

# Cyber Defender

By Plane Gaming



Design Document Version 1.2

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## Version History

### Version 1.0 - October 31, 2020

#### Change Log

Initial document for game pitch.

### Version 1.1 - November 9, 2020

#### Change Log

Added project execute description and picture.

Updated story and world/ambience.

Added enemy art.

### Version 1.2 - November 16, 2020

#### Change Log

Added Items, values, images, descriptions.

Added Enemies, descriptions, images, stats.

Updated Player, images, stats

Added UI and Art, main menu, game over, UI, items

Updated Music and Sound

Added Asset Credits

# Overview

## Game Logline

In the distant future, you are a Cybersecurity Mercenary hired by a large corporation to combat the rampant malware that has targeted the system.

## Genre

Theme: Sci-fi, Cyberpunk

Game Type: Top down shooter

## Objective

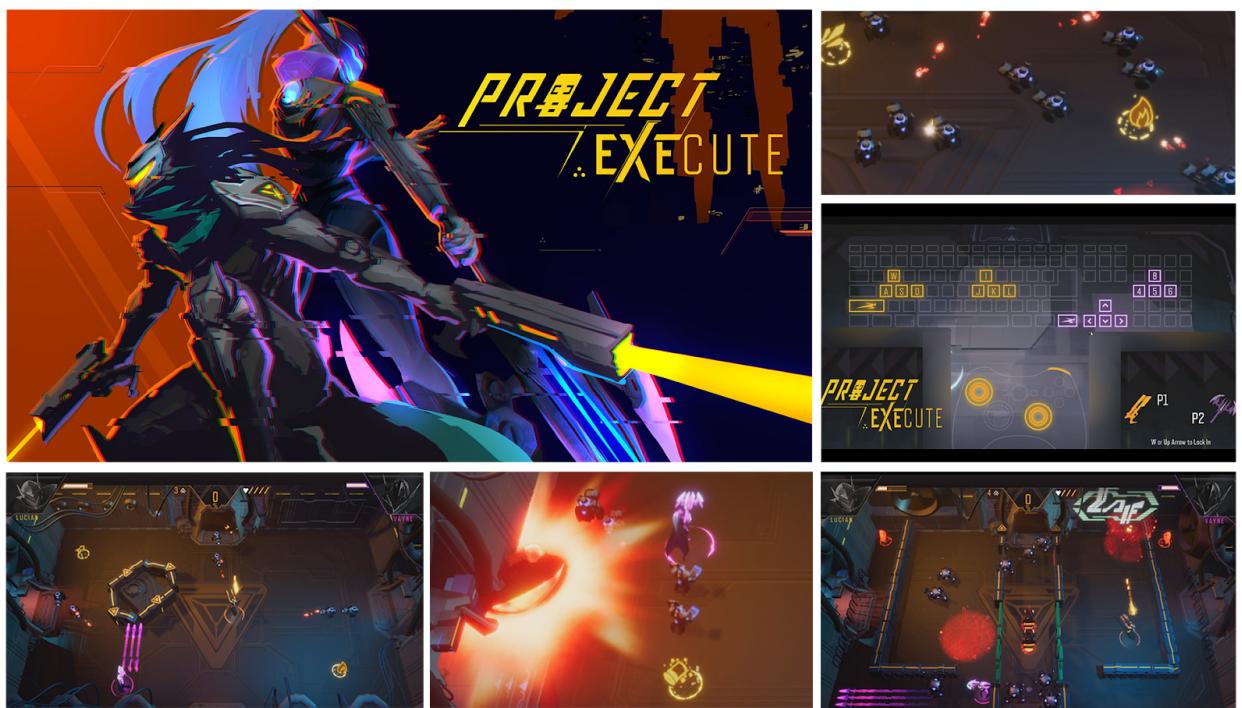
The player must enter their virtual avatar and defend the contracted company's systems by destroying the attacking viruses while keeping their virtual avatar from being destroyed.

## Platform

PC - Windows, WebGL

## Similar Games

Project Execute



- Project execute is a top down co-op shooter where players fight through waves of enemies, although there isn't much information on the game currently we are taking inspiration from its art style for our game..

## Risk of Rain 2



- Risk of Rain 2 is a rogue lite 3rd person shooter that becomes more difficult the longer you play, With its multitude of items players find their base character increase in power over the course of the run. While items are random strategy is present within the game allowing players to modify characters to better suit their playstyle. Travelling from level to level defeating hordes of monsters and bosses Risk of Rain 2 provides a satisfying gameplay experience that rewards players for their game knowledge and foresight.

## Enter the Gungeon



- Enter the Gungeon is a rogue lite bullet hell dungeon crawler. With 4 heros to choose from and 2 to unlock, players explore the ever changing walls of the gungeon in an effort to kill the past. As you descend floor by floor you are faced with wave upon wave of the gundead arming yourself with guns and weapons that range from the realistic to the ridiculous. As you dodge and weave between bullets and shoot your own, skilled players are rewarded with items that make them stronger and closer to killing the past that brought them there.

