Game Design Final Project Proposal
Shattered

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1. Game Concept[1]

1.1. Introduction

Shattered is a couch co-op fighting game. The goal is to break the blocks underneath your opponents to get them to fall off the map. The last person left standing on the map wins the round. The players can jump to get over gaps and they can slam their hammer into the blocks to break them.

1.2. Description

Cracks in the glass start to creep towards you. You know the block you're standing on won't hold much longer, but now is your chance to swing your hammer and break the block underneath another opponent. Thus, you're left with a decision: should you jump away in an attempt to preserve yourself on the map, or will you take the riskier approach and attempt to break the blocks under your opponent before the block underneath you shatters.

1.2.1. General Feel. Shattered has an attractive scenic background that matches the look and feel of the rest of the game. The game is graphically focused on beauty through lighting, the lighting simply enhances the feel to the game and is not meant to be a distraction to the actual focus of breaking blocks. To assist with player with that focus, flat textures are used, and bright contrasting colors are employed to help identify the characters from the background. The simple graphical feel is meant to enhance the playful 'couch co-op' nature of the game.

1.3. Main Menu

The initial screen acts as a menu screen where players can register their controllers and select from a set of characters. Since there won't always be exactly 4 players, the game allows for the selection and registration of characters to certain controllers. After players select their characters and register to a controller, a confirmation button is pressed and the main level is displayed.

1.4. Main Level

The level is a 10 by 10 grid of glass blocks. The glass blocks alter in hue and saturation slightly to help players distinguish between the blocks. The 10 by 10 grid of blocks float high in the sky of an earthly, but cartoony, world. In the background a mountainous scene is visible. Throughout game play the sun will move through the sky, changing the color and feel of the game. In the background birds and clouds can also be seen and move around to help the level appear more dynamic. This level is as if a flat plane was floating high in the sky and there was a camera in a fixed location looking down at an angle at it.

1.5. Game Play

When starting the game a large countdown timer appears in the middle of the screen and counts down from 3. When the timer reaches 0 the timer vanishes and the 4 players are spawned at each of the 4 corners of the level. To help with game balance, each player is spawned at a random corner every single round. At this point the players can move anywhere on the level. If they move to a location where no glass block is present beneath them, then they will fall off the map and be eliminated from this round.

1.6. Character Design

The characters are simple in design and fairly flat in texture. Each character looks the same, but each has different accents of color based on what the player chose. The character wields a large hammer, almost as big as they are, with 2 hands. All the character's movements are somewhat cartoonish in style.

1. Note: Typically a game proposal by a larger corporation will also include a technical analysis, legal analysis, cost and revenue projections, as well as a plethora of art.

1.7. Controls

One joystick moves the character in the direction pushed. Pushing 'up' on the joystick will move the character northward on the 10 by 10 grid. Similarly, pushing 'left' on the joystick will move the character westward on the 10 by 10 grid. One button causes the character to jump. This action is triggered as soon as the button is *pressed*. The character cannot jump very high, but their momentum is preserved. This allows the character to run and jump over one block, or one gap. If the gap is larger than one, the character will not make it and will fall off the map. Another button causes the character to swing their hammer. This action is triggered as soon as the button is *released*. Quickly pressing the button will cause the character to swing their hammer at the ground in front of them, causing the block in front of them to shatter and fall into oblivion. If the player presses and holds the button, then the character will swing the hammer and pause as soon as the hammer makes contact with the block in front of them. Cracks will start to appear in a line out in front of them. Briefly holding the button then releasing it will cause 2 blocks in a line in front of them to crack, then shatter. Holding it for longer will cause 3 in a line to crack and shatter. Holding it even longer will cause 4 in a line to crack then shatter. The cracks in the glass are an indicator to any other player that these blocks could break at any moment.

1.8. End Game

When all but 1 character has been eliminated, the game will pause and a score screen will be overlayed. The score screen will show basic stats such as how long the player was alive this round, how many rounds the player has won, how many hammer swings they've had, how many jumps they've had. At the bottom of this score screen text is displayed with a timer: "Rematch? Press A in 5...". If the timer runs out, the game will return back to the main menu. All stats will be reset, and game will appear as if it had just started up.

1.9. Main Feature

The game solicits real world physics, so that when the glass of the blocks shatter, it looks realistic. Gravity also feels realistic, both with the falling of the glass shards and with the character's movement. Physics of friction are also applied to how the characters start moving and stop moving. However, to help players feel more in control of the character, slight alterations in jump direction can be done after the character has left the ground.

1.10. Extra Features

- Each time a hammer comes into contact with a block, and after the subsequent shatter, the screen will shake to help indicate to all players that blocks have been shattered. The camera will shake more vigorously based on how many blocks were shattered at that instance.
- As the characters walk across the blocks, their feet can be heard tapping on the glass.
- After a short period, blocks that have been shattered will respawn, filling back in the hole that was left by them shattering. They will make a noise and release a short glow to indicate that the block is back.
- If the players chooses to have a rematch, then their spawn locations are randomized, and their scores continue to accumulate.
- Music slowly grows more intense based on how few blocks are on the screen as well as how many players are left. The largest variable of control over the music is the tempo. A victory melody is played as soon as one player wins.
- The characters are rigged so that moving looks fluid and is not distracting to the game play. The character has 2 arms fixed to a hammer, 2 legs, a torso, and a head.

