Risk Assessment and Mitigation

The risk assessment process was mainly carried out through team brainstorming to identify any problems that could potentially arise. The identified risks were then classified as project, product and business risks according to the following guidelines:

- Project risks   - problems with organization, planning, and personnel
- Product risks   - technical issues and problems with implementing the requirements or design
- Business risks - issues that relate to the wider impacts of the game and problematic factors outside of development, especially concerning our client and stakeholders

The probability of each risk was rated on a simple High-Medium-Low scale as follows:

- High   - almost guaranteed to occur at some point during the project
- Medium   - has a decent chance of occurring at some point during the project
- Low   - very unlikely to occur at any point during the project

The impact of each risk was rated on a similar High-Medium-Low scale:

- High   - would cause significant disruption to the project/ difficult to manage
- Medium   - would cause moderate disruption to the project/ moderately hard to manage
- Low   - would cause minimal disruption to the project/ easy to manage

Some risks were determined to be insignificant and so did not merit inclusion either due to highly improbable occurrence or very low impact. The simplistic classification of risks was chosen because of the small scale of the project and the relatively low number of risks associated with it. The scales for probability and impact were designed to be straightforward and consistent, with the risks presented in three tables, one for each category of risk. Each risk is accompanied by an alphanumeric ID, its likelihood & impact ratings, and strategies to mitigate its likelihood and/or impact.

Risk Monitoring

During our brainstorm session we decided it would be prudent to adopt a risk monitoring strategy that we could plan and lay down right at the very start of our project, to ensure that throughout development we were:

1) Monitoring the risks we have already identified and outlined below.
2) Identifying new risks that present themselves, or that we have missed, as the project continues
3) Analysing our development processes and strategies to eliminate as much risk as possible

We are using an Agile development method in this project as we want to prepare for fast and impactful changes that could arise in our core requirements, resulting from customer negotiation, changes in technology, etc. Hence it is necessary to adopt this 'agile' style in our risk assessment process. We decided to hold a fortnightly risk analysis of our project, whereby we can identify any changes we have made and the possible risks they could cause and monitor the ongoing risks of the project.

Project Risks:

ID	Risk	Likelihood	Impact	Mitigation Strategies
PJ1	Permanent loss of team member(s) during development.	Low	High	May alter design to be more simple to reduce strain on the remaining team members.
PJ2	Temporary loss of team member(s) due to illness, bereavement or other unforeseen circumstances.	Low	Medium	Modify work schedule to accommodate for the reduced workforce.
PJ3	Team member(s) failing to contribute/attend meetings consistently.	Medium	Low	Contact truant members. If communication breaks down completely, consult administration.
PJ4	Perfectionism by team members resulting in delays and an inability to complete deliverables.	Medium	Medium	Hold regular team meetings to identify any delays before they disrupt deliverable deadlines.
PJ5	Inaccurate estimates of the time required for tasks to be completed.	High	Medium	Allow a buffer of extra time which can be used if some tasks take longer than expected.
PJ6	Problems with version control resulting in a loss of work.	Low	High	Ensure that a rigorous version control system is used and well understood by all team members at all times.
PJ7	Lack of technical skills required to produce the software.	Medium	Medium	Assign team members to tasks that match their skills. Use online tutorials and research techniques.
PJ8	Lack of experience of software development.	Medium	Medium	Make use of expertise and tuition provided by the university via lectures and recordings.
PJ9	Differences in interpretation of requirements by different team members resulting in a lack of synergy.	High	Medium	Identify and resolve discrepancies in interpretations early through team discussion.
PJ10	Changes to requirements during development.	High	High	Ensure design is flexible and code is modular.
PJ11	Lack of team member fulfilment, enthusiasm and morale.	High	Low	Keeping open lines of communication to identify and address any such problems as early as possible, having a non-work activity.

		Medium	High	
PJ12	Communication breakdown between team and customer.	Medium	High	The team should take responsibility of keeping the customer up to date with the process, and maintaining open lines of communication, i.e. regular meetings.
PJ13	Team member(s) are sidetracked by the addition of features which are not part of the core requirements.	Medium	Medium	Having a rigorous and thorough plan, including deadlines and start dates, will ensure that the team won't get sidetracked and will remain on task.

Product Risks:

ID	Risk	Likelihood	Impact	Mitigation Strategies
PD1	Bugs that are present in the final product.	High	High	Carry out thorough testing, throughout the process.
PD2	Use of faulty libraries.	Medium	High	Only use libraries which are popular and have a large number of positive reviews.
PD3	Failure to meet functional requirements.	Low	High	Draw on the requirements document at all stages of development to make sure the requirements are being adhered to.
PD4	Some features are too complex to completely implement before deadline.	Medium	High	May need to cut certain features to prioritise essential requirements.
PD5	Production of an unbalanced game which therefore leads to a poor player experience.	Medium	Medium	Playtest the game to ensure that it is well balanced.
PD6	Using outdated technology.	Low	Low	Ensure that we are using up-to-date technology by staying on top of new releases and trends..
PD7	Software relies on technology that is not accessible to the majority of our target user base.	Low	Low	Ensure that we are using technology that the majority, if not all, our target user base will have easy access to.

| PD8 | The customer finding it hard to maintain and add to the product in the future. | High | Medium | Organising as a team to formulate a clean and understandable format by which to create the software, so future teams will be able to use, add-to, patch the game. |
| PD9 | The client is not happy with the final product. | Low | High | Ensuring the client's expectations are managed throughout the project, keeping them informed of developments and the expected outcome. |

Business Risks:

ID	Risk	Likelihood	Impact	Mitigation Strategies
B1	Failure to successfully cater to the target user base.	Medium	Medium	Play testing the product with members of the target user base and using feedback to improve the game in this respect.
B2	The software reflecting poorly on the university.	Medium	Low	Communicate with public relation managers at the university to ensure the game acts as an appropriate reflection of the university.
B3	The software failing to interest prospective students playing it, and hence having a negative effect on their interest in the University of York	High	Low	Ensuring the game is fun, balanced and University of York related by play testing and surveying prospective students.