

Game development project

1. Introduction

For my game development project, I have decided to create a game that has two main goals. The first one is to survive and the second one is to kill all the enemies.

1.1. Simple background story

The premises of this game is a rundown military base that was taken by strange creatures, and you are the only human left alive. Now your goal is to survive by dodging enemies until you find a weapon room where you pick up a weapon prototype by pressing the “E” button and the goal of the game suddenly changes. Now you are no longer the prey, but you have become the hunter. Your new goal is to kill all the enemies and free the base.

I have decided to make this game as a top-down pixel game mainly due to the lack of free assets that would fit my idea.

2. Development

As I decided to do a 2D game I first started by finding sprites that would fit my image. Unfortunately, I couldn't find assets that would fit my idea perfectly, so I was combining a lot of different assets for the game map that had to be adjusted because they didn't have the same dimensions as my main assets. I also modified the assets for the main character and the enemy assets are created from scratch in App called Aseprite.

I wanted the game to be different each time the player plays it. So, I have created different rooms that will create a 5x5 map where the rooms spawn randomly always with only one weapon room and one starting room. In these room I also created spawn point for both structures, that will spawn differently each time, and also for Enemies that will have a percentage change to spawn according to the difficulty that can be set in the game menu.

Next, I created the player and enemy movement with enemy follow functionality when player enters a follow radius and attack functionality when he enters attack radius. For the player I created a pickup weapon functionality that also changes the game goal and the shooting functionality for the weapon. Afterwards I added the health and damage system for both.

Further I implemented all the in-game menus, main menu and settings, music, mini-map and some small additional functionality like blood split animation.

3. Biggest challenges

One of the biggest challenges I faced was to create a pickup system for the player. Because of the random room spawn I had to create my player as a prefab and spawn him within the start room and I had to do the same for the Weapon. Because of this it was quite problematic to find a way to set the weapon a child of the Player and delete it from the “end room” when picked up. The solution I came up with was to have 2 different weapons. One that can be seen in the end room and an invisible one with the shooting functionality that will be assigned to the player as a child component when he picks up the first one.

The other problem I faced was the enemy attack functionality. I have tried to use the coroutines to make the movement not dependent on the update function. I faced quite a few hard-to-find problems because the enemy movement is also dependent on the player and in unity its quite hard to understand the bug report which made me spent a lot of time on debugging making this functionality.

The last problem I can think off was to correctly set all the variables and conditions when player wants to start a new game or go back to the menu. As this is different in each part of the game and there is a lot o things that need to be changed with the click of a one button it is quite hard to make it function correctly in all the specific scenarios.

4. Project future

Due to the time consumption of this project, there are still a lot of things that can be implemented or at the very least updated.

The first big update to the game would be a pathfinding functionality for the enemy. With this the game could also be adjusted so that when the player enters the second phase of the game all enemies will go after hit regardless of their map location. I have tried to implement some 3rd party path finding libraries but because of the way I spawn my maps, structures and enemies I couldn't find a way to add this functionality without any big-time consuming changes to the game.

The second big update would be to create better assets that would fit the theme and story of the game. The current version is mishmash of different free assets that to some extent fit together.

There is also the opportunity to add some smaller updates like more weapons, enemies or playable characters. There could also be special game modes (for example speed run mode) or game bosses.

5. Additional information

My GitHub name: VostaMartinVM and here is a link to my GitHub repository: [RedditIdea](#).