## Audience

This game is targeted towards individuals who enjoy games whose main challenges are reaction based, with a side focus on item mechanics and character builds.

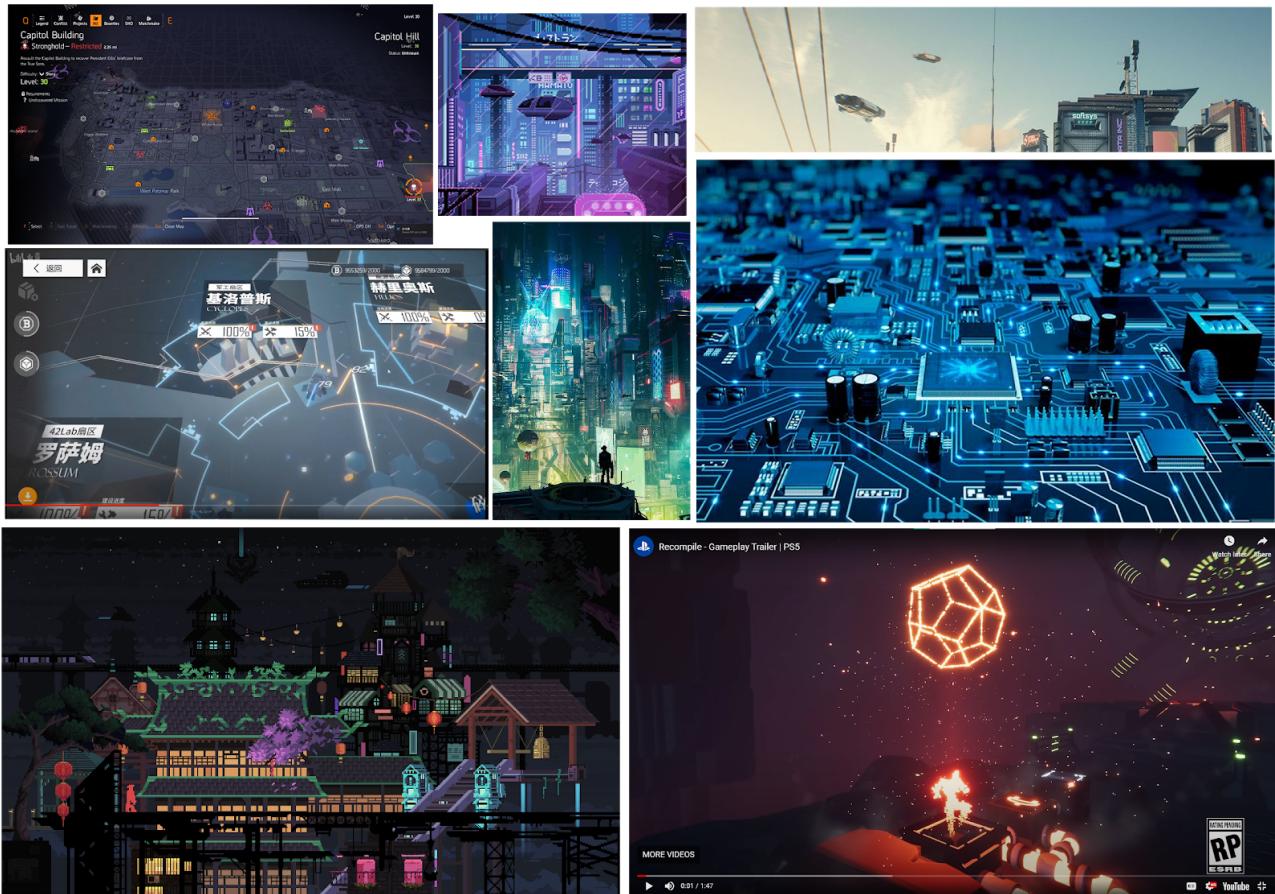
## Player Goals

- Players will notice the mechanics from the enemies, hero, and items at a glance.
- Players will be encouraged to improve as they continue to play and understand what enemies can do.
- Players will want to play the game again to improve their score or try out different item builds.

# Game World

## World and Ambience

The game world takes place in company Z's computer system, where the player is a cyber security mercenary attempting to protect the system from malicious cyber attacks. The level and world design is centered around a sci-fi and cyberpunk techno theme, with inspiration from retro games and pixel games.

