Project Name: UniverseMalin

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Supervisor: Lawrence Goetz

Project UniverseMalin is designed to be a multiplayer boss fight game where the players will play as a white blood cell and will be tasked with defending the human body from virus, bacteria, and other harmful invaders. This game's ultimate goal is to serve as a way for friends and families to connect with one another through a fun and relaxing experience that throws in just a touch of learning within.

For this project we have decided to use Unity as our main game engine to help us create this game due to the fact that Unity is relatively easy to learn to operate. Being one of the most popular game engines in the market, Unity provides its users with an asset store where users can download assets from other users to make it easy for people to create their dream game without needing experience in creating character models. This is also great for since due to the time constraint of this project, we will most likely be unable to create our own original character model. Another important aspect of our game is that it will most likely be a multiplayer game. Unity also offers us many options to help us implement this feature such using the Netcode SDK that is provided by the unity engine or using the third party ones that are offered in unity asset stores such as Photon Fusion and Fishnet.

TimeLine

9/1 - 9/16 - for the first few weeks of the project all the members will most likely be familiarizing themselves with Unity since some of the members have not previously used Unity.

9/17 - 9/30 - the members will be creating a basic map of the game and also create a basic model for the characters of the game. These models are simple and will be used mainly for testing purposes.

10/1 - 10/7 - the member will start coding player movement for the player character trying to add as many features as possible to make the character more exciting.

10/8 - 10/21 - the members will be working on coding the movement code for the enemy character and also work on a combat system for the player and enemy characters. At this time the game should be somewhat playable.

10/21 - 10/31 - the members will try to create and test their first demo level of the game and add any new features that they come up with along the way.

11/1 - 11/11 - the member during this will try to add some addition level to the gaming and trying to balance the difficulty of the game so that the game won't be frustrating or boring

11/18 -11/30 - the team will be focused on adding the multiplayer feature to the game and any other additional feature will be added at this time.

12/1 - 12/10 - test the game and try to find and fix any bugs.

12/11 -12/13 - preparing for the final presentation.

List of features Based on the Technical and game design document:

-**Game Mode:** Multiplayer

-**Game world includes**: 3D objects,characters,weapons,buildings,audio

-**Background Story**: Different objects fight giant objects during different levels. In every level, the number of enemy objects increases and the floor becomes more unstable. In addition, every level will have educational facts about the objects of the game.For example, if the enemy object is E.coli, then some facts will show up in the beginning of the game to educate players.

-**Mechanics of the game:** Consist of four different maps. Each map will show an anatomy part of the human body and obstacles that are common in the location. For example, the stomach area will be the background area and E.coli bacteria will be the target.

-**Audio and Visual effects**: free audio and sound effects from the internet.

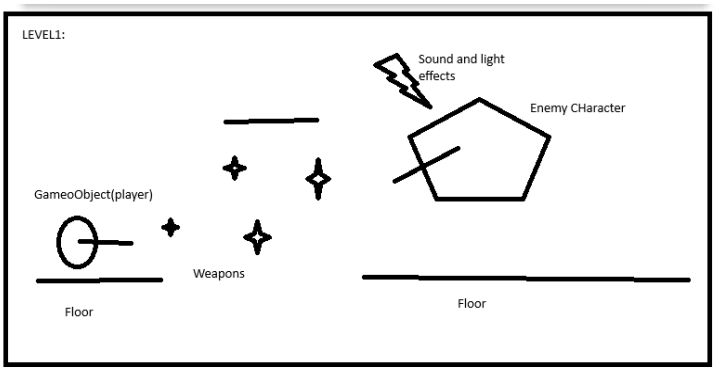
-**Delivery Platform:** PC Windows 10 or 11 platform.

-Hardware requirements: Computer with 8-16 gb RAM,keyboard,Mouse monitor,speaker or headphones, internet connection,hard drive 10 gb, and modern graphics.

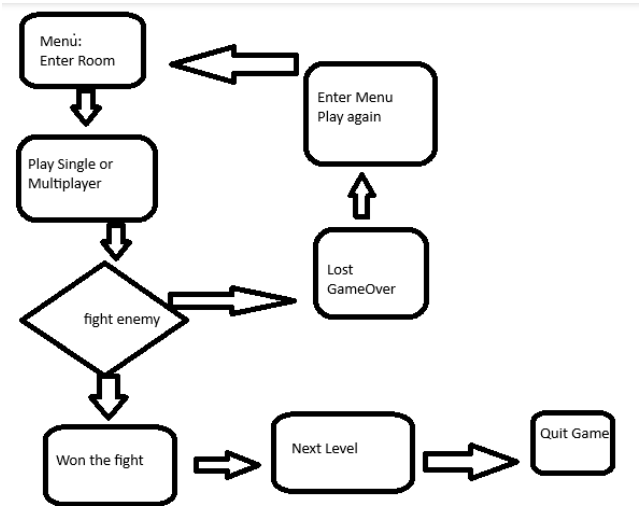
Choice of Game Engine: Unity engine for the game developers to edit and manipulate the characters and levels. The Photon and unity netcode are used to build multiplayer functionality in the game. The Unity engine provides the following features: Characters, Audio System,Editing of the game environment,scripting system,physics support with physics assets like friction.

