TP0: Proposal

***\*\*\*TP3 is at the end of the page***

Project Description

Name: Mission Impossible

Description: In this 2D sniper game, a person with snipers in a specific location shoots aliens using a sniper. There are different kinds of aliens with various abilities. Some with bullets, some with elemental attack (fire, poison, freeze). With the timer passing, aliens would approach, and the score would go up when eliminating enemies. There is a possibility that after killing enemies, orbs would be dropped to be collected when not equipping the sniper. There are even some achievement badges to be collected. Maybe try to kill 15 aliens in a roll without wasting any bullets… In the last round, there is a big boss to fight with. There are three bosses to be explored. Besides, each time you win the boss, you will be awarded two lollipops. The lollipops can be used in future games for dealing huge amount of damage that appears on the screen.

Similar projects

I am inspired by CSGO and Valorant, which have a crucial powerful weapon sniper. They are incredibly powerful but hard to steer and master. But in this game, players are being set up in a 2D environment to play this game not only skillfully but also tactically.

This game is also similar to Plants vs Zombies, where various zombies go for Dave’s brain. They are quite similar in like generations of zombies and Zomboss at the end. However, in my game, I made some creative ideas such as there are three bosses to be explored, and you can pick the orb to have effects. Maybe the sequence and timing of picking those orbs determine the win or loss of the game. Therefore, they are similar to some extent but I made some so-called improvements to make the game more interesting.

Structural Plan

Functions:

Helpful Functions: ButtonPress, Distance, Sound

User Interface: Intro Page Effects, Winner Page, Particle Effects,

Ability of the person: Reload, Move, Equip/Unequip Sniper, Collecting Orbs, Buff Status, Skills

Game: GameStart, GameOver, Reset

Aliens: Shoot, Move

Classes:

Different Orbs, Different Aliens, Three bosses, Sniper

Algorithmic Plan

The trickiest is shooting bullets out of the sniper and bullets physically hit the target. I will write a class for the sniper, which has properties and buffs. When aiming, it is followed by OnMouseMove function, and when shooting, the velocity of the bullet is generated in that direction. Then, when hitting the target, the health of the target decreases. When zero, the target dies.

Timeline Plan

11.19-11.20 Helper Functions

11.20-11.21 User Interface including Intro Page, MainPage, GameOver Page, Winner Page, and Success Page

11.21-11.22 Class Sniper

11.23-11.24 Class Alien

11.25-11.26 Class Orbs

11.25-11.26 Class Three bosses

Version Control Plan

Using git to get previous versions:

A screenshot of a computer

Description automatically generated

Besides, I would like to make a copy of each day to store them in my file “MissionImpossible” such as “theGame1stEdit” “theGame2ndEdit” “theGame3rdEdit”

It is also auto-backed up in my personal OneDrive.



Module List

I will not use any other modules.

TP1 update

1. Only 1 boss at the end instead of three.
2. Updated three types of monster movement: monster 1: move unorderly and explode at the end, monster 2: would avoid bullets and explode at the end, and monster 3: when the person is holding the sniper, the monster move as monster 1 does. When the person is not holding the sniper, the monster moves toward the person directly with a faster speed. (1.4 times speed as usual).
3. Remove the orb class section. Make orb as a function. It can generate orbs when enemies are being killed.
4. Remove the lollipop section. They are just hardcoding, not enjoyable at all.
5. The reload section is removed because monsters have a lot of health, and it is hard to kill them.
6. I wrote fire, poison, and freeze for orbs. But, poison effects the same as fire, so I change poison to health.

TP2 update

Design Modifications:

1. \*\*\*Adaptive difficulty level: based on four weightings of monsters in the battlefield, character health percentage, bullets accuracy, and time elapsed. This score ranged from zero to one. And by met certain conditions (score based), the difficulty would be increased by increasing the attack attribute and speed of monsters. There is a list that contains scores every five seconds. The average of the list is compared to the current score. If the current score is higher, then the game is getting harder since the player seems thriving in the game, and vice versa.
2. Add buff sections with corresponding transparency.
3. Make and manage the stage section with corresponding transparency 🡪 1st stage: monsters. 2nd stage: boss
4. Win and loss condition & pages
5. Return to home button.
6. How to play Page by clicking the question mark button
7. Cute aim cursor & battlefield pic

TP3 update

1. Updated how to play page.
2. Implement the sound 1: when playing Page, 2: gameover sound, 3: contact damage sound, 4: increasing difficulty sound: “harder better faster stronger~~”, 5: win sound “yea⬆️⬇️~~⬆️⬇️”, 6: use shield Sound, 7: win sound, 8: loss sound
3. Add Badges section: first one is unlocked when a player’s first 20 bullets are not missed. This Achievement is pretty hard that could possibly draw players attention and interest and draw them play more times.
4. Add terrain class including woods and stones. Features for terrain: monsters would avoid terrain (they won’t overlap). How I implement this is to ray cast the closest terrain that test if monsters would strike into terrain. If it is possible then it’s going to move in another direction to avoid collide with the terrain. Here I use possible because they move with a range of random numbers. Therefore, if it is possible, this action is required. The boss would destroy the terrain it steps on (they won’t overlap as well). Woods have radius of 15, where the radius for stones are 25.
5. Updated aim cursor when playing.
6. Shield skill: absorb 75% of the damage in 2 seconds. The CD is 10 seconds.
7. Improved algorithm of my “AI” adaptive difficult
8. Player has two active skills: shield skill and trackingBullets skill: bullets would go for the closest monster (boss is not included) with one passive skill: health regeneration.
9. Bomb effects: magnify the image for 0.6 secs and disappear with the sound of bomb