



COMP376 – Introduction to Game Development

Kaustubha Mendhurwar

Game Design Document

Safeguard the Realm!

Team Free WiFi

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EXECUTIVE SUMMARY

Safeguard The Realm! is a tower defense game where the right strategy is absolutely necessary in order to not lose. The objective of the game is to defend the castle against waves of enemies, by placing various types of defence towers on the grid map. As the waves get defeated the user will gain coins which can be used to buy more towers or upgrade the user's level. Each round three towers are randomly made available to be bought and the higher the player's level, the higher the chances to have three strong towers available. The player wins if they can endure the enemy waves.

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OVERVIEW

Theme / Setting / Genre

- Theme: In the middle ages, a kingdom's castle is being attacked in the countryside.
- Genre: Strategy - Tower Defense
- Setting: Medieval Fantasy

Core Gameplay Mechanics

- Grid System
- Economy Progression
- Market System
- Timed Enemy Waves

Targeted platforms

- PC
- Mobile

Monetization model

- Free to Play

Project Scope

- Game Time Scale:
 - Cost: ~288 man-hours (6 (persons) * 4 (hours/week) * (12 weeks))
 - Time Scale (How long will it take to make this game?): ~3 months
- Team Wi-Fi:
 - Six members:
 - Isaac Doré:
 - Lead Gameplay Programmer
 - Music design
 - Kerry Ducharme:
 - Lead level designer
 - Gameplay Programmer
 - Jason Brennan:
 - Documentation
 - Gameplay Programmer
 - Vincent Berardi:
 - Project Manager
 - UI programmer
 - Gameplay Programmer
 - Carlos Almeida:
 - Level design
 - QA Lead
 - Yann Shiun Huang:
 - Level design
 - Art design
- Licenses / Hardware / Other Costs
 - Licenses: Unity Personal
 - Total Costs with breakdown: None

Influences

- **Kingdom Rush**
 - Kingdom Rush is a classic real-time tower defense game with a medieval fantasy setting. Each level presents a predefined path with empty slots (called “Strategy Points”) where the player can place towers to defeat waves of enemies. It inspires our core gameplay mechanics.
- **Bloons Tower Defense**
 - Bloons Tower Defense is a tower defense game. The player can choose various types of towers and traps around the track in order to defend against the bloons. It has a very similar game mechanic like our game.
- **Teamfight Tactics**
 - Teamfight Tactics is a strategy game based on the Dota2 mod Dota Auto Chess. It has a very interesting economy system and rerolling shop pool system. It inspires our “Tower Market system”.

The Elevator Pitch

We are building a tower defense game with an intricate tower market system featuring different types and tiers of towers the player could use to attack the waves of enemies every round. Bringing the hype of autobattler into the realm of tower defense.

Project Description (Brief)

Safeguard the Realm! is a tower defense game with a twist. The player will have to purchase and place towers to defend their castle against waves of monsters. Every round consists of two phases: the first one is the market (strategic) phase and the second one is the battle phase.

In the market phase, the player can spend their gold on: towers, rerolling the market, gaining levels, or they can save their gold to make some profit over time for future rounds. They can also place their newly bought tower(s), or move around their existing ones in this phase.

The second phase is the battle phase. A set amount of enemies will spawn one after the other and begin marching towards the player's castle. If an enemy reaches the castle, the castle will suffer damage. The towers bought and placed by the player can attack, slow and kill the advancing enemies. Once this phase is over, it is the end of a round, and phases repeat. The amount of rounds and total enemies spawned is based on the level being played.

Project Description (Detailed)

Safeguard the Realm! is a tower defense game with a twist: a market system with randomized towers to choose from. The player will have to purchase and place towers from this market to defend their castle against waves of monsters. Every round consists of two phases: market (strategic) phase and battle phase.

In the market phase, the player can spend their gold on various attributes to help them win the round. One thing the player can spend their gold on is on towers that are “randomly” generated from a probability based on their level. Once they player has bought a tower, it will go to their inventory. They could now place this tower on the map if they choose, but it must be placed strategically to kill the enemy waves. The reroll of the towers is to generate a new 3-set of towers the player could select, but it comes at the cost of 1 gold. The player must carefully consider spending their gold on a market reroll, so this factors into their strategy. The market offers players 3 towers chosen randomly from an internal pool of tower tiers. Whenever the player owns 3 of the same tower, they will be consumed and upgraded to a stronger version of itself, capping out at level 3. Lastly, the player could gain a level by buying levels from the market; the higher their level, the more towers they could place on the map and the probability of high-end towers to be generated increases. They can also choose to save their gold to make some profit over time for future rounds, but again, the player cannot be too conservative because they must have enough towers to properly defend their castle from enemy waves.

The second phase is the battle phase: the enemy waves will try to attack the player’s castle, and if it is not well defended, it will take damage. If the castle health reaches 0, then the game is lost and we transition to a game over screen. However, if the castle remains untouched for the phase, then the player will be on a “winning” streak and this will increase the amount of gold they get for completing a round. There are also gold enemies that will be spawned randomly at certain rounds to allow the player to gain even more gold. In terms of enemies, there are regular enemies, gold enemies, and a boss enemy on the final round of the level. Once this phase is over, it is the end of a round, and the phases repeat until the last round is completed; the amount of rounds are based on the level being played (normal, intermediate, and advanced).

Personas

John Doe

"John Doe, 23, student. Single, Studying a Bachelor's degree in Commerce. Plays games on his phone during metro rides and once a day at home on a desktop computer. He also plays with friends online on the weekend on PC. Focuses on real-time strategy games like the StarCraft series, the Warcraft series, and auto-battler games like Teamfight Tactics. Watches fantasy shows like Game of Thrones, Vikings, and movies like the Lord of the Rings trilogy and Harry Potter. He reads fantasy novels like The Silmarillion. During the summer, he likes to partake in LARPING (live-action roleplaying) on the weekend with his friends."

Linda Gratton

"Linda Gratton, 26, researcher. Married, has a PhD from l'Université de Montréal. Plays games mostly on her phone during her breaks or on public transportation. She also plays some casual games on her laptop at home while watching Netflix. She enjoys games like Candy Crush and some tower defense games (Bloons TD 6, Plants vs. Zombies, and Kingdom Rush). She enjoys the Marvel movies. She likes to go out in the city during her weekends with friends, so she rarely plays games on the weekend, but does during the week."

John Deer

"John Deer, 21, works in a factory. Single, has a high school diploma. Plays games seriously and likes to manage teams in games like World of Warcraft. He likes the challenge that game can bring, he consider himself a hardcore player. He enjoys sci-fi movies like Star Wars and Star Trek. He still lives with his parents and mostly spend his day playing video games alone or with his friends."

What sets this project apart?

- It has a very unique “Market/Shop System”, which randomly picks various types of towers. The player must carefully formulate a strategy by choosing towers from the market.
- It is a real-time strategy game, that has a fast and intensive pace involved. The player must think carefully with every move. No tedious nor no-brainer grinding or farming.
- The game’s economy is enhanced with a winning/losing streak bonus and interest system.
- The game has very unique types of towers that provide the player more strategy choices.
- Since the market offers a randomized selection of towers, every game is unique!

