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HuntMaster
A Real Time Strategic Game

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Abstract— Intention of this application is to develop a real-time strategy game which involves single player mode and multiplayer mode. This application is an action based 3D game developed on Unity game engine. In this video game, the single player mode refers to a graphical perspective rendered from the viewpoint of the player character. The gameplay is action-based with strategic and role-playing elements, the game provides a rush of adrenaline. The game will be based on Window platform.

Keywords— unity3d; monodevelop; c#;

I. INTRODUCTION

The “HuntMaster” game is inspired from Richard Matheson’s science fiction novel "I am Legend"[4] in which only one person is survived as human being where others turned into human killers. Human killers wants this man to become like them. Survived person then realises that only way to survive on this planet is to kill this human killers, at this situation game starts and user gets control of this survived character.

1.1. Description

The player view the game environment through the eyes of a survived character. Environment or terrain makes one feel real. The player controls the only survived character named Dr Hero. The abilities of survived character are similar to human being like walking and running in all directions, jumping, crouching, and collecting the pickups and using-reloading-changing weapons. The game has a design with only single-player mode. In the single-player mode there are three sub-modes named easy, normal and hard. Depending on sub-modes, the number of pick-ups and enemies and difficulties will vary. When the game becomes harder, the number of enemies will increase and at the same time number of pick-ups will be reduced.

In the beginning of the game player has given one weapon and certain number of ammo. If the player wants more weapons or number ammos then player has to be pick them when appeared in the map. Enemies in the game will depends on the modes of the game. Player has given one hundred health units at the start of the game. When enemies attacks on the player health will be reduced. The damage to health varies depending on the number of enemies attacked. The enemies only can bite, they don’t possess the ability to use guns and shoot. However, power-ups are placed in the game to increase the health. The player will be having only one life.

When health of the player reaches to zero, player dies. When player dies the game ends. If the player kills all the enemies before the health becomes zero, player wins the game.

1.2. Problem Definition

This game provides entertainment as well as increase in faster and more enhanced mental rotation abilities and higher spatial resolution in visual processing and accurate attention allocation. Playing this game will improves creativity and problem solving skills. We decided to make this game because such games improves critical-thinking. Video games are brain testers which also helps to overcome different obstacles and problems. Another benefit to video games is that it helps to kill the boredom.

1.3. Scope of the project

Application will have an execution file which can run on windows platform. The game would include many levels of difficulty which will engage the player in an interactive environment. C# is used to code the movements of the objects involved in the game. Actual physics concepts are applied to the game like gravity, torque etc. which makes it real time strategic game.

To have convincing physical behavior, player in a game must correctly accelerate and can be affected by collisions like wall or any other object, gravity for limited height jump and other forces. Unity has provided built-in physics engines that handle the physical simulation for player. Player also can create object that behave passively by realistic way with just a changing few parameter settings.

II. REQUIREMENTS

The functional requirements of the game are given below. These requirements gives fair idea about game. Application aim is to keep requirements as low as possible so that player will not require special hardware to play the game.

2.1. Functional Requirements

The objective of the game are shown in its functional requirements. This means, it defines what new features the game is supposed to have. The Main Menu GUI shall allow the user to access a section where to select a level to play, and another section for accessing game options. The Level Select GUI shall allow the player to access all unlocked levels and display the locked levels .The Option Select GUI shall allow the user to manage a set of customizable options that would personalize the player's experience. The Pause Menu GUI shall allow the player to access the game options, save, and exit the game.

2.1.1 Pre-Game Requirements

2.1.1.1 Environment Determination

The system shall provide the User with the functionality that the User can make selections for the environment.

1. Inputs : Mouse click
2. Source : Mouse input
3. Outputs: Desired Environmental conditions are selected.
4. Pre-condition: The user already opened the environment screen.
5. Action: The user made decision for environment just by clicking the desired selection.

2.1.2 Game Control Requirements

2.1.2.1 Control of Movements

The system shall provide the User with the functionality that the User can direct the selected character dynamically.

1. Inputs : Keyboard press
2. Source : Keyboard input
3. Outputs : Changing the directions and positions of the selected character
4. Pre-condition: The User press "a", "s", "d" and "w" buttons of keyboard.
5. Action: When the User pressed on one of these buttons, the Keyboard event strikes at the keyboard Listener.

a. If "w" button is pressed, character changes its direction to up.
b. If "s" button is pressed, character changes its direction to down.
c. If "d" button is pressed, character changes its direction to right.
d. If "a" button is pressed, character changes its direction to left.

2.1.2.2 Fire to the Target

The system shall provide the User with the functionality that the User can fire to the targets.

1. Priority : Essential
2. Inputs : Mouse click
3. Source : Mouse input
4. Outputs: The selected character fires to the targets.
5. Pre-condition: The User clicks the mouse.
6. Action: When the User clicked mouse, the Mouse Listener receives the mouse event. The selected character fires to the target which had been taken aim before. The selection of weapons which will be used for firing depends on which mouse button is clicked.

a. If left mouse button is clicked, primary weapon is fired.
b. If right mouse button is clicked, secondary weapon is fired.

