

# Fortified!

Team TMBJ

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## Introduction

*Fortified!* is a survival, wall defense game. The camera provides a first-person perspective and moves with the player. It features player progression aspects in which the player may purchase beneficial upgrades. *Fortified!* starts the player off within their fortress with walls on all sides, and treasure in the middle of it. The player will have to defend their walls from enemies on all sides of the fortress. They will need to get their bearings and prepare for the first round and its waves of enemies. The first round will feature small waves of easily defeated enemies. The enemies' main goal is to break down the player's walls and get their treasure. However, enemies may also attack the player if they get in the way. The player will be able to move within their fortress to view all angles outside of the wall and move around outside the fortress to get to the enemies. Defeating enemies will give the player money to spend on upgrades for their fortress and new weapons at any time during the game. Enemies will be more plentiful and more difficult in future rounds. The more expensive items and upgrades will have a greater effect against the enemies. The goal of the player is to defend their walls from destruction and the capture of their treasure, and eventually defeat the last waves of enemies and the boss in the final round in order to win.

### **Interactivity and Rules**

The player can interact with the game's systems through keyboard and mouse inputs. The player can perform actions such as walking, running, jumping, interacting with objects, start the next round, and pause and resume the game with keyboard inputs. The player can click on UI on the menus, scroll between weapons, attack, and change directions with mouse inputs. There are limitations to what the player can do. The player cannot perform actions like crouching, picking up objects, and moving objects. The player also cannot go beyond the boundaries of the terrain.

The player can pause and resume the game by pressing the Escape key. The player can save and load the game, and the player can quit the game.

### **Objectives**

The goal of the player is to defend the treasure in the middle of the fortress from incoming enemies by defeating said enemies. The player wins the game if the player can make it past the last round without the treasure's health or the player's health going below 0 HP. When the player wins the game, a Win Scene is loaded in to tell the player that they have won. The player loses the game if either the player's health or the treasure's health goes below 0 HP. When the player loses the game, a Game Over Scene is loaded in to tell the player that they have lost.

### **Conflict**

The conflict the player encounters in the game comes in the form of enemies that spawn from all sides outside of the fortress. The enemies during each round will attack and do damage to the outer walls of the fortress and will even attack the player if the player is close enough to them. Enemies that the player can encounter include skeletons, ghosts, zombies, and the final boss.

### **Visual and Audio Assets**

The game features several menus. There is a Main Menu, where the player can start a new game, quit the application, load in a saved game, view the How to Play menu, and view the About menu. The How to Play menu features the main objectives of the game and the controls of the game. The About menu features the game's name and the credits, which gives each team members' names and their roles in making this game. The game features a 3D art style with animated 3D models of the skeleton enemies and weapons within the game. The game features a song and many sound effects corresponding to player and enemy interactions.

## Features Implemented

### **Successfully Implemented in GDD**

- Walking (WASD / Arrow keys)
- Running (Hold Shift while walking)
- Jumping (Space bar)
- Attack (Left mouse click)
- Interact with objects (F key)
- Pause/Resume Game (Escape key)
- Selecting menu options (Left mouse click)
- The player wins each round by defending the treasure in the middle of the fortress from enemies.
  - The player can only achieve this goal by defeating all of the enemies in a round, and by having more than 0 HP by the end of the round.
- The game's main conflict is the enemies that will do everything they can in order to reach the treasure.
  - The enemies during each round will attack and do damage to the outer walls of the fortress.
  - Enemies will even attack the player if the player is close enough to them.
- Pause Menu
  - Restart and quit buttons are present. The quit button goes back to the Main menu.
- Shop Menu

- The player can spend their money that they accumulate over the course of each round.
- The player can repair the existing fortress walls for a certain price.
- The player can buy new handheld weapons.
- The player can purchase upgrades to the fortress walls.
- The HUD features health bars for the player's HP and the treasure's HP, both of which decrease in size as enemies attack them. The HUD also features the player's current balance of money and the current round.
- Each round starts when the first enemy spawns somewhere outside the fortress, and each round ends when the last enemy is defeated. A round continues as long as there is at least one enemy standing with more than 0 HP. Each round is differentiated by the number of enemies that spawn in that particular round.

