

War Of Kings: A Chess Game Catalogue

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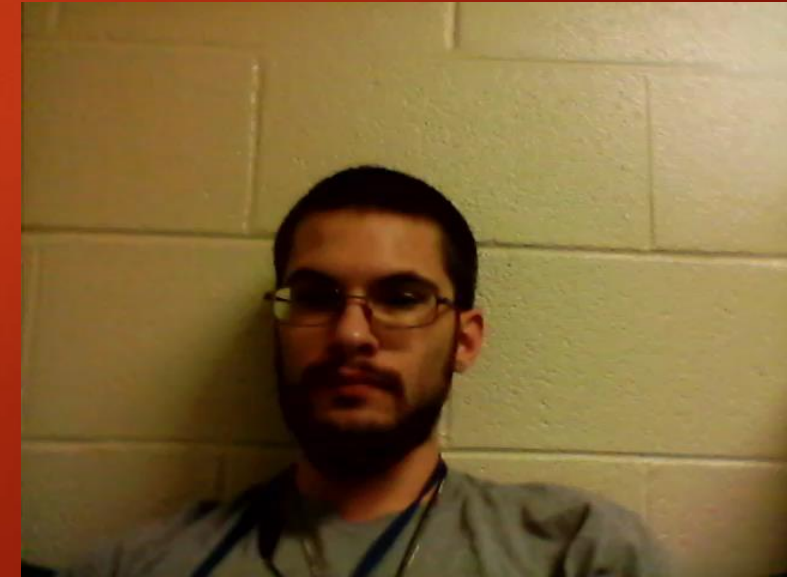
Problem Statement And Purpose

- ▶ What is chess
 - ▶ One of the oldest and most popular board games in the world.
 - ▶ Played by two people with two colors
 - ▶ Turn based combat where players try to capture each other pieces in an attempt to force each other into an unavoidable capture position
- ▶ What is the problem?
 - ▶ There aren't many examples of digital chess
 - ▶ Many interesting forms of chess simply do not exist on any digital media
 - ▶ Ex: Alice Chess, Millennium Chess, Kubikschach, Raumschach, etc...
 - ▶ Only a few chess games with online multiplayer support and mobile support
- ▶ <https://www.britannica.com/topic/chess>



Requirements Overview..

- ▶ What do I want to do?
 - ▶ Make a game that holds many formats of chess
 - ▶ Is available to the average person
 - ▶ Has many options for controls
 - ▶ Has online and offline support
 - ▶ Can be played by mobile users



Research and Background

- ▶ Unreal Engine Blueprints
 - ▶ Visual Scripting Language
 - ▶ Based on C++ and can generate C++ code from Blueprints
- ▶ Chess formats:
 - ▶ 2-Player, 3-Player, 4-Player, Alice, Millennium
- ▶ Main Menu, Pause Menu, HUDs:
 - ▶ Unreal Engine Widgets and Buttons
- ▶ Android Mobile Support
 - ▶ Gamepad and Touch Controls
 - ▶ Android Setup
- ▶ Networking
 - ▶ Hosting Games
 - ▶ Joining Games
 - ▶ Creating New Players



Hardware and Software Requirements

- Preface:
 - Anything that can run Unreal Engine on its own can run War Of Kings
- Windows:
- 4 GB Ram, most GPU and CPU are acceptable.
- Android:
 - Testing Still Ongoing:
 - Tests ran with 1GB of Ram
 - Likely need around 500MB or less until online networking support is complete.

