CS 2053 Team Project

Game Design Document

Professor:

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Abstraction:

This game is developed by Unity game engine. The game we develop uses the 3D graphics, sound, physics, and dynamic camera, AI, and user interface technologies. The underlying programming language is C#.

There are two levels in this game.

In the first level, it's a first-person game, the player is trying to steal a file from enemy's base and get out of the base.

In the second level, it's a third-person game, player will control an aircraft and destroy all enemy aircrafts to earn enough score to win this game.

Part 1: Game Technologies involved

A. 3D Graphics

The whole game applies to the 3D graphics. All game objects and game world space is 3D format. In level 1, all objects are in the same level (ground). In level 2, both player aircraft and enemy aircrafts fly in the same level (y-axis) and move along x-axis and z-axis.

B. Sound

When you play the game, you will hear different sounds.
In level 1, when the player is walking, you will hear footstep sound, when you turn on your flashlight, you will hear a sound of the switch, when the file is picked up by the player, the alarm starts.
In level 2, if player aircraft fires bullet, there is a sound that is triggered by initializing a new bullet object in each frame; when player or enemies' aircraft is destroyed, there is sound played by triggering the "destroy" objects; there is also a background music looping in the game up.

C. Physics

In this game, there is collision detection.
In level 1, we detect collision by distance between player and enemy.
In level 2, we use the capsule technology to test for collision. The detection of bullet colliding the enemy aircraft and the enemy

aircrafts colliding the player aircraft applies to it. In order to make sure all game objects are destroyed when they are all out of the camera, we set a cube as our game boundary. If the game objects collide to the cube, they will be destroyed.

D. Dynamic/multiple camera

We use both dynamic and multiple camera in our game.
In level 1, we use a first-person camera, which is controlled by the mouse (on PC).
In level 2, we use the fixed/single camera, because we assume our player aircraft is flying in the sky and the enemy aircraft is move toward our player aircraft.

E. AI

In level 1, enemies can chase the player. In the code, enemies firstly detect the direction of player, then they rotate themselves to face forward to the player. After that enemies walk forward to get closer to the player. If it's close enough, enemies will attack the player.

F. User Interface

There is multiple graphic user interface allow the player interact with the game. For instance, the player can choose the level he want to play, restart the game and quit the game by the buttons on each menu. In the beginning, there is a main menu where player can choose the level and quit the game.

When the first stage is finished, there is a menu for player to choose whether go to the next stage or back to main menu. When the second stage is finished, there is a menu for player to go back to main menu.

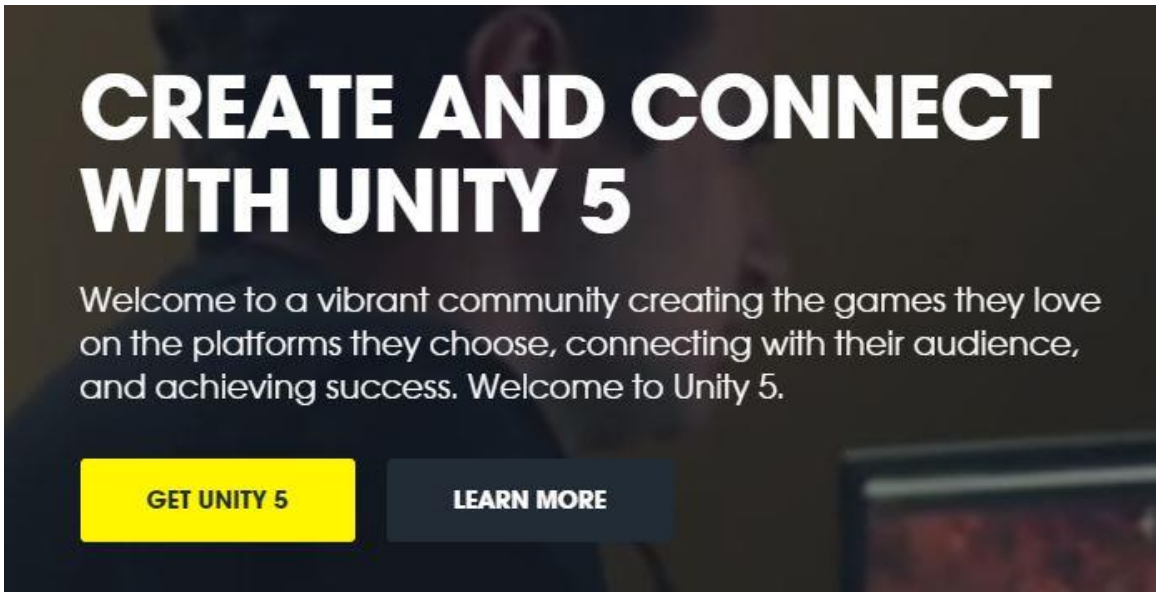
Whenever the player die, there will be a menu for player to choose restarting the stage or going back to main menu.

Part 2: Install the Unity

Step 1:

Please visit the website: http://unity3d.com/

Choose “GET UNITY 5”



Step 2:

Choose “PERSONAL EDITION”, then click “Free download”

Step 3:

Click “Download installer”

Step 4:

Then follow the instruction to download and install the “Unity 5”

Part 3: Responsibility

This is a team work and there are two team members.

Yang Lu (3518826)

Jiapeng Zhu (3452286)

This game is decomposed into two parts and each part is one level. Each team member is responsible to one level.

Yang Lu is responsible to the first level, which is a first-person part. Also he implemented user interfaces, including several menus and switching between them. His work implemented 3D models, sound, camera, and AI.

Jiapeng Zhu is responsible to the second level, which is aircraft shooting part. He implemented the level 2, including the implementation of the technologies above (except AI part) and parts of the composing documents.