5. Risk assessment and mitigation

The risks to the project are presented in the tabular presentation below, with the following information about each one of the column headings and what their classifications represent:

- **ID**- a systematic way of identifying specific risks.
- **Category type**- allows for a more efficient way of identifying specific risks based on their type when needed.
    - o *Project* – Affects project schedule and resources.
    - o *Product* – Affects product quality and completeness.
    - o *Business* Affects the organisation procuring developing the software.
    - o *Technology* – This type of category differs from the other categories as this type of risk is directly related to systems and technology failures. Examples of such of errors may include hardware & software failures or human errors.
- **Description**- details what the risk is
- **Potential consequence**- details on a possible outcome that could result if the risk remains unattended
- **Likelihood and severity**- allows the team to make a judgement about how much of a priority this risk is in solving or preventing
    - o *Likelihood*
        - ▪ Low (L) – Low or unlikely chance of occurrence.
        - ▪ Moderate (M) – Relatively likely to occur.
        - ▪ High (H) – Near certain chance of occurrence.
    - o *Severity*
        - ▪ Low (L) – Little or negligible impact on the project itself, should still be review periodically.
        - ▪ Moderate (M) – Moderate impact on the project, there will be some visible marks on the project timeline when assigning time to resolve it.
        - ▪ High (H) – Large impact on the project, will require a large amount of time to resolve subsequently affecting following deadlines.
- **Mitigation** - details the steps that need to be or are being taken to prevent the risk from happening.
- **Owner**- shows who is responsible for either solving the problem or arranging for it to be solved.

- **New Owner** – shows the new person responsible for specific risks after the project takeover phase.

There is significant detail about the risks to the programming and game itself because each item can affect the overall game, schedule and all are distinct issues. The likelihood and severity of the risks are also included because this tells us which risk to prioritise in mitigating, and each item has an 'owner'- without one, the responsibility can be unclear, causing the issue to not be solved.

Risk Register

ID	Type	Description	Consequences	Likelihood	Severity	Mitigation	Owner	New Owner
Assessment 1								
R1	Product	AI interaction proves infeasible to implement	Opposing ships will behave differently	H	H	Fake AI via scripted interaction	Alexander	
	Product	AI decision making too slow to be convincing	Game may not be enjoyable	L	M	Fake AI via scripted interaction	Alexander	
	Product	AI not being as advanced as it could be	The AI is either too good or bad. Making the gameplay worse for the user.	M	L	Fake AI via scripted interaction	Alexander	
R2	Technology	Physics engine being unstable	Player and projectiles may not interact with the other elements in the program correctly	M	M	Make it difficult to get into an unstable situation	Alexander	
R3	Technology	Cost of high-res textures cause high loading time	Game may have a large loading time which may cause the user think the program is broken	L	L	Minimal resources are loaded (possibly on another thread) or compression used	Alexander	
R4	Technology	Large maps and complex algorithms cause low fps	Game is harder to run on low specification computers	M	H	Optimisation Frustrum culling more simple Ais	Alexander	
R5	Product	Rendering during movement may stutter/lag/flicker	Graphics look slightly worse than they would if you pay close attention	L	L	Optimise the movement and if the rendering issue isn't resolved try to different movement system	Alexander	
R6	Technology	Tile map rounding error causing artifacts	The game runs without any errors, but a lot of visual artifacts	H	M	Pad texture atlas that is used for the tile map	Alexander	
R7	Project	The team misjudges how long different tasks will take	The deadline is missed or the work is of a lower quality	M	H	The team will work together closely to make sure everyone is working at a good speed and encourage others to keep working.	All	All
R8	Project	Bad team communication	Elements of the project may not done and others duplicated	M	H	The team will ensure that they update the Trello and communicate their progress regularly	All	All
R9	Business	Choice of an unsuitable game engine	The engine doesn't support all the features that are to be implemented	L	H	Dedicating an initial period on reviewing available game engines and choosing the most one based on the project brief		
R10	Business	Loss of intellectual property	Requires for sections that have since the last save been updated to be done from scratch since	L	H	For deliverables creating a folder on Google Docs that saves automatically whenever a change is made withing the file. For code when making changes first test that there are no errors within the code before merging it together on GitHub allowing for everyone to download a copy.		
Assessment 2								
R11	Product	NPC targeting of player ship not enough or too challenging	Game may not be enjoyable	M	M	Player test gameplay and adjust parameters	Alexander	
R12	Project	Change in requirements	The game does not include all the features and levels of complexity as stated by the client	L	L	Using the agile development approach, we allow the project to be more dynamic through constant re-evaluation of the requirements		
R13	Project	Team member unable to continu project or missing a period due t illness	When left until the final stretch of the project can increase the workload and stress of the remaining members	M	M	Assigning more than one team member per section that needs to \be done. Using such software as Google Docs so that other team members can update write-up sections if needed.		
R14	Product	The saved data isn't saved properly/cannot be fetched back allow for the player to resume the game	Fails to fulfil the new requirements and doesn't allow for the player to resume the game where they last left off	L	H	Running the game on different devi and seeing once the game has bee saved if the saved file is generated device directory.		
R15	Product	The difficulty of the different levels aren't reflected in the game	The gaming experience may become less enjoyable as the levels are too difficult and a	M	M	Making reasonable adjustments to parameters to the code when it con the different level difficulties and		

			suitable one for skill level isn't implemented			adjusting the difficulties adequately based on user testing		
R16	Product	The power-ups obtained ruin the gaming experience	Can break the logic of the game making it too easy if the power-u aren't balanced for the difficulty game.	L	M	Making base designs of different powerups and testing them in game then adjusting their parameters based on those tests so that they influence the game, but not break the balance		
R17	Product	The navigation (between pages different navigation options)	Makes the navigation within the game a lot more time consuming and confusing making less ergonomic.	M	L	Using a simple design for the menu with clear navigation between the different navigation options.		