Creation of the video game "Shadow Collective"

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"Construcción de software y toma de decisiones"

Summary

In our fourth semester studying the subject "*Construcción de software y toma de decisiones*", we are creating a video game from scratch where we implement our knowledge in Unity, HTML, CSS, JavaScript and MySQL. We wanted to create a game that was engaging to the user and that can provide free entertainment to gamers of all ages.

Introduction

The game we are proposing has a futuristic narrative describe as

> "*In the year 2053, Nexus - an evil corporation led by a hyper-smart AI - conquered the world. The shadow collective, a group of rebels, has been hiding in the shadows trying to overthrow Nexus' rule of surveillance and injustice, but to no avail. The world's last hope rests in the hands of our hero, a cyborg who wishes to use technology for the greater good."*

and throughout the ten weeks of our software subject, we learned and created it as described in this document.

Gameplay

Shadow Collective will be a rogue-lite top-down RPG. The player will choose at the beginning one of three cyborg classes: Cybergladiator, Codebreaker, and Ghostwalker. The Cybergladiator class will give the player superhuman strength and fighting skill. The Codebreaker class will give the player the ability to control some of the technology remotely. And finally, the Ghostwalker will have technology that allows them to go undetected.

The gameplay will focus on the player infiltrating the Nexus building, a tall tower with the final boss on the top floor. Each floor will be a level with different objectives and mechanics. As the level progresses, or climbs the building, they will be given rewards like gadgets or upgrades from which they can choose and build their own character, simulating leveling-up. The boss will have different stages, with different mechanics, and the goal is to disconnect the power supply that keeps Nexus alive. (This gives a window for a sequel, since maybe before being disconnected, Nexus transfered itself into another computer). If the player dies, they will be allowed to keep their gadgets but they will have to start again from the first level.

Mindset

Shadow Collective wants to make the player feel like there is a lot at stake. This is done through the rogue-lite mechanic and the story, however, we don't want to make the game too punishing and that's why the player will be able to keep their gadgets. Also, we want the player to feel how they become increasingly powerful as they progress through the levels and climb the tower. Finally, in the boss stage, we want to make the player feel a sense of urgency, which will be done through the music and visual cues of the game.

Controls

The player will control their character using the WASD keys. As it is a top-down game, they will be able to go in all four directions. To attack, the player will aim using their mouse, and when they click, a projectile will shoot from the player in the direction of the mouse position, until it hits a wall or an enemy. Some gadgets will require player input, so they will be assigned in order a number key.

Mechanics

There are a number of interesting mechanics, and this is how they will be achieved:

- When a player is seen by a camera or a guard, the rest of the guards will be notified and they will go towards the player. The path the enemies will use will be calculated using the A* algorithm. This will trigger a state of alarm for the guards. If after a certain time the guards haven't seen the player, the state of alert will drop and the guards will again pathfinder their way to their original outpost.
- There is a cone of vision for cameras and guards, where if the player is inside they can be seen. This will be implemented with a Polygon 2d Collider, where if the player goes in, a ray will be thrown towards it. If the ray does not hit an obstacle before, the camera or enemy will call a public function from the player if it can be seen (since there are gadgets and abilities that could manipulate this), which will return if the player was seen or not.
- The passive gadgets will modify the player class when instantiated, while the active gadgets will have a method called each frame in order to check for input in order to perform an action if necessary.
- The different playable classes will be defined by derived classes from a base abstract class.

Conclusion

After creating this project we were able to strengthen our knowledge in some programming languages and also to develop some abilities that will help us in the future such as organization, teamwork, leadership and patience. As a team we think it is really important to be able to have the eagerness of wanting to know so we can achieve big projects such as this one.