CMPE 316 - Game Programming

Final Report

Escape from the Office

Group 9

Egemen Engin

Barış Sinaplı

Eyüp Bahadır Başlı

Ilyas Nayle

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1. Introduction

When you are going every day to work in your office and while working, you always dream to escape from there, but how will you do that? The “Escape from the Office” game will give you the opportunity to make your dreams come true. It is an interactive and challenging game where the player will interact with objects and the environment and must escape from the floors of the office in a limited time. If the player wants to skip the work hours, there are certain tasks that must be accomplished. The player must collect some objects, solve puzzles, switch between reality and his dream via the portal, avoid the deadly traps; most importantly protect himself from the BOSS! After completing all the tasks, the player accesses the elevator in order to jump to the next level. Also, don’t forget the time! If your time is up, the player gets caught while sleeping.

2. Character

The main character is an office employee who works as a game programmer. However, he tends to very sick of his job. Every day when he comes to work, he goes to his office and starts working for 12 hours without any breaks, that puts him in a very bad condition because when he looks at his colleagues, they are less productive than him and he is also paid less, therefore he starts thinking about escaping from the office.

In this game, you can control this character with “WASD”, shift, mouse rotation and space. WASD is for movements, shift is for sprinting, mouse rotation is for rotation of the camera and space is for jumping.

3. Inventory

The inventory system is a storage located bottom of the game play screen where the player stacks all of the collectable objects for using later. For example, a key that is used for opening doors, is collected and can be shown in the inventory system. With keypad numbers, players can change the selected object in the inventory. Color of the selected object's frame becomes green. Otherwise, it is white.

4. Doors

There are 5 types of doors in the game. Pressure Plate Door, Portal, Password Door, Binary Lever Door, Key Door. The first one is a key door which can be opened only through a key, and the player must look for the key on the specific floor. The second one is the password-protected door which the player has to find the passcode of the door by solving the puzzle and entering the passcode in the password system of the door to unlock it. The Binary lever door is the type of door where the player converts the passcode into the binary number and then uses it for opening the door by adjusting the levers. The portal door is used by the player to jump from the dream into reality during the game and vice versa. Lastly, the Pressure Plate door is used by the player for an opening for a certain limited time and has to pass through it.

5. Level Ends

There are level ends which finish the levels which are colliders simply. If it is the last level it is exit door from the building, otherwise they are elevators.

6. Traps

There are different types of traps in each floor. For example, a patrolling scissors which is moving around, a printer that shoots a paper plan to a specific direction with a delay between each shooting, a rotating and static male or female bosses who are having laser eyes and the player must protect itself from the direct contact or else he/she dies and lastly pens shaped spike traps that is in the ground and goes in and out for a limited time and the player must prevent a direct contact with them.

