Senior Project - Project Lance

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**Scrum Master:** Connor Loftus

**Github Site:** <https://github.com/mdreisbach/Project-Lance>

**Slack Workspace:** projectlance.slack.com

**Project Summary:** Our proposed project is creation of a video game titled Project Lance. Project Lance is a third person action platformer being designed and developed in C++ and a game engine known as Unreal Engine 4.

**Project Goals:** The goal of the project is to create a fully playable game mode where the main feature is a continuous level that is dynamically generated through code. Each time the game is played the level will be unique as modular level elements will appear in a random order. Object oriented design principles our team members have learned during our time at Rowan will be emphasized in our design to achieve this modular level system, creating of characters, and the ability to expand on our game in the future.

**Product Features:**

* Modular Level System - Levels will be designed in components so they can be reused in code in order to load them dynamically. Additionally this will lead to the game running efficiently and not using up unneeded memory as only a few sections of each level will need to be loaded at once. Object oriented design principles will be used in creating of these modular level components.
* Continuous Always Changing Level - Each time the game is played through the level will be continuous until each player is defeated and there is a winner. Using the modular leveling system this will be possible. Our code will load a different leveling component at random creating a unique and dynamic level each play through. Additionally as the characters progress through the level the speed will increase leading to an increasing amount of difficulty.
* Settings Menu - Creation of a settings mode that will at a minimum allow the players to customize the keybinds for abilities. The class for holding the settings will be programmed to allow for additional options to be easily added.
* Multiplayer and Single Player Functionality - Within our game mode that is being developed both multiplayer and single player functionality will be developed.
* Data Storage - Data storage will be implemented to save options selected in the settings menu and high scores.
* Four Unique Characters - Four characters are planned for development that will each contain their unique abilities and physics. Our character classes will be developed using object oriented design principles to ensure shared functionality is abstracted to one class.

**Any Limitations:**

* Time - Time will be a limitation that our team will need to keep in mind as we develop the game. There is a large amount of work to be done to develop all of the components so our team needs to plan out our development to ensure a working product can be delivered at the end of the semester.
* Limited by Game Engine - From our research we have decided to use Unreal Engine 4 for our game engine to assist in development of the game (this decision will be finalized in the design document). Our development will be limited by what is allowed in the game engine.
* Team Members Without Experience Using Unreal Engine or C++ - Several of our team members have little or no experience in the technologies we are using (Unreal Engine 4 and C++). This give the limitation of the first few weeks being devoted to a spike for learning for the team members that need experience.
* Art Dependencies - It is our goal to have custom art made for the game (3D models, music, and sound). Our team knows artists from other schools that are interested in creating art for our project. Our team realizes implementing the art depends on the outside individuals completing the work which we have little control over. Therefore using custom art is both a risk and potential limit. To mitigate this risk our team plans to find royalty free 3D models and music in the Unreal Asset Store early on in the project to have place holders in the case that the outside individuals falls through on delivering.

**Any Stretch Goals:**

* Creation of Website - A stretch goal that our team would want to implement for our final presentation is a website for information on the game and to promote it. This will emphasize the web development experience of our team members throughout our Rowan experience. This does come second to having a functional product at the end so we determined to list it as a stretch goal.
* Online Multiplayer Gameplay - An end goal of the game would be to have online multiplayer. Our team members do not have experience working with online multiplayer development so we decided to focus on developing the game play during the semester. If we end up with enough time this is a stretch goal we would like to attempt.
* Additional Game Modes - Our team has discussed additional game modes which we would consider working on if our original spec is completed before the semester is complete.
* Additional Characters and Levels - Given enough time our team plans to develop more characters and levels then we have realistically planned for in our original spec.