### **Successfully Implemented Not in GDD**

- The player also successfully defends the treasure by making sure that the treasure's HP is above 0 HP.
- Restart button completely restarts the game at Round 1.
- Shop menu can be accessed at any point in the game by interacting with the weapon shop object.
- The player can heal themselves and the treasure through the shop menu for a small price.
- Press Tab key to start the next round.
- Scroll to switch between primary and secondary weapons.
- The player can buy turrets that are stationed outside of the fortress to shoot at enemies for the player.

- The player can save and load their game from the last round they reached.
- The player can buy up to four AI warriors at a time and tell them which part of the fortress to guard. They will automatically attack any nearby enemies in their range.

## Features Removed

- The player does not lose the game when an enemy immediately touches the treasure.
  - This feature made the game too hard to beat. If the player left the fortress and an enemy touched the treasure, there wouldn't have been much notice for the player. Instead, the treasure has HP to give the player a little more time to save the treasure.
- There are no inner protective walls for the treasure.
  - This was unnecessary since the treasure itself has HP now.
- Restart button does not start the player over at the current round.
  - The main game takes place in one scene.
- The player cannot upgrade handheld weapons.
  - Instead, new weapons are bought and replace existing weapons in the player's primary and secondary slots.
- The player cannot buy upgrades to their armor.
  - We opted to have a button just to heal the player's damage instead.
- There is no continue button or quit button on the shop menu.
  - The shop can now be accessed at any point in the game, not just between rounds. Also, the quit button is already in the pause menu.
- There are only 5 rounds in the game, not 10.

- Ten rounds would have made the game too long.

## Problems Encountered

- There was a problem with some of the buttons on the shop menu where clicking the same buttons multiple times would keep spending the player's money when the button in question was only a one-time purchase. This problem was resolved by checking if the purchase was already made before doing the logic behind these kinds of buttons.
- There was a problem with our nav mesh with the AI enemies not being able to path towards the player when the player was in the enemy's attack range.
- Modeling and texturing in blender and exporting to Unity also presented a challenge. Sometimes things would not export correctly and the material would not be able to be seen. To fix this I imported the models and textures separately.

## Conclusions

### **Taylor:**

Making a 3D game is particularly fun to me. I already had some experience with making a 3D game in Unity through MART 380, where I made "walking simulators" as art projects. This was my first time using Blender to make 3D models, and it was challenging to understand at first but satisfying when I completed a model. I enjoyed designing the landscape and fixing all the bugs in our game. I would make a 3D game again. One challenge for me was how to create some of the sound effects for the game. Since the sound effects were very specific sounds, I had to find objects around my apartment and improvise noises.

**Brandon:**

I found making our 3D game to be very rewarding and overall enjoyable. I too had some experience with Unity in MART 380. There I made a walking simulator and an arcade style space shooter. I got to use Blender for a little bit and also had my first experience with making AI. Getting the pathfinding of the AI to function the way we wanted it to was definitely the biggest challenge, but getting them to finally work and function the way we wanted was such a satisfying feeling. I would absolutely make a 3D game again.

**Josh:**

Making a 3D game was extremely enjoyable. Often, I found myself spending an entire day at the computer creating a new aspect of the game from scratch. Although I am on track to attend medical school, I definitely see myself in the future making games as a fun creative outlet and hobby. I had no experience with Unity or Blender and I had only spent a little free time experimenting with the Unreal engine, so this was an entirely new experience. The most challenging things for me were learning to model and scripting the AI. Figuring out how to use Blender effectively to make low-poly models that still appeared decent was difficult but rewarding. Navmesh for AI is also extremely complex and I had a real problem getting it to work correctly, especially with objects that act as obstacles but can be destroyed like the walls. I had waited a long time to take this class and I am grateful for getting the experience to finally produce a game of my own, a long-time dream of mine.

**Matthew:**

I found the process of building a 3D game a enjoyable experience. This was my first experience with Unity and C#, but I found them both easy to learn with resources on the web. Another first for me was Blender, which I can honestly say was more of a pain to learn than any



programming language/software I've experienced, but through practice and patience I got the hang of it. When developing the weapons for the game, I loved seeing the model and the animation come together, and I'm very pleased with how smooth the animation for firing the Bow is. Engines and languages vary from developer to developer, so having a skill that can be applied universally to not only companies in the game industry will hopefully set me apart from the rest when applying for jobs.