2.1.2.3 Pause

The system shall provide the User with the functionality that the User can pause the game at any time.

1. Priority : Essential
2. Inputs : Keyboard press
3. Source : Keyboard input
4. Outputs: The game stops and selection menu is shown.
5. Pre-condition: The User press “ESC” button of keyboard.
6. Action: When the User pressed this button, the KeyboardListener receives the keyboard event. The game is stop until the “ESC” button is pressed again.

2.1.2.4 Accelerate

The system shall provide the User with the functionality that the User can accelerate the selected character.

1. Priority : Essential
2. Inputs : Keyboard press
3. Source : Keyboard input
4. Outputs: The speed of selected character increases.
5. Pre-condition: The User press “space” button of keyboard.
6. Action: When the User pressed this button, the keyboard event at the keyboard listener. The character has the default speed. When “space” button is not pressed;
7. If the current speed of character is equal to the default speed, the speed does not change.
8. If the current speed of character is greater than the default speed, the speed decreases up to the default speed. When the User keeps pressing “space” button;
9. If the current speed of character is equal to the max speed, the speed does not change.
10. If the current speed of character is smaller than the max speed, the speed increases up to the max speed. PS: default and max speed is specified later.

III. FLOW OF APPLICATION

In the flow of the game, Interface at different stages of the game are specified. We tried to keep user friendly interface. The interface creates excitement of the game before we start the game or game also can be judge from its interface the below figure shows flow of the game.

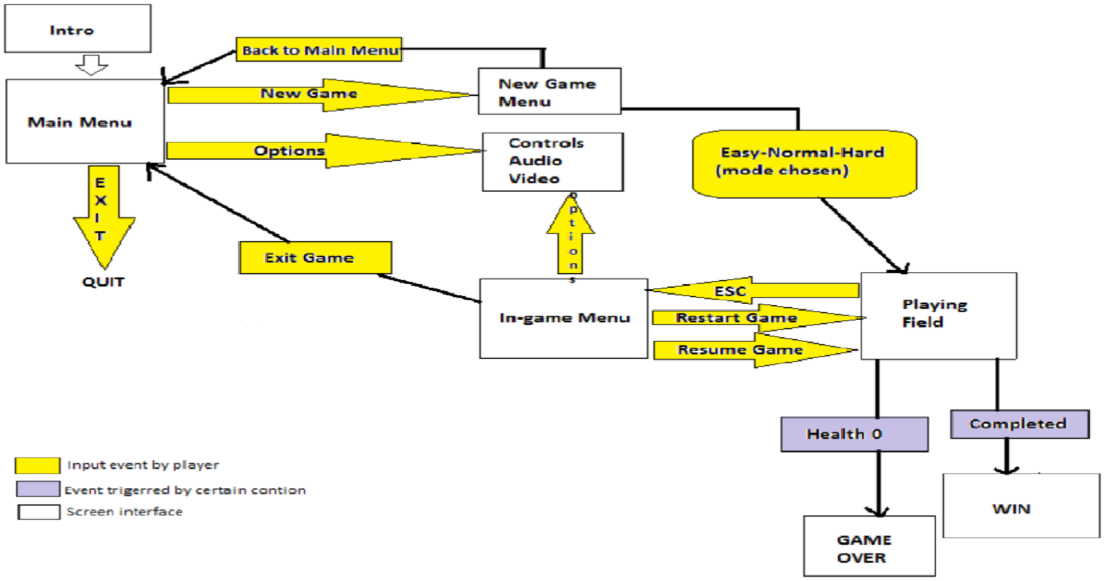


Figure 3.1 Flow of game

IV. IMPLEMENTATION

The project implementation includes accomplishment of 3 tasks. They are, creating an Environment and coding for character, enemies and executive file of complete game.

4.1 Environment

The basic Environment is developed in Unity Editor by developing game object for Land, Directional Light, and First Person Controller. The Hierarchy includes all the game objects present in the game. The Inspector column controls all the properties of objects like scaling, position, rotation, and physical properties like rigid body, vectors.