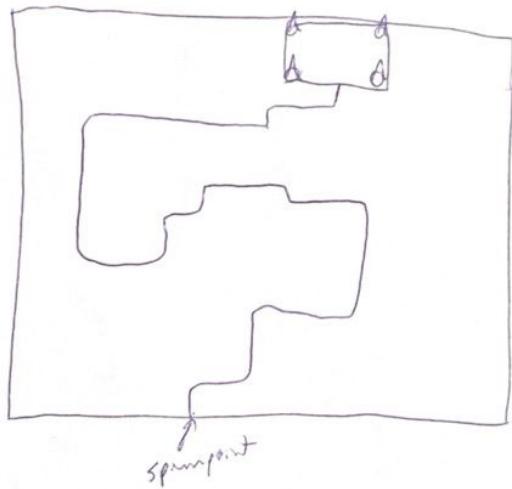
Art Direction

Types of Maps

Level 1

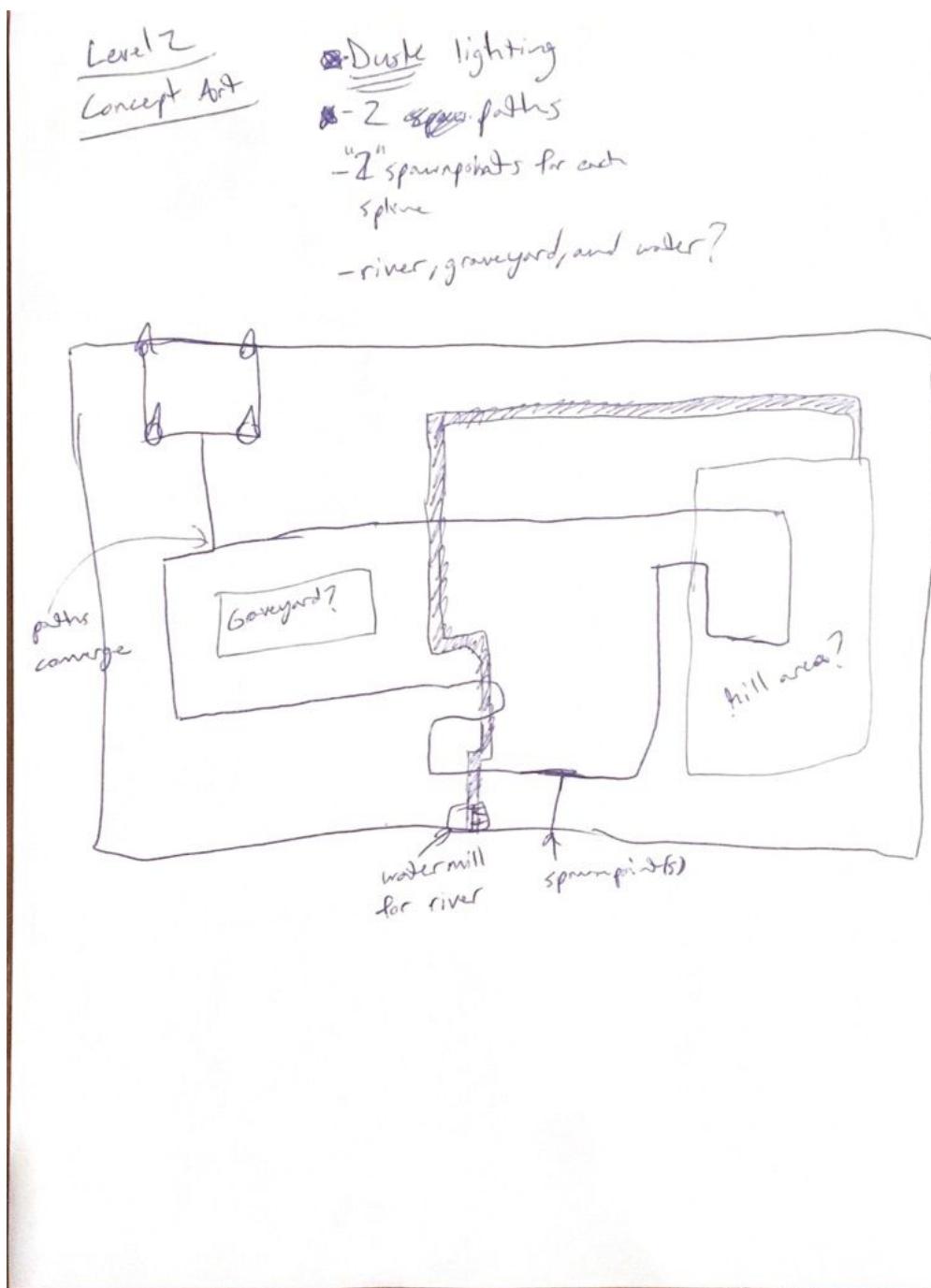
Level 1
Concept Art

- This map should introduce players to the basic premise of the game.
⇒ keep it simple



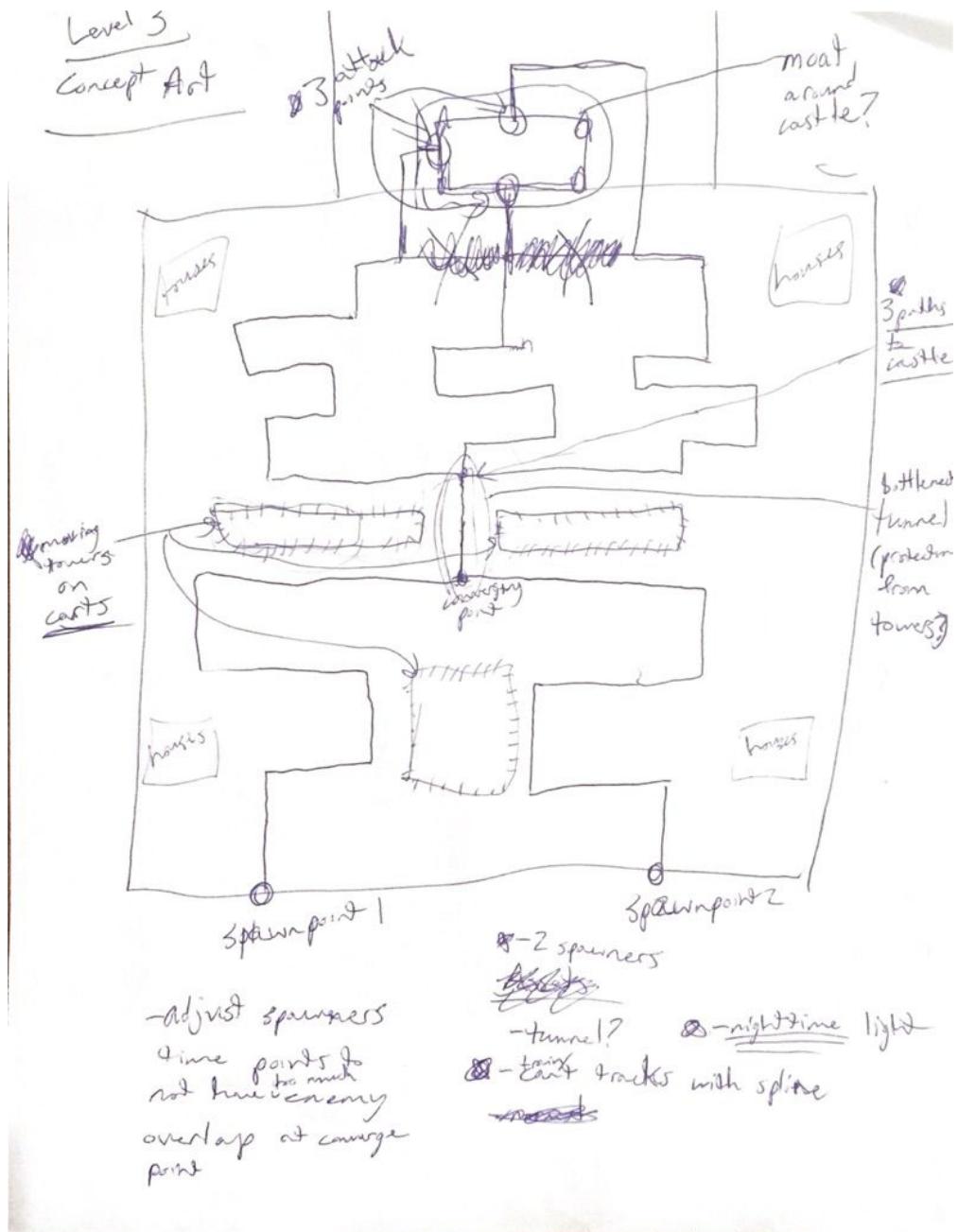
The Level 1 is the beginner/tutorial level to get the player familiar with the mechanics of the game. As such, just a simple path going towards the castle with some turns is sufficient. Motto of this map is to keep things simple. It will have the (default) day time lighting.

