Risk Assessment and Mitigation

Group 18

Team B

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Risk Management Process

Every project comes with risks, and in this document we lay out how we chose to manage them.

Our risk management process had 4 stages. First, we identified everything that could possibly go wrong. This resulted in many useful suggestions, as well as ones such as "a cyberattack takes out every computer in the room leaving us the only ones left standing", which would be dismissed in the next phase.
We also categorised these risks based on what they might impact:
- **Team**, affecting the people working on the project
- **Technology**, affecting the project and what we used to build it. This got broken down into the subgroups of software and hardware
- **Requirements**, regarding what, exactly, the customer wanted us to implement
- **Estimation**, affecting the time we have available
- **Project**, affecting the project as a whole creation

Next, in the risk analysis stage, we assessed the likelihood of these risks occurring and the severity of their consequences. As this is only a relatively small project, we use a three point scale to assess these - high, medium, and low.

From there, we could start risk planning. We looked at what actions we could put in place to (ideally) minimise and avoid these risks, or, if that wasn't possible, how to mitigate the damage caused, as well as implementing contingency plans if it all went completely wrong. One significant step which we took was to assign multiple people to the same role - so that if someone gets stuck, they have a point of contact with which they can work through the problem together.

Finally, the risk monitoring phase. This isn't a static phase, moreso one that the team members bear in mind whilst developing. This part requires vigilance, checking if any of the identified risks are showing themselves and putting into place the minimising measure, as well as keeping abreast of new risks we hadn't identified earlier, throughout the project cycle. Each identified risk has an owner, whether that's the whole team, a group of people, or just one. They are responsible for re-assessing the likelihood and severity of these risks, as well as reporting them.

These identified risks are presented below in a register. Each risk is given:
- **ID** - a unique identifier to tell them apart and for ease of referral.
- **Type** - which category out of the three explained above the risk falls into.
- **Description** - a description of the risk.
- **Likelihood** - how likely the risk is to become a problem, on the scale defined above
- **Severity** - how severe the effect from the risk happening would be, on the scale defined above.
- **Mitigation** - what steps we can take to mitigate the effect of this risk.
- **Owner** - the person who is responsible for re-assessing the likelihood and severity, throughout the course of the project and reporting back to the group.

Risks

ID	Type	Description	Likelihood	Severity	Mitigation	Owner
R_WOR K_UND ONE	Team	A member of the team is unavailable (extended illness, etc) and their work goes undone	M	M	Ensure there's at least one other person working on each section/able to take over	The whole team
R_INCO MPATIB LE	Technolog y - software	Game doesn't run on the customer's machine	L	H	Use Java, a cross platform software Ensure the final product isn't computationally expensive	Implement ation
R_CHA NGE_R EQS	Requireme nts	Customer changes their mind about requirements - adding or removing some	M	M	Keep in regular contact with the customer	Requirem ents
R_DATA _LOSS	Technolog y - hardware+ software	Electrical fault results in data loss	M	H	Keep backups on both physical drives and the cloud	The whole team
R_COM MS	Team	Team communication breaks down/is ineffectual	L	L	Try multiple communication methods inc. in person	The whole team
R_OVE RRUN	Estimation	The team runs out of time to complete project	M	H	Prioritise and ensure the most important sections get done Weekly Gantt chart to keep track of progress	Team leader, Methodolo gy & Planning
R_FUT URE_P ROOF	Project	Lack of documentation makes project hard to understand in the future	M	M	Follow coding standards re commenting Ensure important points are down in writing	Implement ation (+ each other group documenti ng their own sections)
R_LIBR ARIES	Technolog y - software	Lack of library documentation makes it hard to use	M	H	Chose library with established docs No person working alone	Implement ation
R_MAJ OR_BU	Technolog y -	Major bugs render code unusable	L	H	Establish frequent tests Use best coding	Implement ation

GS	software				practices	
R_MINOR_BUGS	Technology - software	Small bugs negatively affect user enjoyment	H	L	As above and also: Resolve bugs when found, to ensure they don't create larger problems down the line	Implementation
R_SCOPE_CREEP	Project	Project morphs into something entirely different than required	M	M	Thorough planning frequently referred back to Iterative working to monitor state of project	Requirements + Architecture (to define project) Implementation (to stick to it)
R_KNOWLEDGE	Technology - software	Team member knowledge of codebase is not enough to contribute	H	L	Arrange a meeting between implementation team to discuss possible solutions	Implementation
R_DELETE	Project	A file is accidentally deleted or becomes unavailable due to corruption	L	H	Create a remote repository on Github and use Cloud services such as Drive and update them consistently	The whole team
R_GIT_DOWN	Technology - software	Github goes down during a critical time period for implementation	L	H	Make sure everyone has a local version on their device and don't leave everything for the end	Implementation
R_COPYRIGHT	Project	Part of the project infringes copyright, accidentally, be it code or assets	L	H	Do prior research to make sure any tools or assets have a licence. Can remove entirely if licence not present	Implementation
R_OVERDONE	Project	Over-engineered product; some features which are not required are implemented - this is a waste of resources	M	M	Make sure that all architecture models are met and check all requirements are met, before implementing further features	Implementation
R_AWOL	Team	Team member stops responding to communication and ceases to contribute	M	H	Make sure there are people covering others, so they can complete the work which is unfinished	The whole team
R_INCOMPLET	Project	The requirements given by the customer are not	H	H	The features which have not been implemented	Implementation

E		implemented completely	[red]	[red]	are provided in document format to the customer. This should include a list of the features not implemented and a justification as to why	
R_PER FORMA NCE	Project	The game does not run well on the client's computer, in terms of speed of running. There may be some lag	M	M	Test the game on computers with varying specifications and processor powers. If there is a significant decline in performance, consider making the game less resource heavy, if possible	Implement ation
R_RESI ZE	Project	The game does not resize to different window sizes	M	L	Create a resize method in the screen classes. Test the game on devices with different window sizes and then make any subsequent changes if needed	Implement ation
R_MIS_ COMMS	Technolog y - software	If there are any changes in the requirements, this is not relayed properly to the coders	M	H	Hold multiple weekly 'catch-up' sessions to make sure that there is an understanding of what everyone is working towards and if there is any change towards the customer's requirements	Requirem ents + Implement ation
R_COM MIT	Technolog y - software	An incorrect commit is made to the main branch, introducing a merge conflict or possibly causing the game to crash	H	H	Make sure to test run code to make sure all aspects coded thus far are still operational. Before committing to main branch, review changes and make sure that your project is updated	Implement ation
R_NEW _RISK	Project	A new risk is uncovered by a group member during the product development and this is not shared with the rest of the group	M	H	In weekly meet-ups do a review if any circumstances have changed - that includes if any new risks have appeared	The whole team