Assessment 1: Greenfield Development - Method Selection and Planning

Cohort 1 Team 2

Team Members:

Trace Chinelle
Vidhi Chohan
Apollo Cowan
Siyuan Liu
Aryaman Marathe
Charlie Mason

Methods - A:

1. Outline of Team's Software Engineering Methods

Our team took a user-centred approach to software engineering through the use of use cases and use case diagrams throughout the requirements and architecture phases of design. They also informed the implementation phase and were helpful in maintaining traceability throughout the project.

We also maintained a focus on traceability between the different phases of the project by referencing the Requirement IDs throughout our architecture document. We also used these requirements to inform our testing during implementation.

We decided to use an object-oriented approach to the software engineering process. We used this approach in all of our group discussions to explain and expand upon our ideas. The object-oriented approach was visible in our use cases, behavioural diagrams and structural diagrams.

To make the best use of our time we created a project schedule which included planned time scales and internal deadlines to ensure we didn't fall behind. We then structured the workload evenly across the team to fit within this plan. In our biweekly meetings we would iteratively reassess this schedule to ensure it was working and to provide more time for sections that were more difficult than anticipated.

2. Justification of Team's Software Engineering Methods

A user-centred approach allowed us to easily and clearly plan each action that a user would want to be able to achieve without missing any. This meant that we were able to stick closely to the initial design with little need to make retroactive changes. This allowed all the team members to focus on their other responsibilities more closely. Being consistent with this approach throughout multiple phases was also useful in making sure all team members understood the goals of the subteams that they were not part of.

One of our main team focuses was on traceability. Traceability was very important to ensure that the program we implemented would match the requirements we elicited. Without clear traceability throughout the project we would likely have needed to make large fixes to the implementation which would have unnecessarily increased the workload.

We knew that the program we would implement would need to be written in Java, which is an object-oriented language. This is why we decided to apply an object-oriented approach to our software engineering process. Being object-oriented throughout the whole design process made it much easier to implement these concepts later on. This also allowed team members to assist with parts of the project they were not originally assigned to because all members were familiar with the concepts through an object-oriented viewpoint.

The project schedule was very helpful to make sure all of the work was completed in a timely fashion. It made it easy for us to distribute the workload across the full time available for the project. It was easily accessible to all team members so that they could easily check their current goals, which prevented unnecessary delays. Internal deadlines were helpful, both in ensuring that all the necessary work was completed to be able to begin work on the next phase, and also allowing time to review all the documents before the external submission deadline.

3. Justification of Development and Collaboration Tools Used and Alternatives

Our team used GitHub as our primary platform for collaboration, version control, and code management throughout design development. It ensured a reliable environment to share and review any changes made whilst also allowing work on different features to be done concurrently and minimising the risk of conflicts. The commit history tool made it easy to track progress, identify bugs and ensure accountability for contributions.

We used the Google Drive workspace for document collaboration. Using Google Docs allowed for real time editing and easy accessibility throughout the team. We considered using Git for version control of our non code documents, however, we decided that Google Drive is more user friendly and efficient for collaborative writing. This choice kept our workflow streamlined which was especially crucial during earlier design phases.

WhatsApp is where we hosted our communication. We decided on this due to its simplicity and the fact that it is popular and widely used. We contemplated using Slack, however, we as a team did not have much shared experience with the platform.

Methods - B:

1. Team Structure and Division of Work

Our team organised work by dividing tasks evenly, with tables outlining responsibilities for transparency and tracking. We adopted informal roles to allow members flexibility based on availability and interests, rather than fixed titles. To streamline efforts for some tasks, we split into three pairs (teams of two), with each pair responsible for a distinct project section. This approach fosters focused collaboration while reducing dependencies across different project areas. For others, we either assigned the whole task to a specific team member or we split the task between 4 of us to ensure the marks were distributed evenly across the project.

2. Justification for the Team's Organisational Approach

Using tables for task division ensures an even workload and clear progress tracking, this also facilitated the equitable distribution of tasks.