Level 2



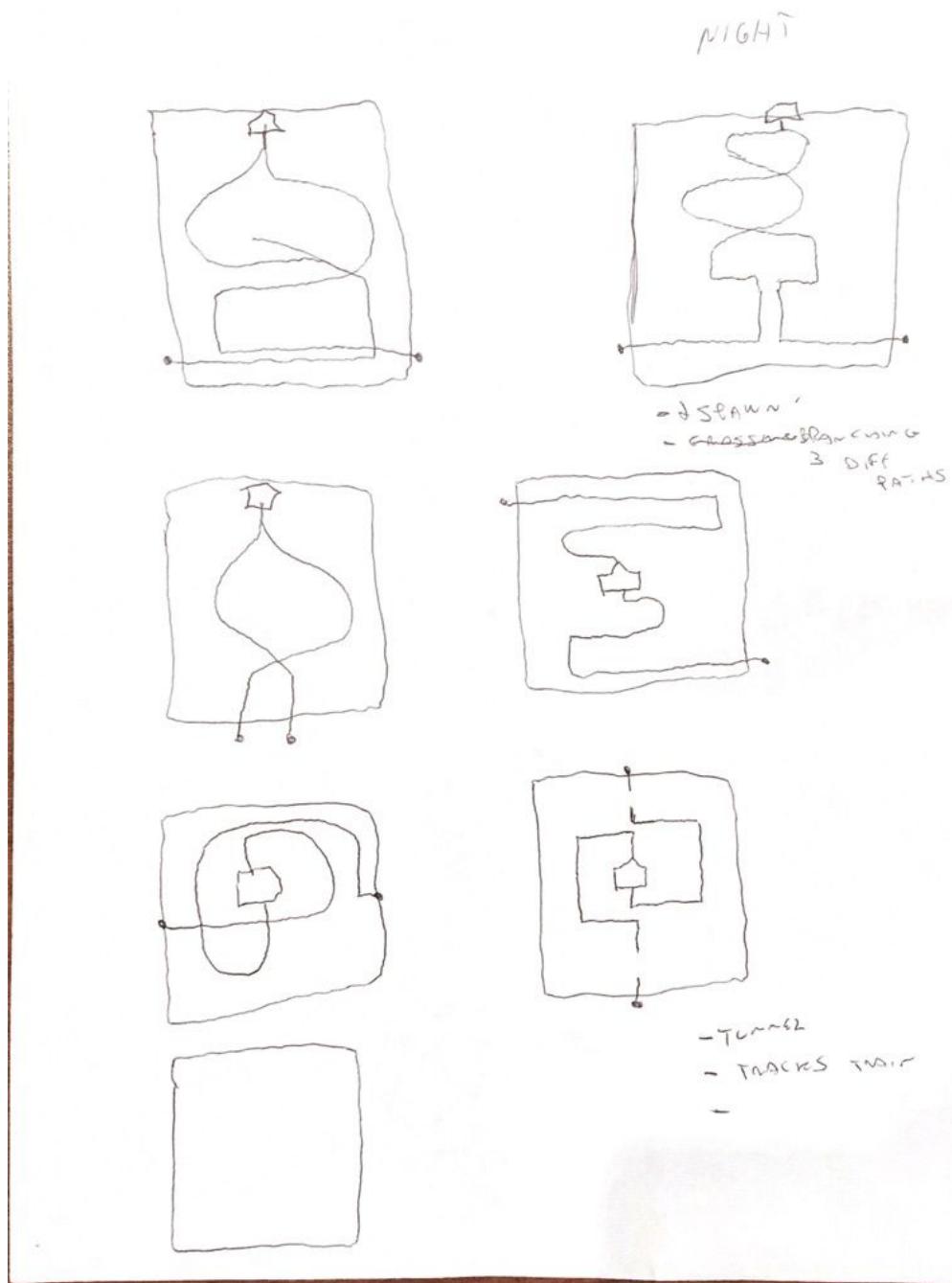
Level 2 should introduce some more complexity by introducing 2 paths. This will force the player to strategize where they should place their towers. This map will also have dusk lighting to change up the feel of the level progressions. If possible, have a river, a graveyard, and elevated area as the decor of the map.

Level 3



Level 3 should also introduce some more complexity by introducing 2 paths with 2 separate spawn points (technically 3 spawners) that converge and then split into 3 paths for 3 attacking points of the castle. This will really force the player to strategize where they should place their towers. Moreover, this map should utilize the spline feature to make tracks with carts carrying a tower to have a "moving tower". This map will also have night lighting to also change up the feel of the level progressions. If possible, have a moat, at least 4 villages, and a tunnel area as part of the decor of the map.

Other Level Ideas:



There were some other level design concepts we did not end up using for the current project. However, these can be added as future levels.

Core Gameplay Mechanics (Detailed)

Timed enemy waves

This is also called “Survival mode” or “Horde mode”. This is a very common game mechanic among tower defense games. The player must continue playing as long as possible. The most common victory condition can be either enemies’ target, e.g. The player’s bases/castle, is not destroyed after a certain amount of time or the player defeats all waves of enemies in time.

There will be a predetermined number of waves of hordes for each level. Each wave has also a predefined number of various types of enemies. There will be a count-down timer used between each wave. Each wave of enemies will spawn at the starting point of the predefined path, and then keep marching along the path until reaching the player’s castle. Player’s goal is to defeat all the waves of hordes before they reach and take down the castle.

Market/Shop System

The market will provide a random selection of towers, including duplicates from a shared pool, to the player. Duplicate towers can be combined to create stronger versions of that tower. The tier of towers generated from the market is based on the player’s level. Towers have various prices, depending on their types and tiers. The market also provides a feature to let the player refresh/reroll the selection of towers, if the player would like to have more options.

Before each battle/level, the player will have access to the market. The market will start with a set of three random towers, based on the player’s level. Each tower’s price may vary depending on its type or tier. The player will be able to purchase the towers with the gold gained from the previous battle(s) or given by the game at level one. If the player is not satisfied with the current selection of towers, the player has an option to refresh/reroll the selection by spending a small amount of gold, which may be incremented as more time the player tries to reroll. The amount of gold that can be gained from the battles is very limited, so the player must spend their gold wisely.

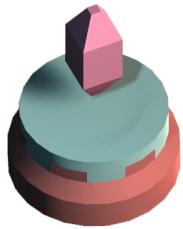
Types of Towers

Ballista (Tier 1)



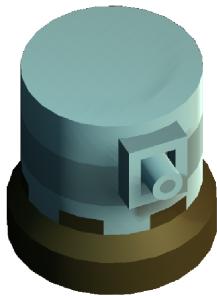
Ballista towers are the basic but versatile all around towers that shoots direct projectile to enemies. They start with only one weapon but can be upgraded to have up to 4 firing weapons in total. This means lower damage projectiles but a potential of a high rate of fire.

Crystalline (Tier 1)



Similarly to the Ballista, this type of tower also sends a projectile directly to a single enemy. The difference being that even when upgraded, it only sends one projectile at a time, but that the projectiles that are sent deal more damage. Even if the rate of fire is slightly increased, it will remain slower than the Ballista tower.

