

# **Reborn as a Farmer: Defender of the Realm Against Demonic Invasion**

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**Revision:** FINAL

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## Introduction

You are an average American salaryman, working a 9-to-5 job at a large soulless corporation. You are walking back home after working 4 hours of unpaid overtime on a Saturday, not caring too much to look both ways as you cross the street. Suddenly, a truck hurtles towards you at breakneck speed, its blaring horn echoing through the city streets. Before you can react, everything goes black. When you open your eyes, you realize you have been reincarnated as a farmer. Somehow, your life has become worse in this world, as the concept of human rights has not been invented yet. As a poor farmer you are enslaved by the King, and are sent out into the Purgatory™ to fight demons and defend the kingdom.

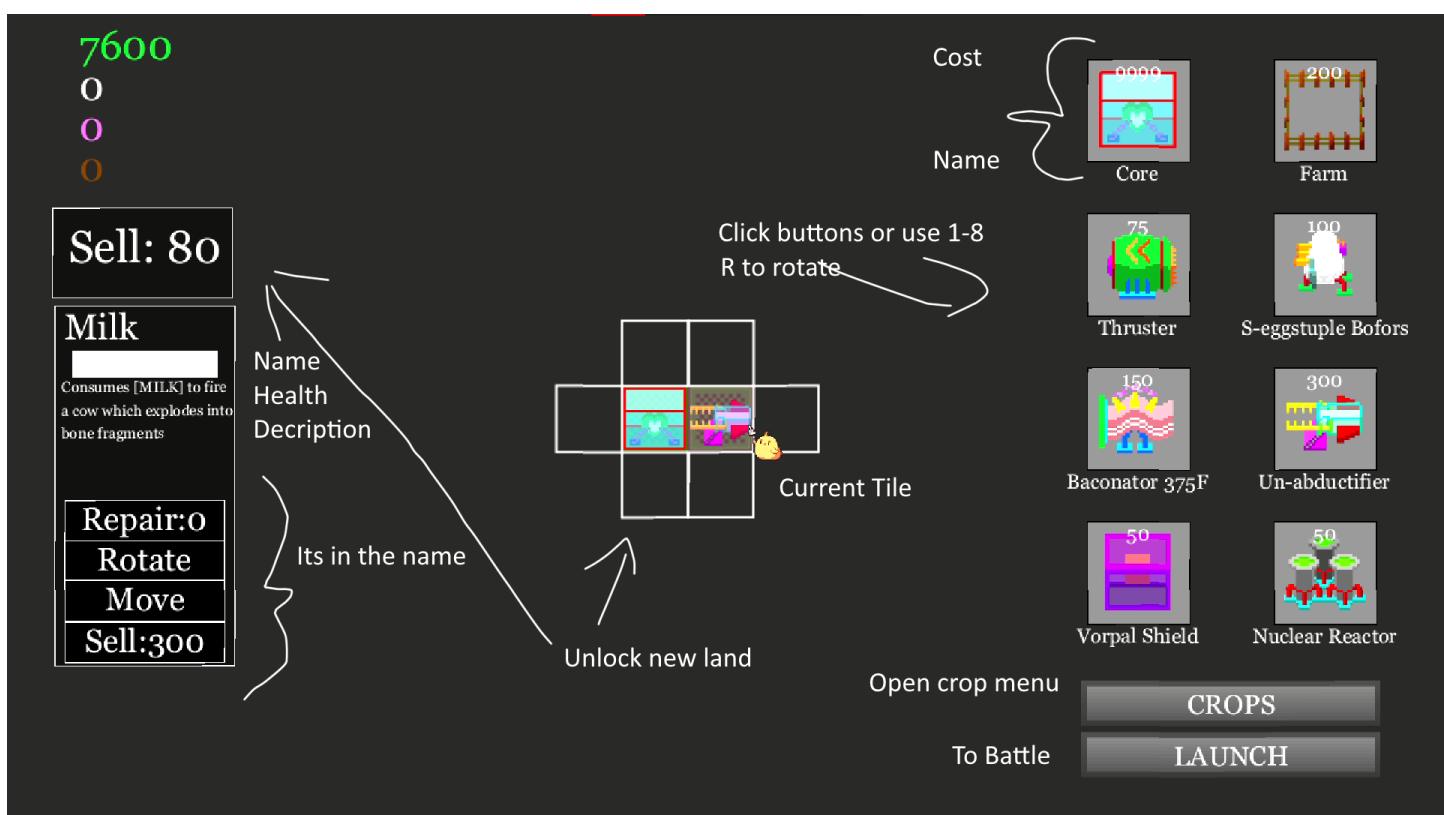
This game is a mixture of tower-defense and 2d shooter games. The player has to not only design a functional ship, but also be able to maneuver it against oncoming enemies.

