

Game Design Document: Botline Blitz

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Introduction

This is a Game Design Document for the Pirate Software Jam 16, created to act as a bible and a reference point for the development of the game, Botline Blitz. The theme of this game jam is "You are the weapon" which was incorporated into the game through the premise of the game. This game is created on Godot 4.3.

The game is a typical tower defence game with a twist. Whilst the general set up of a tower defence game is the same (waves of enemies, placing down turrets along a predetermined path). When the wave starts the player will jump into the point of view of a tower. They will manually attack the enemies and jump between any towers on the board as the enemies progress along the path.

Inspirations:

- Bloons TD

Bloons Tower Defence helped us visualise design concepts like enemies, towers, level design and UI .



Platform

This game is intended to be playable on PC and as a browser game.

Genre

This game is part of the Tower Defence, Singleplayer and Strategy genre.

Target Audience

The target audience is aimed towards players who enjoy the tower defence genre and strategy games.

Gameplay Overview

The player takes control of SOS, an AI who oversees a complex turret system. SOS aims to protect a friend at the end of the path from aggressive robots coming in waves to destroy said friend using the turret system. The game begins with the player placing down turrets in predetermined locations using Scrap-Bolts, an electric resource used to power/boost the turrets between enemy waves.

When the player feels ready to take on the wave of robots, they can start the first wave where robots would follow the path. However, when the wave starts instead of a top-down point of view of typical pov, (POV) the player is then transported to the first tower along the path within a first person POV.

In this POV the player will have to manually attack the waves of robots by shooting them down. Additionally if there are more than one turret on the map, the player can switch between the turrets in case the enemies get out of range of the current turret.

Win Conditions

- Surviving the current wave with the giant robotic friend intact.
- Defeating all of the enemies of the wave.

Lose Condition

- Enemies reach the end of the path too many times, resulting in the health of the robotic friend reaching zero.

Mechanics

This section will go over the typical tower defence mechanics before it delves into the major differences that make the game unique.

Tower Placement

Before a wave of enemies/ in between enemy waves, players can place towers aka turrets down on a map via a top down view. The places where the player can place the towers will be predetermined slots along the path in order for the player to get all the visual angles needed when the POV becomes a first person view of the turrets.

Additionally, in between each round, turrets can be destroyed and replaced in a different slot where a previous turret was occupying it. The cost for placing turrets down, destroying them, or moving them to a new location requires Scrap-Bolts, a resource used to supply the turrets.

Tower Upgrades

Before a wave of enemies/ in between enemy waves, players can upgrade the turrets currently on the map using Scrap Bolts between each round of combat. There are three upgrades that can affect each tower, and each upgrade has three levels (1-3). As the level increases with numbers, the efficiency of the upgrade improves. The upgrades only improve the stats of the tower.

Firing Rate: The rate of which the towers shoot their projectiles onto the enemy.

Turn Rate: The rate of how fast a tower would rotate.

Rotation Space: How far a turret can rotate before they reach a limit, starting from Level 1) 90 degrees, Level 2) 180, to Level 3) 360 or 270.

Health

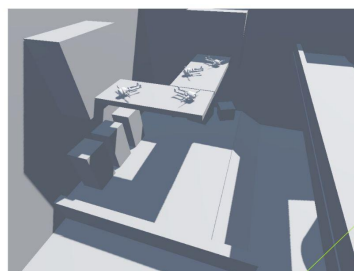
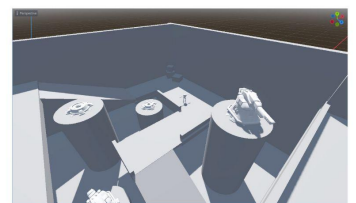
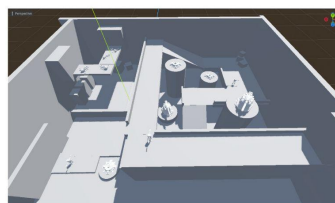
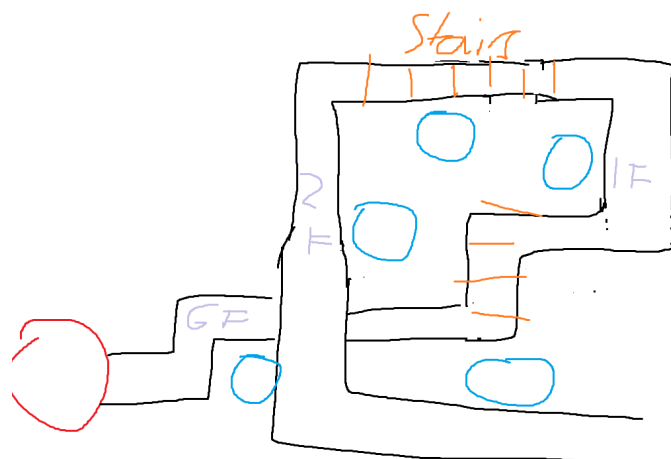
In order to win an enemy wave the player needs to ensure that they survive the wave with the health of the giant robot intact. The giant robot will have **10 Health**. Each time a robot reaches the end of the path, the robot loses one health. The game ends in a lose condition if the robot has 0 health left.