Boomerang (Tier 2)



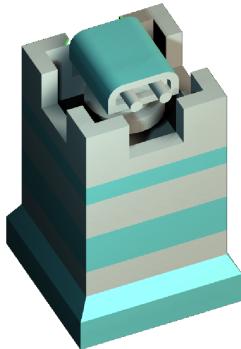
The Boomerang tower has a particular projectile that no other tower has. The boomerang itself is following a fixed path in front of the tower. When upgraded, the tower will have 2 and 3 shooting locations on the tower itself. This makes it a great candidate for crowd control as it is able to damage multiple enemies at once. This tower is a tier 2 tower and will be harder to get in the market.

Speed Support (Tier 2)



This will be the first support tower made available to the player during their matches. These support towers work as a stat modifier to all other damaging towers in its range. In this specific case, the tower will increase the attacking speed of its neighbors. As it is upgraded, the speed multiplier is increased.

Lightning (Tier 3)



The lightning tower is the fourth and most damaging tower currently in the game. It targets a single enemy but does not shoot any projectiles. Instead, it fires a constant lightning beam to the target, dealing damage over time. It has a tick rate mechanism to deal damage over time which can also be increased by the support towers. This tower is a legendary tower that is very hard to get in the market.

Damage Support (Tier 3)



Having the same mechanic as the speed support tower, this one applies a multiplier to the damage dealt by the towers. It is a tier 3 tower because when leveled up and combined with other towers also of higher level, it boosts their potential damage further than their initial maximum damage values. Also, when combined with a speed support, strong and creative combinations can be achieved.

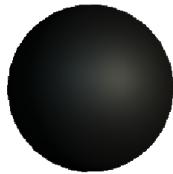
Type of Projectile

Arrow



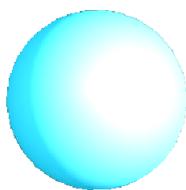
The Arrow is used by the Ballista. It is a very common arrow used in most medieval games.

Cannonball



The Cannonball is used by the Ballista when it upgrades. It is a very common Cannonball used in most medieval games.

Energy Shot



The Energy Shot is used by the Crystalline tower. Stronger than the regular cannonball.

Boomerang



The boomerang projectile is used by the tower of the same name. It is different from the other projectile since it follows a spline instead of targeting an enemy.

Lightning



The lightning projectile is used by the tower of the same name. It is more animated than the other projectiles and reaches the monster automatically.

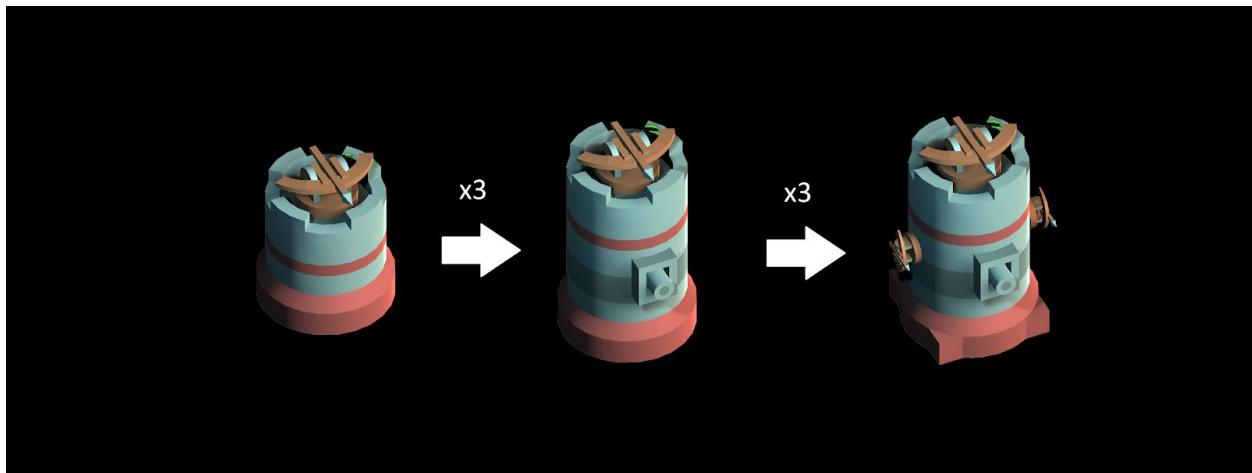
Upgrading Towers

In order for the player to be able to upgrade the towers bought previously during the game, they will need to scavenge the market for the same tower. The upgrade mechanism is automatically triggered based on the amount of towers of a specific type the player owns. The player needs 3 towers of a given level and type in order for all 3 of them to be replaced by a tower of a higher level. For example, if 2 Ballista level 1 towers have been bought, the moment the player buys a third one, it will consume them and award the player a Ballista level 2.

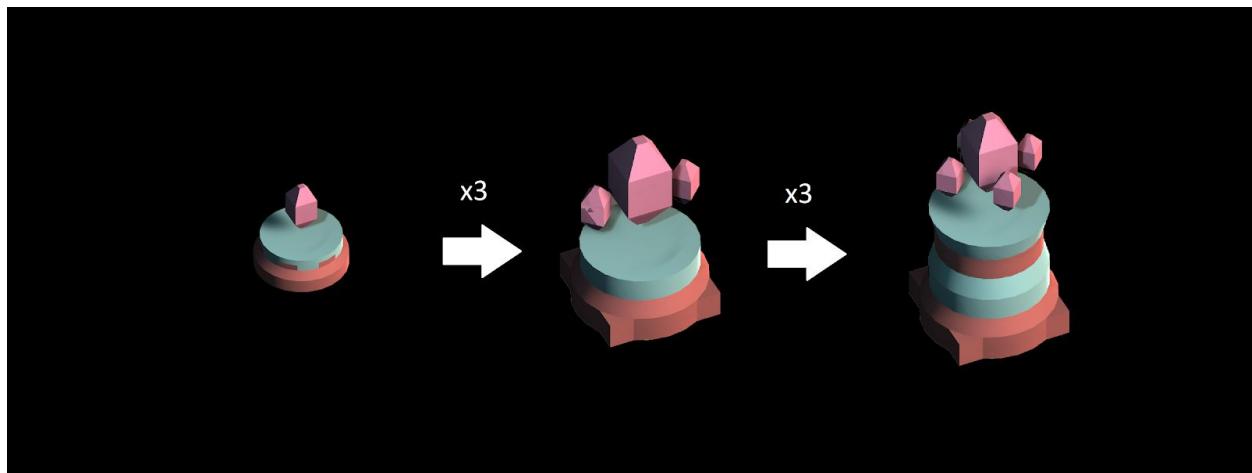
One thing to keep in mind is that upgrades will only trigger during the market phase. Because the grid will be locked during battles, we don't want the player to lose towers already positioned as they might still buy a third tower during the combat. In such cases, the upgrade will be postponed to the end of the battle phase where all available upgrades will be executed.

The following models will be used for the various towers and their upgrades:

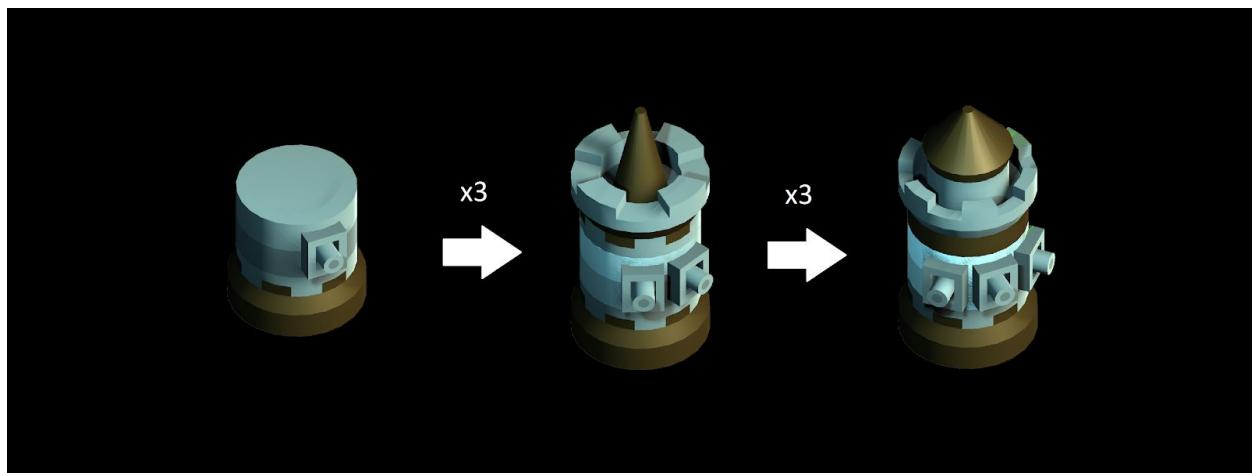
Ballista



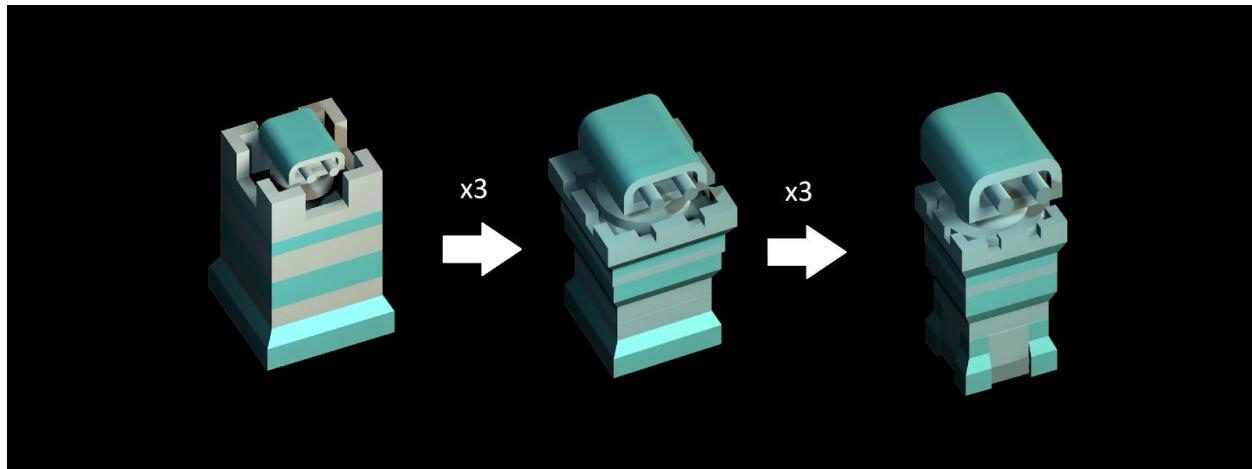
Crystalline



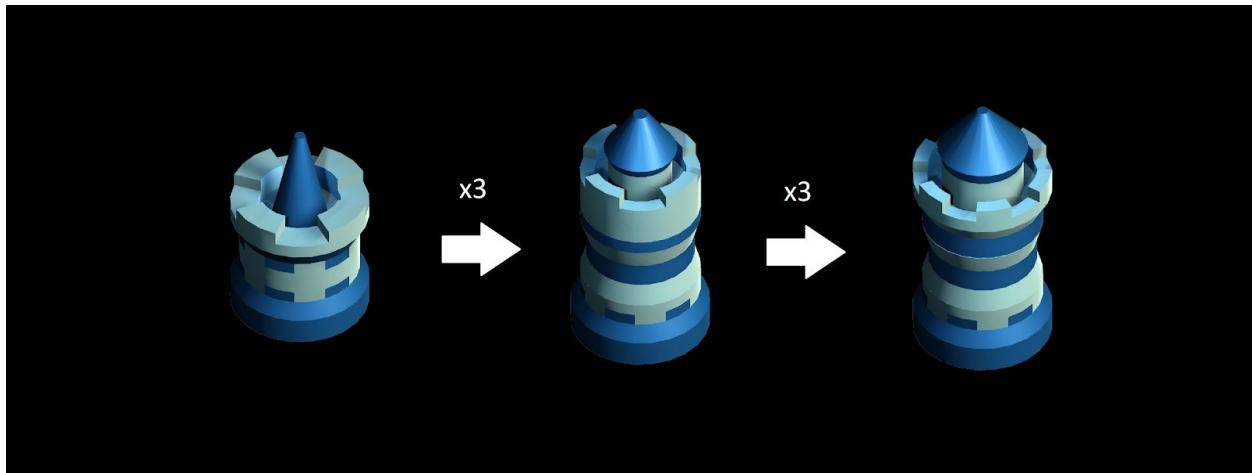
Boomerang



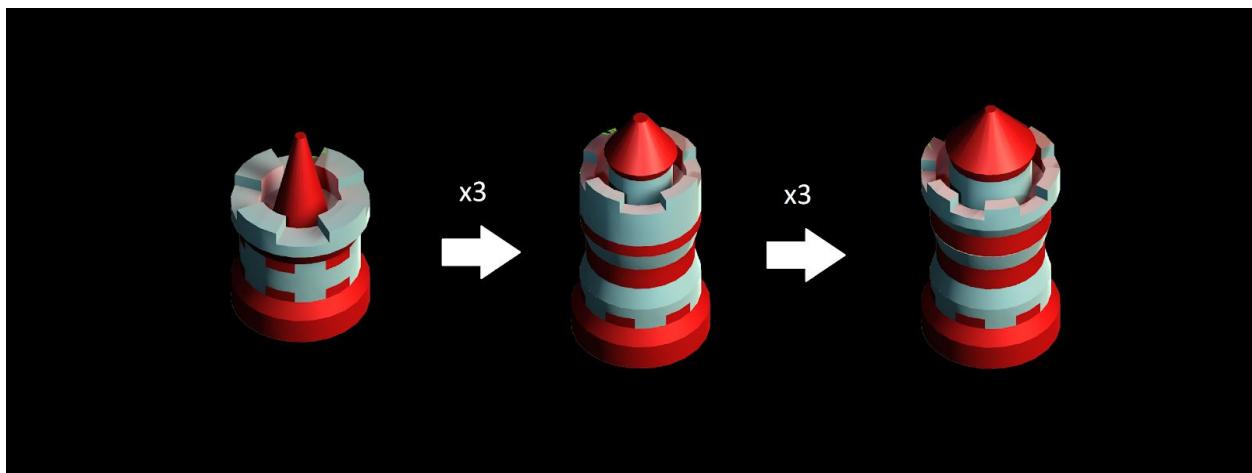
Lightning



Speed support



Damage support



Types of Enemies

Goblin Hunter Main



The Goblin Hunter Main is one of the higher probability enemies to appear. They have a health of 4 and an attack power of 2. They do not drop any gold.

Goblin Archer



The Goblin Archer is another enemy of the higher probability. They have a health of 3 and an attack power of 3. They do not drop any gold.

Gold Orc Pig



The Golden Orc Pig enemy is a particular enemy of very low probability. They have a health of 10 and an attack power of 1. They drop 1 gold. This enemy allows the player to be able to get gold if they manage to kill it on the path with their towers.

