Module: Software Engineering Project Management
Assignment: Phase 1 - Project Report
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1. Background

Our client, **GROUP 2,** a children's toy manufacturing company, has requested software to be developed for their proposed new toy and has provided a list of specific requirements to guide our team in developing this product. After conducting a thorough requirements analysis, our team concluded on developing a web-based car racing game suitable for children. This proposal contains sections explaining our chosen project management methodology and the expected outcome for each phase of the project.

2. Methodology

The selected methodology for this project is Agile due to the emphasis on teamwork, customer collaboration and the possibility to break the project into smaller parts in an iterative fashion (Leu et al., 2012). Agile facilitates gathering and refining the customer's requirements, allowing the stakeholders to review and comment on the products before each iteration. It also reduces the amount of documentation needed and improves the required time to complete the project, focusing on fulfilling the requirements before the due date and avoiding project failure (Hron & Obwegeser, 2018).

Among several agile methodologies, Scrumban has been selected for this project because it provides the necessary procedures for a small team, where each member shares the same responsibility and iterations are shorter than in Scrum. As a result, Scrumban benefits include less stress, better efficiency and customer's satisfaction (Alqudah & Razali, 2018).

Scrumban disregards the need for a Scrum Master and Product Owner from the by-the-book Scrum methodology. It also helps organise team tasks and track progress through every iteration, avoiding bottlenecks and allowing the PM to show a clear

picture to the stakeholders of the state of every requirement. It brings the most appropriate features of Scrum and Kanban to improve efficiency (Kniberg & Skarin, 2010).

3. Requirements Gathering

During the early stages of this project, a series of discussions were held with our client, Group 2, to establish their children's toy requirements. As a result of these meetings, we were provided with a **total of 15 requirements** that the client would like implemented within the product.

Following consultation with the product developers, it was decided that **10 of the proposed requirements** would be taken forward. Although the perceived impact on User Experience influenced this decision, the main factor was the desire to stay within the assigned project deadlines.

A summary of the agreed-upon requirements has been included in Appendix A.

3.1. Gathering requirements - Sprint 0

The Requirements gathering phase lasted for 14 days. Figure 3.1 depicts the Kanban-style board used for the requirement gathering sprint, and Figure 3.2. shows the Gantt Chart (see Appendix B - Requirements Gathering Sprint Plan).

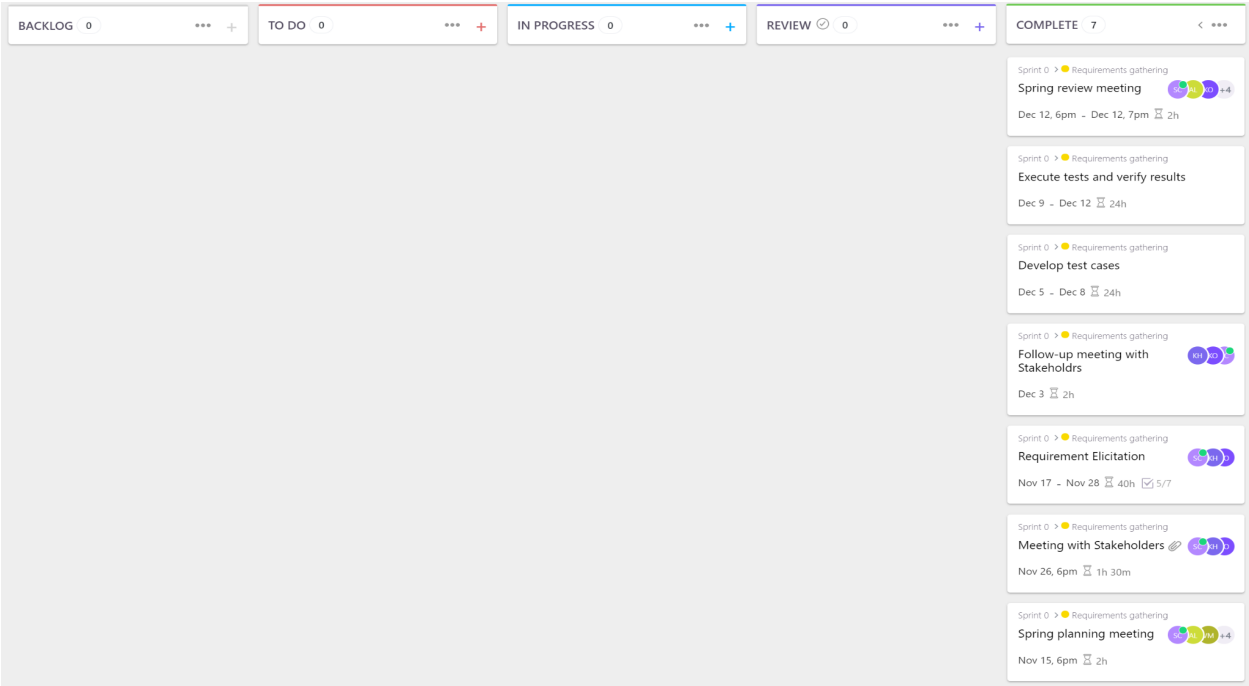

Figure 3.1: Requirement gathering board (Sprint 0).

