# Risk assessment and mitigation (4)

We decided to keep our original approach to risk assessment and mitigation as all team members are familiar with the risk matrix (severity levels,likelihood levels etc.) as we have used the same one throughout the project.

## Introduction

To manage risk within our project, we decided to produce a risk register. A risk register is an effective tool to identify issues and plan mitigation techniques to avoid them. The register is also a good tool to provide documentation to the group, as to what to do in the event of an issue. Within the risk register, risks are detailed and then categorized into groups which are related, for example, bugs during coding are categorized as technology issues. Severity and likelihood levels are then assessed for each risk and mitigation techniques are tailored to avoid, limit or accept consequences. The level of detail used within the risk register is low to moderate and includes the type of mitigation used. This has been done purposefully as the risks themselves are nonspecific and can happen at anytime, to any member of the team. As such, mitigation techniques must also be nonspecific in an attempt to combat all possibilities. The risk register was systematically updated throughout each assessment to ensure we always had the most recent version available. During our scrum meetings, we mentioned any new risks that we came across and these were then added to the risk register by the documentation lead.

**Types of Mitigation:**

- Risk Acceptance: Does not mitigate the risk as the cost of doing so outweighs the damage of the risk
- Risk Avoidance: Mitigation designed to avoid the risk altogether
- Risk Limitation: Mitigation that, when an issue occurs, works towards reducing the damage of the issue
- Risk Transference: Mitigation that transfers the issue to a 3rd party.

**Severity Levels:**

Severity levels are a description of how harmful a risk may be if it were to occur. A risk can be harmful in one of two ways, either a risk degrades the quality of the project or a risk can cost time to resolve.

| | Low | Medium | High |
|---|---|---|---|
| Quality | Requirements mostly met | Requirement partially met | Requirement not met |
| Time | A Day | A few days | A week or more |

**Likelihood Levels:**

Low - Will almost certainly not happen
Medium - Has equal chance of happening or not happening
High - We expect this to happen at some point
Almost certain - This will almost definitely happen at least once

**Risk Identification Process:**

After reviewing feedback from assessment 1, we decided to included information regarding our risk identification process. Our process involved each member being allocated a risk category (i.e. tech, people, requirements, estimation) and coming up with a list of possible risks that may occur during our project along with their severity and likelihood. Then, we had a team discussion which involved going over each risk and deciding on a mitigation. This was useful as everyone got a say and collectively

generated more ideas (different methods of mitigation). We decided to use three severity levels and four likelihood levels to help simplify the process.

**Risk matrix:**

A Risk matrix was produced to provide an overall risk as the product of the likelihood levels and severity levels. This is a simple mechanism to increase visibility of risks and assist decision making. The higher the overall risk of an issue (higher number), the more dangerous the issue is to the project, as such more planning will go into attempting to mitigate or avoid issues with higher overall risk. On the other hand, issues with less overall risk represent issues that may be ignored, as they may not be too damaging or are very unlikely.

| | | Severity Levels | | |
|---|---|---|---|---|
| | | Low | Medium | High |
| Likelihood levels | Low | 1 | 2 | 3 |
| | Medium | 2 | 4 | 6 |
| | High | 3 | 6 | 9 |
| | Almost Certain | 4 | 8 | 12 |