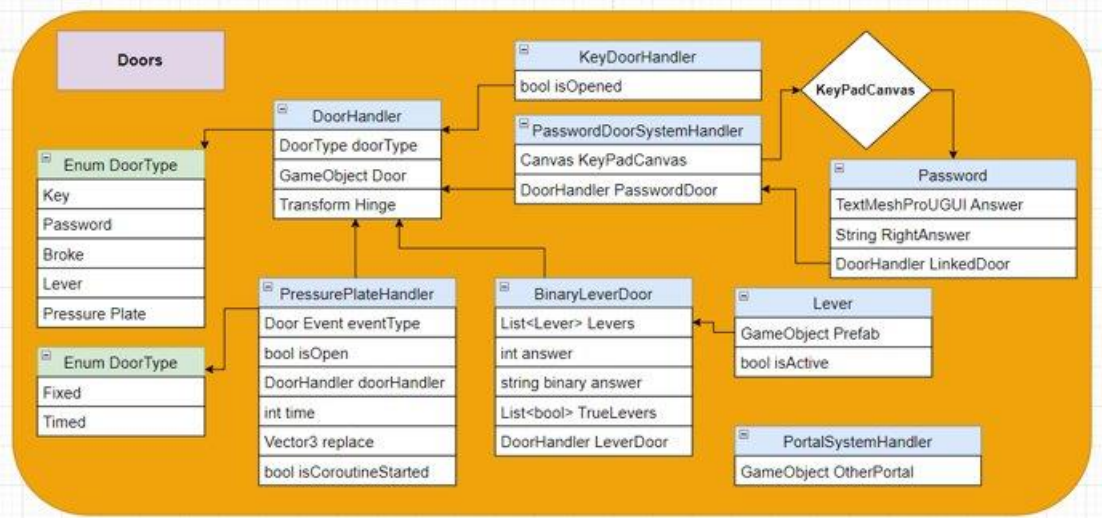
7. Floors

The floors are also knowns as the levels in the game. We have 3 floors in the game. Starting from the 2nd floor which is the starting point of the game. This floor is having 4 different rooms which 2 of them are puzzles and the other 2 of them is halls which contains traps. The first puzzle in the 2nd floor is the player has to find a password to exit from the room. The second puzzle in the 2nd floor is the player has to find numerical answer and convert it to binary to open binary lever door. The next floor is 1st floor which contains 5 rooms. From these 5 rooms, 2 of them are halls which have traps, 2 of the others is puzzle room and 1 more the last room is a hidden room which contains the key for opening the door. The player should use the portal for accessing this room. We think that as a he goes the reality from his dream to take a key. The character can see himself while he is sleeping on his desk in this room. The second puzzle is labyrinth with pressure plate door. The player has to find pressure plate firstly. After that, the player has to find door before it closes. The last floor which is the ground floor, or the last level is consist of only traps, and the player must survive these traps in order to complete the game

8. Project Structure

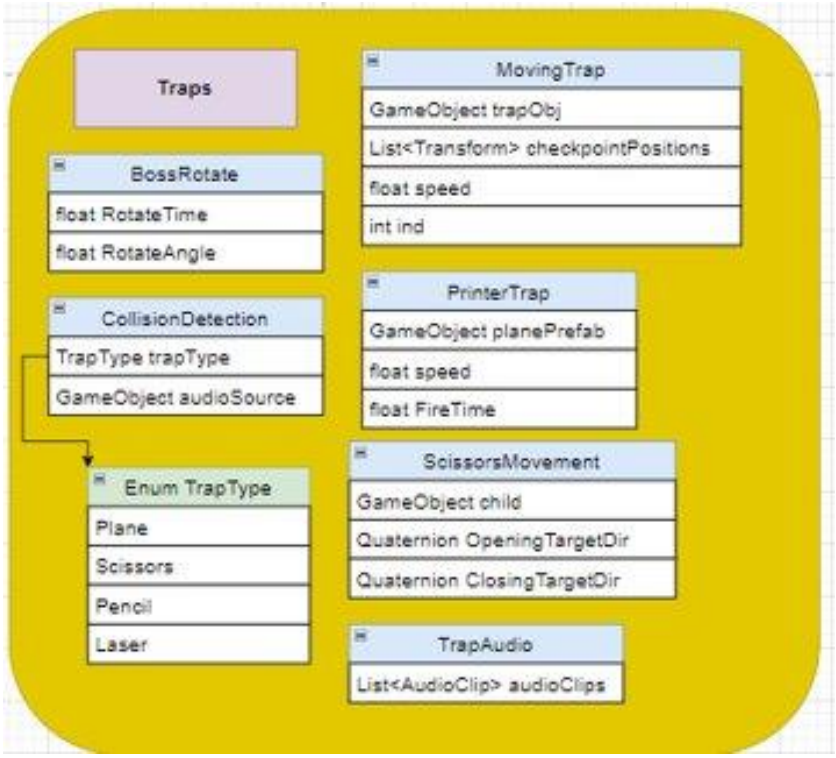
Doors

In this game, there are five different types of doors as mentioned in previous parts. We have a common script “DoorHandler” for all doors except the portal. We differentiate doors with Enum in this script. Also, there are exclusive scripts for all doors to handle with different situations such as password system, pressure plate or levers. Except “PortalSystemHandler”, these scripts use open door function which is in “DoorHandler” to open door as a result of different conditions. Portal deals with teleport the character from one gate to another gate.



