A Final Report

On

CHESS: THE ROYAL BATTLE

Submitted in partial fulfillment of the requirements for the award of the degree of

Bachelor of Technology

In

Computer Science and Engineering

Submitted by:-

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Abstract

Chess, one of the oldest and most popular board games, played by two opponents on a checkered board with specially designed pieces of contrasting colours, commonly white and black. The goal is to seize the king of your adversary. Its rules of play help to enhance and im-prove the mental and intellectual activities of the player, and this game is hugely popular around the all. This document deals with the fully computerized Chess Game. The game allows player to play chess according to the valid rules of the chess on computer.

ACKNOWLEDGEMENT

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We would like to express a deep sense of gratitude and thanks profusely to Project Guide Dr. Vivek Thapar, without whose wise counsel and able guidance, it would have been impossible to complete the project in this manner.

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Finally, we are indebted to all whosoever have contributed in this report work.

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1. Introduction

Chess, one of the oldest and most popular board games, played by two opponents on a checkered board with specially designed pieces of contrasting colours, commonly white and black. The goal is to seize the king of your adversary. In the game, this is known as checkmate. Chess is played on a board with 64 squares. Each player starts with 16 pieces, lined up top with two lines. The first row is made up of pieces called pawn. Next the row contains: king, queen, two rooks, two bishops, and two knights.

Chess is described as a “complete knowledge” game, because both players are know the whole state of the game world at all times: just by looking on the board, you can see which pieces are alive and where they are found. Throughout the game theory analysis, however, human players see chess in terms of Strategies and thinking. The player's ability to win in chess requires a certain level of intellectual ability. One has to “see” what is happening, what a moving opponent says in terms of a particular strategy, usually part of a long-term strategy for victory.

Chess is one of the most popular board games because it has many benefits to playing. It:

- Improves memory.

- Increases intelligence.
- Deepens focus.
- Elevates creativity, and
- Boosts planning skills.

Chess game has its own special rules, which cases to make it more interesting in the world. Some of them are as follows.

i. King

The king can move horizontal, vertical and diagonal like the queen, but only one step at the time. The king may never enter a square which is threatened by an opposing piece. In other words you cannot place the king on a square when your opponent could capture the king next move.

ii. Rook

The rook moves vertical or horizontal in a straight line. The rook cannot jump over other pieces, all squares between the rook's current square and its destination must be empty.

iii. Bishop

The bishop moves diagonally in a straight line. Like the rook, the bishop cannot jump over other pieces.

iv. Queen

The queen combines the movement of a rook and a bishop. This makes the queen the strongest piece on the board. The queen can move horizontal, vertical and diagonal in a straight line and may not jump over other pieces.

v. Knight

The knight makes an L-shaped move, which is a combination of 1 square horizontal or vertical, and one diagonal. The knight is the only piece that can jump

over other pieces to travel from one square to another. The pieces the knight jumps over are not affected.

vi. Pawn

The pawn can only move forward, but there are some variations in its movement which depend on the position of the pawn and the goal of the move. A pawn can always move one square forward, except when the destiny square is non-empty. A pawn captures diagonally forward, and not straight ahead. Thus, a pawn can move one square diagonally when capturing. There is another variation on the usual one step forward, only available to pawns which have not moved yet. From its starting position, a pawn can move two steps forward, if both squares in front of it are empty.

vii. Check

Check is a term used when a king can be captured by an enemy piece in the next move. A move which puts your king in check is illegal, and will not be accepted.

viii. Checkmate

When a king is in check, and there is no move after which the king is not (again) in check, it is checkmate. The player who is checkmated loses the game.

1.1 Technology Used

This project comes under the field of game development.

A game engine, also known as a game framework, is a software-development environment designed for people to build video games.

Developers use game engines to construct games for video game consoles. The core functionality typically provided by a game engine may include a rendering engine for graphics, a physics engine, sound, scripting, animation, among others.

Unreal Engine is used for developing chess game.

1.2 Objectives

- To create a graphical user interface for the game.
- To add custom graphical models and complete chess board.
- To add the conditional statements to allow Chess piece movement.
- To add our own custom background music.