Figure 3.2: Requirements Gathering Gantt Chart

3.2. Priority Requirements.

Five of the agreed ten requirements have been categorised as a higher priority, thus requiring implementation first. The below sections detail our reasoning/justification for these choices.

3.2.1. The device should be controllable by Keyboard/Mouse or Touch.

Effective human-computer interaction relies upon input devices to accomplish tasks. Users frequently relied on using an input device such as a keyboard, mouse, or touchscreen to complete this report. We put this at the highest priority as there is no way for users to complete any operation if there is not at least one way to interact with the application (Noah et al., 2017).

3.2.2. The UI should be usable with one hand.

According to the research conducted by UX Matters, 72% of users interact freely with their phone using either their thumb or finger. Following the same trend, we decided to prioritise requirements related to usability, as we consider this to be integral to the project's success (Hoober, 2021).

3.2.3. The device should be safe for use by children.

The security and privacy of children are one of our main concerns. A balance must be struck between good parental controls and respect for the rights and privacy of the children that are using our platform. Monitoring activities, content and activity restrictions could be enforced to build a safer application (Zaman & Nouwen, 2016).

3.2.4. A player should be able to create a user profile.

User profiling is used for security purposes and can also be used to tailor the experience for different users (Ouaftouh et al, 2015). Whenever personal data is collected from users, the security of that data must be taken into account. Any sensitive data must be stored securely and must not be made public unless the user gives their

consent (such as associating their usernames with scores on in-game leaderboards) (Atote et al., 2016).

3.2.5. Sounds are to be muted with a single key/button press.

Audio can be used to enhance the user experience in a game in many different ways. In some contexts, however, in-game sounds may not always be desired by the user. For example, having the option to quickly mute repetitive tunes/sounds could be critical for some users, as sound could either enhance or worsen the game experience (Pelmutter, 2018).

4. Development

This phase focuses on the development of the priority requirements outlined in section 3.2 above. It consists of 3 sprints that have been built according to the Scrumban methodology.

- Sprint 1: framework Development (figure 4.1). For sprint 2 items and duration details, see Appendix C.
- Sprint 2: requirement implementation - phase 1 (figure 4.2).For sprint 2 items and duration details, see Appendix D.
- Sprint 3: requirement implementation - phase 2 (figure 4.3). For sprint 2 items and duration details, see Appendix E.