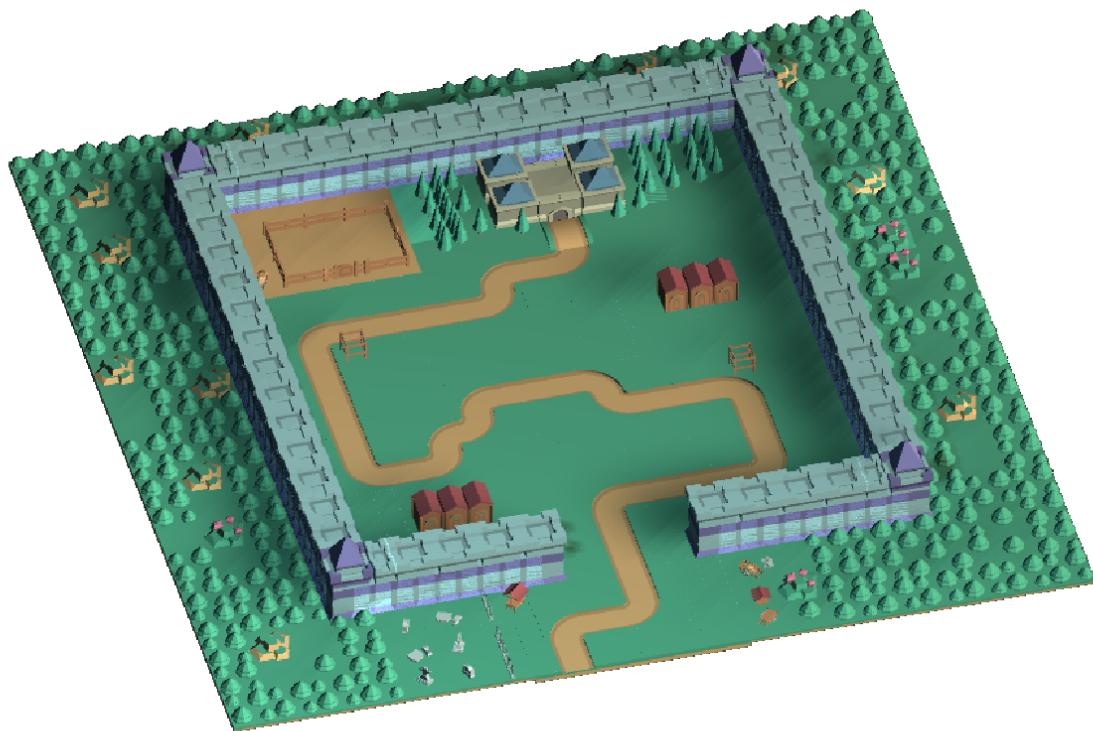
Orc Boss



The Orc Boss enemy is the leader of the enemy forces and only appears in rounds 5 and 10. They have a health of 20 and an attack power of 6. They drop 5 gold. This enemy allows the player to be able to get even more gold if they manage to kill it on the path with their towers. However, if they do not, then it will inflict more damage to the castle compared to the other enemies, so it is crucial to have good tower placements in these rounds.

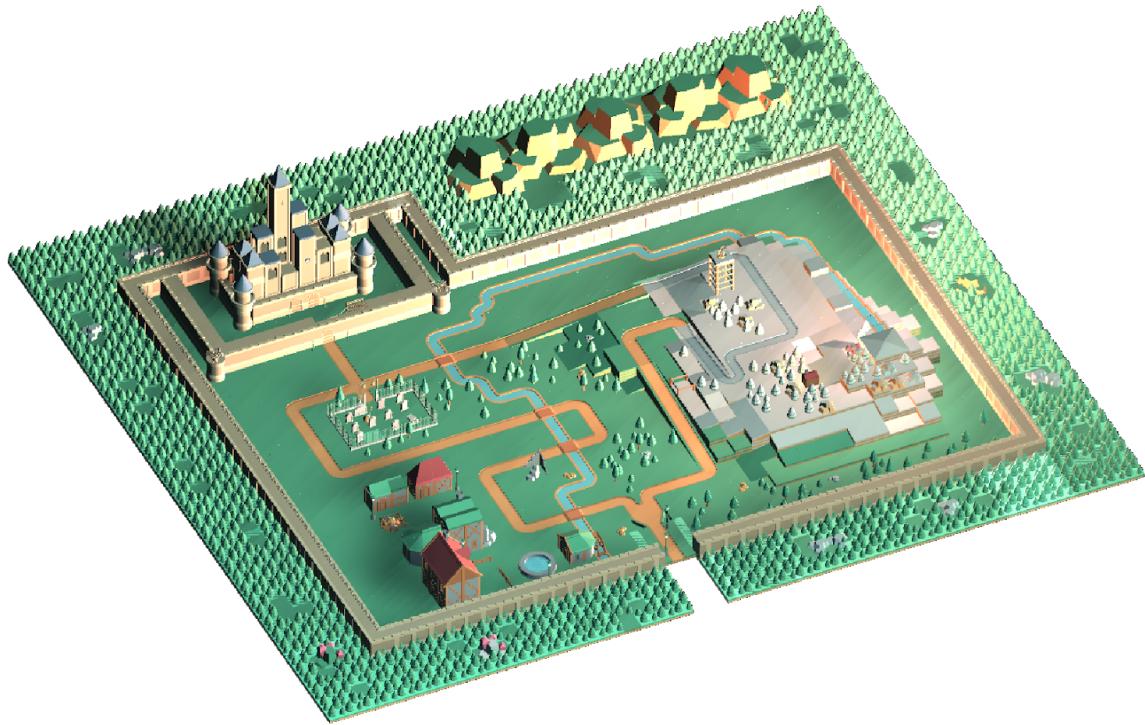
Types of Maps

Level 1



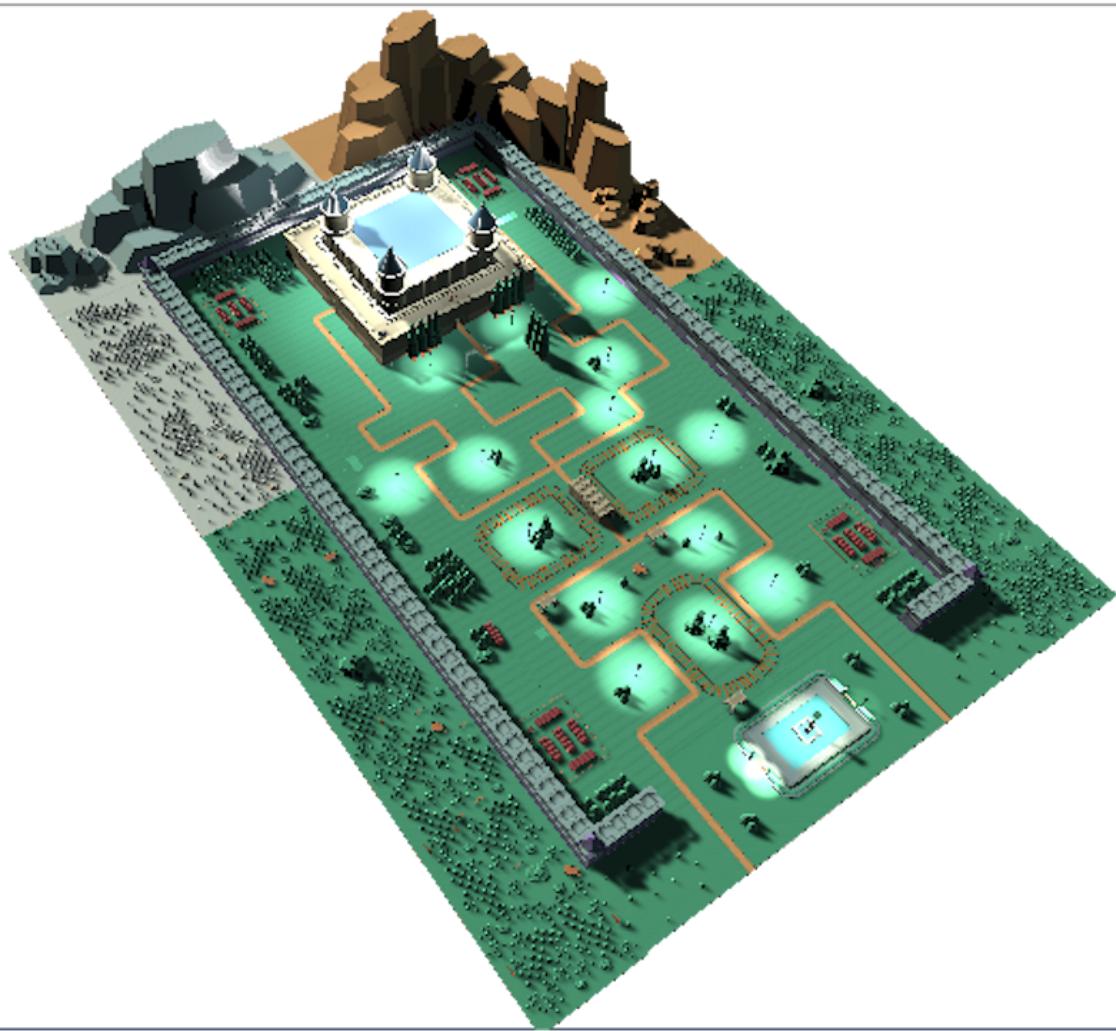
This is the prefab for the map of Level 1.