2. System Requirements

For this project, the minimum hardware requirements are:

- Processor - intel i5 or greater (or similar to this)
- Ram - 8gb or greater
- Graphic Card - Nvidia GTX with Vram 4gb or greater (or similar)
- Storage - 1TB or greater

Software needed to complete project includes:

- Epic Game Launcher
- Unreal Engine 4 or greater
- LMMS

3. Coding/Core Module :-

Fig 1:- Components

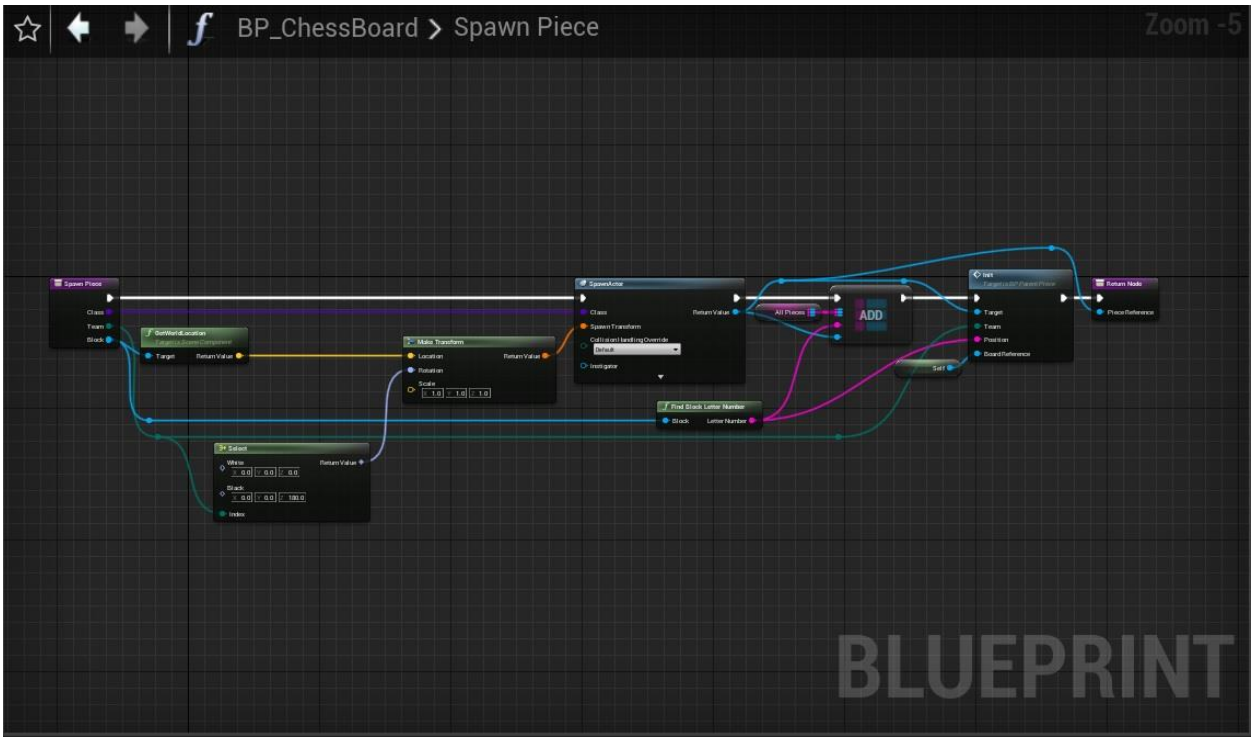


Fig 2:- Spawn Piece Function

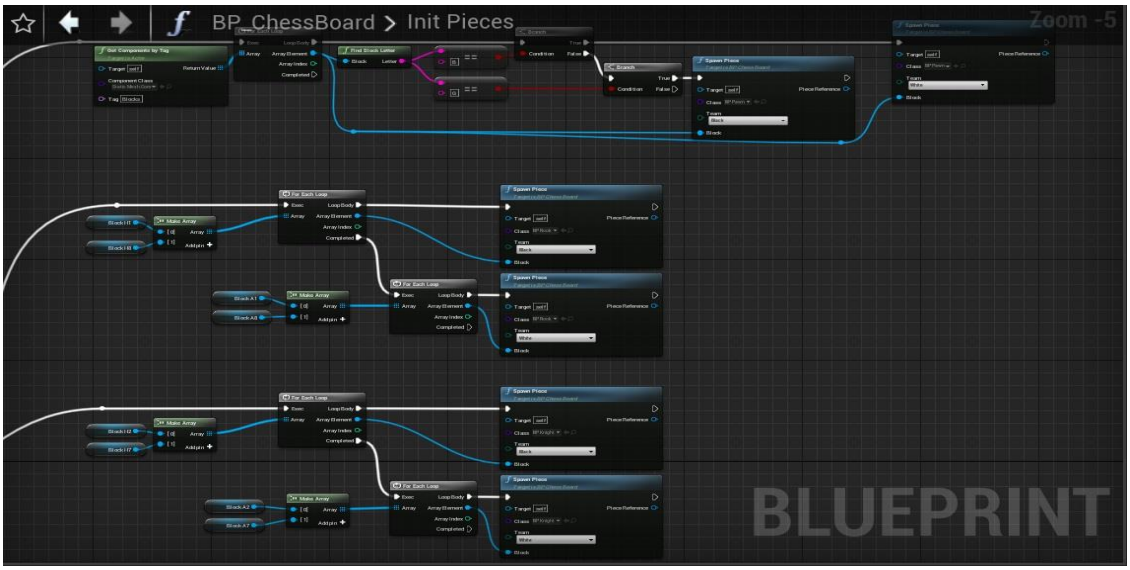


