**Planning and Estimating**

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1. Size Estimate:

In the planning of our project, we have determined an estimate of the total size of our project, in terms of effort. As we will be using the Unity Engine, some of our work will involve the GUI and high-level manipulation of our project. However, the vast majority of our effort will be concentrated in writing the C# scripts for game object behaviors. Each of these scripts will be contained in a separate source file, and will have jurisdiction over one specific behavior apiece. As a result, we are able to roughly estimate how many lines of code each script will utilize. Looking at previous Unity projects that I have created, with similar levels of complexity (maybe slightly less to that of our project), each has had roughly 7-10 objects, and 15-20 scripts. So that is roughly 3 scripts per object. Although the number of lines in a script can vary greatly, mine mainly fell in the range of 25-50 lines of code, with the average falling around 35 lines per script. So we are looking at a size of about 700 lines of code for the entire project. Final deliverable had 400 lines of code, and 24 game objects. FPA calculated to be 653.8 points

1. Project Risks:
2. -The learning curve for Unity - of our four group members, only 2 of us have experience with Unity and C#.

-To mitigate this, we will need to invest time in going through the documentation to get our group up-to-speed on Unity’s functions.

1. -The learning curve for Rewired plugin - none of our group has experience with the Rewired plugin for Unity.

-To mitigate this, our customers may be able to demonstrate how it works. Additionally, official documentation is available on Unity’s website.

1. -Our small group size - Our team size is the minimum size allowed for this project. This will have a huge impact on our speed and output. It will be a challenge to manage both the project and the CS 499 class elements.

-To mitigate this, we are going to have to work efficiently among each team member.

1. -Design elements of the puzzle - As we are brainstorming ideas, there is no set groundwork for what the puzzle should look like/ how it should play.

-To mitigate this, we may have to change fundamentals of the puzzle during development if the “fun” factor and/or theme aren’t where they need to be.

1. Schedule / Resources allocation

Development will be separated into phases. They are listed here in order.

* Phase 1: Planning - this includes completing our preparation documentation, as well as brainstorming ideas for our puzzle and collaboration with the customer to get the details right.
* Phase 2: Preparation - this includes reading up on documentation for software that we will be using, as well as installing and configuring our version control and development environments.
* Phase 3: Development - this includes the actual implementation of our ideas into code, categorizing work based on fulfilling requirements.
* Phase 4: Testing/Debugging - Although the plan is to test and debug as we develop, there will come a time at the end of the project period where we will have time to focus solely on polishing the project, and making it as robust as possible.

Looking at these different phases, the ranking of time and resource costs, from highest to lowest, are as follows:

Phase 3, Phase 4, Phase 2, Phase 1.