Level 2



This is the prefab for the map of Level 2.

Level 3



This is the prefab for the map of Level 3.

Gold Generators/Economy System

- There are two ways how the game generates the gold for the player, which is a very important resource for the player to buy towers or to level up.
- There will be a specific type of enemy during the march of hordes, called the “Gold Enemy”, which carries a certain amount of gold with it. In order to loot the gold from this enemy, the player has to kill the monster before it reaches the castle. Once the Gold Enemy is defeated by a tower, the gold carried by the enemy will be added to the player’s inventory/”pocket”. This also ensures that the user does not try to lose on purpose.
- Each end of battle phase will generate a certain amount of gold for the player. The amount of gold generated may vary, depending on the player’s performance, such as win/lose streaks. There is a win streak to reward users that are doing well and there is also a lose streak as a catch up mechanic.
- There is also an interest rate on gold saved, giving the player an incentive to save their gold for further rounds. If they have a good strategy at the beginning, they can “snowball” their money and get stronger for the later rounds.

STORY AND GAMEPLAY

Story (Brief)

There are castles in the countryside that are being attacked by waves of monsters led by the Orc bosses. They are attempting to attack three different castles at different times of the day (day, dusk, and night). You have been tasked with building towers on the paths leading to the castles to get rid of as many of the monsters as possible to minimize the damage to the castles.

Story (Detailed)

Long ago, the human race had made peace with the different magical species of the land: orcs, goblins, and orc pigs. But, these three species recently got together to wage war against the humans due to their prosperity. Both sides decided to prepare in different ways. The orcs, goblins, and orc pigs believe that storming the humans by the masses will ensure their victory, but the humans used their cunning intellect to develop different towers that will destroy their adversaries in their tracks. Some use the standard tools of arrows, cannonballs, and boomerangs to attack, but they also imbued some of these towers with magical powers to fire energy shots and lightning. Furthermore, they made some towers able to support the other ones by increasing their power and speed through magic too. The kings of the different castles have hired a tactician to place these towers along the castle path to try and ensure that the castle suffers minimal damage.

Gameplay (Brief)

Before each battle begins, the player will have access to the market, where the player will be able to purchase various types of tower by spending their gold.

Each battle phase will have waves of enemies marching towards the player's base/castle along the predefined path(s) on the map.

Around the predefined path(s), there will be empty slots, where the player is able to place the towers that they bought from the market to attack enemies on the path.

The goal is to defeat all waves of monsters before they can reach and take down the player's base/castle.

Gameplay (Detailed)



Main Menu Image



Transition to Levels



Market phase start image



Tower in inventory after being bought image



Reroll being clicked and generating a new set of towers image



Buying a level image



Placing a tower on the map image



Battle phase start phase



Enemies on path phase



Towers attacking image



Enemies being killed image



Castle being attacked image



Gold enemy image



Boss enemy image

Level 2





Level 3





Game over scene image

ASSETS

- 3D

- Characters List

- Enemies:

- Goblin hunter
- Goblin archer
- Boss monster - Orc boss
- Gold enemy - Golden Orc Pig

- Towers:

- Ballista
- Crystalline
- Boomerang
- Lightning
- Support - Attack Damage
- Support - Attack Speed

- Environmental Art Lists

- Walls
- Mountains
- Grass
- Trees (summer and winter variants)
- Rocks
- Mountains
- Houses
- Graveyards
- Carts
- Fences
- Farms
- Street lights
- Rivers
- Bridges
- Castles
- Railways
- Towers
- Water wheels

- Sound

- Sound List (Ambient)

- Market phase

- Level 1
- Level 2
- Level 3

All level phases currently have the same ambient sounds across which is an environmental composition of multiple sounds from the medieval times. We want the player to feel like if they're currently in a market with people talking around, bells, chickens and different human activities for sound FX from that time.

- Battle Phase

- Level 1
- Level 2
- Level 3

As with the market phase, the battles currently all have the same music. An epic and heroic music mixed with an orchestral medieval fantasy melody.

- Misc. Sounds

- Coin sounds

Coin sounds are made when clicking various cost options of the UI.

- **Code**

- Player Script
- Inventory Script
- UI:
 - HealthView Script
 - Player UI Script
 - Market UI Script
- Market:
 - Market Script
 - MarketProduct Script
 - MarketSlot Script
 - TowerTier Script
- Tower:
 - Tower Script
 - Attacker Script
 - SplineAttacker Script
 - Beam Attacker Script
 - Projectile Script
 - Boomerang Script
 - Lightning Script
- Castle Script
- Enemy Script
- MoneyYielder Script
- WaveManager Script
- Utils:
 - Spawner Script
 - Spawnable Script
- Behavioral:
 - SplineFollower Script
- Events:
 - CollisionEvents Script
 - Timer Script
 - TriggerEvents Script
 - UnityEvents Script
- SnapSystem:
 - SnapLocation Script
 - SnapManager Script
- Navigational:
 - LevelManager Script

- Animation

- Environment Animations

- Water wheels rolling
- Moving carts on railways

- Character Animations

- Enemy

- Walking animation for each enemy
- Dying animation for each enemy

- Tower

- Shooting arrows
- Shooting boomerangs
- Shooting blue energy balls
- Shooting lightning beams
- Spinning glowing balls (for support)

CONTROLS

- **Mouse left-click:**
 - To interact with in-game UI, e.g. left-click the buttons on the market HUD.
 - To interact with towers in the inventory and on the map, e.g. left-click to select a tower in the inventory, then place the selected tower onto the map by left-clicking on an empty slot (predefined tower location) on the map.
- **Key "Q":**
 - To rotate the camera in a counter-clockwise direction.
- **Key "E":**
 - To rotate the camera in a clockwise direction.
- **Key "A":**
 - To move/pan the camera to the left of the map.
- **Key "D":**
 - To move/pan the camera to the right of the map.
- **Key "W":**
 - To move/pan the camera to the top of the map.
- **Key "S":**
 - To move/pan the camera to the bottom of the map.
- **Key "R"**
 - To reset the camera to its default position.
- **Mouse Scroll Wheel Up:**
 - To zoom into the map.
- **Mouse Scroll Wheel Down:**
 - To zoom out of the map.

SCHEDULE

- Game Proposal

- Time Scale

- 1 month
- Due October 3, 2019
- Etc.

- Prototype Presentation

- Time Scale

- 2 months
- Due October 31, 2019
- Etc.

- Final Presentation

- Time Scale

- 3 months
- Due December 2, 2019
- Etc.

TASKS/ISSUE TRACKING

The screenshot shows a GitHub Kanban board for the repository "zee366 / comp376TeamProject". The board is divided into four columns: "To do", "In progress", "Review in progress", and "Done".

