

Next Level Gaming

Rust + Fyrox Game Engine

Nysodi 2D Rogue-Like Game

<https://github.com/davide-perli/Nysodi>

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Interim presentation

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ARCHITECTURE

In this context, the coding language involved is Rust, along with the Fyrox engine.

The game works on any OS, since every machine must compile the game using the same dependencies (there's a one time longer compilation)

TL;DR:

Fyrox is a modern, Rust-based game engine for 2D and 3D games, supporting Windows, Linux, macOS, WebAssembly, and (increasingly) mobile. It runs on most desktop hardware with OpenGL 3.3+ and a dual-core CPU, and uses Rust's standard compilation process (Cargo), producing native executables or dynamic libraries for hot-reloading. Compilation is cross-platform and can target multiple architectures, including x86_64 and ARM.



FYROX

Need to mention that the characters' designs might not remain the same for the next presentation checkpoint

PROJECT IDEA – BACKLOG



SCRUM-1 User walks around a map

As a player I can walk around a map in all directions, being bounded by some limits that have collisions enabled

SCRUM-9 Enemy targets the player once it appears on the map

As an enemy I need to target the player as soon as I acknowledge his presence and follow him around the xOy plane

SCRUM-10 User has a health bar corresponding to exactly one heart

As a player, I want to be able to survive based on a full health bar which decreases by a predefined number of points, meaning I have left a few chances to continue the game



PROJECT IDEA – BACKLOG

SCRUM-2 Various regeneration items appear/disappear on the map

As a player, I want to be able to see and have access to items that randomly appear on the map so that I can heal the damage caused by my enemy

SCRUM-4 Enemy attacks the player and vice versa

As the enemy, I have the ability to cause damage to the player. As a player I have the ability to deal damage to the enemy. As active entities, we both are susceptible to having our health damaged.



CHALLENGING TECHNICAL ASPECTS

1. The documentation for Fyrox is rather inextensive, which resulted in a lot of trial and error regarding combining writing code with adding objects via the editor since it was a new concept for us to add scripts to entities (not to mention the fact that there are 3 main resources which we researched since there's little to no information about this engine and AIs are not trained for our purpose)
2. Sometimes missing imports for structs with the logic needed to be implemented for that specific task represented an obstacle until discovering this resource:
<https://docs.rs/fyrox/latest/fyrox/index.html>
3. Coming across entities having multiple node children presenting specific properties was at first unusual for us (e.g. 2D rectangle Enemy sprite having a collider and multiple handles for front and back) - SCRUM-9
4. Assigning textures to blocks after getting used to using the editor by writing code to generate the arborescent structure for the nodes regarding item generation (item spawning based on player proximity and radius at a given moment after the player has been hit and has a low health bar) - SCRUM-2

CHALLENGING TECHNICAL ASPECTS

- 5. The health bar implemented using a green fill rectangle and a black background rectangle was behaving unusual because of the fact that the rectangles were meant to overlap each other (the green bar fill was never fully visible because of being blocked by the background) - SCRUM-10
- 6. Characters' animation individual sprites having to be sliced based on number of rows and columns using the editor (non-intuitive since the official documentation doesn't explain how to do it)
- 7. Respawning the player in the same position as the start, the cycle for respawning the bot after 3 seconds after it has been defeated - SCRUM-4
- 8. Discovering that the order in which the children of a certain sprite are aligned dictates whether that object is below or above another object (HeartBackground before its sibling, HeartFill, results in having the background behind the fill so you can see the health going down and how much it used to represent => max health) - SCRUM-4



PENDING TASKS TO COMPLETE THE PROJECT

SCRUM-3 User aims to use explosive items in combat

SCRUM-5 Damage inflicting items have various predefined values to project onto the enemy's health

SCRUM-6 Based on the damage done by weapons, Enemy remains still or runs away for a fraction of time

SCRUM-7 User walks around a map formed out of different tiles having various designs, moving around without object collision

SCRUM-8 User wins/ loses, score computing

