APPENDIX E:

Individual Project Report

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1. Personal contribution

Project Lead: As the project lead, I was tasked with idea generation and establishment of project scope during the initial phase of the project. As a team, we discussed the idea of an investment optimizer for low risk investment vehicles such as savings accounts, where principle investment is guaranteed, yet maintaining liquidity unlike other vehicles such as fixed-deposits and government bonds. We established that there is a market demand for such a solution based on findings from a Dec 2019 market research by Standard Chartered Bank (attached under Miscellaneous folder). Mid-way through the project, as we covered data-mining analytics in our lessons, I proposed adding in a phase 2 for our project which performs Knowledge discovery on the results generated by out optimization systems.

System Architecture: Initially, the project was envisioned as a single standalone React.js system that implemented all the rules in the knowledge base to perform investment optimization through forward chaining and sorting of the results. However, to tap on my teammate's expertise in .NET development, I've decided to split the project into a React.js frontend and a .NET backend with API access through REST calls. This separation of presentation and knowledge base enabled the subsequent ability for us to perform data mining through the use of R calls to the API in phase 2.

Market Research: Through primary research on banks website and secondary research on financial saviness portals such as MoneySmart, SmartSaver and ValueChampion, I've collated all the preliminary research findings into a spreadsheet (attached under Miscellaneous folder) from which by teammate used to perform the data extraction and knowledge representation.

UI Implementation (Frontend Web UI): I was fully responsible for developing the frontend using React.js as a platform. Design elements such as user experience, data representation and aesthetics were considered and constantly fine-tuned to provide a smooth and seamless experience for the user.

System test-bedding and deployment: As the system architect, I have full overview of the overall configuration of the frontend, backend and their interfaces. Naturally, I was also responsible for setting up of the backend and frontend systems for development testing. I used Docker images to deploy our development setup on my personal home server. For project submission, I've also provided the software setup instructions for deployment to ISS-VM as native executables.

2. Things I've Learnt

Project management: I've learnt important lessons on the importance of effective communications with my team, as the Covid situation makes it difficult for us to meet up in person to address project issues. I've found value in communicating the project proposal and project scope with my team early in the project through the use of a detailed project documentation so each member has a clear picture of their role in meeting the project outcomes and deliverables. There was also effective delegation of roles based on each member's strengths which allowed us to maximize our potential as a team.

Reasoning Systems: The topics taught about knowledge extraction, knowledge representation, constraint optimization and knowledge discovery are things that I have partial knowledge of before attending this course. I'm glad that this project has given me the opportunity to see the big picture of how they are inter-related. Now I have a much deeper understanding of reasoning systems after implementing them in our solutions.

React.js: I've deliberately picked the most popular web framework for this project development (even though I have no prior experience with it) as I also wanted to keep myself updated with current trends in the industry. I have been a developer since 2005 and feel that it is important to be familiar with the latest IT trends so I can effectively use this knowledge in advising my students and clients. (I'm a lecturer in a local Polytechnic)

3. Application of knowledge and skills to other situations

The experience gained from leading this project has given me more confidence in my analysis and management skills. I enjoyed the processing of maximizing the interest of all stakeholders and executing a project plan that checks all the boxes that we set out to achieve.

The strategy of developing of a MVP with additional stretch goals can be used in all future projects. The fusion of knowledge gained from our coursework and technical know-how gained through self-directed research within the project time window also given me the confidence in leading future similar projects in my line of work as a student team supervisor or a staff project developer.