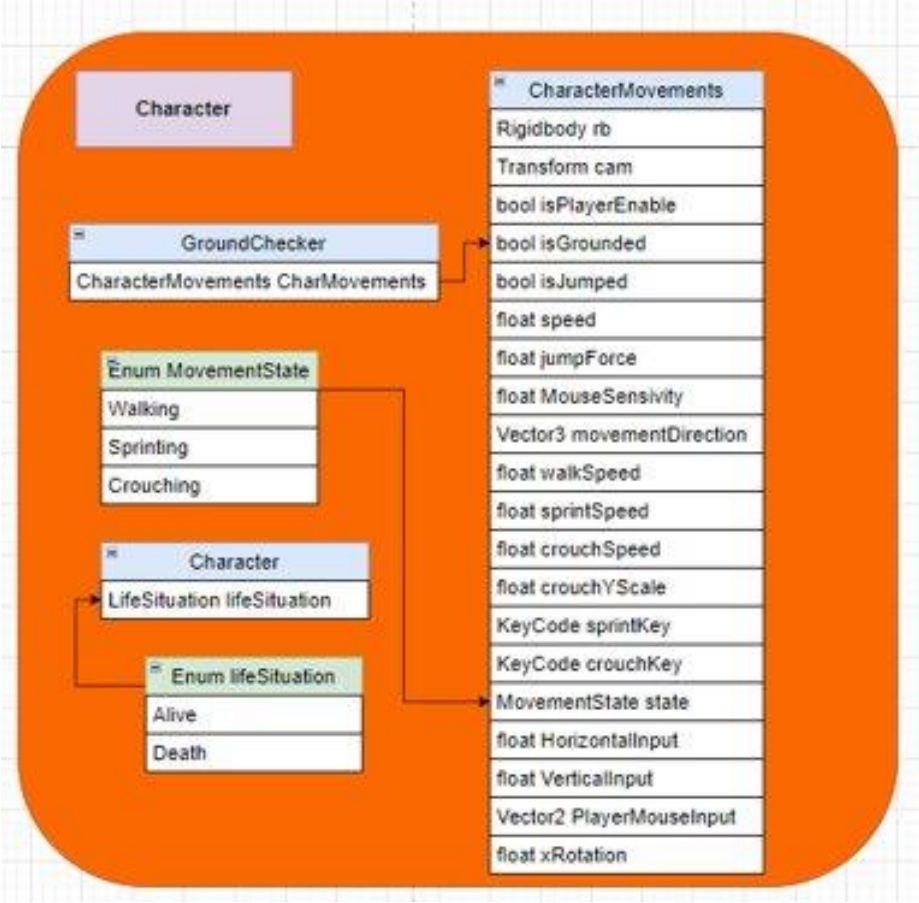
Traps

We used a common script for all types of traps which is “CollisionDetection”. There is Enum for differentiate trap types in this script. This script handles with death situation and playing sounds according to collision detection. According to type of trap, it uses “TrapAudio” script to play correct audio clip from the audio clip list. Except these, there are different scripts for different traps’ features such as patrol, shoot, rotate etc.



