Section 5 - Risk Management Updated:

This document is a change of the initial submission in assessment 1. Please refer to the key to see if anything has been added, changed or simply removed.

Key	
Colour	Meaning
Example	Anything highlighted in green means it has been added
Example	Anything highlighted in yellow means it has been changed
Example	Anything highlighted in red means it has been removed by a change that is highlighted in yellow.
~~Example~~	Any text that has been crossed out, means it has been removed and is not being referred to by a change. So it has been removed completely.

Anything not coloured or marked by the key is assumed to be kept the same.

This section will discuss Risk Management throughout the software engineering project. In this section we aim to identify, analyse, plan and justify how we monitor these risks. Identifying risks early will reduce chances of project disasters, as mentioned by Barry Boehm. [1]

To begin with we will identify risks and categorise them into types of risks. Project, product and business risks all affect different aspects of the project so it is key we group our risk with the appropriate category. It is crucial we identify risks early in the project to avoid uncertainty and problems which could affect the project throughout the time we have. Once this is done we can add them to the risk register, describe the risk and move onto the next stage, analysing the risks within the risk register.

With analysing risks we need to define the probability of the risk occurring and the impact it could leave on the project. By analysing risks with a risk register, we can be prepared to face any risks (especially those with high probability). The risk register will outline the likelihood of the risk and the severity of the risk if it were to occur. We are using a scalar from low, medium to high. So each risk will be given a scalar for the likelihood and severity.

This leads to our third step of risk management, risk planning. To avoid any risks occurring, no matter the severity or probability, we will do a semi-detailed plan on how to avoid, mitigate and manage the risk. We will assign a mitigation plan to each risk, explaining how we will avoid the risk throughout the project and how we will handle it if it were to occur.

The final process in risk management is risk monitoring. On the same risk register we will assign an ‘Owner of Risk’ along with a secondary owner (or more if necessary) in case the original owner is unable to manage the risk. This is so we can have a person who will monitor the risk and make sure they are ready (know what to do) if a risk that they were assigned to were to arise. Risks will be split equally so the as a team we can share the burden of the risks. It is the job of the ‘Owner of Risk’ to monitor the risk regularly and update the risk in documentation. With an update they will inform us if the risk has got higher or lower in severity, and higher or lower in probability. This is so we can flexibly adapt to the risks that arise later on without having to refer to a plan that was completed months ago. Also, any changes in mitigation will be recorded as well, in case we discover a better way to manage a certain risk.

As a team we believe this to be the best format for our Risk Assessment as we can constantly refer to the risk register throughout the team project and can regularly update it to become more effective at managing risks. We have kept the same monitoring system as it was effective throughout the assessment and worked well.

RISK 1 - PROJECT	*LIKELIHOOD:* ***MEDIUM***	*SEVERITY:* ***MEDIUM***
DESCRIPTION:	With the timeframe of the project, it could be likely that at some point a member of the team could fall ill and is unable to do work for a period of time. This could hinder project progress and affect the timeframes given when planning.	
MITIGATION:	As we are in a group of six. We will work in pairs on similar areas of work. So if one member of a pair falls ill the other can pick up from the work. If, for example, both members of the pair fall ill or the other member has too much work on their hands we will split the work between the whole group to reduce time lost.	
OWNER(S) of RISK:	Aaron Yates & Matthew Walke	

RISK 2 - PRODUCT	*LIKELIHOOD:* ***MEDIUM***	*SEVERITY:* ***MEDIUM***
DESCRIPTION:	When working with the customer, they may decide to suddenly change the requirements, which may affect our initial plans and constraints. This means we might have to re-work aspects of the project/product. This would take up time and can affect our project plan.	
MITIGATION:	As a group we will make sure our work is not too tied down to certain requirements and constraints. We will work flexibly and be prepared for any sudden changes.	
OWNER(S) of RISK:	All	

RISK 3 - PROJECT	*LIKELIHOOD:* ***LOW***	*SEVERITY:* ***MEDIUM***
DESCRIPTION:	With this being a large project with a small timeframe, we may fall behind with progress and miss deadlines/targets we and the customer have made.	
MITIGATION:	We will create a full plan with a GANTT chart to keep up with work. We can change it along with progress with the project and other aspects.	
OWNER(S) of RISK:	Ali Tariq and Matthew Walke	

~~***RISK 4 - PRODUCT***~~	~~*LIKELIHOOD:* ***LOW***~~	~~*SEVERITY:* ***HIGH***~~
~~*DESCRIPTION:*~~	~~With choosing an open source library (libGDX) there falls the risk the engine may become obsolete or buggy. The developers may decide to stop development and make it no longer open source, meaning we will no longer have access to downloads. This would leave us with the files we have on our systems.~~	
~~*MITIGATION:*~~	~~We will make regular backups of program files and documentation so if we pass on our work to another group we can pass them on the latest version of the software/documentation that was last available.~~	
~~*OWNER(S) of RISK:*~~	~~Scott & Dan~~	

