

## Risk Assessment and Mitigation

Team 15

Team 14

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# Risk Assessment and Mitigation v0.3

## Preface

This document is intended to be read by the system engineers as well as the customer. The document is added to as the plan will evolve (refer to version history for this document's various iterations).

- v0.1 Creation of the document, outlining the planning in introduction. Risks added.
- v0.2 Risks have been expanded upon and revised. Our risk management process added to the introduction. Introduction could be expanded upon.
- v0.3 Introduction and risks final edition.

## Introduction

Our Risk Management process consisted of first planning how we would carry out the next stages such as deciding the basic template we would use for our risk register. We then brainstormed as a group so as to voice everyone's concerns and systematically identified all possible risks stemming from various categories, from risks associated with time constraints and team organisation to the software itself. These were condensed, with risks with very low severities or likelihoods being eliminated, and refactored into a risk register as planned.

In the register, they were prioritised according to likelihood and severity, after we conducted qualitative analysis, since we bore in mind that this is a smaller project with negative ramifications not being critical. Thus we concluded that the level of detail did not need to be high either, and so did not focus on carrying out quantitative analysis, which may be less subjective but was too detailed and time consuming for our purposes. This prioritisation allowed us to put our focus on reducing risks we had determined to have problematic consequences. Our risks are tabulated with a unique ID for each one, the type/area, a description, likelihood, severity, mitigation and ownership. We felt all these columns are appropriate and necessary to fully be prepared in order to deal with any problems that may arise. We use three levels of likelihood and severity: low, moderate and high.

Next, we planned to reduce the impact and probabilities of risks that required attention, by laying out avoidance strategies, mitigation strategies and contingency plans. Finally, we delegated the responsibility of monitoring certain risks to every individual in the group for the duration of the project. This consisted of reassessing the likelihoods and severities of risks under an individual's jurisdiction. Each person came back to the register regularly and updated the likelihood and severity of each risk they were responsible for and if they detected a great enough change, they would have to report the change in status and raise their concerns in our frequent meetings. New risks could also emerge and are added.

Our adherence to this carefully constructed process may have taken up greater portions of our time, but allowed for us to work well together as a team and provide deliverables of good quality on time as we had prepared for any risks that may have come beforehand.

## Risk Register

ID	Type	Description	Likelihood	Severity	Reason/Cause	Mitigation	Owner
R1	People	Too many people working on the coding aspect and not enough people working on the documentation, or Vice Versa.	M	H	If too many people work on the same type of work, it would be difficult to assign tasks and also lead to other work might not be finished on time.	Split the team into half. Half of the team working on the code and the other working on the documentation. Ensure there is communication between each team so that any updates can be made clear. This is done via Discord.	Marcin Mleczko
R2	People	Specific sections of documentation are not complete and specific requirements that were intended to be implemented are no longer implemented.	L	M	Because documentation and code are inextricably linked. If one of them is not completed on time, the other part needs to be changed constantly, resulting in a slower project schedule	Have deadlines for specific sections of code/documentation to be completed for each week to ensure the team is on track and everything that was set is completed.	Sal Ahmed
R3	People	Team members not being sure of what tasks they will need to perform for that work, leading to a delay in completion of project/documentation.	M	M	Because most of the work in this project is related, such as code and requirements, and when we need to write code, it has to be done according to the points on the requirements	Have a weekly to do list which provides each member of the task that they will need to complete during that week which will help with the workflow.	Sal Ahmed
R4	Project	Software Engineer becomes unavailable.	M	M	Because the project was a collaborative effort by multiple people, when there was only one code engineer. Some unforeseen reasons can bring the whole project to a halt	Involve a second Software Engineer to increase bus factor.	Joe Wrieden
R5	Product	Product is over-engineered, i.e. features that are not required are implemented, unnecessarily using up resources.	L	M	Putting too much time into unnecessary features may result in the project not being better completed or implemented on important features	Enforce that the Engineers stick to the Architecture models as defined in the documentation.	Kingsley Edore