Resources

The main resource to the game is Scrap Bolts, an electric resource that can power up and boost the turret system. This resource can be used to place down turrets, upgrade turrets and replace turrets. This resource can be collected on the death of the enemy robots, with the different types of robot offering a different amount of resources. For example a basic robot would give 10 scraps bolts, whereas a strong robot would give 20 scraps-bolt.

Level Design

The original pathing that the enemies followed in the initial premise was a simple S-shaped path. However, the 3D elements of the game along with the first person point of view can include allowed elements of verticality. As a result we wanted to include that in our level design, with different floor heights and allowing the player to shoot up and down as well as side to side.



Unique Game Mechanics

This section details all of the unique game mechanics unique to this game, despite being typical tower defence mechanics.

Turrets Overview

The turrets are guns that the AI, SOS, uses to protect the path. There are three turrets used for the game, one for single attack combat, another for AOE damage and the third and final one as a support/damage over time turret. When a wave starts, the player will choose a turret and use that turret to destroy the enemies coming along the path. The player can also jump between turrets already on the field during the wave.

Turret Shooting:

When the player is in the turret, in order to shoot the projectiles for the different turret, the player needs to shoot down the robots within their vision, or shoot the ground within their vision. The former is used primarily for the laser and rocket turrets. Aiming towards the path is used primarily for the support turret. To help with the aiming, a crosshair UI will be provided to help the players.

Jumping Between Towers:

If there are more than one turret on the map, the player can switch between each tower during an enemy wave. One method would be clicking on the turret icon, labelled for each turret place that appears in the HUD during the combat. Another method would be a possible keybinding the turret places via numbers, similar to the quick-keybinding for the inventory in stardew valley.

Turret One: Lasers

Laser Turret:

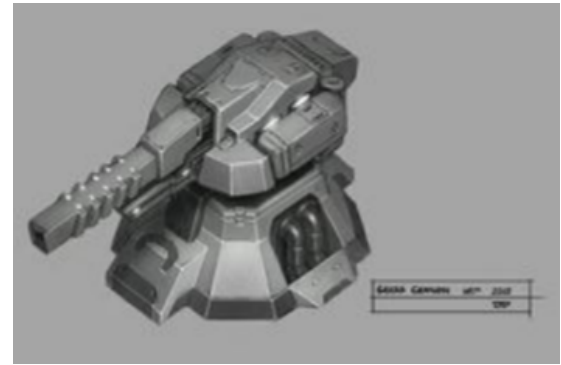
- One-hit Kill towards basic enemy
- First/only turret available when starting a new game.
- Fast firing rate (even before upgrades)
- Unlimited Ammo
- When fighting strong enemies and above, the turret needs to hit them multiple times to kill them.
- Shoots out lasers, starts with one laser per click.
- Strong against Basic Enemies
- Weak/neutral against everything else.