# Risk Register

*Overall Risk is calculated from risk matrix

| ID | Category | Description of Risk | Severity | Likelihood | Overall Risk* | Mitigation | Risk Ownership |
|---|---|---|---|---|---|---|---|
| 1 | Tech | Data Loss due to unforeseen circumstance | High | Low | 3 | Avoidance: Utilisation of 3rd party services to store online backups | Technical lead |
| 2 | Tech | Bug in development environment | Medium | Low | 2 | Avoidance: All tools the team uses are well tested. | Technical lead |
| 3 | Tech | Incompatible software update to 3rd party software | High | Low | 3 | Acceptance: All affected code and software must be updated | Technical lead |
| 4 | Tech | Hardware compatibility issues | High | Low | 3 | Acceptance: Software stability suffers | Technical lead |
| 5 | Tech | Game lacks stability and crashes | Medium | Medium | 4 | Limitation: Software tested on final platform as coded, stability issues will be fixed as they are found | Technical lead |
| 6 | Tech | Unity not working on lab PCs | Medium | Almost Certain | 6 | Acceptance: Each team member installs unity on their laptop as a back-up | Technical lead |
| 7 | Tech | Code changes breaking existing code | Low | High | 3 | Avoidance: Use existing tests to ensure we are not changing existing behaviour | Technical Lead |
| 8 | People | Arguments within team | Medium | Medium | 4 | Limitation: Speak to Lecturer to act as a moderator | Project Manager |
| 9 | People | Team member | Mediu | Almost | 8 | Limitation: member's work | Project |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | is unavailable | m | Certain | | is split between remaining members depending on who has the least work | Manager |
| 10 | People | Team member is lacking critical knowledge | Medium | Almost Certain | 6 | Limitation: Basic training on new languages or tools | Project Manager |
| 11 | People | Miscommunication | Medium | Almost Certain | 8 | Avoidance: Some documents are created for the sole purpose of aiding communication between members, e.g Gantt chart | Project Manager |
| 12 | People | Under-communication | Medium | High | 6 | Avoidance: The team holds 2 face to face meetings per week in addition to semi-regular online communication. | Project Manager |
| 13 | People | Uneven workload | Medium | Medium | 4 | Avoidance: Team members with little work are encouraged to participate in or review other parts of the project. | Project Manager |
| 14 | People | Total loss of team member | High | Low | 3 | Acceptance: Talk to lecturer to discuss methods to proceed with more assistance | Project Manager |
| 15 | Requirements | Misunderstanding requirements | Medium | High | 6 | Limitation: All work is peer reviewed and obvious issues are resolved before they are used for other elements of the project | Customer Interface |
| 16 | Requirements | Requirements change | High | Almost Certain | 12 | Limitation: Team uses the scrum methodology, to more easily accommodate changes to the requirements. | Customer Interface |
| 17 | Requirements | Architecture doesn't work / unfit for purpose | Medium | Medium | 4 | Avoidance: sequence diagrams were created to run through the architecture to reason its workings. | Customer Interface |
| 18 | Requirements | Conflict between different stakeholders | Medium | Medium | 4 | Limitation: The team would act as a moderator between the two stakeholders, and attempt to resolve the issue into a compromised requirement | Customer Interface |
| 19 | Requirements | Ambiguous requirements | Medium | Medium | 4 | Avoidance: All requirements were peer reviewed to avoid | Customer Interface |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | ambiguity. | |
| 20 | Requirements | Inflated Requirements | Medium | High | 6 | Avoidance: During the listing of our requirements, each requirement was labeled with a priority, which indicates how vital it is to the project. Almost all optional requirements were removed | Customer Interface |
| 21 | Requirements | Stakeholders have inaccurate expectations | Medium | Medium | 4 | Avoidance: Meetings were held with stakeholders to clear up ambiguous issues within the requirements | Customer Interface |
| 22 | Requirements | Requirement differences between our group and the group whose project we picked up | Low | High | 3 | Acceptance: Before starting implementation, discuss requirements as a team and select which requirements to adopt as part of the change management procedure. | Project Manager |
| 23 | Estimation | Unexpected program complexity | Medium | Medium | 4 | Acceptance: More time is issued to the problem to allow its completion | Secretary |
| 24 | Estimation | Incorrect severity and likelihood assessment in risk register | Medium | Medium | 4 | Avoidance: Multiple team members check our risk analysis to avoid obvious mistakes | Secretary |
| 25 | Estimation | Overly optimistic schedule | Medium | Medium | 4 | Limitation: When required, schedule more time for problematic tasks. | Secretary |
| 26 | Estimation | Team members losing time trying to understand the code and architecture of the product from the other team | Medium | Medium | 3 | Avoidance: We do not have to understand all of the code to make changes, only need to understand the interface you are changing/adding to. | Secretary |