Risk Assessment and Mitigation
ENG1 Team 9

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Risk Management Process

The first thing our team did in the risk management process was to identify all the possible risks that could affect the development of the game. We did this by firstly coming up with some sections of the project (for example the requirements) and then as a team brainstorming as many risks as we could think of and noting them down under the current section. We then eliminated the risks we felt were extremely unlikely or inconsequential for a project of this scope. With the remaining risks we came up with a simple but clear description of what the risk was, so when we came back to assess the risks we would easily be able to understand what each risk meant. Splitting the risks into different types/sections helps us easily identify what each risk corresponds to and reference them when we are working on that part of the project.

After identifying all our initial risks we analysed each risk as a team and discussed their severity and likelihood. We decided that the likelihood would span from Low to Medium to High as we felt this was enough detail as we needed for the likelihood of each risk. We also decided that the severity should range from Low to Medium to High as we felt that this was also enough detail for the severity of each risk.

Now that we had analysed each risk we then created a plan on how to deal with each one. This plan had to include at least one way to avoid or mitigate each risk and if possible both. We felt that having both an avoidance and mitigation strategy for a risk was useful as we had a way to reduce the chance of the risk occurring and the impact it would have if it did occur. For some risks we also have a contingency plan which is the best course of action if the risk isn't avoided or mitigated and often entails falling back to earlier proven solutions.

Finally we assigned an owner to every risk, the owner's job was to assess the likelihood and severity of that risk at a frequency of at least once a week. Then the owners were to report any changes to the team during our weekly meeting so that we could agree as a team that these values needed to be changed and if any of our strategies to deal with the risk needed to change or be enforced. Who owned what risk was decided by what their main role was in the team and which type of risk this role was closely linked with (for example the project lead was assigned "project" type risks). This ensured that the owner of the risk was familiar with what the risk meant and its effects, meaning that they will be better able to monitor that risk over the course of the project.

All this above information about each risk was finally input into our risk register which is a table containing every risk along with their: ID, Type, Description, Likelihood, Severity, Avoidance/Mitigation/Contingency Plan, and Owner. This register allows our team to easily lookup any risk and have all the information about that risk clearly displayed to them. The Likelihood and Severity columns are even colour coded from green (for the lower values) to red (for the higher values) which made sure the information was even clearer to our team.

Risk Register

ID	Type	Description	Likelihood	Severity	Avoidance/Mitigation/Contingency Plan(s)	Owner
R1	Project	One or more members of our team are unable to participate	Medium	High	**Mitigation:** Make sure our bus factor remains stays at least 2 by having at least 2 people with a complete knowledge of any part of the code, documentation and the write up.	Bertie
R2	Product	Use of poor quality Libraries	Low	Medium	**Avoidance:** Perform careful research of third party libraries before implementing them into our code. Ensure libraries are well tested and reasonably popular to minimise risk.	Jacob
R3	Product	Code structure and readability reduce as the project progresses.	Low	High	**Avoidance:** Ensure project architecture is well planned and code is reviewed before the final version is committed. **Mitigation:** Comply with relevant style guides and ensure code is well documented.	Henry
R4	Product	Product is unable to be built/run on the required hardware or Operating Systems	Medium	High	**Avoidance:** Check with our customer if they have specific requirements for device specification or operating systems the project must be compatible with. **Avoidance:** Periodically review the performance of the project using benchmarking and ensure CI systems attempt to build the project for multiple OS targets.	Jacob
R5	Requirements	Requirements that are written don't correspond to what the customer wants	Medium	High	**Avoidance:** Meet regularly with the customer and specifically discuss the user level requirements with them. Then carefully create the system requirements as a team based on the user requirements that have been gathered.	William
R6	Requirements	The customer changes the requirements causing us to have to rewrite large parts of	Medium	High	**Mitigation:** Ensure that the architecture of the project is modular and when designing it, ensure the possibility of expansion and adding features is maintained.	William

ID	Type	Description	Likelihood	Severity	Avoidance/Mitigation/Contingency Plan(s)	Owner
		the game, possibly under limited time			**Mitigation:** Use an agile software development methodology, which will allow for flexible response requirements changes late into the project. This encompasses meeting with the customer frequently, which should reduce the number of the changes that arise later on. **Contingency:** If there is not enough time to make the changes or the changes required are closer to a prior version we should fallback to that prior version of the solution.	
R7	Project	Misalignment between member's strength and role	Low	Medium	**Avoidance:** Early on in the project we should try to determine our team members strengths and assign roles to them that best fit those strengths. **Mitigation:** Assigning more than one member to the same role to leverage different skills.	Bertie
R8	Requirements	Unclear or ambiguous requirements	Low	High	**Avoidance:** Make sure requirements are carefully written from the start. **Mitigation:** If a team member feels they are ambiguous or unclear, make sure to clarify this with the rest of the team and the customer if necessary.	William
R9	Product + Project	Use of tools that are overcomplicated or only one team member understands	Low	Medium	**Avoidance:** Have discussions between the team about which tools we've used before when choosing one. **Mitigation:** If a new tool is chosen and it is complex or some team members are unfamiliar with it, hold a meeting to show all team members the basics.	Jacob
R10	Project	Poor time management and missing the deadline	Low	High	**Avoidance:** Prioritise working on the fundamental requirements of the project before spending time on extra features.	Bertie

ID	Type	Description	Likelihood	Severity	Avoidance/Mitigation/Contingency Plan(s)	Owner
					Mitigation: Using a gantt chart from the start, allows time buffers between tasks to accommodate sudden events.	
R11	Project	Lack of communication within team causes issues	High	Medium	**Avoidance:** Set up a quick and easy communication system for the team to use.	Bertie
					Mitigation: Team members should clarify if they have any questions or misunderstandings.	
R12	Project	Project schedule is not defined or understood.	Medium	High	**Avoidance:** Create a clear project schedule and assign tasks to each team member.	Bertie
					Mitigation: Hold regular meetings with the team to check on task progress and ensure new tasks are set.	
R13	Project	Scope of project increases and results in some requirements not being met in time.	Medium	High	**Avoidance:** Clearly follow the project schedule and ensure that all requirements are first met before extra features are discussed or worked on.	Bertie
R14	Write Up	Parts of the writeup are poorly formatted or hard to understand.	High	Low	**Avoidance:** Keep the format of the writeup segments fairly consistent throughout and make sure the format is easy to understand, e.g. paragraphs should contain sentences of information that links together.	William
					Mitigation: Ensure that all parts of the writeup are proofread by the writer and at least one other member of the team.	