R6	Technology	User's computer has insufficient memory to deal with seven or more boats at a time or save/reload features and new features such as power-ups	M	H	This may result in the game not working in certain environments or systems	Inspect program for optimization opportunities each sprint, such as removing memory intensive operations from loops.	Joe Wrieden
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R7	Technology	User's computer has an outdated or incompatible version of Java and is unable to execute the game reliably.	L	H	This may result in the game not working in certain environments or systems	Write the program in a widely supported version of Java, especially by libGDX, such as Java 8.	Benji Garment
R8	Project	Initial schedule is greatly under-estimated and does not provide adequate time for the project.	L	H	Underestimating the time required for a project will lead to the possibility that the entire project name will not be completed within the required time, resulting in failure.	Over-estimate length for each task to ensure that even if they are delayed, the deadline is not delayed too (i.e. the Cone of Uncertainty [1]).	Marcin Mleczko
R9	Project	Requirements are introduced or altered by the client and must be implemented before the deadline.	M	M	Failure to communicate consistently can lead to more work piling up or customers being unhappy with the finished product	Abide by agile methodologies, in this case Scrum, with short weekly sprints in order to address changes in requirements.	Abir Rizwanullah
R10	People	Requirements implemented are not to the stakeholders/customers liking.	H	H	Failure to meet the client's needs resulted in dissatisfaction with the finished product. Eventually the project failed	Providing the customers with the week's prototype/deliverable in weekly meetings to discuss any of the requirements they feel may be at odds with the current version of the implementation	Kingsley Edore
R11	Project	Members are not accountable for any faults during the project, leaving ambiguity as to who should correct them.	L	M	If members are not responsible for their own work mistakes, this will lead to a backlog of work and no one to complete these tasks	Enforce ownership of each task when they are delegated in each sprint.	Marcin Mleczko
R12	Project	Collaboration tools become unavailable for the team, thus limiting the productivity for a given time period.	L	M	The lack of continuous communication will result in members not being clear about their work requirements and the	Guarantee each member is contactable through more secure means	Kingsley Edore

					project will not be completed on time.	such as email if necessary.	
R13	Product	Coders do not pay attention to the changing requirements.	L	M	This will result in inconsistencies between requirements and code and may lead to dissatisfied customers with the final product	Have a weekly meeting where the documentation team discusses what changes have been made to the requirements due to	Joe Wrieden
R14	People	No one on the team has high enough coding skills to produce the required product.	L	H	This will result in the code not being completed in the allotted time	Email the client with the problem. Ask for an extended deadline.	Abir Rizwanullah
R15	Technology	Software Engineers are unsure on what kind of libraries can be extended from in order to implement the game.	M	H	Using an unlicensed library can lead to an unfeasible final project, resulting in the failure of the entire project.	Research is done beforehand into licencing and what libraries can be reused.	Benji Garment
R16	People	Someone on the team suddenly stops responding and ceases to complete the work that they were set.	M	M	When a member of the team responsible for a particular task stalls, this can slow down the whole project and can seriously lead to overdue projects	Make sure there are enough people covering other members so they can finish the incomplete work.	Sal Ahmed
R17	Technology	Users monitor may not have a 1920 x 1080 quality resolution which may affect gameplay quality.	L	L	This causes the game to not work well and reduces the user experience	Provided a scalability option which allows the games to run smoothly regardless of resolution.	Benji Garment
R18	Product	All requirements are not implemented within the product.	H	M	This can lead to dissatisfaction with the project	A documentation is provided to the customer/stakeholder with the requirements that are not implemented in the game with a justification as to why the requirement has not been implemented.	Abir Rizwanullah
R19	Product	Libraries we reuse may be flaky and may affect our product quality.	M	H	Incomplete game libraries can lead to certain requirements not being met	Research is done beforehand into good quality libraries in order to pick the most suitable and reliable game library for the project.	Benji Garment

## References

[1] - McConnell, S. (2006). *Software Estimation: Demystifying the Black Art*. Microsoft Press

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