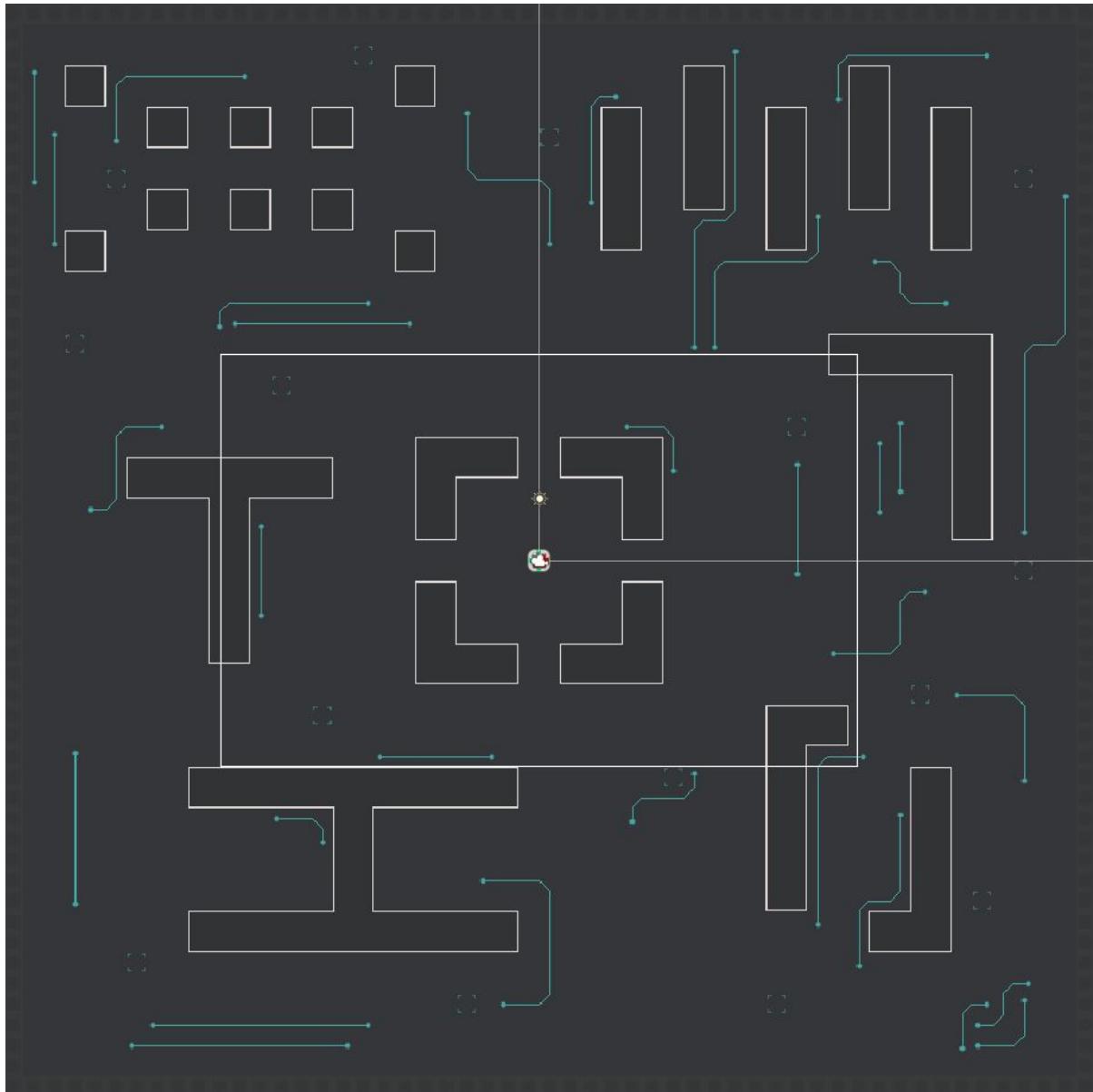


World and ambience mood board - Bottom left art by reddit user IgglePiggle69420

## Level Design

This is a current implementation for the level design and world ambience as of version 1.2 of the design document.

The objects surrounded by white outlines represent walls and the entirety of the level is surrounded by a layer of walls. The blue lines and the dark gray background are based off of the mood board theme.



## Gameplay

### Description

The Player controls the Hero who is a contracted cyber defender, their task is to defeat the five waves of cyber attacks that are trying to infiltrate company Z's systems. The player must defeat individual viruses which have a chance of dropping random upgrades in order to empower their character with the ability to last through all of the attacks.

## Controls

The player will control the hero, which is the contractor's virtual avatar, with their keyboard. The controls will be designed to be intuitive to new players so that they can navigate through the 2D space with ease.

### Player

- 'W' - Move Up
- 'A' - Move Left
- 'S' - Move Down
- 'D' - Move Right
- 'Primary-Mouse-Click' - Fire Weapon
- 'Shift' - Combat Dash

## Levels

Definitions:

- Floor: The level the player is on
- Room: A section/area within a level
- Wave: A group of enemies that will spawn inside a room

## Objectives

The object of the game is for the player's virtual avatar to survive through the entirety of the five rounds and destroy the boss virus in round five. Once the player destroys the boss, they successfully defend the company's systems from the malicious cyber attack.