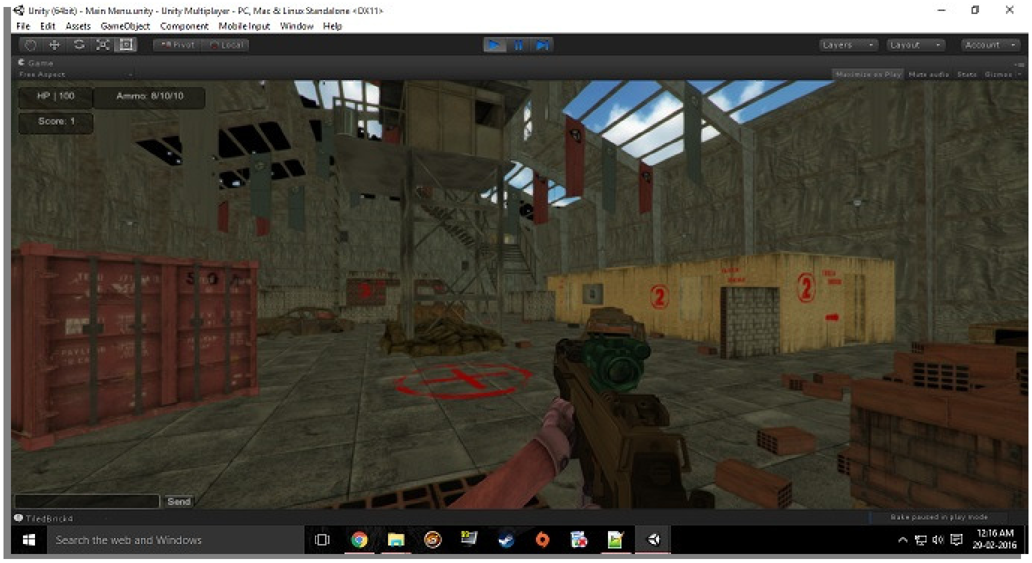
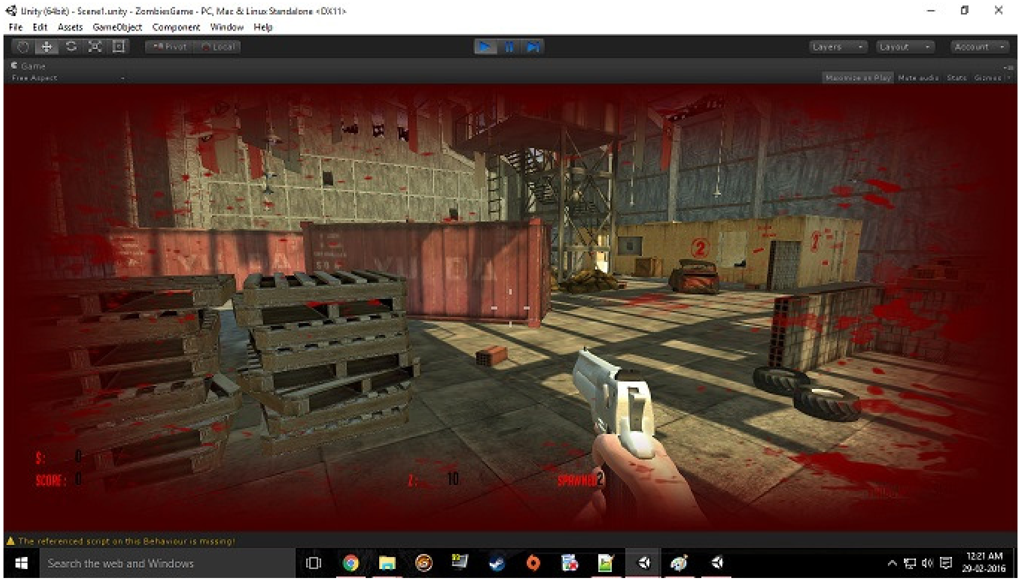

Unity (64bit) - Main Menu.unity - Unity Multiplayer - PC, Mac & Linux Standalone <DX11>
File Edit Assets GameObject Component MobileInput Window Help
Pivot
Local
Layers
Layout
Account
Game
Free Aspect
Maximize on Play
Mute audio
Stats
Gizmos
HP | 100
Ammo: 8/10/10
Score: 1
Send
TiledBrick4
Bake paused in play mode
Search the web and Windows
12:16 AM
29-02-2016

Figure 4.1 Level 1

4.2 Programming

Programming is done in monodevelop tool provided by unity3d platform [1]. C# is used as scripting language. Movements of character and enemies are programmed in c#. Artificial Intelligence is used for Patrolling and Chasing of enemies. . The enemies and guns in the game are imported from standard assets [6] of unity3d website. They are integrated in the executive file. The sound played while playing the game are also imported. It is not required to have unity3d game engine on users system. Ammo, health and score will be displayed on upper left corner of the screen. When the player will be attacked, the reddish screen will appear on the screen which will indicate that health is reducing.



Unity (64bit) - Scene1.unity - ZombiesGame - PC, Mac & Linux Standalone <DX11>

⚠ The referenced script on this Behaviour is missing!

Figure 4.2 Enemy

4.3 Executive file

Executive file is provided for installation which integrates environment, programming and all other stuff. After installation of file desktop icon will appear to start the game.

V. CONCLUSIONS

5.1. Conclusion

Working with unity3d game engine is completely a new experience for us. Normally we are working with different Object Oriented languages, DBMS, mark up languages etc. We learn and practice these things by video tutorials [2], text tutorials, internet and learning materials given by unity3d web site. It is very interesting work and it demands much time because the game engines creates game environment which gives us feel like a real world. The Exists game engines demands vast knowledge about its properties, sections and sub-sections. We tried learned so many new things through this project. This project has given us new concept of animation, game engine and the software-hardware interface. The game we developed as project is intended to serve the gamers in the world. The successful implementation of this project has given us pleasure and may give this to billions of game lovers among the universe. This project fulfills our technical skills and also our temperament.

5.2. Future Scope

In future, levels of the game will be increased with new environment. Also we will try to develop new games with new stories. We will improve graphical representation with adding new features to game. At this stage game works on windows platform our aim is to put it on android so that it will available on play store.

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