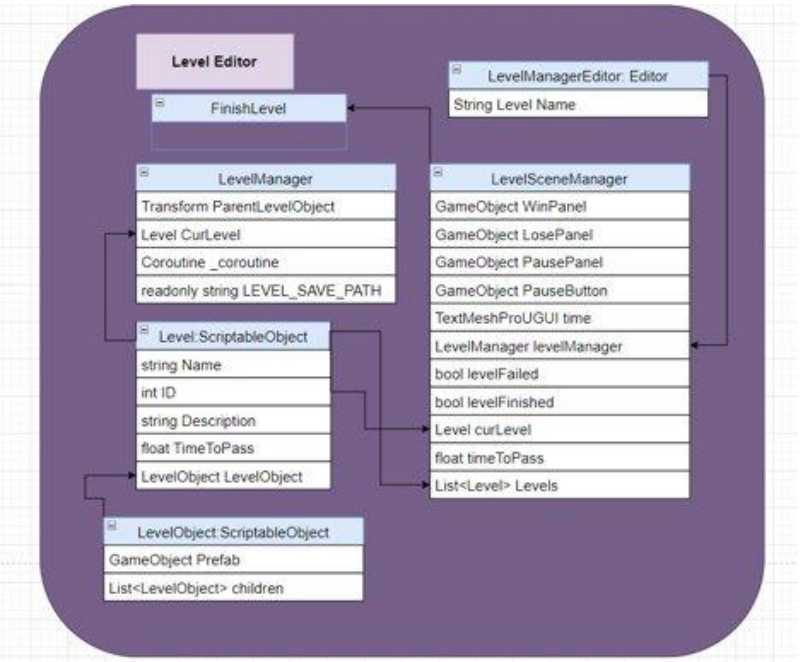
Character

These scripts are used to control character movements which are move, rotate, sprint, jump and crouch. It uses ground checker script to prevent double jumps etc. Also, there is Enum to understand movement state of the character which are walking, sprinting and crouching. Character script handles with life-or-death situation.



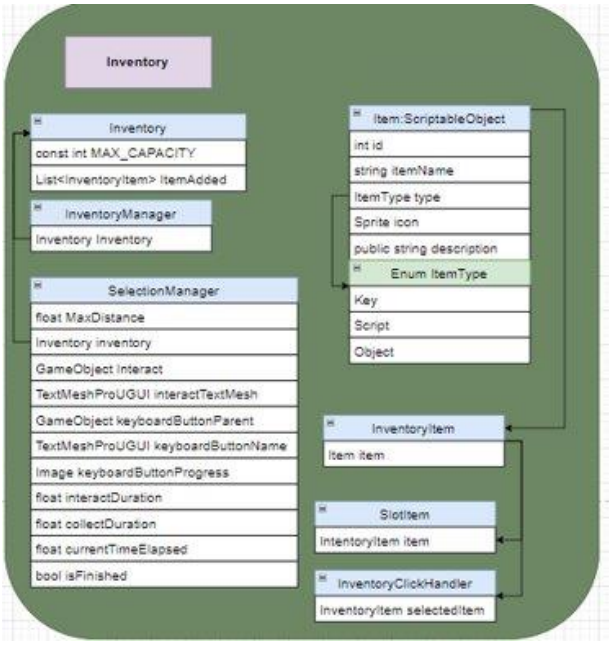
Level Editor

Level editor scripts deals with saving and loading levels easily. With the help of these we only use one gameplay scene and load levels to that scene. Also it make level design easier.



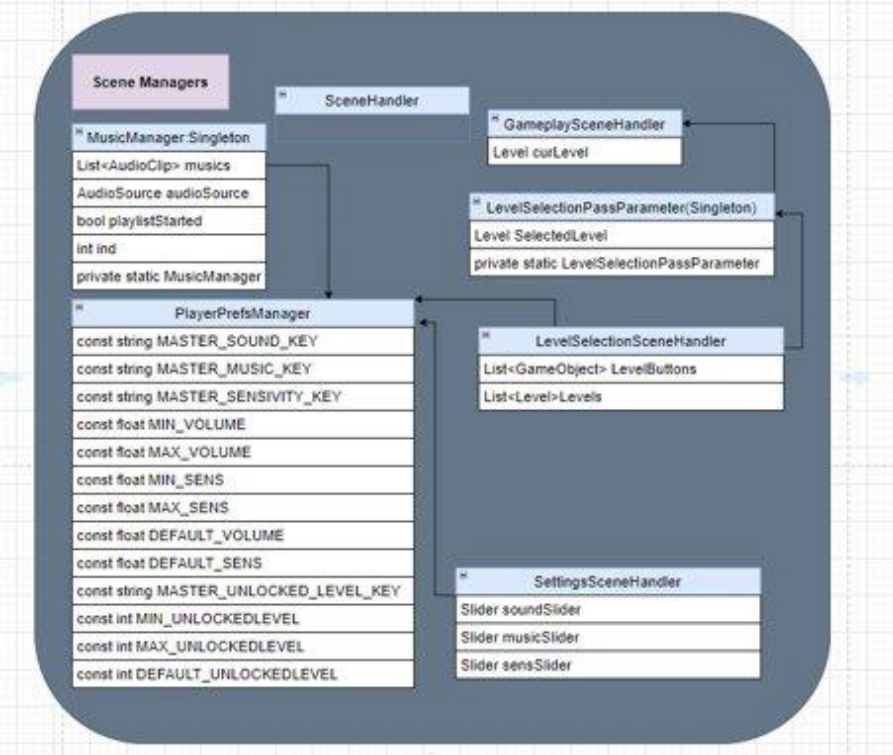
Inventory

Inventory script, selection manager and item which is scriptable object deals with inventory systems which are inventory UI, taking and using items. Selection manager instantiates ray from middle of the screen. If it hits to an item, door or lever, it shows information. If it is collectable object, it adds item to inventory after player press “E”. In hitting to the door and lever situations, player has to press “E” for a while to interact with them.