## Difficulty Settings

The game will have one difficulty mode that will continuously increase over the course of the game as the rounds progress.

# Game Characters

## Hero

### Description

The Hero character is controlled by the player, the Hero mechanics and controls focus on the ability to move and output high amounts of damage while moving. While powerful, the hero is relatively weak in terms of their health points and will be destroyed from a small number of attacks, so the player must focus on optimizing damage output and dodging attacks.

Hero Image



[PLACE HOLDERS]

Hero Bolt Image



Hero Crosshair Image



## Stats

The player has 5 health on spawn when the player is hit by an enemy ability, it will lose a corresponding amount of health. When the player's health reaches 0 the game is over.

The player can click to fire bolts that deal 1 damage each bolt to all enemy types, the rate at which the player can fire bolts is one shot every 0.5 seconds.

The player can use their dash ability to move 40 units in a given direction (1-2 player body lengths), the dash has a starting cooldown of 2.5 seconds.

## Melee Enemy

### Description

- The Melee Enemy will patrol around the level and once the player enters its range it then proceeds to inch closer to the player, once the player enters range it will deal damage to the player. Melee enemies will have a decent amount of health needing 3 attacks to be deleted.

## Basic Enemy Image



### Stats

The Melee enemy deals 1 damage every second that the player is in range until it is either destroyed or out of range.

The Melee enemy has 3 health and will change colors on hit, it will be destroyed when its HP reaches 0.

## Ranged Enemy

### Description

- The Ranged Enemy will likewise patrol around the level and once the player enters its range it then proceeds to inch closer to the player while also hurling projectiles. Ranged enemies will have a decent amount of health needing 3 attacks to be deleted.

### Ranged Enemy Image



## Ranged Enemy Bolt Image



### Stats

The Ranged Enemy shoots a bolt towards the player's transform, dealing 1 damage to the player on hit. The rate at which the bolts are spawned are 1 bolt every second.

The Ranged Enemy has 3 health it will be destroyed when its HP reaches 0.

## Trojan Enemy

### Description

The Trojan Enemy is a speedy enemy. The fastest of all the enemies, it zips around the stage. Once the player enters the Trojans range the Trojan will turn slightly invisible and begin to go straight towards the player. Once the Trojan has come close it will activate an explosion ability that harms both the player and surrounding enemies. Due to the Trojans speed and destructive capabilities its health will be the smallest of all the enemies taking only 1 or 2 attacks to be deleted.

### Trojan Enemy Image



The Trojan enemy explodes for 1 damage to any entity in range (player + enemies).

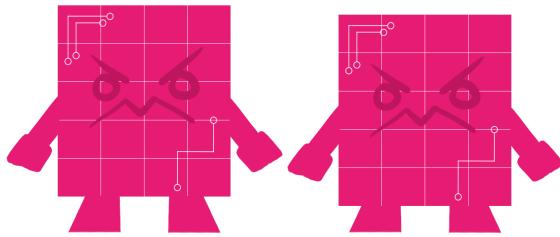
The Trojan enemy has 1 health, it will be destroyed and explode when its HP reaches 0.

## Brute.EXE Enemy

### Description

The Brute Enemy is the tank of all the enemies. It lumbers around the stage slowly. Once the player enters the Brutes range the brute will slowly make its way towards the player and once close enough deals a devastating melee area of effect attack causing the player to be knocked back with its incredible force. The Brute while slow will take around 5-8 shots to be deleted.

## Brute.EXE Image



### Stats

The Brute enemy deals 2 damage and knocks the player back every second that the player is in range until it is either destroyed or out of range.

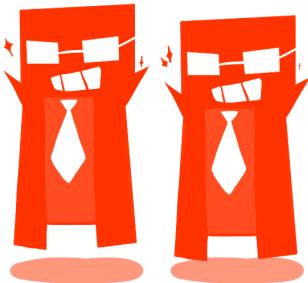
The Brute enemy has 5 health and will change colors on hit, it will be destroyed when its HP reaches 0.

## Adware Enemy

### Description

The Adware Enemy controls the field. As opposed to the other enemies who try to close into the player the Adware will prefer to keep its distance. It patrols like any other enemy but once the player enters its range it will begin to send 3 small window projectiles that increase in size and spread out as they travel. The Adware enemy is a tricky one to fight but while commanding space is deleted with 3 to 4 attacks from the player.

### Adware Enemy Image



### Stats

The Adware enemy shoots 3 bolts that spread and increase in size towards the player's transform, dealing 1 damage to the player on hit. The rate at which the bolts are spawned are 1 bolt every second.

The Adware enemy has 3 health and will change colors on hit, it will be destroyed when its HP reaches 0.