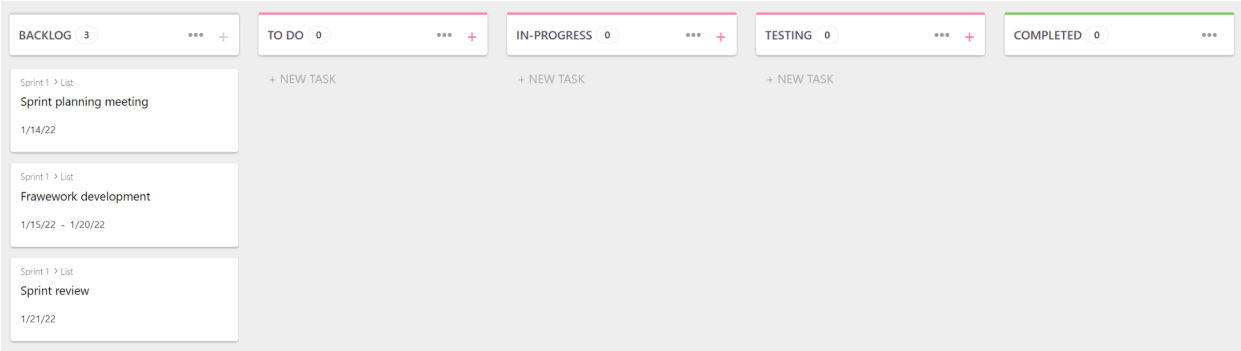

Figure 4.1: Sprint 1 board

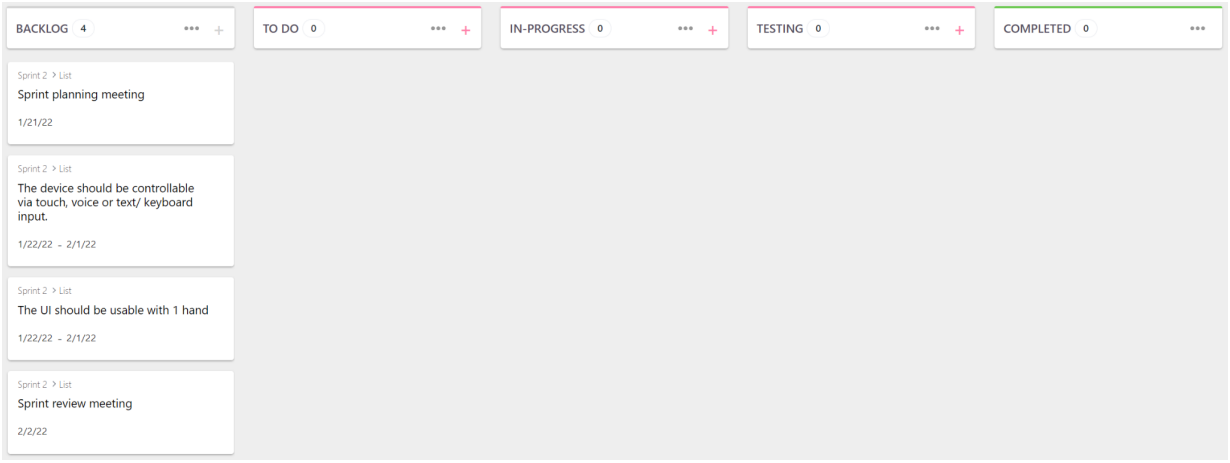

Figure 4.2: Sprint 2 board

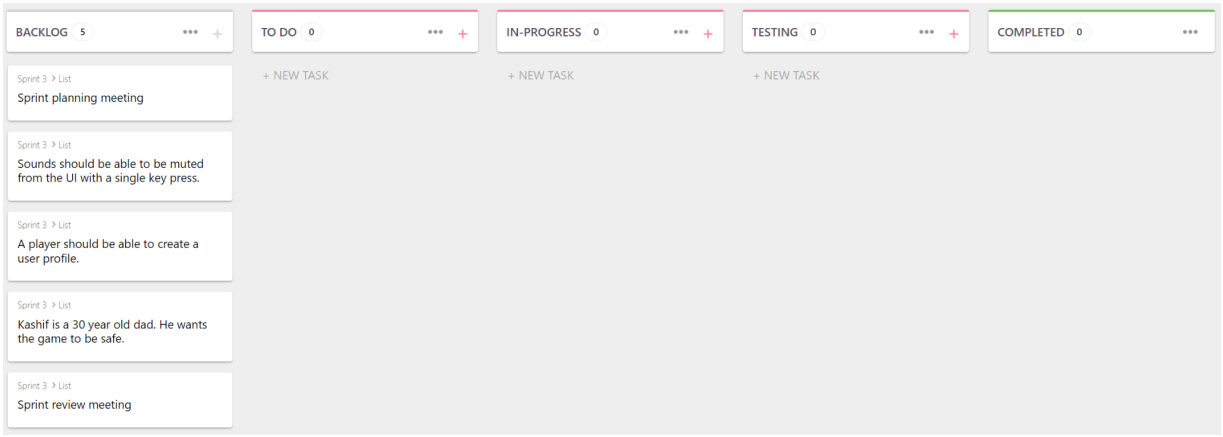

Figure 4.3: Sprint 3 board

5. Conclusion

Following engagements with our client **GROUP 2** and a detailed analysis of the requirements, our team considers a web-based car racing game suitable for our client's new product. Of all the agile methodologies reviewed, Scrumban provides the best approach required to achieve our primary goal of delivering the project within the desired timeline.

6. References

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7. Appendices

Appendix A - Agreed Requirements

A complete list containing both the Functional and Non-Functional requirements agreed upon by ourselves and the client has been included below:

Functional Requirements:

- The UI should be usable with one hand.
- Sounds are to be muted with a single key/button press.
- Additional language(s) should be available.
- The device should be controllable by Keyboard/Mouse or Touch.
- The game should allow users to create a profile.

Non-Functional Requirements:

- The device should be safe for use by children.
- The game should keep a young child entertained.
- The game should have limited, controlled access to the internet.
- The game should be simple/intuitive to use.
- Data should be stored in an efficient manner.

Appendix B - Requirements Gathering Sprint Plan

Task	**Duration (days)**	**Product**
Sprint planning meeting	1	Notes
Meeting with stakeholders	1	Notes
Requirement elicitation	3	Requirements Sheet

Follow up meeting with stakeholders	1	Notes
Develop test cases	3	Gherkin Scripts
Execute tests and verify results	3	codes
Sprint review meeting	1	Notes

Appendix C - Sprint 1 Items and Duration

Tasks	**Duration (days)**	**Product**
Sprint planning meeting	1	Notes
Framework development	5	
Sprint review meeting	1	Notes

Appendix D - Sprint 2 Items and Duration

Tasks	**Duration (days)**	**Product**
Sprint planning meeting	1	Notes
Implementation: Requirement 1	3	Source Code
Implementation: Requirement 2	3	Source Code
Testing	2	Test Cases
Sprint review meeting	1	Notes

Appendix E - Sprint 3 Items and Duration

Tasks	**Duration (days)**	**Product**
Sprint planning meeting	1	Notes
Implementation: Requirement 3	3	Source Code

Implementation: Requirement 4	3	Source Code
Implementation: Requirement 5	3	Source Code
Testing	3	Test Cases
Sprint review meeting	1	Notes