Turret Two: Rocket Launcher

Rocket Turret:

- Shoots out rockets that do strong damage + AOE damage.
- Second turret available after the first wave when starting a new game.
- Slow firing rate, at least slower than the Laser Turret.
- Also unlimited ammo
- Can One-shot kill, strong enemy and basic enemy



Turret Three: Support Turret

Support Turret:

- Shoots out electric webs that slows down the enemy waves and does damage over time.
- There can only be MAX 5 puddles along the path.
- Puddles will disappear from the earliest iteration if there are more than 5 puddles on the path.
- Puddles will disappear automatically after a set amount of time.
- Turret has an average speed rate compared to the other two turrets.



Enemies

The enemy of the game is a group of robots sent to destroy the giant robot friend at the end of the path. These enemies will appear along the path with groups. It will start out in small numbers and with basic robots but as the game progresses there will be stronger and more varied enemies.

Enemy Waves

All of the enemies appear from one source point on the path, there are no additional openings for the enemy to come from. Each wave has a predetermined amount of enemies to help slowly build the player's proficiency in the mechanics. **All enemies have two stats, speed and health.**

Whenever an enemy dies, they will drop Scrap-Bolt resources, if any enemy reaches the end of the path then the health goes down per enemy. Aka one basic enemy passing and a strong enemy passing take away the same number of health, one. Typically the waves past the first few waves at the start of each round should last between 30 seconds to one minute of gameplay.

Enemy Types

Basic Enemy

- First appears in early waves, and appears in large groups to overwhelm the player in harder waves
- Stats: 1 health, 4 speed (Fastest compared to the rest of the units)
- One-shot kill from any turret unless their health was increased by the shield enemy.
- When killed, drops 10 Scrap Bolts

Strong Enemy

- First appears in early waves as a step up from basic enemies
- Stats: 3 health, 3 speed (slightly slower than basic enemy)
- Multi-hit to kill from Laser Turret and Support Turret
- One shot kill from Rocket Launcher
- When killed drops 20 Scrap Bolts

Speed Booster Enemy

- First appears in the middle of the waves, gearing for the end of the game.
- Stats: 5 health, 2 speed.
- Multi-hit to kill from all turrets
- When Strong Enemy passes them (ie collision boxes collide), it triggers the support and the Speed Boost enemy gives temp speed boost to match Basic Enemy's speed.
- Temp Speed boost automatically goes away after 1 second.
- Speed Booster Enemy can only speed boost the first 5 strong enemy that passes before it's in a 5 second cool down.
- When killed drops 30 Scrap Bolts

Shield Enemy

- First appear in the middle, near the end of the game.
- Stats: 5 health, 2 speed.
- Multi-hit to kill from all turrets.
- When Basic enemy passes them (ie collision boxes collide), it triggers the shield enemy's ability and gives basic enemy a +2 to health as a shield, giving it the same health as a Strong enemy.
- Shield Enemy can give a shield to the first 5 basic enemies that passes them before it is in a 5 second cool down.
- When killed drops 30 Scrap Bolts

Wave Design

Waves	Enemies	Total Scrap-Bolts	Notes
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ONE	15 Basic Enemy	150 ScrapBolts	Note: At the VERY START of the game you get 150 scrap, when buying the laser they have 50 scraps. At the end of the round the player should have 200 scrap, this can lead to 3 Lasers, 1 Rocket Launcher or 1 Upgrade.
TWO	30 Basic Enemy	300 scrap bolt	
THREE	10 Basic Enemy 10 Strong Enemy	300 Scrap Bolt	
FOUR	20 Strong Enemy 10 basic enemy	500 Scrap Bolts	
FIVE	21 Strong enemy 5 Speed Booster enemy	570 Scrap	At the start of the wave, a speed booster goes first, then within 0.5 seconds later, then drop 1 strong enemy so that the player sees the relationship. Then after 3 seconds, drop the rest of the enemies
SIX	25 Strong Enemy 5 Speed Booster 20 Basic Enemy	850 Scrap Bolts	
SEVEN	30 basic Enemy 6 Shield Enemy	480 Scrap Bolts	At the start of the wave, drop a shield enemy, then within 0.5 second drop 5 basic enemies so that the player can see what the relationship is like, then continue the rest of the pattern.
EIGHT	30 basic enemy 5 shield enemy 10 Strong enemy	650 Scraps Bolts	
NINE	20 Basic enemy 5 Shield Enemy 20 strong enemy 5 Speed Booster enemy	900 Scraps Bolts	
TEN	30 Basic Enemy 5 Shield Enemy 30 Strong Enemy 5 Speed Booster Enemy	1,200 Scrap Bolts	Should the player complete this wave with some health intact, they win the game.