# Game Objects - Items

## Description

When the hero destroys a virus enemy, there is a random chance of that enemy dropping a random item. The hero can pick up the item which acts as a powerup for the hero's stats.

## Inspiration

The item upgrades take inspiration from the popular game Risk of Rain with regard to either giving the hero a new ability or improving an inherent ability that the hero has.



## Attack Up

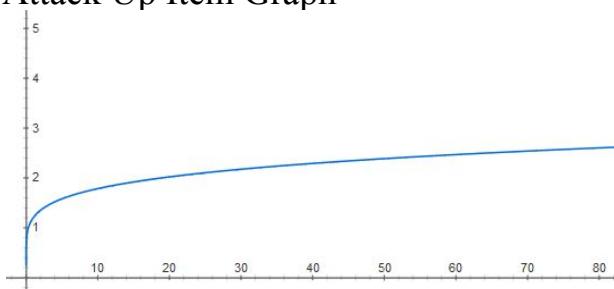
### Description

Increase the damage that the hero's primary ability does.

The formula we are using for increasing the damage of the hero based on the number of items picked up. In the formula below,  $y(x)$  is equal to the total damage per shot and  $x$  is equal to the number of Attack Up items picked up.

**Current Hero Damage Formula:**  $y(x) = 0.2 + x^2$

### Attack Up Item Graph



## Attack Up Image



## Dash Cooldown

### Description

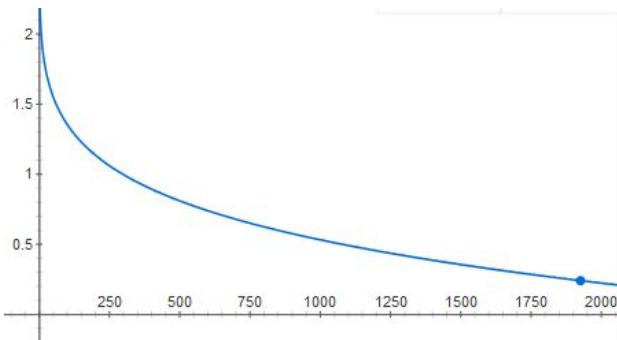
Decrease the cooldown of the hero dash.

The formula we are using for decreasing the cooldown of the hero dash is based on the number of hero dash items picked up.  $g(x)$  is equal to the amount of time taken off of the dash cooldown, where  $x$  is the number of Dash Cooldown items that the player has picked up.  $y(x)$  is equal to the current dash cooldown for the player.

**Cooldown Modifier per item Formula:**  $g(x) = 0.15 + x^{0.15} - 1$

**Calculate current cooldown Formula:**  $y(x) = 2.5 - g(x)$

### Dash Cooldown Graph



### Dash Cooldown Image



## Health Restore

### Description

Restores one point of health for the player.

Health Up restores 1 point of health for the player, if the player has less than full health (5), the item does nothing.

### Health Restore Image



## User Interface and Art

### Mood Board

The mood board gives insight into the general mood and ambience our group is going for with regard to our game.



### User Interface

The User interface for the player mechanics and stats are based on the mood board, the colorization is based on the palette on the mood board.

For Version 1.2 we are using the heart images as a representation of the players health and a blue box as a representation of the player dash.

