

Operation:Bio-Purge:The Facility of Shadows

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1 Executive Summary

In this project, the Unity game engine will be used to create the mobile game Exterminator. The player will need to eliminate every enemy (name given to enemies in the game “Cosmic Emperor”) in a variety of stages in this top-down shooter game. There will be several different game play systems in the game, such as:

1.1 Inventory System:

To help the player get rid of the pests, they can gather and use a variety of things. The player will have a finite amount of health and must avoid being struck by pests.

1.2 Damage system:

The enemies are damaged by the player’s attacks, and the player is hurt if a pest(enemy) hits them.

1.3 Generic team ID system:

With the help of other players, this system will enable the player to collaborate in the pest control effort.

1.4 Enemies AI:

The pests will have an AI awareness system that will allow them to recognize the player and other pests, and they will modify their behavior in response.

1.5 AI behavior tree system:

This system will allow the pests to exhibit complex behaviors, such as chasing the player, avoiding obstacles, and attacking in groups.

1.6 Projectile system:

The player and the pests will be able to fire projectiles at each other.

1.7 Ability system:

The player will have a variety of abilities that they can use to help them terminate the pests.

1.8 Shop system:

The player will be able to purchase items from the shop to help them terminate the pests.

1.9 UI management system:

This system will manage the game’s user interface.

1.10 Level management system:

This system will manage the game’s levels. The game will be developed using the latest Unity technologies, including:

1.11 Scriptable objects:

Scriptable objects will be used to store and retrieve data in the game. It is a serializable unity class that store large quantities of shared data independent from script instances.

1.12 Addressables:

Addressables will be used to manage the game's assets. calling an object via an address of that object.

1.13 Input system:

The new input system will be used to handle player input.

1.14 Timeline:

Timeline will be used to create cinematic sequences in the game.

2 Project Overview

The market for mobile gaming is substantial and expanding. The mobile gaming industry will bring in \$93.2 billion in revenue in 2022. In the upcoming years, this market is anticipated to grow much more. One well-liked game engine for creating mobile games is Unity. Games on a range of platforms, such as Android, iOS, and PC, are created using Unity.

2.1 Project Objectives

The objectives of this project are to:

- Develop a mobile game called Exterminator using the Unity game engine.
- Implement a variety of gameplay systems, including an inventory system, a health system, a damage system, a generic team ID system, an AI perception system, an AI behavior tree system, a projectile system, an ability system, a shop system, a UI management system, and a level management system.
- Use the latest Unity technologies, including scriptable objects, Addressables, the new input system, and Timeline.
- Test the game on a variety of devices, including Android and iOS devices.

2.2 Project Scope

The scope of this project includes the development of the following:

- The core game-play systems of Exterminator, including the inventory system, health system, damage system, generic team ID system, AI perception system, AI behavior tree system, projectile system, ability system, shop system, UI management system, and level management system.
- The game's levels.
- The game's assets, including the game's art, audio, and animations.
- The game's user interface.
- The game's testing.

3 Innovative Approach

3.1 Unique Enemies

This game include unique enemies which enters the game in different locations depending on the progress of the players

3.2 Co-operative game play

The game could allow to team up with other players and terminate the enemies(Cosmic Emperors) together.This would add a social element to the game and make it more interactive.

3.3 Unique abilities

The player could have a variety of unique abilities that they can use to exterminate the pests. For example, the player could have the ability to freeze time, slow down the pests, or even become invisible.

3.4 Up-gradable weapons and equipment

The player could upgrade their weapons and equipment to make them more effective at exterminating the pests. This would add a sense of progression to the game and give players more incentive to keep playing.

3.5 Procedurally generated levels:

The game could use procedurally generated levels to create a unique and unpredictable experience for players each time they play.

4 Project Details

4.1 Project Plan

4.1.1 Phase 1:

Pre-production: This phase will involve designing the game's game play systems, levels, and assets.

4.1.2 Phase 2:

Production: This phase will involve developing the game's game play systems, levels, and assets.

4.1.3 Phase 3:

Testing: This phase will involve testing the game to ensure that it is fun, bug-free, and performant.

4.2 Testing

Various devices, including Android and iOS devices, will be used for testing the game.

5 Motivation

5.1 Personal Reasons

As stated earlier in this proposal, gaming is a very generating industry in term of revenue and in the survey held in 2022 about 93.2 billions USD was generated from games. As a programmer my dream is to became a competitive programmer and I have already started preparing for it so changing my career path would cost me a lot, the main reason I stick to game in unity was because of C# which is similar to C++ and I want to be a speed programmer in C++ so it would not waste my time in learning any new technologies for my final year project. One of the most demanded framework of C# is .net Framework and Microsoft hire engineers experts in these fields. Other main reasons for this are that I will have a choice to use any game engine weather it requires C# or C++ there would be no difficulties for me in these fields. In the end I would say that C++ and C# both are almost same languages and there might be some minor changes but not major changes.

5.2 Innovations

Unity offer powerful tools to enable us to experiment with new game play mechanics, graphics and AI. Our project is motivated by the desire to innovate and bring fresh ideas to the gaming industry.

5.3 Community Engagement

We recognize the importance of building a community of players who share our enthusiasm for the game. Our project is driven by the goal of fostering a passionate player base and encouraging their active participation and feedback.

In summary, my motivation for this Unity game project is deeply rooted for our love for gaming, my desire is to create something unique and entertaining and our commitment to pushing the boundaries of what is possible within the Unity ecosystem.