Project title: Video Game: Dead Man’s Volley

Report Name	Project outline
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Module	CS39440
Degree Scheme	G450 (Computer Graphics, Vision and Games)
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1. Project description

The objective of my project is to produce a game that focuses and expands upon the common gameplay trope known as 'dead man's volley' or 'the tennis boss'. I will be focusing on a single player campaign mode where the user will have to navigate levels filled with enemies and puzzles that are loosely held together by a story to progress.

I do plan to leave room for the possible development of a 'Vs mode' in the future, where a user would compete against either a computer-controlled character or another user in an arena, using the same style of combat used in the single player campaign. The main reason I don't plan to implement this and the single player campaign at the same time for this project is that I don't think I would be able to implement both to a satisfactory standard within a reasonable time frame.

I plan to create this game using Unity, as it provides an accessible interface and the ability to assign a single script to multiple objects, which will prove useful for creating varying enemies and puzzles for the user to overcome. I did consider using Unreal 4 for this project as I have much more experience using it over Unity, however I mostly used blueprints visual scripting, which would prove to be difficult to present as it would require stitching together a lot of screen shots for evidence.

Preferably I would like to have a fully finished game ready for market to provide by the end of this project. However, I do not see myself being able to finish the large amount of content required fill such a game out within the 3-month time frame. So, my goal will be to have 4 – 5 finished levels of the single player campaign, with a working player character, at least two functioning enemy characters with different response to environmental changes and a 'playground' where all the mechanics of this game can be fully tested by the end of this project.

2. Proposed tasks

- **Study the basics of how to operate Unity**

  As I have no prior experience using the Unity Editor, I am going to have to do some revision on how to operate it. Fortunately, Unity provides a user manual that I can refer to as a starting point for my revision. I can also use some of the documentation for Unreal, as some of the pages compare the two game engines and give some examples of Unity C#, UE4 C++, and UE4 blueprint coding being used to implement game functions.

- **Produce a game design document**

  Using a game design document outline provided by my supervisor, I will write up a compilation of the initial Ideas going into this project. I'll also prepare a spreadsheet containing these ideas that I will update frequently to keep track of the development of the game and assist with analysing how the initial plan changes as development continues. Both documents will help come to a satisfactory conclusion I the final report.

- **Produce the 3d models and animations**

  3D models should be easier to produce and animate over 2D sprites, as well as easier to implement into the game. Using 3D models also give me an opportunity to stylises the characters and environment in ways that would be much more difficult with sprites. I will need to produce at least one model for the player, one for each enemy type that is implemented, one for each environmental hazard, and a simple block to construct the environment out of. All of which will use simple materials and colours to assist with identifying each object.

- **Write and implement code**

The most interesting task will be implementing the different functions that the game will require. This will include controls for the player character, an AI for the enemy characters, physics for the projectiles, interactions with puzzle elements and environmental hazards and optimising the levels to reduce lag and CPU usage. This is going to be interesting as mentioned previously, I have no prior experience using Unity or C#. This is way the first task of studying both is important.

3. Project deliverables

- **Mid-Project Demonstration Summary**

A summary of what was presented at the demonstration and the feedback received. This will be used to further develop the project and will be added to a blogger blog post for future reference. A copy will also be included in the appendix of the final report.

- **Game Design Documents**

Two documents acting as blueprints for the final game. The first will define the design for the game if it were to reach its full potential. The second will define the design of the final product provided at the end of this project. The second one will be included in the appendix of the final report.

- **Development Progress Documentation**

A spread sheet detailing the progress in implementing each part of the game. This will include the start and finish times, as well as details about any deviation from the original idea and the reasoning for it. A full copy will be included in the appendix of the final report.

- **Testing Documentation**

A document containing detail of each test that needs to be performed on the game, separating them into unit tests and playtesting. The expected output as well as whether the software passed or failed the test will also be recorded. A copy with all the testing done will be included in the appendix of the final report.

- **Final Product**

The final version of the game to be produced for submission at the end of this project. The game will contain all technical features identified as necessary and may include any improvements stated or suggested in the earlier stages of development. This is a deliverable that is required and so is necessary to note down.

- **Final Report**

A document containing the report and all associated appendices. The report will include a discussion about the work and will acknowledge any 3rd party libraries, frameworks or tools that were used during the project. This is a deliverable that is required and so is necessary to note down.

- **Final Demonstration**

To my knowledge, no documentation needs to be produced for this demonstration, but this is a deliverable that is required and so is necessary to note down.

4. Initial annotated bibliography

[1] Various. “Tennis Boss.” *TV Tropes*, Updated 14 November 2009, https://tvtropes.org/pmwiki/pmwiki.php/Main/TennisBoss, Accessed January 2019.

The document gives further details of the game play trope known as ‘the tennis boss’ or ‘dead man’s volley’. It also gives examples of this trope in current media.

[2] Technologies, Unity. “Unity User Manual (2018.3).” Unity User Manual (2018.3), Updated 29 January 2019, https://docs.unity3d.com/2018.3/Documentation/Manual/UnityManual.html, Accessed January 2019.

Documentation on how to use the Unity Editor and all its associated services. This will be used as a reference when writing the code for the game.

[3] Technologies. Epic Games. “Unreal Engine 4 Documentation.” Unreal Engine 4 Documentation, Updated 10 March 2018, https://docs.unrealengine.com/en-us/, Accessed January 2019.

Documentation on how to use the Unreal Engine 4 Editor and all its associated services. This will primarily be used as a reference to give context to the different operations in Unity.

[4] Blog, Blogger. “Peter Hodgkinson / Peter 'Strike'.” Peter Hodgkinson / Peter 'Strike', Updated 1 October 2018, https://peterstrikehodgkinson.blogspot.com/, Accessed January 2019.

A blog area that I will use to keep a record of my progress on the project. This will be used as reference when writing the final report.

[5] Repository, GitHub. “PeterStrike/CS39440-MajorProject.” PeterStrike/CS39440-MajorProject, Updated 5 February 2019, https://github.com/PeterStrike/CS39440-MajorProject, Accessed February 2019

A git repository that will be used to store and backup all files I produce related to the project.