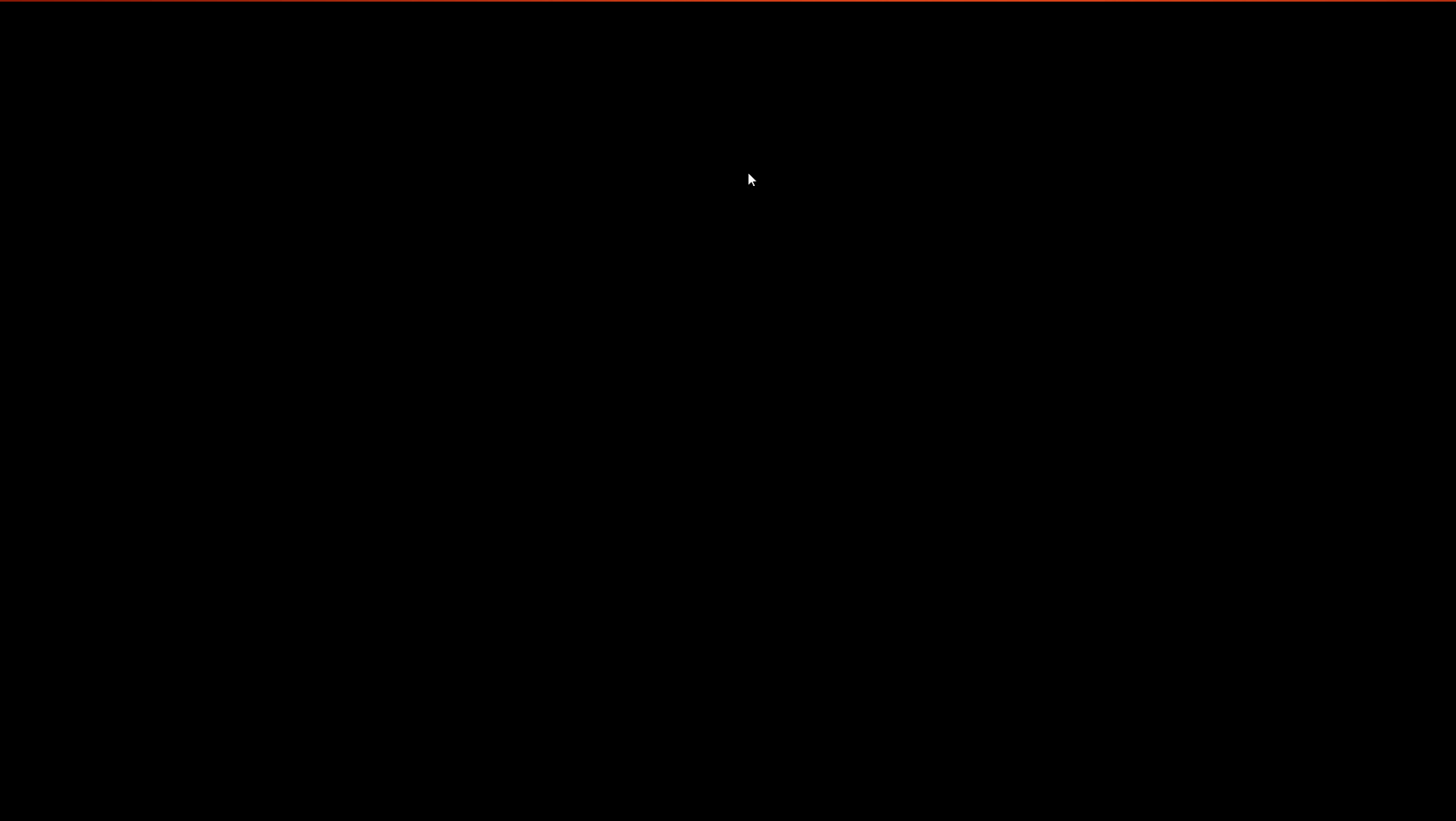


Why I chose Unreal Engine Blueprints

- ▶ Compile Times
- ▶ Computer Performance with Unreal Engine
- ▶ Learning New Language/Challenging Myself
- ▶ Unchanged Game Performance



Program Description



Test Plan Requirements

- ▶ Separated Between five different variants of Chess and 2 modes of playability which are local and online multiplayer.
- ▶ Tests Include:
 - ▶ Mobile controller support- 2 stick for movement and direction and touch input to select pieces
 - ▶ Windows controller- using mouse to select pieces and drag to look around.
 - ▶ Players can select a piece that belongs to their army
 - ▶ Players can select a new place for the piece
 - ▶ Players are not allowed to make invalid moves(putting pieces outside board, putting pieces in allied occupied spot, etc..)
 - ▶ Players Can Promote Pawns to different pieces when pawns go to specific location
 - ▶ Players can host or join a game
 - ▶ Players have a Hud to show information about game and ability to exit game using pause menu
 - ▶ Etc...



Test Plan Results

- ▶ Player Controller for Windows and Mobile for all formats
- ▶ Main Menu buttons
- ▶ Pause Menu buttons
- ▶ Player HUDs mostly work
- ▶ All Boards Mapped to grids and pieces placed
- ▶ All except 3-Player Board can select pieces
- ▶ Special Move tests for boards are in progress
- ▶ Checkmate and Stalemate for boards are in partial testing and implementation



Challenges Overcome

- ▶ Main Menu Level Selection and Button Actions
- ▶ Special Board Formats(3-Player Board Shape, etc..)
- ▶ Mobile Input Controls
- ▶ Camera and Player Movement
- ▶ Creation of Boards
- ▶ Selecting Pieces
- ▶ Change Player Turn



Current Challenges

- ▶ Time
- ▶ My own ambition
- ▶ Networking remains incomplete
- ▶ Mobile Support remains incomplete
- ▶ Checkmate function and Stalemate function are incomplete for some variants
- ▶ Special Moves Incomplete



Future Planning

- ▶ Fix to allow players to connect to listener server(In Progress)
- ▶ Fix to allow players to play on Android(In Progress)
- ▶ Change to player controllers for when a piece is selected, board cells are highlighted to show potential moves.
- ▶ Adding more chess variants to the game.
- ▶ Add themes(option) to boards
- ▶ And more...



Mistakes I Have Made

- ▶ Choosing too many chess formats to work on at one time
- ▶ Not focusing on one chess format to work on at a time and working on one section for multiple formats
- ▶ Being too indecisive about changing projects requirements
- ▶ Making mistakes and forgetting certain rules for certain chess formats
- ▶ Not giving myself enough time to test smaller aspects of the game

What Have I Learned?

- ▶ Unreal Engine Blueprints
 - ▶ Functions, Widgets, Variables, And Space Coordinate System
 - ▶ Player Controllers, Game states, Game Modes, Level Blueprints
 - ▶ Strengths and Weaknesses of Unreal Engine Blueprints

Credits

- ▶ <https://github.com/BDP18/WarOfKingsProj>