Economy

The main resource for this game is Scrap-Bolts, a resource that is used for buying, destroying and upgrading different turrets. Scrap Bolts can be obtained from killing different enemies and can be used in between each round.

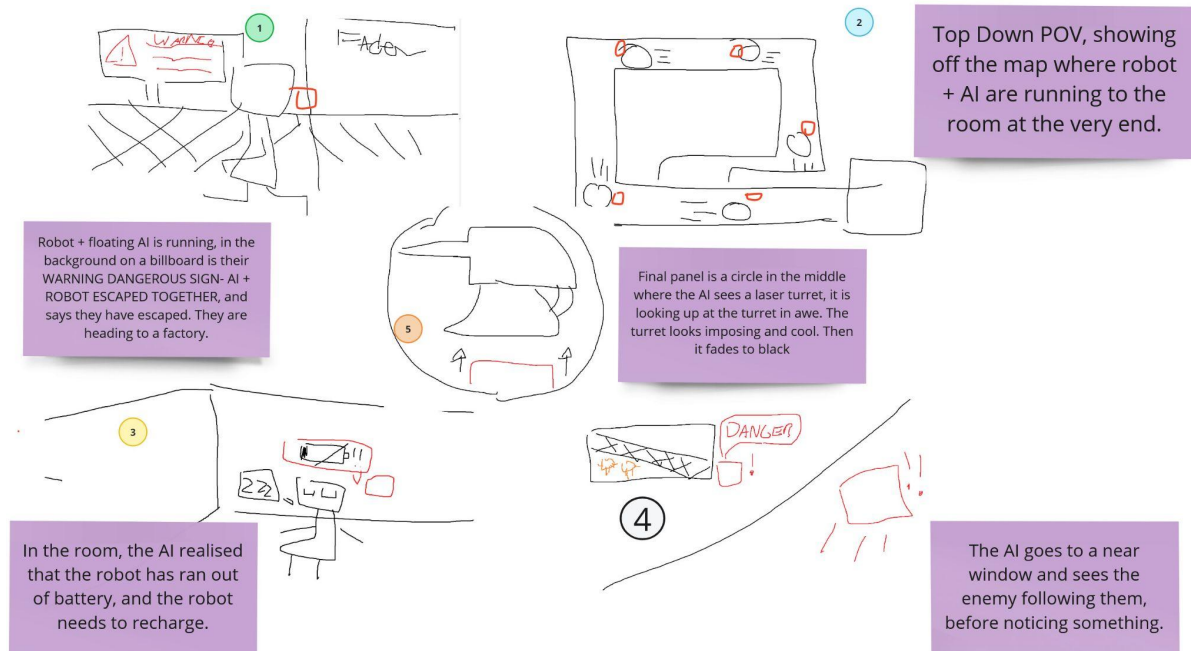
Item Name	Item Description	Cost (In ScrapBolts)
Laser Turret	A turret that shoots lasers. Kills robots one laser at a time—unless it's a big one.	100
Rocket Launcher Turret	A turret that shoots rockets at robots, damaging its nearby friends. Packs enough of a punch to take out one of the big ones.	200
Support Turret	A turret that shoots out an electric web, strong enough to slow any robots and damages them at the same time.	500
Remove Turret Services	Remove a turret from the location. Warning: Will remove allocated upgrades too.	100
Firing Rate Upgrade	Increases firing rate for a turret.	Level 1: 100 Level 2: 150 Level 3: 200
Rotation Speed Upgrade	Increases how fast a turret can rotate from left to right, up to down.	Level 1: 100 Level 2: 150 Level 3: 200
Turn Length Upgrade	Increases how far the player can rotate. From 90 degrees all the way to 360.	Level 1: 100 Level 2: 150 Level 3: 200

Story

The story begins with a massive robot heading to an abandoned robotic factory. The robot is low on energy and is visibly tired. Part of the giant robot is an AI known as SOS, Security Operations SuperComputer, who has aided and helped the robot escape. SOS becomes connected to the old factory security system. The security system is broken and as a result, SOS needs to manually connect with the turret for it to work. Just in time for the robot pursuers to find them hiding it out in said abandoned factory.