-**Menu:** Rules of the game,Game Over, Play again, and host-room.

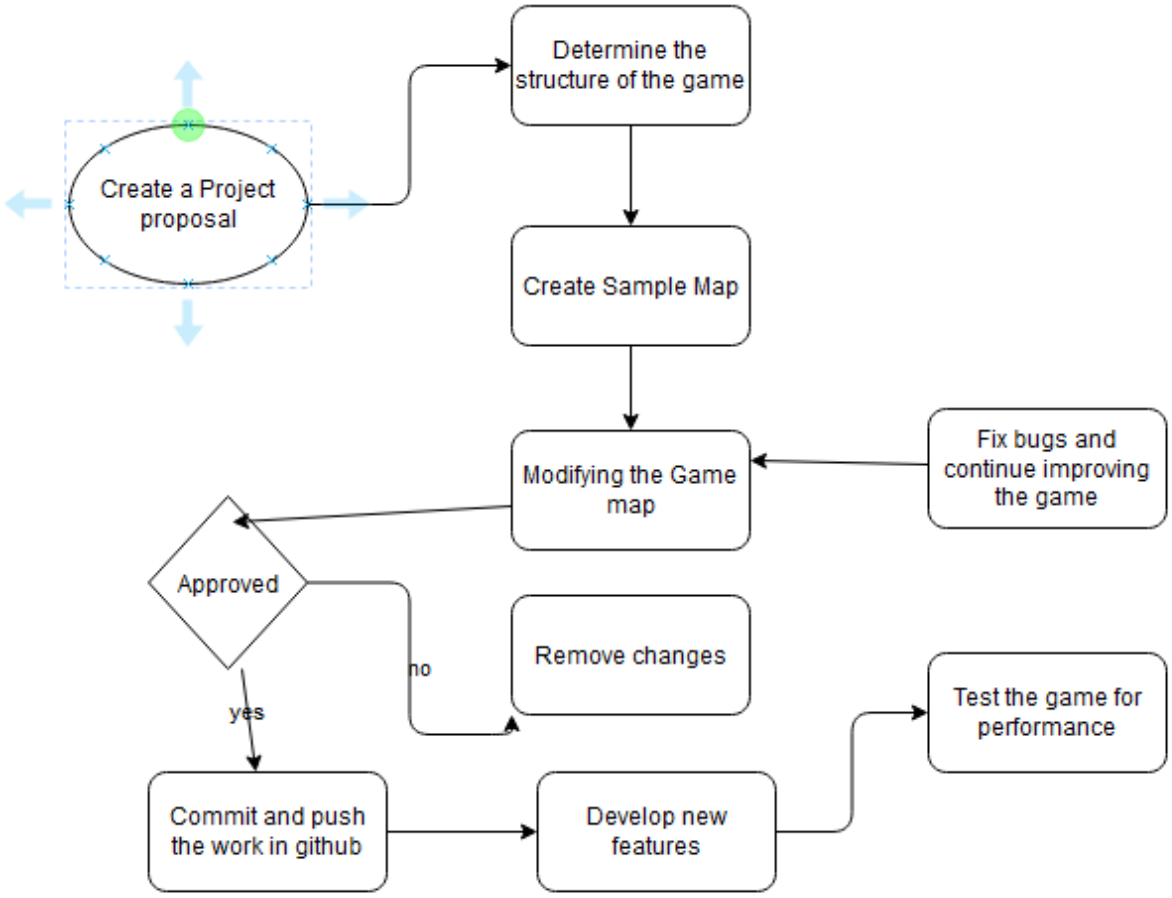
-**Layout Diagram:** The layout of the first level of the game which illustrates different floors,characters,weapons.



-**GamePlay Diagram:** a simple flow chart of how to play the game



Game Workflow:



3D objects and scene management:

-3D objects: moving floors,player, weapons

-Collision detection: characters cannot walk through objects,characters will need to jump over items and walk around to avoid the enemy.

Physics of the Game:

-Friction and gravity

-physics will be needed for picking up items,colliding and jumping.

Game Logic: Each component will have C# script and the component can be added to the objects of the game. The c# scripts will consist of loops, methods and classes to implement the behavior of the objects. For example, the method void update() will run the statements for specific actions like jumping.

Roles: Zixian Lin (Project Manager and Video Game Programmer I) Andrew Gil (Video Game designer I and Game Tester) Aida Khydyrova (Sound Engineer and Game Artist) Jorge D Lata Armijos (Game programmer II,Game designer II)

Data Sources:

-data will be collected from asset store and unity support website.

-youtube tutorial videos will be used to solve problems and learn how to do specific behaviors.

-online open-source information about bugs will be used to fix and avoid common bugs.

-TextBooks on C# fundamentals for beginners.