

Milestone 1

PLAN:

In this milestone we will create a skeletal game that would carry the core features presented in the original proposal. These core features are:

1. Basic Character Movement
2. Minimal Sprites
3. Reflection Mechanism
4. Single Room w/ enemies in action

IMPLEMENTATION:

1 - Basic Character Movement is implemented with event driven programming. The player will be able to control the main character using the keyboard buttons **WASD**. Using GLFW events the program will catch such key interactions and invoke the appropriate callback.

Similarly, the player will be able to control the shield by moving the mouse and this is captured by GLFW mouse events.

2 - Minimal Sprites are loaded into the project to display the main character, enemy(s), projectiles(bullets), and the player's shield. We plan to produce our own artwork for the entire game, but for this milestone all the sprites used are from free resources that we collect online. The artwork is placed at */root/data/texture*.

3 - Reflection Mechanism is the core idea of this game and to assure high technical quality, we implemented this feature using **improved collisions**. Basic collision mechanism was upgraded in this milestone using geometric calculations. The specific implementations resides within shield class at shield.cpp. It detects collision by comparing shield area to the sum of areas of triangles formed by 4 pairs of adjacent shield's vertices with projectile position, also known as Triangle Collision in 2D.

4 - Single Room Map is our choice of representation for this milestone as it is enough to prove the core concept of the game. The gameplay is designed to be continuous in the sense that enemies will keep respawning.

Enemies will have improved bounds checking, and wall collisions implemented to restrict them from exiting the game window. Additionally, the Enemy AI is designed in such a way that it will move at random and point at shoot at where the main character is located at.

The projectiles have improved location checking to be deleted if exiting the window from all sides.

The player can restart the game by pressing the **R** key at anytime.

5 - ECS Implemented ECS Motion system and corresponding component.

REFLECTION:

With good planning and following design principles alongside with perseverance and high team morale, we are able to hit all the objectives previously proposed for this milestone. No discrepancies occurred. The main thing that is imposed to future milestones from this sprint is code cleanup and implementing ECS for all entities, which will be among the top priorities in the next sprints.