DEPARTMENT OF COMPUTER SCIENCE

THE UNIVERSITY OF YORK

SEPR - Assessment 3

Updated Risk Document

Un Two

Contents

Risk Format

We have chosen to continue using a risk register as it allowed easy tracking and recording of risks throughout assessments 1 and 2. It allows us to identify risks in a systematic manner and give a clear description of risks which could impact the project [1]. A risk register allows us to manage and update our risks as our project progresses and sequentially step through the various stages of our agile development process. Feedback from assessment 1 prompted us to add a process for updating the risk register. As part of this, a new category, ‘triggers’, has been added to the risk register to track the likelihood of a risk, this allows the risk owner to apply the appropriate level of action of the contingency plan when trigger symptoms show. The following components are included within our risk register[2]:

Table 1 (Risk Register Components):

Category	**Description**
Risk ID	We decided to give IDs to our risks so we can easily reference and keep track of them throughout our project.
Risk	What is being risked e.g. loss of work.
Description	Full description of identified risk, outlining its associated problems.
Type	We have categorised our risks into the following categories: People/Organisational, Schedule, Tools, Requirements, Technology, Estimation.
Probability	We have used the ordinal scale: [low, medium, high].
Impact	We have used the ordinal scale: [insignificant, significant, major, catastrophic] and included a description of the form the impact will have on our project.
Triggers	List of potential events that would increase the probability of the risk.
Preventative Measures	Description of the action we’re going to take in order to give the best chance of the risk not occurring.
Mitigative Measures	Description of actions to be taken if risk occurs to minimise its impact.
Contingencies	The immediate plan of action for the team or risk owner to take if the risk occurs.
Risk Owner	Team member who is responsible for monitoring and managing that specific risk.

We have also implemented a risk matrix, depicted in table 2, with the probability of the risk occurring on the x-axis and the impact of the risk on the y-axis, which. This enables us to decide which risks are the most important and require the most monitoring which we\\ visible denote through the use of colour coding in our risk register[1].

Table 2 (Risk Matrix):

	Impact			
Probability	Insignificant	Significant	Major	Catastrophic
Low	Low	Low	Medium	High
Medium	Low	Medium	High	Extremely High
High	Low	Medium	Extremely High	Extremely High

This format will allow us to effectively manage risks throughout the duration of our project by making risks traceable; unambiguous; well-documented and monitored. The risk ID allows for forward traceability [3].

Using risk categories allowed us to identify a range of risks then pinpoint the most important risks in each category [4].The risk categories formed the basis for creating ID's making it possible to identify the type of risk. Each letter of an ID is the first letter of a risk type. For example, risk ID ETTo would be referring to 'Estimation','Technology' and 'Tools'. In this particular case, two categories began with the same letter, therefore, to distinguish them 'Tools' is 'To'. We have used ordinal scales and explicit categorisation of risks to disambiguate natural language to ensure clarity of risks, thus minimising miscommunication between group members and between the group and the stakeholder [4]. It is vital for both us and the stakeholder to understand and be able to easily reference the identified risks, how they can be mitigated and our planned contingency to reduce their effect; this is aided by our clear documentation of the risks[5].

Whilst Risk Manager is one of our team roles, as outlined in our team organisation section, we have also included a Risk Owner column to allow the Risk Manager and the other team members to know which risks fall under each of our defined roles [6]. Additionally, we identified a clear need for risks to be identified by importance, so that major risks can be monitored more closely and given priority when following our contingency measures. We have included measures for both impact and probability.

Process for Updating Risk Register (Updated)

We have updated the risk register table to include a column of risk triggers in order to indicate that a risk has occurred or is about to occur. If the risk owner becomes aware that a symptom of the trigger has occurred then they should alert the group and possibly take steps to implement appropriate mitigative measures for that risk. These should be discussed at Team Meetings when the Risk arises, it is then the responsibility of the Risk Manager to formulate an update system for the Risk checking periodically at each subsequent meeting whether the risk has subsided and deciding if a new approach is needed if not.The risk manager is in charge of identifying new risks and planning for these.

New risks may be prompted by:

- any changes to the content of the code/documentation
- the method used to document these
- modifications to the requirements
- changes in the team dynamic

If the risk manager carefully monitors these factors then they may be able to identify the risks before they occur and thus implement preventive measures to stop these risks being realized. They can be monitored by plenty of group discussion to ensure that all work planned by the team is raised so that the above factors can be tracked. The risk owner is in charge of checking whether a risk needs to be edited, if the description of the risk no longer fits the assessment then it must be amended: this includes the status, probability and impact of the risk.
If a risk is no longer relevant for example due to the removal of a deadline as identified by a risk owner then the risk will be removed.