- To do:** Contains three items:
 - Cleanup _Prefabs folder (Added by zee366)
 - Cleanup _Scripts folder (Added by zee366)
 - Campaign Mode (Added by zee366)
- In progress:** Contains five items:
 - Towers sometimes stop attacking the boss (#111 opened by zee366, bug)
 - [MINOR] Can start a round with a tower in "selected" mode. (#102 opened by Kerri-G, bug)
 - Create Design Document (Added by zee366)
 - Create readme file: (#119 opened by zee366, urgent)
 - Set WaveManager max waves to 10 in map3 (#125 opened by zee366, urgent)
- Review in progress:** Contains two items:
 - Implement win streak events on maps 2 and 3 (#127 opened by zee366, urgent)
 - Enemies instantiated in map2 sometimes appear at origin before warping to spine (#110 opened by zee366, bug)
- Done:** Contains six items:
 - GameOverScene With Enemies on it (#131 opened by VincentBerardi)
 - Enemy Health Bars (#115 opened by zee366)
 - Create short video of gameplay (#118 opened by zee366, urgent)
 - Yield money on win streak (Added by Swess)
 - Enemies instantiated in map2 sometimes appear at origin before warping to spine (#110 opened by zee366, bug)
 - Enemies instantiated in map2 sometimes appear at origin before warping to spine (#110 opened by zee366, bug)

At the top right, there are buttons for "Watch" (2), "Star" (1), "Fork" (0), and other navigation links like "Projects", "Wiki", "Security", and "Insights". A search bar labeled "Filter cards" is also present.

GitHub provides the ability to have a Kanban board, so the team utilized this feature to issue tasks amongst the team. Tasks are created in the “To do”, moved to “In progress” when being dealt with, then to “Review in process” when the task is done and needs to be reviewed by the team, and finally moved to “Done” once the task has been approved and merged into the master branch of the project.

MINUTES

September 19, 2019

Present: Jason, Isaac, Carlos, Vincent, Yann, Kerry

18:00: Going through brainstorming sheet, talking about various ideas. At the moment, 3D seems daunting.

18:07: Discussion of first assignment

18:12: Back to project, ruling out 3D. Heavy leaning towards "tower defense", "megaman", "bomberman" type games.

18:15: Looking at free assets on <https://kenney.nl/assets/tower-defense-kit>

18:25: Decided on tower defense game

18:30: Discussing possibility of spending a weekend together to build a prototype, like a game jam.

18:37: Discussing ECS

18:40: Determining primary tasks, foundational code

- Enemy detection
- Enemy spawning
- Enemy shooting
- Using assets to build a level
- We should use the Kanban board on our github to add tasks

18:50: Next meeting set for Thursday, September 26

Proposal due in 2 weeks, will create another google doc for collaboration

September 26, 2019

Present: Jason, Carlos, Vincent, Yann, Kerry

18:00 discussion of game mechanics

- 2 phases, buy phase, play phase
- Players have an inventory to hold towers that they buy
- Max placeable towers determined by player level
- Player's earn gold per round finished, possibly per enemy killed as well
- Player's have a choice to spend their gold, or save it (they will earn more gold per round as a function of their current gold total)
- 3 of the same tower owned? Tower can upgrade (automatic?)
- 3 tiers of towers
- Player can spend gold to buy towers, reroll the tower market, or level up
- Enemies path towards base, damage it upon arrival (and disappear?)
- Game over when base at 0hp
- Towers target nearest enemy unit within attack radius
- Multiple maps
- Each session, start at level 1
- Towers placeable near roads
- Base has a basic attack to help out

18:20

- UI elements (Gold, Experience, Sliding drawer for inventory and market)
- Values can be balanced during playtesting (gold earned, # enemies spawned, enemy speed, tower damage)
- Types of towers (arrows, fire & ice)

18:35

- Bare minimum for prototype
 - 3 maps
 - 3 enemy type
 - 3 tower type (arrows, fire, ice)
 - Market (UI)
 - Inventory (UI)
 - Gold and XP (UI)
 - Enemy pathfinding
 - Tower + base can target enemies
 - Drag and drop towers to place them
 - Tower upgrades

October 1, 2019

Present: Jason, Kerry, Isaac, Yann, Vincent

11:35: Discussing roles for presentation and development

- Vincent will perform the introduction during the presentation
- Isaac, Carlos and Yann will do a back and forth explaining related games, with Kerry interjecting in between each to explain a particular mechanic.
- Jason will talk about reference art, showing where our inspiration for the look and feel came from.

12:00: Next is to have each person explain their particular role:

- Project Manager: Vincent
- Level Designer: Vincent
- Lead gameplay programmer: Isaac
- QA Lead: Carlos
- Art Design: Yann
- Source Control Manager: Jason
- Documentation: Kerry
- Musician: Isaac
- UI programmer: Jason

12:18: Working on the documents for the presentation

October 10, 2019

Present: Jason, Vincent, Isaac, Yann

Meeting opens with a discussion of what exactly is needed for the prototype, followed by assignment of roles.

We decided not to use Unity's ECS plugin, since it is still in beta and not much documentation exists for it.

We will use Unity version 2019.2.4f1

The team will meet on Monday, October 14 at 3pm for a "game jam" and begin coding together. Assignment of roles will be done on the spot. Jason will be available remotely, all day.

From the minutes of September 26:

Bare minimum for prototype:

1 map

- Using ProGrid tool to build map by hand, snapping pieces into place
- The map contains a spline layered over the road
- Only certain tiles can have towers placed on them

1 enemy type (use UFO asset if cannot find proper asset)

- The enemy should have a spawn point, and a system that spawns an enemy at a certain interval
- The enemy will follow a spline that runs over the road from the enemy spawn point to the castle
- Enemy attributes:
- Hp
- Movement speed
- Value containing its progress along the spline to the tower
- Atk damage (upon reaching the castle)
- Atk speed
- Instantiated from a spawner

3-5 tower type (arrows, fire, ice)

- The attributes of a tower should be modifiable
- Damage
- Atk radius
- Atk speed
- Projectile type
- Price
- Picture for market
- Scriptable object that can instantiate an actual tower

- Tower queries enemies in range who are furthest along the path, and attacks

Market (UI)

- Creates pool of towers at start
- Grabs towers from pool to display
- Display 3 towers
- Show tower price
- Reroll market button
- Subtract money from player upon tower purchase
- Player inventory is actually 5 reserved tiles on the map showing the inventory contents

Inventory (UI)

- 5 slots
- Upgrade button
- Can drag from inventory and place on map, instantiating the tower
- Placeable tiles highlighted while tower is being dragged

Gold and XP (UI)

- show n on market UI panel
- Possible progress bar for XP

Enemy pathfinding

- Follows spline from spawn point to castle

Tower upgrades

- Consume 3 of same tower to upgrade

Sound and Music

- Isaac will search for sound effects

On Monday, take tasks from the list in this doc and break them into smaller chunks. Be sure to add tasks to the project board on Github so that we can keep track of what has been done.

Include other weeks since we did meet and we also decided last week to remove xp, so we should incorporate this change too

REFERENCES

Towers and map building blocks

<https://www.kenney.nl/>

Medieval-style font

<https://www.dafont.com/medieval-scribush.font>

Menu scroll images

<https://opengameart.org/content/weathered-scroll>

Goblin enemies:

<https://assetstore.unity.com/packages/3d/characters/humanoids/goblins-free-strategy-rpg-mobile-games-152301>

Orc Boss enemy:

<https://assetstore.unity.com/packages/3d/characters/humanoids/mini-legion-grunt-pbr-hp-98187>

Golden Orc Pig enemy:

<https://assetstore.unity.com/packages/3d/characters/creatures/pbr-orc-pig-109248>

Music during Market Phase:

<https://patrickdearteaga.com/epic-orchestral-fantasy-medieval-music/>

Music during Battle Phase:

<https://freesound.org/people/OGsoundFX/sounds/423119/>

Coin Sound Fx:

<https://freesound.org/people/husky70/sounds/161315/>

Spline modified from:

<https://assetstore.unity.com/packages/tools/modeling/splinemesh-104989>

CREDITS

GDD Template design by Alec Markarian and Benjamin Stanley