Image of base UI elements

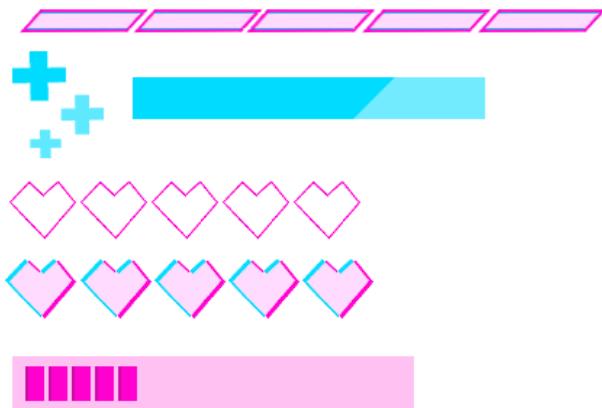
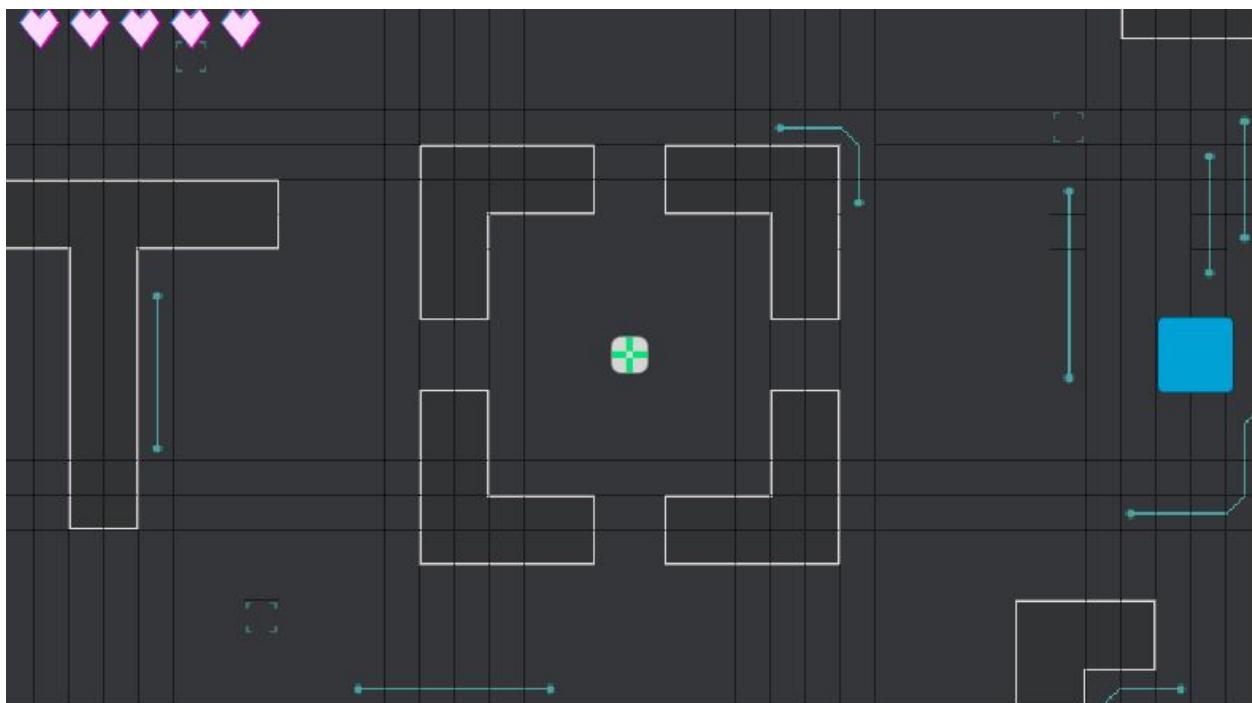
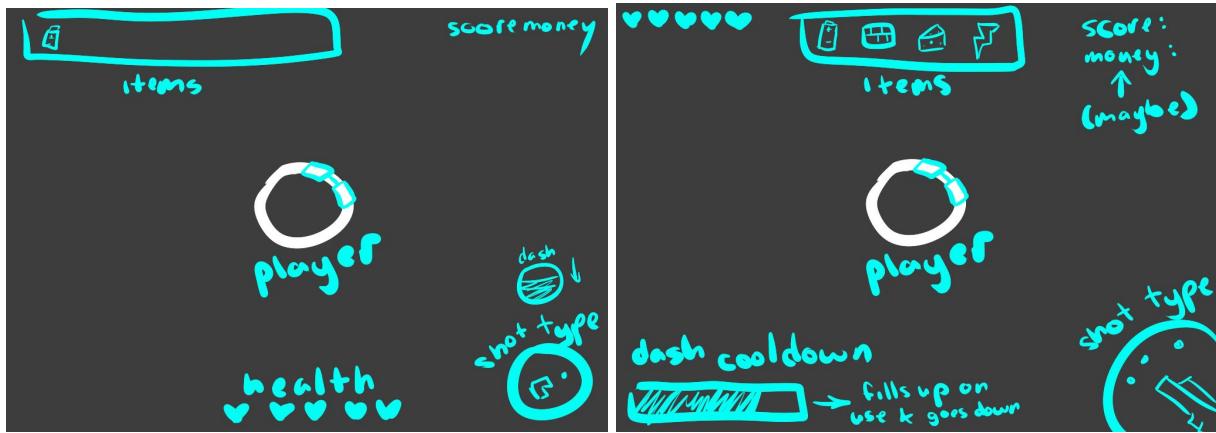


Image of Game Level UI



UI mockups for future implementation:



We will need to decide where to put each piece through testing. Each piece includes health, items, the score (money if we implement that), dash, and shot type.