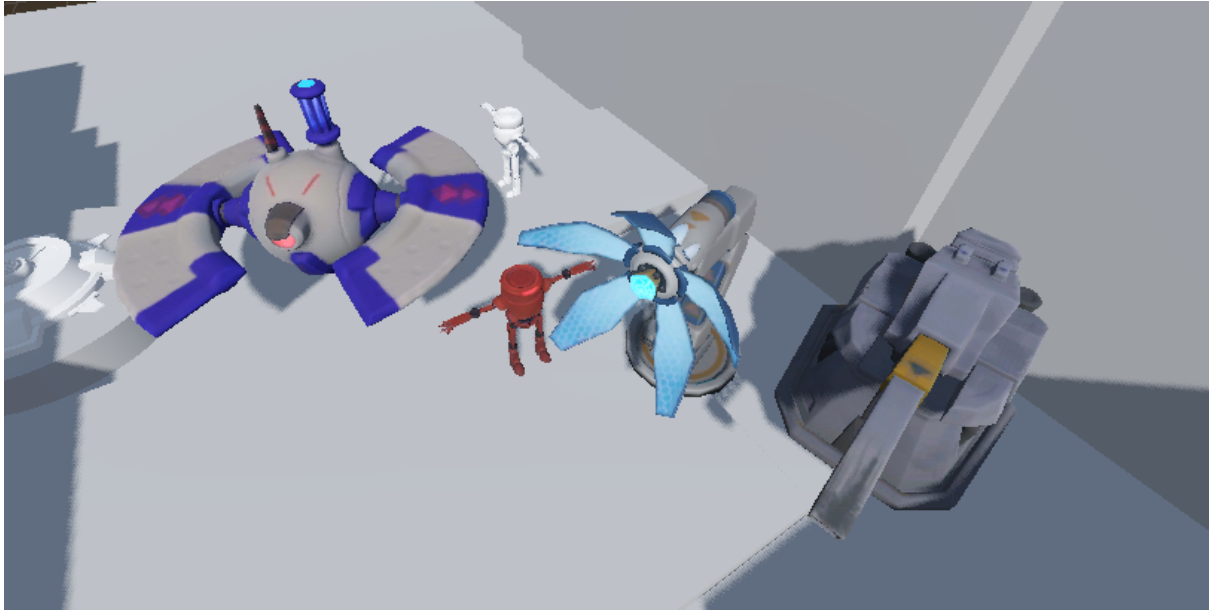
Intro Cutscene

The execution of the story will happen when the player starts a new game. Instead of loading directly into the gameplay, it will play a short intro cutscene that explains the story without any use of dialogue or pictures.



Art

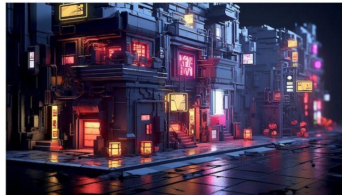
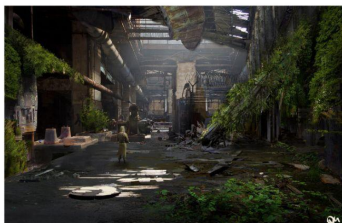
The game was designed to be in 3D to allow the player to get the full experience of being the turret, aligning itself to the theme "You are the Weapon." Considering the time restraints and the workload on the singular 3D artist of the team, we made use of their 3D strengths which were stylized low-poly models. As the idea and basic story evolved, we began looking towards sci-fi, cyberpunk and robots/mechs as inspiration for everything, from models to the environment.



(What the models looked like in the engine).

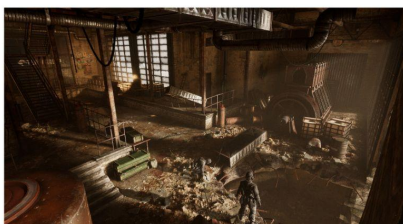
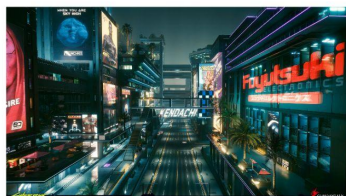
Environment Art

As mentioned we looked at sci-fi and cyberpunk media as inspiration for the setting. The story was already established along with the level design. The environment, like most tower defence games, was primarily for set-dressing so we focused on constraints of the story and the level design. What we discovered was the idea of an abandoned robots factory in a sci-fi world.