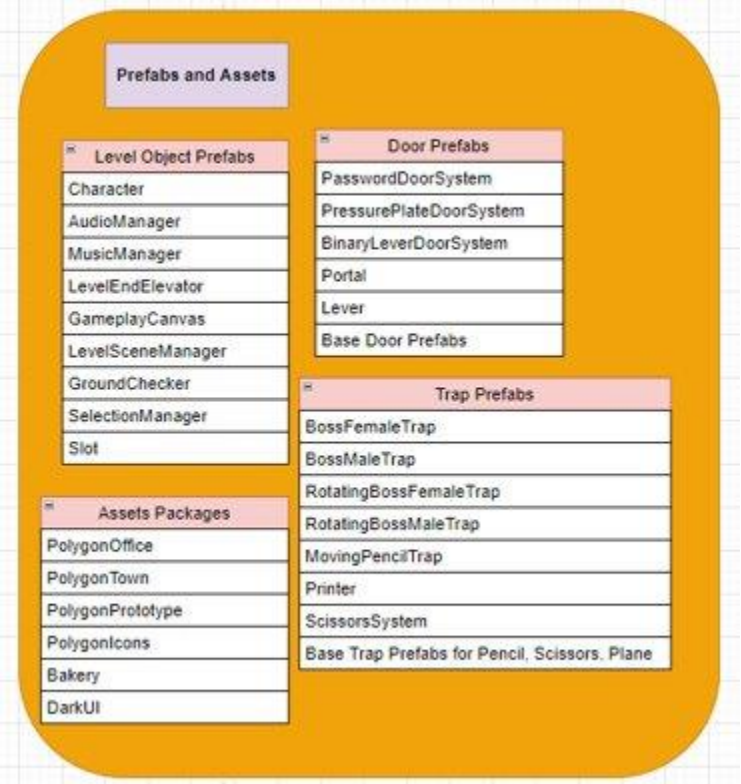
Scene Managers

Scene Managers scripts deals with scene transitions, player preferences, level selection and playing music. We made music manager and level selection pass parameter singleton because we don’t want to interrupt and replay music while scene transition etc. and we need to pass selected level to gameplay scene because we use single gameplay scene.



Prefabs and Assets That We Used

We created different type of prefabs to group different game objects which becomes systems such as doors and trap systems and to make developing and level design easier. We used polygon asset packages for 3D models and DarkUI package to make a good-looking user interface.



9. Scene and File Hierarchy

We always tried to be organized because we should be able to find whatever we needed in files or scenes easily. For complex structures, in scene hierarchy, we used multiple level of hierarchies to prevent chaos.

Except being organized, we gave associated and clear name for scripts, files, folders to prevent misunderstandings later.

On the other hand, we tried to develop parts of the game more modular. Modularity is very important for the development process and improvement process. Also, It makes debugging and testing easier.

10. Tasks

No	Task	Assigned to	Status
1	Character Movements	Ilyas/Egemen	Completed
2	Camera System	Barış	Completed
3	Lightning	Eyup	Completed
4	Animations	Ilyas	Completed
5	Inventory	Barış	Completed
6	Traps	Egemen	Completed
7	Puzzles		
7.1	Pressure Plate	Eyüp	Completed
7.2	Portal	Eyüp	Completed
7.3	Password System	Ilyas	Completed
7.4	Lever System	Barış	Completed
7.5	Item Interactions	Barış	Completed
8	Level Design	Barış/Egemen	Completed
9	Menu Scenes	Egemen	Completed
10	Gameplay UI	Barış	Completed
11	Level Editor	Egemen	Completed
12	Music and Sound	Egemen	Completed