Analysis and Design/development of Solutions**

Problem-solving is a process that I really enjoyed while doing this project. Our app, NTU Mart, was born out of a collective effort to address the challenges faced by NTU students in online shopping within NTU halls. Our decision to choose this topic was inspired by both personal experiences and a thorough survey aimed at understanding the specific pain points of our target audience: NTU students. After gathering enough information, we analyzed the result and embarked on a systematic problem-solving process. Beginning with brainstorming sessions, we carefully conceptualized the app's features while always keeping the end-users in mind. We aimed to ensure that every feature was not only functional but also user-friendly. The progression from conceptualization to the final product involved meticulous steps, including the creation of a use case diagram, an Entity-Relationship diagram, and the iterative design of the user interface.

Surprisingly, our app's initial iteration differed significantly from the final product. The evolution was a result of continuous communication and ideation within the team. This process, in my view, exemplifies a professional and systematic approach to software development. Importantly, this project provided me with a practical application of the diagrams and concepts learned in the Software Engineering module, emphasizing the importance of incorporating such methodologies into real-world projects.

Beyond the technical aspects, this experience left me with a lasting lesson—to always prioritize users and keep their needs at the forefront of app development. Making sure that our app works well and has a positive impact is important to me, and I plan to keep this user-focused approach in my future work.