Vibes??
Ruined/Abandoned Factory
Ruined Warehouse?
Cyberpunk?

**Ruined sci-fi factory,
with cyberpunk vibes**



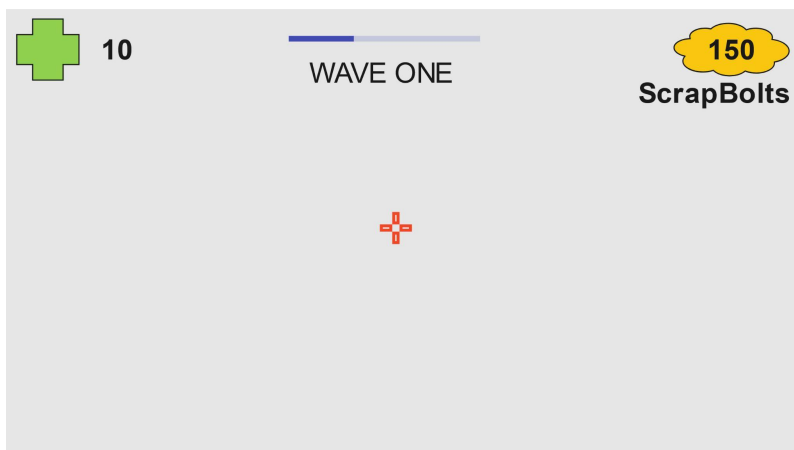
Audio

The soundtrack was created on Logic Pro, we took inspiration from Cyberpunk 2077 and other sci-fi games and used synths to create that familiar vibe/feel. The sound effects were also created on Logic Pro. We took inspiration from other tower defence games for example, at the start of the wave when the robots come in, an audio file plays that sends a message “We are Here”, a direct reference from how in Plants vs Zombies when the Zombies appear with an audio message “The zombies...are coming.”

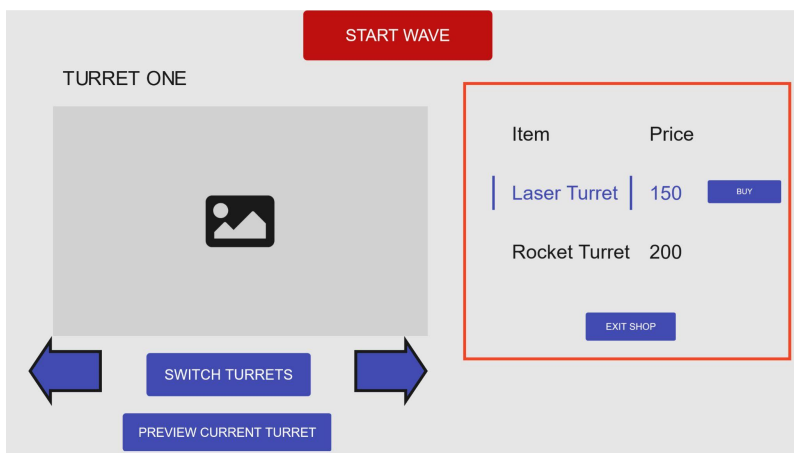
Game Experience

UI

There are two elements of the user interface that were to be considered when developing the game. The combat portion, and the base building portion. In Miro we created a wireframe of what these portions would look like for each, taking inspiration from tower defence games and shooters.



This is a wireframe of what the UI during combat could look like.



This is a wireframe of what the building phase in between waves looked like.

Controls

Controls	Description
Mouse	Move the mouse to look around during combat and build things in between waves.
Left Click	Shoots out projectiles from the turrets during combat, select things during build phase in between waves.
WASD	Rotates the turret in accordance to the direction (W is up, S is down, A is left, D is right)
1,2,3,4,5	Shortcut method from swapping from different turret locations.