RISK 4 - PROJECT	*LIKELIHOOD:* ***MEDIUM***	*SEVERITY:* ***HIGH***
DESCRIPTION:	With creating lots of files with different versions, there is a chance the mediums we wish to store these on may fail and we could lose vital work. This creates a dilemma as we be without certain versions of code and possibly documentation.	
MITIGATION:	For code we will make regular backups and version on GitHub and our own offline mediums. We will make sure at least two of us have a backup at any given time. We will also backup work on Google Drive.	
OWNER(S) of RISK:	Ali Tariq and Lewis	

RISK 5 - PROJECT	*LIKELIHOOD:* ***MEDIUM***	*SEVERITY:* ***HIGH***
DESCRIPTION:	As we are using github, there is the risk we may push versions into the main branch instead of the dev branch. Or simple merging errors could occur resulting in loss of new code or outdated code being pushed into the newest branch.	
MITIGATION:	The scrum master will ensure and keep track of what people are coding at the same time. They will ensure that people are working in different classes rather than the same one, as merging two edits on the same class can cause merging errors.	
OWNER(S) of RISK:	Scrum Master	

RISK 6 - PRODUCT	*LIKELIHOOD:* ***MEDIUM***	*SEVERITY:* ***MEDIUM***
DESCRIPTION:	LibGDX is an open source framework. It therefore may not be as bug free as other competitors such as Unity. This could restrict us if it affects certain requirements we would like it to perform or game elements we would like it to use.	
MITIGATION:	We will make sure that the engine is up to date at all times and we will make ourselves aware of any possible bugs early on to make sure we don't run into them later.	
OWNER(S) of RISK:	Matthew and Scott	

RISK 7 - PROJECT	*LIKELIHOOD:* ***LOW***	*SEVERITY:* ***MEDIUM***
DESCRIPTION:	With being a small group, there is the possibility communication and relations will break down resulting in the team not working together. This will hinder progress and work produced could be poor.	
MITIGATION:	We will assign a Team Leader or Product Owner (for SCRUM) to ensure the team is working well. We will also rotate this role to ensure everyone is content and will give a chance for each member of the team to lead the project. We will also have regular meetings to discuss any problems within the team that may arise.	
OWNER(S) of RISK:	Team Leader and/or Product Owner & Scrum Master	

RISK 8 - BUSINESS	*LIKELIHOOD:* ***LOW***	*SEVERITY:* ***LOW***
DESCRIPTION:	Swapping projects creates the risk that we may select one that is not suited to us or is badly made.	
MITIGATION:	We will make sure to research into the other project and make sure to select one that is well suited to our abilities. Along with that we will also make sure that the project has been well developed and documented.	
OWNER(S) of RISK:	All	

~~***RISK 9 - BUISNESS***~~	~~*LIKELIHOOD:* ***LOW***~~	~~*SEVERITY:* ***MEDIUM***~~
~~*DESCRIPTION:*~~	~~With using online communication tools such as Facebook Messenger and Slack we may have a problem with connectivity resulting in problems with communication. This could slow progress and affect communication.~~	
~~*MITIGATION:*~~	~~We will have regular face-to-face meetings and SCRUM sessions to make sure we are communicating in person. This will also eliminate the issue of communication if these mediums of communication were to go offline.~~	
~~*OWNER(S) of RISK:*~~	~~Team Leader and/or Product Owner & Scrum Master~~	

RISK 9 - PROJECT	*LIKELIHOOD:* ***MEDIUM***	*SEVERITY:* ***MEDIUM***
DESCRIPTION:	(Old) With being a group which is new to our chosen engine and software engineering in general. The concern is we may have selected requirements and an engine that is too complex for our capabilities. (New) We may have selected requirements for the game that may be too hard to make using the engine we are using. The concern is that we may not have the specific skill to fulfil a future or current requirement for the game with the engine we have selected. (With the change of this risk, we have also changed the likelihood from low to medium)	
MITIGATION:	We will follow our GANTT chart and have regular meetings to make sure everyone is satisfied with the requirements and goals. If anyone is dissatisfied, we will review our requirements and modify them to our abilities.	
OWNER(S) of RISK:	All	

RISK 10 - PROJECT	*LIKELIHOOD:* ***MEDIUM***	*SEVERITY:* ***MEDIUM***
DESCRIPTION:	During the period of the project all of us will have other priorities such as exams and revision time. This can slow progress and affect the quality of work produced.	
MITIGATION:	We will follow continue to follow our GANTT chart, we have taken into consideration the exam periods and other submissions. The team will work around the exams and make sure they have enough time to concentrate on exams and other aspects whilst still working on the project.	
OWNER(S) of RISK:	All	

RISK 11 - PRODUCT	*LIKELIHOOD:* ***LOW***	*SEVERITY:* ***MEDIUM***
DESCRIPTION:	Whilst testing code for our product, we may find a severe bug, which may holt progress and break the game.	
MITIGATION:	Included in our GANTT we have allocated ourselves an amount of time to test over code. This will allow us to test and eliminate any bugs we may find during this time. We will also continue to test code whilst we create it as well.	
OWNER(S) of RISK:	Team Leader and/or Product Owner & Scrum Master	

References:

[1] B. Boehm, “Software risk management: principles and practices,” IEEE Software, Jan 1991. [Online]. Available: http://ieeexplore.ieee.org/abstract/document/62930/. [Accessed 8th November 2017].