Informal roles allow members to shift focus as needed, encouraging flexibility and reducing bottlenecks. This made it so we could change the roles if needed as the project goes on, as members of the team could choose to do tasks that suited their preferences.

We paired up to do the Requirements, architecture and implementation sections. This promoted in-depth work, efficient planning for each section and faster progress.

For the other sections (Website, Methods selection and planning, Risk assessment and mitigation), we assigned tasks to team members who needed additional marks to balance the distribution more evenly across the team.

3. Coordination and Communication Practices

We conduct informal check-ins for sub-teams to update on progress, using shared tables for task tracking and collaborative tools (e.g. Google Docs) for transparency and access. We also kept our own checklists and check-ins within the sub-teams. This structure allows each member to stay informed on the overall project status while also focusing on their section.

4. Effectiveness of the Approach

Our approach supports accountability and independence while aligning with our collaborative style, as informal roles suit our team's dynamics. Dividing into pairs allows simultaneous progress on multiple sections, while also ensuring the tasks are completed to a high standard.

Methods - C:

1. Project Schedule

Task	Dependencies	Responsibility	Start and Finish Dates (DD/MM)
1. Read and discuss brief and assessment document	None	Group	30/09
2. Write client meeting questions	1	Group	30/09 - 07/10
3. Book client meeting	None	Tracey	02/10
4. Have client meeting	2+3	Group	07/10
5. Delegate work	4	Group	07/10 (& 14/10)
6. Set up website	None	Vidhi	01/10
7. Research requirements	None	Apollo & Vidhi	07/10 - 14/10
8. Requirements write-up	7	Apollo & Vidhi	14/10 - 04/11
9. Research architecture	None	Tracey & Charlie	07/10 - 21/10
10. Architecture write-up	8+9	Tracey & Charlie	21/10 - 04/11
11. Research risk	None	Charlie	07/10 - 14/10
12. Risk write-up	11	Charlie	14/10 - 21/10
13. Research methods	None	Apollo & Vidhi	14/10 - 28/10
14. Methods write-up	13	Apollo & Vidhi	28/10 - 10/11
15. Research implementation	None	Aryaman & Siyuan	07/10 - 21/10
16. Programming	8+10	Aryaman & Siyuan	28/10 - 10/11
17. Implementation write-up	15+16	Siyuan	28/10 - 10/11
18. Program testing	16	Aryaman & Siyuan	04/11 - 10/11
19. Proof-read and edit documents	8+10+12+14+17	Group	04/11 - 11/11

2. Evolution of the Plan Throughout the Project

The plan for this project changed a few times throughout its duration. At our first meeting we only planned as far as the client meeting which took place a week later. We did this because we wanted to have a full understanding of the project before delegating the work amongst ourselves. This first plan included a group discussion of the project brief and assessment document and preparation for the client meeting by preparing questions and booking a meeting slot. After we had the client meeting we had enough understanding of the project to be able to split the workload evenly between ourselves. After delegating tasks to each team member we were able to create a basic plan, splitting each deliverable into research and write-up.

We had group meetings biweekly on Mondays and Thursdays to discuss the project and make progress. In our week 3 Monday meeting we reassessed the task delegations as we found that some team members were not able to complete any of their assigned work until other sections were complete. We reassigned the tasks so that all team members had a responsibility that they could start working on straight away.

As the project progressed, our task priorities would shift. Each week we assessed the priority of tasks that needed to be completed based on how many other tasks were dependent upon their completion. Once one task had been completed we were able to increase the priority of others. We set internal deadlines for our highest priority tasks to make sure there would be enough time to complete them and any tasks that were dependent on them. We set looser deadlines for lower priority tasks since we weren’t currently working on them and didn’t know exactly how long they would take to complete yet. This gave us more flexibility to change our plans as we needed.

In week 6 we reassigned some tasks again so that team members who had multiple responsibilities yet to complete could focus on just one while a team member who had already completed all of their tasks could assist on the other. In this final week time was much tighter approaching the external deadline, so reassigning tasks lessened pressure on the team as a whole, resulting in a higher quality of work.