

TULIP GAMES



Grid-Gro Tower Defense

Game Design Document

Version #1.0

All work Copyright © 2021 by Tulip Games.
All rights reserved.

Chris Tulip

September 2021

Table of Contents

I.	-----Version History-----
II.	-----Game Overview-----
III.	-----Gameplay Mechanics-----
IV.	-----Camera-----
V.	-----Controls-----
VI.	-----Interface Sketches-----
VII.	-----Menu and Screen Descriptions-----
VIII.	-----Enemies-----
IX.	-----Turrets-----
X.	-----Scoring-----
XI.	-----Sound Index-----
XII.	-----Art / Multimedia Index-----

Version History

Version 0.2 : Got links to art and sound Assets.

Version 0.5 : Worked on sections 1-4.

Version 0.7 : Worked on sections 5-8.

Version 1.0 : Finished rest of document.

I. Game Overview

Grid-Gro Tower Defense is a tower defense where the player is able to form their own maze on the grid. Build towers to defeat the enemies before they reach the end of your maze. Enemies will continually spawn and the amount and strength of the enemies will steadily increase over the course of the game until defeat.

II. Game Play Mechanics

Grid: The full grid is broken up into chunks where the player only has access to one chunk in the beginning but they can buy more chunks within the game. The player can make a path through the grid that the enemies will follow until they reach the end of that path. If an enemy reaches the end of the path the player loses a life.

Lives: The player starts with 3 lives and loses a life per enemy that reaches the end of the path. The player will also slowly regenerate lives over time.

Towers: The player can buy towers and place them on non-path tiles to attempt to stop the enemies from reaching the end of the path. Efficient maze planning and tower positions is the key to having a long run.

Resources: The player will have access to a few resources that are dropped from enemies when they are killed. Gold, being the most common resource, is dropped from all enemies and is used to build new towers or buy new chunks of the grid. Iron is dropped from armored enemies and is used to upgrade towers to rank 2. Steel is dropped from tank enemies and is used to upgrade towers to rank 3.

Enemies: Will follow the path to the end. If they make it to the end they will take 1 life from the player. There are a few different enemies and they will spawn consistently over the course of the game. The enemies also get stronger and spawn faster as the game time goes on.

III. Camera

2D camera facing straight on at the scene. Camera can move and zoom out but is clamped by the bounds of the grid.

IV. Controls

Touch Controls:

Tap: Does most “select” commands. Interacts with UI and can place buildings and interact with the grid.

Drag: Scrolls the camera.

Hold and Drag: Zooms camera out.

V. Interface Sketch

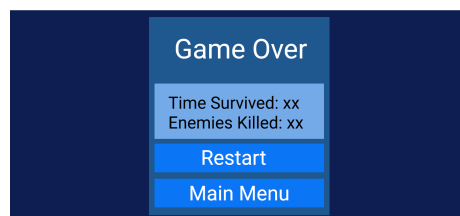
<https://www.figma.com/file/jQIDmj6eLET7feMxpgG1M1/Grid-Gro-Tower-Defense-UI-and-Menu-Mock-ups?node-id=0%3A1>



Main Menu Screen



Gameplay UI



End Screen

VI. Menu and Screen Descriptions

Main Menu

The main menu will have 3 buttons on it. A play button that brings the user to the gameplay scene, an instructions button that will display a screen that gives the player the basics to the game and a quit button.

Gameplay Screen

The gameplay screen will have a couple of UI assets that the user can interact with along with a few game objects. The buttons in the bottom left will allow the player to do the commands listed (add or subtract to the path/ buy grid chunks / access tower menu). When the tower button is pressed, the tower build menu opens up with the selection of towers available. This tower panel is hidden until the player wants to access it.

If the player selects a grid tile that has a turret occupying it, it will give more information in the details panel (bottom right) such as Object name, various stats, upgrade rank and kills.

The resource bar at the top left will show the various resources the player gains from killing enemies. These resources are gold, iron, and steel.

End Screen

The end screen will activate when the player loses their lives. It will display game stats such as amount of time lived and total enemies killed. It will have 2 buttons that will either start a new round or take you back to the main menu.

VII. Enemies



Basic Enemy: Medium HP. Medium move speed.



Armored Enemy: Medium HP. Armored. Slow move speed.



Fast Enemy: Low HP. Fast move speed.



Tank Enemy: High HP. Armored. Medium move speed

VIII. Turrets



Basic Turret: Medium damage, Medium attack speed, Medium range,
Cheap cost.



Fast Turret: Low Damage, Fast attack speed, Medium-low range,
Medium cost.



AOE Turret: Medium damage, Slow attack speed, Low range, AOE around turret, Medium cost.



Missile Turret: High damage, Slow attack speed, High range, AOE projectile, High cost.

IX. Scoring

There is no “Score” that is being tracked but players can challenge themselves by seeing how many kills they can get in 5 minute mode and can see how long they last in unlimited. Time survived and total kills are tracked and are displayed at the end of the game.

X. Sound Index

<https://opengameart.org/content/through-space>

<https://opengameart.org/content/and-then-we-left>

<https://opengameart.org/content/51-ui-sound-effects-buttons-switches-and-clicks>

<https://opengameart.org/content/chaingun-pistol-rifle-shotgun-shots>

<https://opengameart.org/content/11-male-human-paindeath-sounds>

<https://opengameart.org/content/background-space-track>

XI. Art / Multimedia Index

<https://www.kenney.nl/assets/tower-defense-top-down>

<https://wenrexa.itch.io/ui-different01>

<https://opengameart.org/content/various-stones-and-oregem-veins-16x16>

<https://opengameart.org/content/heart-pixel-art>