## Main Menu

The Main Menu UI for version 1.2 is relatively basic, it is themed based on our mood board with buttons to play and exit the game



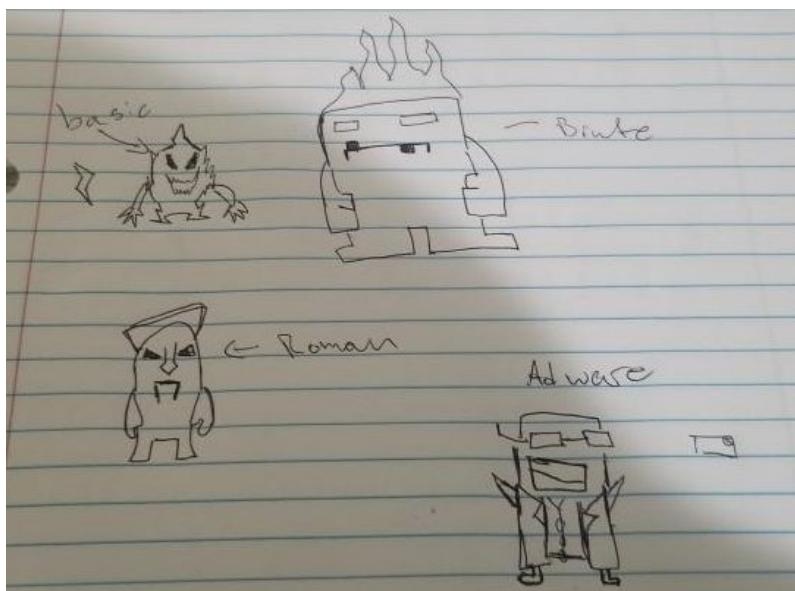
## Game Over

The Game Over UI for version 1.2 is likewise basic but themed based on our mood board, it has buttons for replaying and quitting the game.



## Character Art Prototype

The following image is concept art for how we originally wanted our enemies to look, the basic being a representation of both the basic ranged and melee enemies.



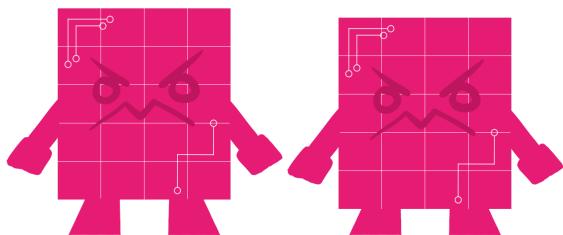
Basic Enemy Art



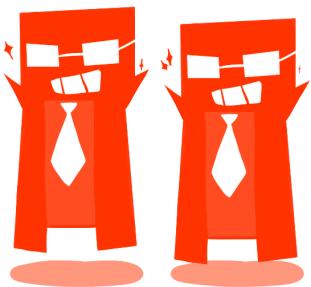
Trojan Enemy Art



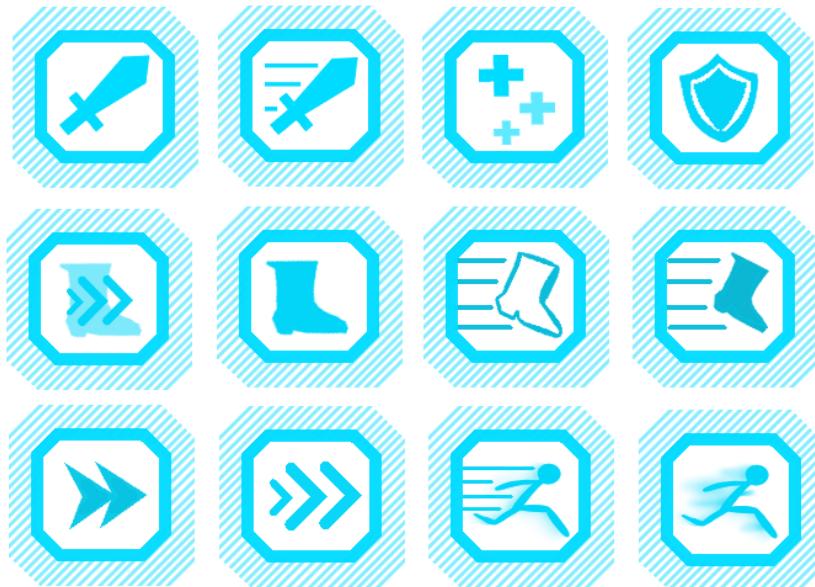
Brute.EXE Art



Adware Enemy Art



## Item Art



## Music and Sound

### Background Music

There will be one song playing in the background throughout the menu system of the game, which is still to be determined.

The background music for the gameplay is Street Love from Rizwan Ashraf, this music plays and persists throughout the entirety of the gameplay state of the game.

We have created a `BackgroundMusic` gameobject that does not destroy when switching scenes for easy implementation of background music.

### Sound Effects

There will be multiple sound effects throughout the game, certain sound effects will activate on collisions and some will activate on a key input or event.

- Player Shooting
  - The audio file DM-CGS-41 from Dustyroom plays on player shot.
- Player Dash
  - The audio file DM-CGS-46 from Dustyroom plays on the player dash.
- Damage
- Game Over
- Enemy Destroy
- Enemy Attack

# Animations

## UI

The hero's health represented as a UI element has an idle animation in which the object bobs up and down as the game progresses.