Fig 3:- On Board Function

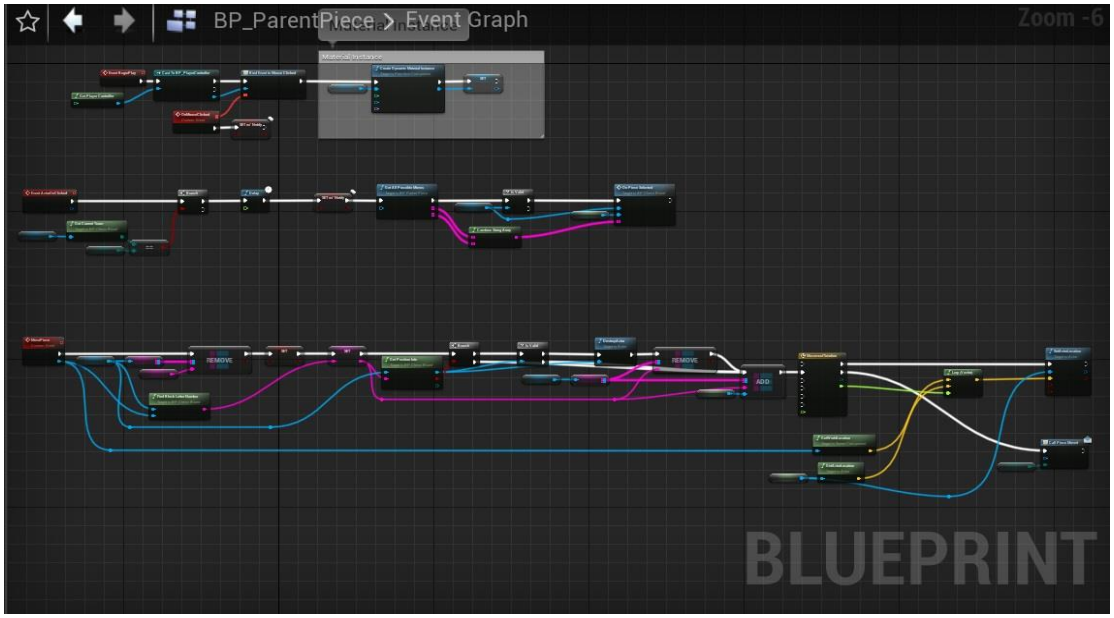


Fig 4:- Combining Functions

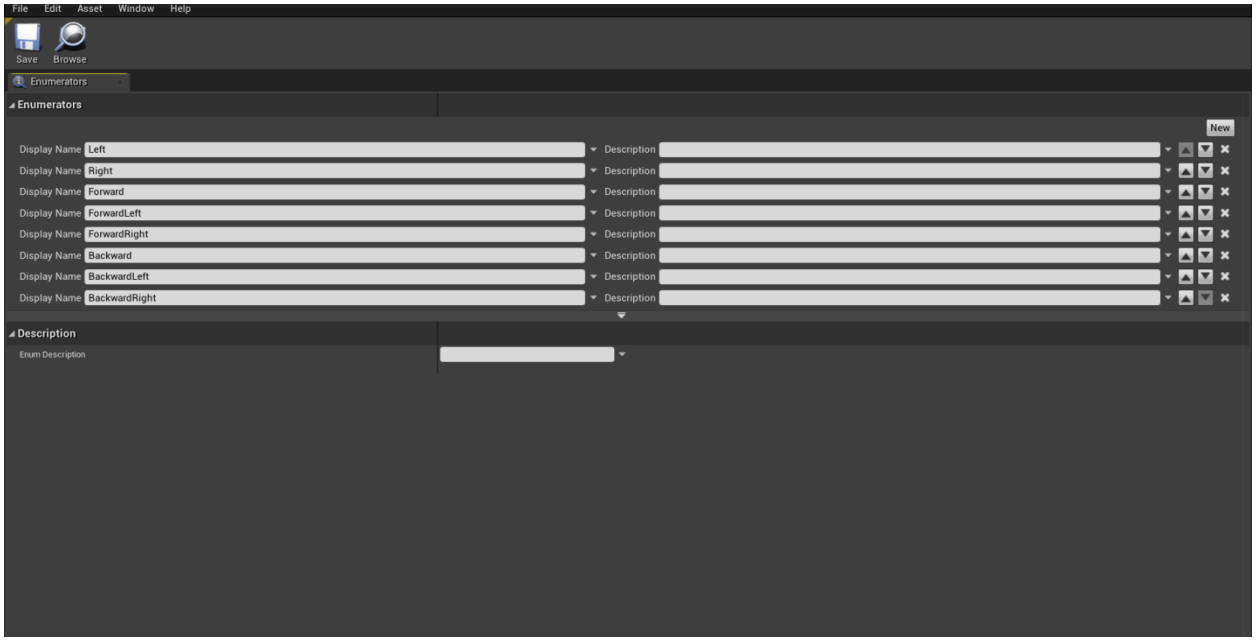