Risk Register

Risk ID	Risk	Description	Type	Probability	Impact	Triggers	Preventative Measures	Mitigative Measures	Contingency	Risk Owner
TP1	Loss of work	Elements of work packages which are vital for the project's progression are lost or corrupted.	Technology, people	Medium	**Catastrophic**- Work would have to be redone, potentially disrupting the project schedule we have agreed with the stakeholders.	Document/Version control/Storage Tools not being used consistently by all members. Change of any of the above tools.	Fully employ version control software, committing changes as soon as they are made..	Back up work to an external hard drive or store it in cloud storage. Keep multiple copies.	Recover work from our back up.	Documentations manager
T1	Adopting a different set of development tools	When we select a new project they may have been using very different tools that may be difficult to learn how to use. They may not be free or completely accessible to our group. They may not be easy to use to create new content with a consistent style.	Technology	High	**Major**-There could be a learning curve which then takes up the time we have to implement changes.Software which is not accessible results in us having to to find an alternative..	Group tools will have drastically different development tools or tools that we do not recognise as a group.	Ensure that when selecting a new group project that the tools that we want to continue to use are tools that they are already using.	Communicate with the previous group to gain extra knowledge about these tools and determine if there is a way to transfer their old content into a new tool or create a style in a different tool that resemble their original content style.	Learn how to use the new tool.	Risk Manager

E1	Schedule pressure	Under-estimating the amount of time needed to complete project.	Estimate	Medium	**Major**-This could lead to an unfinished product.	Deadline approaching with at least 1 of the gantt chart deadlines missed. Shorter assessment windows.	Make sure we are not doing more than we are meant to be doing, according to the sustainable pace according to our Gantt Chart.	Have regular meetings with stakeholders to discuss requirements, and to ensure we are making the product, according to our joint requirements specification.	Re-evaluate what we are trying to achieve with project, so that we can meet the required standard and reduce size of project.	Group manager
P4	Team Roles Changing	Changing the roles of team members which may lead to miscommunication, neglected tasks and inconsistent content.	People	Medium	**Significant**- There may be members whose skills are more suitable for a specific role hence by switching roles, may not be able to best results as possible.	Group member expressing desire to change role.	Regularly check that group members ar comfortable with their roles and understand their tasks.	Ensure that if swap over is necessary there is a clear handover between the individuals swapping roles so that no ownership is lost.	Use pre-defined team roles (as in method document) to change role of member by clearly stating the responsibilities they are gaining.	Group manager
P5	Risk Owners Changing	Risk that if we change roles then the risks may need to be inherited which may lead to no-one being in charge/monitoring a risk.	People	Low	**Major-** This could lead to confusion as to who should be managing which risks as previous risk owners may become accustomed to managing certain types of risks.	Changing team roles.	If team roles are changed, make it clear if risk owners are also changing or not and if so what they are inheriting.	Ensure hand over is clear.	Revert back to original Risk Owners	Risk Manager
Pr1	Project is not desirable	Our project wants to be desirable to other groups so that they select it to develop further. If our project is not unique enough this risks a poorer grade.	Product	Low	**Major**- This means if we couldn't get our project selected, we might need to reevaluate the direction our project was going so we can make a desirable project.	Swap over phase, project not chosen.	When pitching, make sure it sound really desirable to other groups so it stands out.	Analyse which aspects of our project we could of changed, so it could've of appealed more	Reevaluate our approach to this project.	Group Manager
To1	Changing Development Tools	If the risk of using a certain tool becomes too great or it no longer works the way we need it to, we must change tool. This can waste time transferring content over to a new tool and	Tools	High	**Significant**- There would be disruptions to the scheduled timeline if we have to make tool changes. Accessibility to new tools may vary among members.	Associated risk of tool becomes too great. Tool becomes inappropriate for use. Tool becomes too difficult to use/not enough knowledge of how to use it amongst group members.	Thoroughly research new tools before using them, ensure that at least one group member is familiar with the tool.	Ensure that work is well documented so that key components are always obvious so that if transfer is necessary all of the main components will not be lost.	Work with list of main components of content to rebuild with the new tool.	Risk Manager

