

# Procedurally Generated Tower Defense 3D

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## **Abstract**

The overall goal of this project was to create a 3D tower defense game that has procedurally generated levels. The report is broken up into three primary sections: Requirements, Technologies, and Timeline. In the requirements section, we will be quoting mostly from the Project Proposal—you do not need to reference it because enough context will be provided. We will identify what was planned to do, what was accomplished, how it was accomplished, and what was failed to accomplish.

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# 1 Requirements

## 1.1 Procedurally Generated Level

The tower defense level will be procedurally generated. There should be at least one path from enemy spawn to the tower. The tower will be placed randomly. There should be tiles that cannot have weapons placed on them (like trees), and tiles that can. Weapons should not be able to be placed on the path.

## 1.2 User Interface

There should be a tower health indicator. There should be a menu for selecting weapons to build. Once selected, the player should be able to select a tile, and the weapon should build if funds are sufficient. There should be a currency indicator. There should be buttons for starting and stopping the movement of enemies (like a pause).

## 1.3 Weapons

There should be multiple types of weapons that vary in damage, rate of fire, and range. Weapons will fire projectiles at enemies in their range. The player should be able to build these weapons on tiles in exchange for currency.

## 1.4 Enemies

Enemies will have pathfinding towards to tower. When enemies reach the tower, a corresponding tower health deduction should take place. Enemies will have varying health, speed, and currency drops. Enemies should detect collisions with projectiles and take damage from them.

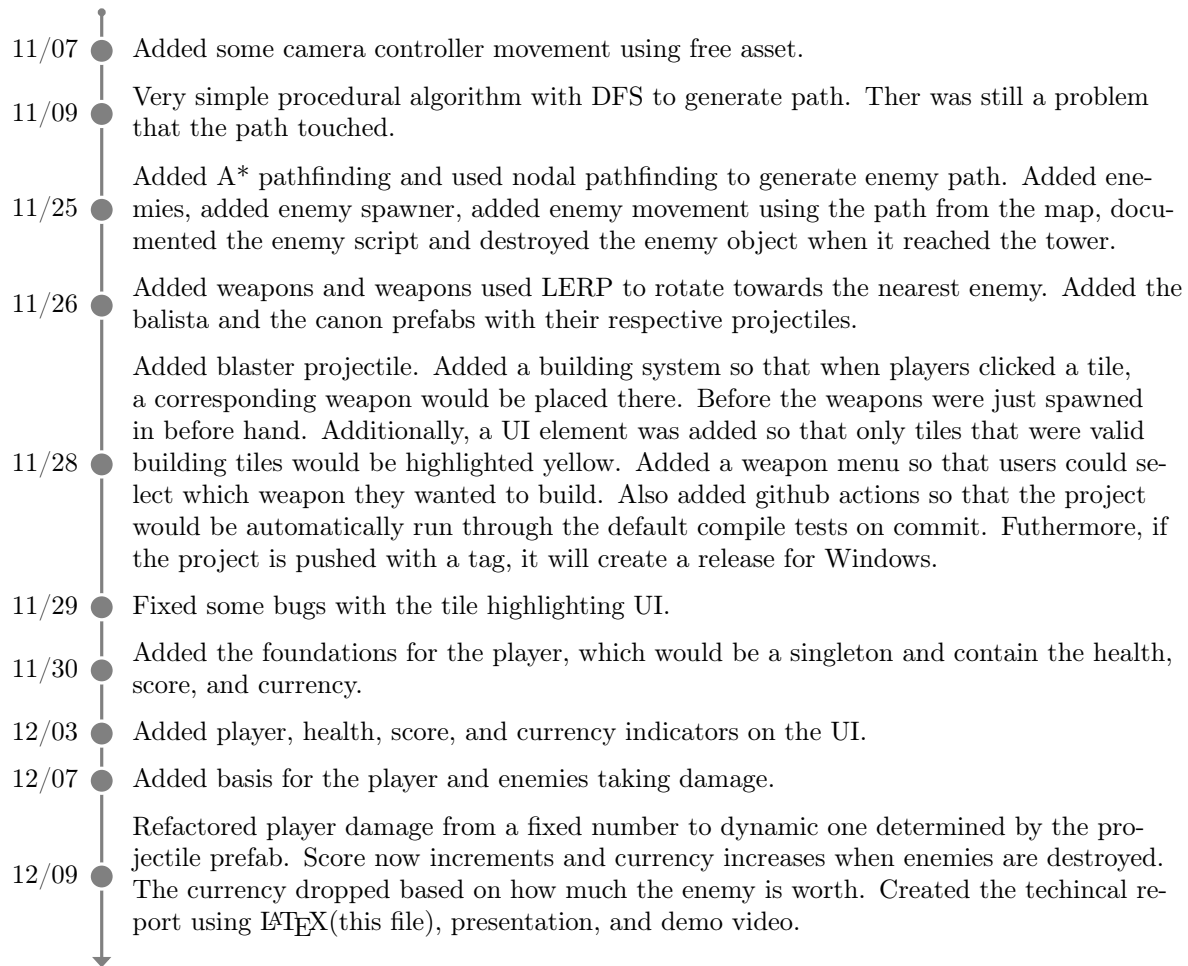
## 1.5 Reach Requirements

- Upgradable Weapons
- Weapon Selling

# 2 Technologies

- Unity

### 3 Timeline



### 4 References

- 3D Tilemap in Unity
- Brackeys Unity Tower Defense
- Manual Tilemap Unity
- Procedural Tilemap
- Kenney Tower Defense
- Unity GitHub Actions