Fig 5:- Direction Enumerators

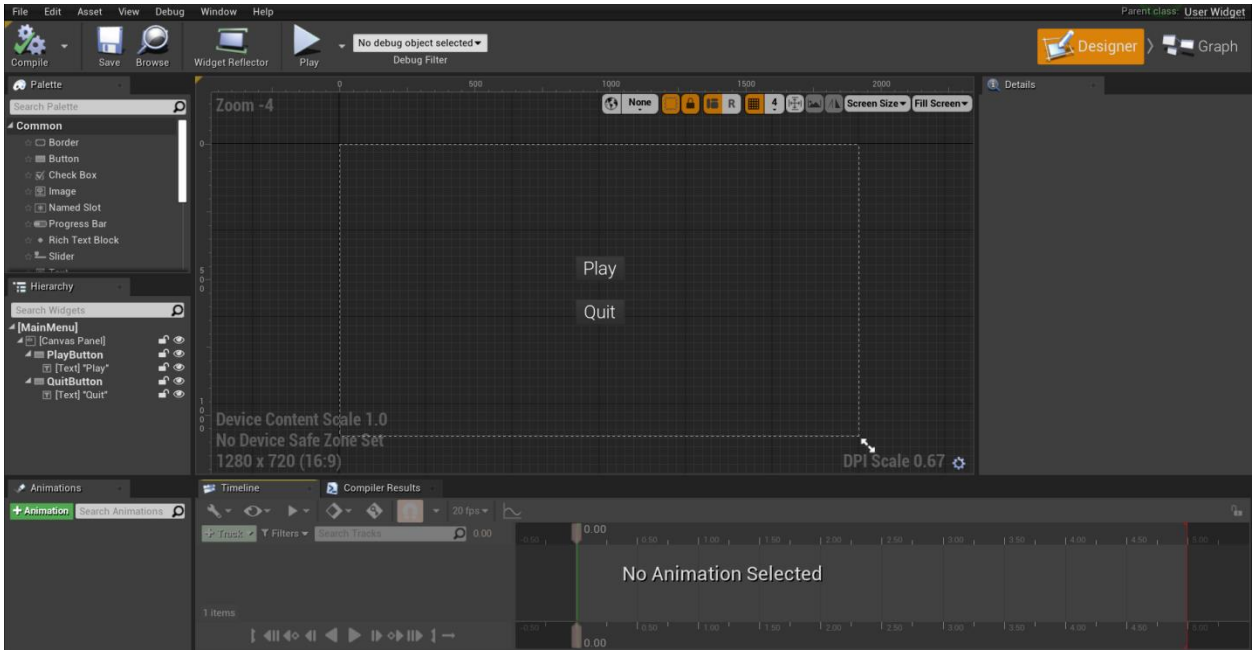


Fig 6:- Coding Main Menu

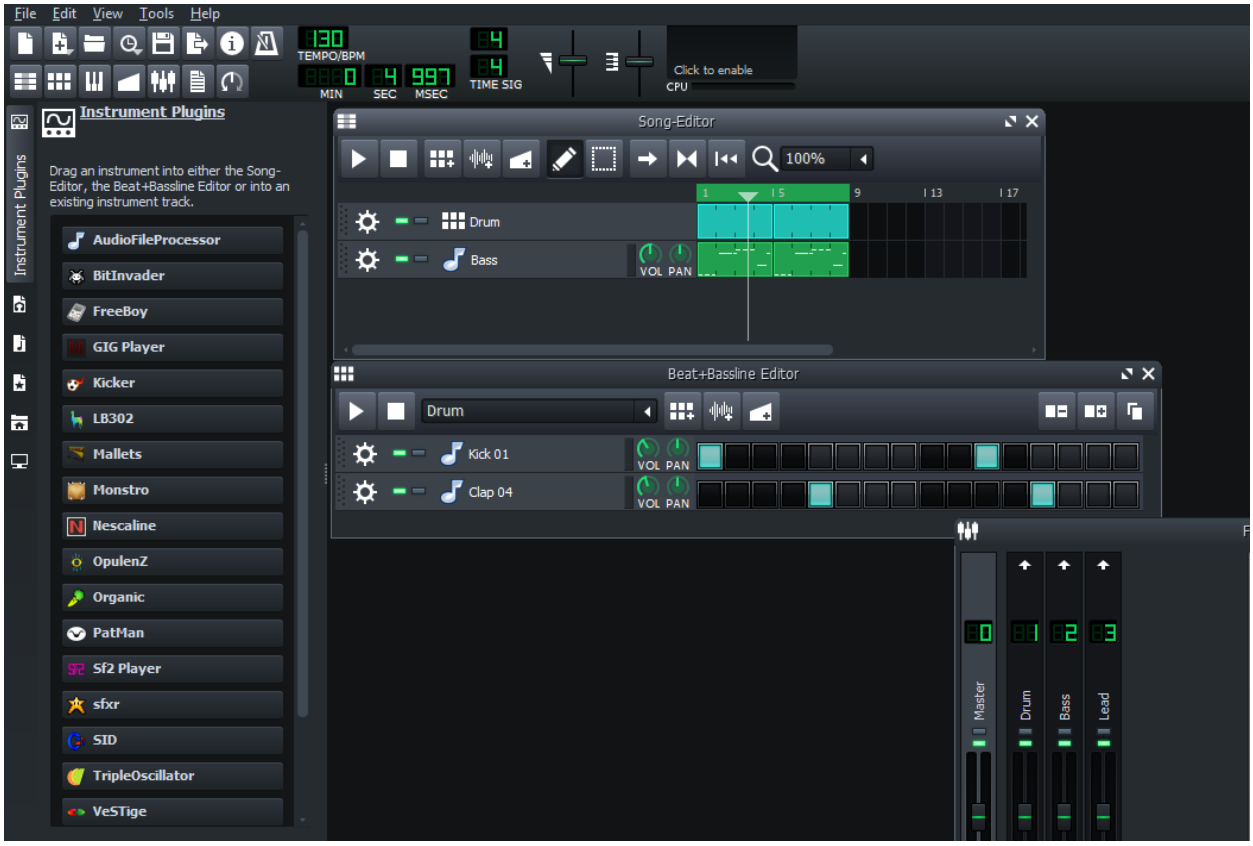
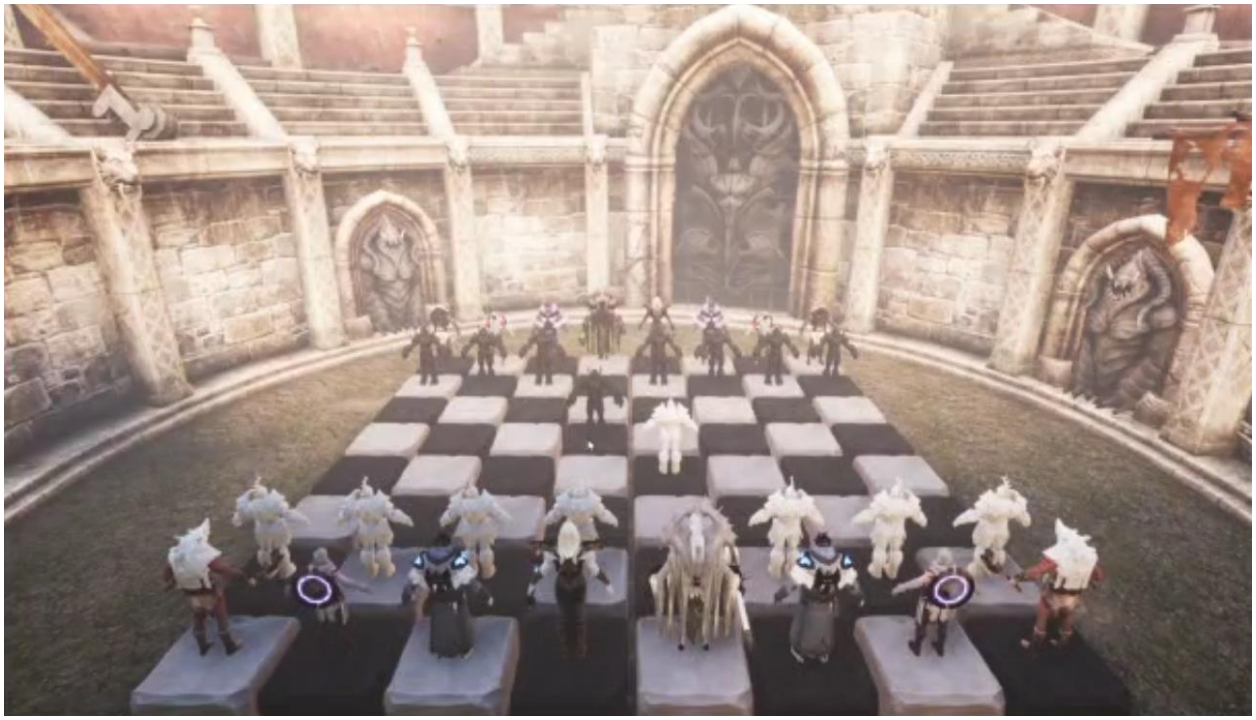