		may cause information to be lost in the process.								
R1	Misunderstanding requirements	Creating requirements which do not reflect the stakeholders desires.	Requirements	Medium	**Major-**This would lead to an entirely different product from the one envisioned by the stakeholders being created.	Meetings with the stakeholder may flag up that certain requirements do not reflect their desires.	Not to make any big decisions without speaking with stakeholders first.	Develop an inclusive relationship with stakeholders, consulting with them so as to ensure the requirement specification is accurate and complete.	Consult with stakeholder again to reach a new consensus.	Requirements manager
P1	Errors made by team	This could involve mistakes made when programming of the game.	People	Medium	**Significant** - Will not be able to integrate until it is corrected.	Tests failing when they shouldn't. Documents not matching criteria specified in brief.	Peer review each other's' work, reducing the likelihood of mistakes being made.	Debug the identified errors before committing the code to our code repository.	Correct the error as soon as possible. Inform the team of the error and put in place procedures to prevent the same error occurring again	All team members
ETTo1	Middleware availability changes	Some of the middleware we intend to use (Development environment, overleaf, etc) may become unavailable or unsuitable for our use.	External, Technology, Tools	Low	**Major** -If our development environment becomes unusable in some way throughout the project we would have to start almost from scratch. If other middleware becomes unavailable it may cause major problems.	Middleware starts to become unusable or buggy. Or lack of useful literature makes it difficult to use.	Using well established middleware.	If availability changes make middleware unusable we should ensure we've prepared the correct alternatives to use.	Identify alternative middleware.	Software manager
R2	Requirement changes	Stakeholder wants to change project requirements.	Requirements	High	**Significant** - work we have done up until this point may become irrelevant.	Stakeholder expresses desire to change requirements.	Facilitate an inclusive relationship with the stakeholders, ensuring the initial statement of requirements and any future changes are jointly agreed.	Explain the impact of changing the requirements to the stakeholders, negotiate a revised statement of requirements which satisfies both parties.	Update requirements specification to reflect our new consensus. Implement these changes as required.	Requirements manager
P2	Quality Control	The project is not being completed to a uniform, high quality standard.	People	Medium	**Significant** - A project which has inconsistencies with quality could leave stakeholders dissatisfied.	Inconsistent effort being applied. Largely negative feedback from assessments.	Ensure we check our work and cross reference with the requirements we made.	Take a systematic approach towards the project, ensuring requirements are forward traceable	Redo parts of the project which are not of the required standard.	Documentation manager
P3	Project member skills or	Skills or knowledge not at appropriate	People	Low	**Significant** - It could affect the quality of the final product.	Members taking too long to complete tasks or	Ensure all team members have the required software	Have the more proficient, experienced member lead the more difficult tasks.	Consult the documentation and ask other team	Software manager

	knowledge	level to carry out tasks				procrastinating them and relying too heavily on other member's support.	expertise.	Regular group code inspections to increase group understanding of code created	members for help, reallocate roles if required.	
S1	Falling behind our schedule .	Not completing our work packages in accordance with our project plan.	Schedule	Low	**Significant** - This could lead to us rushing our work, affecting the quality of the final project.	Continually falling behind	The iterative nature of our agile methodology aids us in avoiding schedule risks .	Have at least 2 meetings a week to discuss our progress.	Reorganise schedule to accommodate delays.	Group manager
C1	Misunderstanding of new formal methods	Not completing work due to schedule being messed up by changed approach	Schedule	Low	**Medium** - Could lead to inefficient work, will be easy to fall back into habits from previous section of work.	Behind schedule set out by EG	Go through EG's documentation as a group, split out the new roles and arrange meetings in the set way	If progress is lost we must let the relevant Manager decide how to make up time and what approach is not working and how to fix this	Follow E1 and S1	Documentation Manager
C2	Inability to understand given code	Unable to move forward with changes as the old stuff is too hard to understand	Tools	Medium	**Medium** - Within our group there is a limited experience with unity, so taking over the project of someone with greater knowledge than us could reveal new techniques	Unable to even begin work on the new section of work.	Before eve choosing the project we sat down with the coding leader of EG to talk through the code.	EG are next to us at all practicals or within a one day meeting, any problems can be solved by agreeing to a meet up to talk.	If unknown code is found immediately stop working on it to save code breaking changes from happening	Software Manager
C3	Inability to recreate artwork	Too unskilled to create artwork as good, or fitting in the style	Tools	Medium	**Low-** Is purely a design choice and will have little impact on the final product though it would be nice to be similar	Artists in the group not as good as artist in other team	We have chosen a group that used a tiled game board, making recreation very easy	Get the artwork done first to quickly decide whether its up to scratch	Copy and paste their existing tiles to create something almost identical	Website Manager
C4	Misunderstanding New Requirements	Not completing work to the expected quality due to a miscommunication in the expected deliverables	Requirements	Medium	**Significant** - Could lead to an unsatisfactory project being created without meaning too.	Must be reviewed at each team meeting or might pass unnoticed	First talk through with EG about the expected finished project, followed by meetings with client to check they are both in agreement	Arrange to flag this at the next group meeting, if not resolved through this take to an EG meeting and failing that arrange a client meeting	Check against EG Requirements and next step plan	Requirements Manager

References

[1] E. Wallmuller, "Risk Management for IT and Software Projects," Business Continuity, pp. 165– 178, 2002.

[2] V. Georgiev and K. Stefanova, "Software Development Methodologies for Reducing Project Risks," Economic Alternatives, no. 2, pp. 104–113, 2014.

[3] I. C. S. S. E. S. Committee and I.-S. S. Board, "IEEE Recommended Practice for Software Requirements Specifications." Institute of Electrical and Electronics Engineers, 1998

[4] I. Sommerville, Software Engineering. Pearson, tenth ed., 2016.
[5] L. Richter. Creating a Risk Register. [Online]. Available:http://www.brighthubpm.com/risk-management/3247-creating-a-risk-register-a-free-excel-template/
[6] E. Geese, “Method Selection and Planning” 2017.