Method Selection and Planning

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4.A Methodology and Tools used

For this project we planned it in 2 phases: a Design phase and a Implementation Phase separated by a short break, both phases we used the Agile methodology for planning but more specifically SCRUM. We have been having sprints lasting a week in length throughout the development process with one day in the week where we plan the tasks and activities that need to be completed in the sprint. To facilitate these meetings we have in person meetings and Discord to facilitate virtual meetings when in person meetings are not an option. By doing this we would all be on the same page and increase efficiency from an understanding of what needs to be done that week.

During the Design phase the main collaborative tool we used was Google Drive. It was used to store deliverables and documentation as it has a built-in Word processor as well as version control to allow team members to see contributions to the document which was immensely useful during this phase. During this phase we elicited the requirements from our customer and used that to generate the system and user requirements and constraints. This then informed our design of the architecture and the UML diagrams we made such as class diagrams and sequence diagrams. To assist this process plantUML was used as it provided tools to design UML diagrams, furthermore it allowed for the creation of gantt charts to help log our progress and illustrate the overall timeline of the project. We chose this over technology such as Draw.io, plantUML would ensure consistency as multiple team members would contribute to the architecture diagrams.

For the Implementation Phase GitHub was the main collaborative tool used. It allowed for easier project synchronisation with its features such as pull, push and branching. It also has conflict resolution support which Google Drive lacks to help support the development of the project. During the actual implementation of the project we decided on using LibGdx, a game engine using Java. This was chosen over another engine in consideration Litiengine due to its more active community and more extensive documentation available.

4.B Team Organisation

For our team's organisation we have a nominal leader who organises the weekly meetings and sorts out the agenda during those meetings. During these meetings we will allocate work to the individual who thinks they can complete it during the coming week, although the work is handled individually we try to allocate it so that a team member has work which is related and so can provide support or take over in case of emergency. This reduces the bus factor and mitigates the risk we have to take when working in this style.

The reason this style of organisation was taken was because of the size of the project, this was a small project and a small team. We felt it was more efficient to handle portions of the work individually and have members of the team available to provide support. More importantly was that as a team of 6 we were small enough to have weekly meetings to help track every member's progress for that week. Progress then gets reflected into a Gantt chart so that everyone is aware of the project's overall progress and an idea for when individual tasks should be completed by.

4.C Systemic Plan
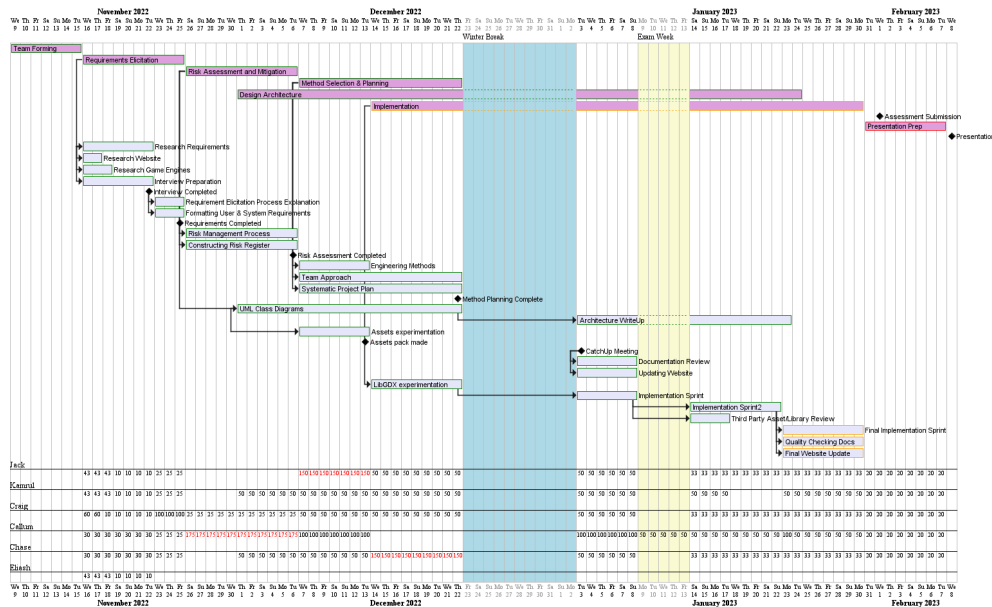
Weekly Gantt updates available on the Gantt Chart section on our website.

Team Forming, Starting: (9/11/2022)

A brief phase of the project where members of the group met each other for the first time. Importantly communication methods were established that were used throughout the entire project, and a group name and logo were created. Ended: (15/11/2022)

Requirements Elicitation, Starting: (16/11/2022)

This phase began immediately after team forming. The most important tasks completed during this phase was the interview with the customer and the creation of the requirements document. The creation of the requirements document was dependent on the interview as that established necessary requirements not contained in the product brief. During this phase research was also conducted on websites and game engines. Ended: (25/11/2022)

Risk Assessment and mitigation, Starting (26/11/2022)

This phase began immediately after Requirement Elicitation. The key task in this phase was the production of a table containing potential risks in the project, their likelihood and their danger. This was a high priority task and was done early, as other tasks were dependent on a risk assessment being done, to avoid unforeseen negative consequences. Ended: (6/12/2022)

Method selection and planning, Starting (7/12/2022)

This phase began immediately after Requirement Elicitation. The key task in this phase was establishing a systematic plan for the rest of the project to follow. Ended: (22/12/2022)

Design Architecture, Starting (1/12/2022)

This phase began during the Risk Assessment phase and ran concurrent with implementation, until closely before the end of implementation. A key task in this phase was the creation of structural and behavioural diagrams that would be used to inform implementation. Ended: (24/1/2022)

Implementation, Starting (14/12/2023)

This phase began during the Design architecture and Method selection phase. It was dependent on design architectures, structural and behavioural diagrams the key task of sprint one was to implement a framework for the game and the key task of sprint two was ensuring the code met the requirements and the key task for sprint three was fixing errors and ensuring readability of the code. Ending: (30/1/2023)

Final review and presentation preparation Starting (30/1/2023)

This phase was dependent on the implementation being complete so that it was able to be presented in a complete state. The key task in this phase was to create the presentation for the project. During this phase the entire project was reviewed to ensure that any potential mistakes or errors were amended.
Ending: (8/2/2023)

Evolution of the plan during the project

During the plan, time was set aside for breaks, between 23/12/22 to 2/1/23, and 9/1/23 to 14/1/23. The first break occurred for two reasons, firstly due to difficulties with communication due to the team no longer being in York, and secondly to prevent burnout among the team. The second break occurred due to exams being scheduled in this period, thus the team were not able to work on the project during this time.