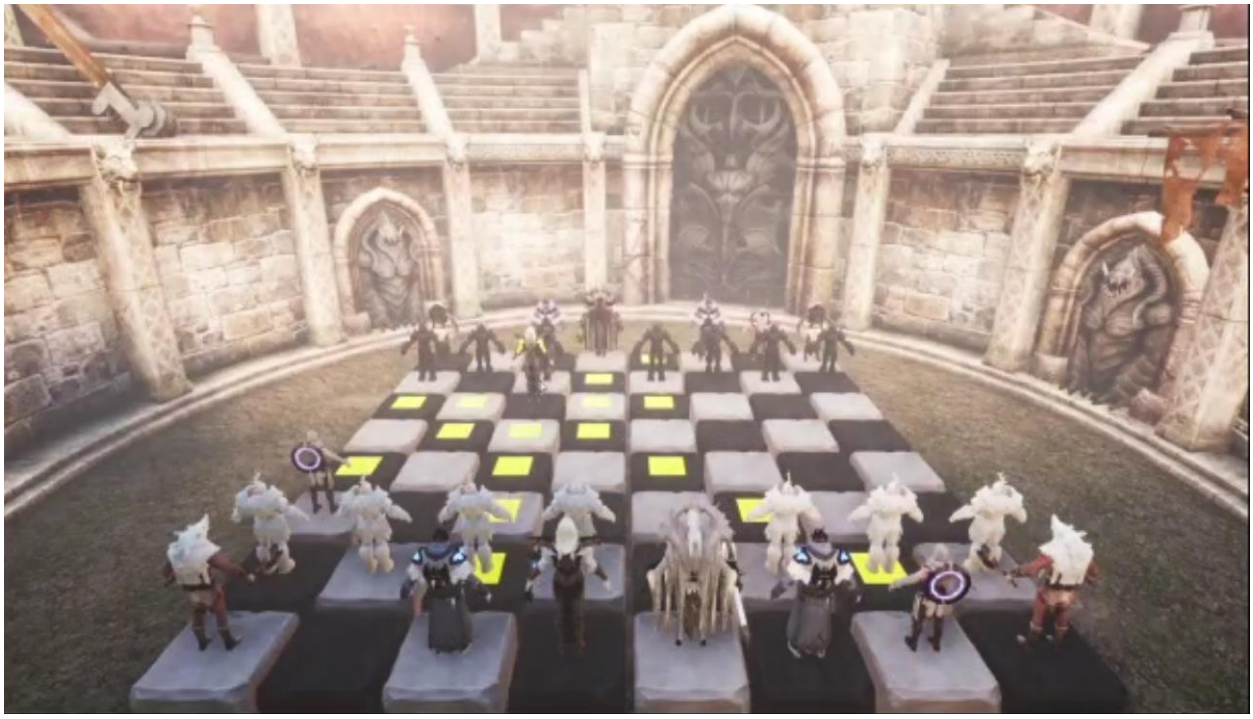
Fig 7:- Mixing Background Music

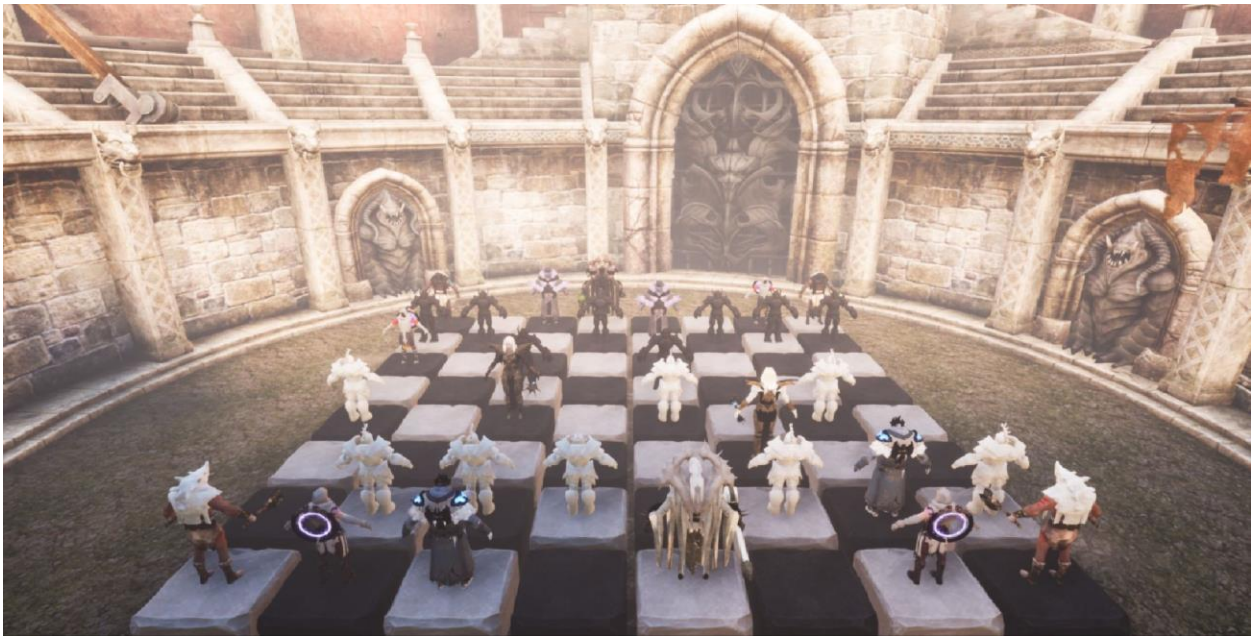
4. Performance of the project

- The environment has been created as well as the basic chessboard.
- Different models have been created and added to be used instead of traditional chess pieces.
- Moves are performed by the chess pieces as they are supposed to.
- Backgound music has been created and added to the game

5. Output








Winner
Black
Restart
Menu
Quit

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