## Hero

The hero will have animations for key abilities utilized in the game. These animations will include:

- Hero Dash
- Hero Movement
- Hero Shoot

## Enemy

Each of the unique enemies will have an animation for attack and move.

### Basic

- Projectile Attack
- Movement

### Trojan

- Increase and decrease alpha
- Explosion Attack
- Movement
  - Faster than basic enemy

### Brute

- Area of effect melee Attack
- Movement
  - Slower than basic enemy

### Adware

- Throw Window Attack
- Movement
  - Same as basic enemy

# Coding Conventions

## Constants

- Constants will be signified by having the letter K in front of the variable name

## Enemy File management

- Enemies will have 3 files
  - 1 for their attack
  - 1 for their FMS behavior
  - 1 for player detection and interaction

#### Items

- Items will be derived from a template Item object and have a number assigned to them
- Player will keep track of the number of items he has

## Schedule

DEADLINE	TASK	TASKMASTER
11/1/2020	<b>Game Pitch / Design Document Version 0.1</b>	
	Mood Board	Alicia
	Character Art Design	Hamza
	Game Design	Group
11/8/2020	<b>Digital Prototype</b>	
	Player Movement / Ability	Bill
	Player Attack	Hans
	Enemy Movement / Behavior	Hamza
	Enemy Player Interactions / Enemy Abilities	Alicia
11/15/2020	<b>Rough Demo</b>	
	Player Behavior	Hans, Alicia
	Enemy State Behavior	Bill, Hamza
	World Behavior	Alicia, Hamza, Bill
	Item Behavior	Hans
	UI	Alicia, Hans
11/22/2020	<b>Alpha Playtest</b>	

	Polish Levels	TBD
	Spawn Design	TBD
	Character Art	TBD
	Enemy Art	TBD
	Item Art	TBD
	World Art	TBD
11/29/2020	<b>Beta Playtest</b>	
	Polish Collisions and Movement	TBD
	Bug Fixes	TBD
	Implement feedback from peers	TBD
11/6/2020	<b>Final Game</b>	
	Extensive Playtesting	TBD
	Implementing Final feedback from peers	TBD
	Bug Fixes	TBD

## Potential Additions

### Bosses

#### Worm (Storm Worm)

- Boss type enemy. Player enters a lone room with a large hole. Worms will pop out to attack the player. Each attack is a heavy strike rendering the worm stunned for 5 seconds in which the player can attack the worm.

#### The Slammer

- Boss Replicates itself after 5 seconds. Initially melee based but after 5 clones are created it subsequent clones gain the ability to hurl projectiles at the player. The base boss will have 100 health and each clone will spawn with 75% of its father's health. The player must try to delete the boss as soon as possible to avoid getting overwhelmed.

#### CryptoLocker

- This boss disables half of the players Items at the beginning of the fight. Its primary method of damaging the player is through a spread of projectiles that cover the arena. As

players damage the boss, they will slowly gain their items back until eventually defeating the boss and reclaiming all of their items.

## Additional Items

### Attack Speed Up

Increase the rate at which the hero's primary ability can be activated.

### Critical Up

Increase the rate at which critical attacks occur for the hero's primary ability.

### Regeneration Up

Increase the rate at which the hero's health is recovered.

### Movement Up

Increase the movement speed of the hero.

### Shield Up

Add a set amount of shielding to the hero, if consecutive shields are added it increases the shield at a lower rate.

## Potential Level System Addition

### Level One

- In level one, only the basic enemy type spawns. This is to give the player a feel for the controls and the basic mechanics of the game.

### Level Two

- In level two, the game starts introducing new enemies, in addition to the Basic enemy spawning, the Trojan enemy spawns. There will be less Trojan enemies as opposed to basic enemies as they are a specialized enemy type.

### Level Three

- In level three, the game continues to spawn both basic enemies and trojan enemies, but additionally adds the Brute enemy. There will continue to be a relatively large number of Basic enemies with a lesser amount of Trojan enemies and even fewer Brute enemies.

### Level Four

- In level four, the game will continue off of the spawns from level three but incorporate the Adware enemy.

### Level Five

- In level five all enemies will spawn together at an increased rate with increased stats, giving a final challenge for the player to overcome in order to protect the computer system.

# Asset Credits

Thaleah\_PixelFont - Tiny Worlds

CasualGameSounds - DustyRoom

Free Music Tracks For Games - Rizwan Ashraf

Attack Jump & Hit Damage Human Sounds - Rocklynn Productions

Ultra Sci-Fi Game Audio Weapons Pack Vol. 1

## References

### Template

- <https://myuwbclasses.github.io/CSS385/FinalProject/DesignDocTemplate.doc>
- Previous UWB CSS385 Game Design Documents

### Project Execute

- <https://www.tiltreport.com/articles/517/you-can-now-download-play-three-new-league-le-gends-minigames>

### ROR2

- <https://riskofrain2.fandom.com/wiki/Items>