Key Features:

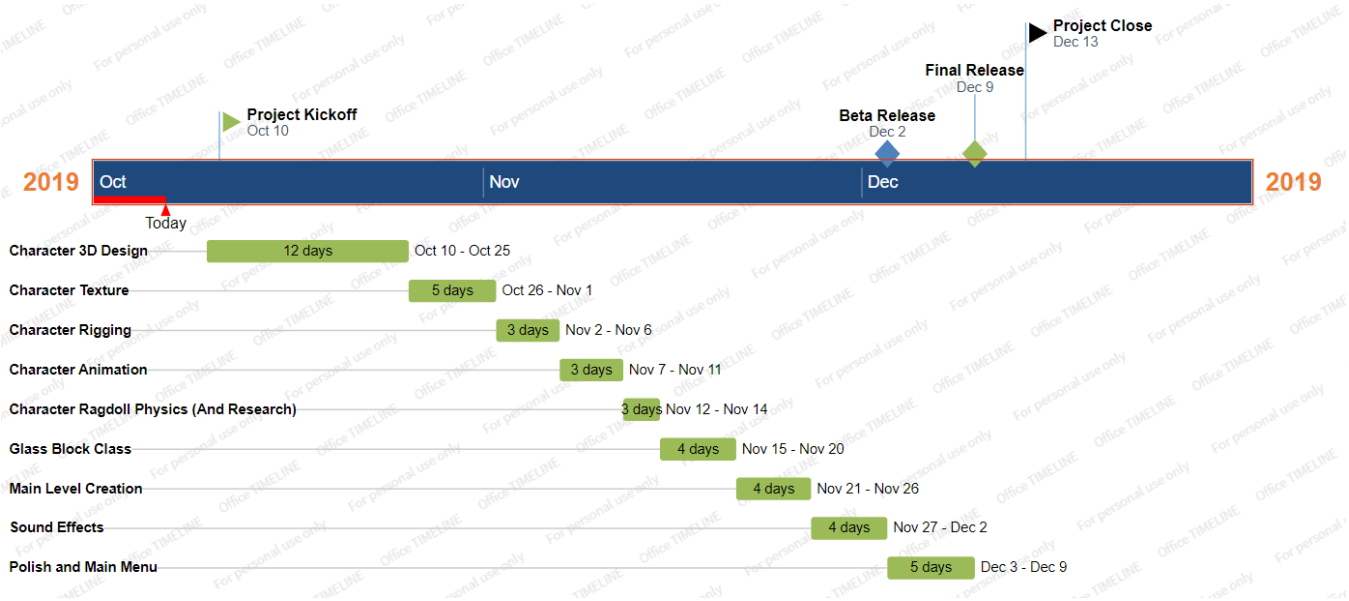
- *Couch Co-Op:* Providing an intimate local experience for friends and family to duke it out.
- *Realistic Hammer Physics:* The hammer breaks glass just like in real life.
- *Realistic Destructibles:* The glass breaks just like glass would.
- *Intuitive Controls:* Tight and clean controls that everyone can grasp.
- *Great Balance:* All characters are on a level playing filed, so even someone new stands a chance.
- *Replayablility:* Every game is different!

1.11. Genre

Casual Action-Strategy Couch Co-Op

1.12. Platform

Shattered is designed to be played with a controller. Specifically controllers that support an analog joystick and have at least 2 buttons. The game is targeted towards PC with USB controllers.



1.13. Concept Art

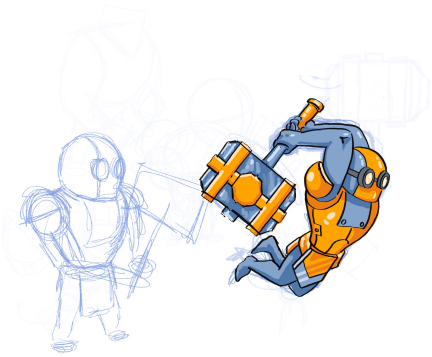


Figure 1. Concept of the characters holding hammers

2. Research Component

Physics simulation will be the primary research topic. Objects in real life will be studied as well as physics equations to help establish a virtual world that resembles similar physical responses to the real world. The main focus will be on rag doll animation with physics based human animation. The secondary focus will be on the physics of hammering and destruction physics.

3. Work Schedule

The work can be broken down into 4 Main components:

- Level Design
- Input Configuration
- Physics
- Character Design
- Sound Production

Each of these have their sub components too.

Level Design:

- Main Menu
- Main Level
- Block Class
- Scoring

Input Configuration:

- Xbox 360 USB Input
- Multiple Controller

Physics:

- Realistic Falling
- Realistic Momentum
- Realistic Collisions

Character Design:

- 3D Model
- Textures
- Rigging
- Animation
- Ragdoll Physics

Sound Production:

- Character Walking
- Hammer Sounds
- Glass Breaking Sounds
- Main Music
- Keyed Music

The game cannot function without the main level, the character, and the blocks. Since the main research component of this project is the physics of the character itself, the character will be the first thing that I will design. Following that will come the main level and the block class so that I can test the physical interaction between the hammer and glass.