In the Building phase, the player can expand their ship and repair their towers. They are also able to build new towers, which fall into 3 categories, Offense, Defense, and Utility. Of course, this all requires money, which the player can earn by selling resources their farms generate during the Battle phase. Once the player has completed building, they launch into the Battle phase.

In the Battle phase the player has to survive oncoming enemies while also advancing towards the next Hangar, where they once again enter the Build phase. This will also be a test of if the player's ship design is successful. There is also a timer that the player must pay attention to. 7 angels may evict the player from life if they aren't quick enough. If the player dies during this phase, they are sent to the end screen, where they can either end the game or return to the main menu.

# INSTRUCTIONS

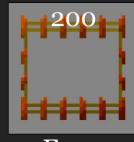
- |                                 |                                     |
|---------------------------------|-------------------------------------|
| [H] - Access Help Screen        | [1-8] - Hotkey Tower                |
| [W] - Forward                   | [M1] - Select Tower                 |
| [A] - Left                      | [MOVE] - Swap tower location        |
| [S] - Backward                  | [SELL] - Sell tower or tile         |
| [D] - Right                     | [R]/[ROTATE] - Change tower version |
| [TAB] - Toggle Mouse/Key aiming | [C] - Deselect tower                |
| [M1]/[SPACE] - Fire             | [BACK] - Quit Game                  |
| [Q] - Turn Right                | BATTLE:                             |
| [E] - Turn Left                 | L: Boost/Egg/Bacon/Cow Meters       |
| [MOUSE] - Aim                   | R: Individual health bars           |



Core of your ship, game over if it dies. Building another does nothing but the menu must be symmetrical



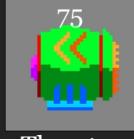
Core



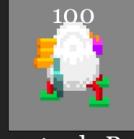
Farm

Generates [Egg/Bacon/Cow] during battle.  
Used as ammunition for respective guns.  
Crops be sold in the hangar for money

Increases turning speed of ship  
Placement and direction is important,  
game will calculate torque accordingly

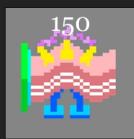


Thruster



S-eggstupple Bofors

Bacon gun, shoots 4x3 waves of bacon  
Costs 1 bacon or just call it 1 pig



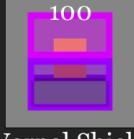
Baconator 375F



Un-abductifier

Milk gun, shoots 1 cow for 1 cow (no way)  
Cow explodes into bone fragments

Shield, absorbs dmg from adjacent towers. Expends nuclear fuel to reduce damage taken



Vorpal Shield

Generates nuclear fuel and increases fuel storage. Increases base movement speed. Nuclear fuel can be used by shields and boosting speed.



Nuclear Reactor

3656  
0  
16  
8

Dollars  
Eggs  
Bacon  
Cows

Sell resources

Price/Unit  
This is random when you enter the hangar.  
Sometimes its better to wait for a higher price



Total money earned



## Features

### Must

- Hanger where you can expand your farm and ship by building new towers and buying land

- Land can be purchase for increasing prices
- Towers can be built of different types
- Farms can be built of different types (cow, pig, chicken)
- An expandable moveable platform which contains placement positions for towers
- Survival game where the player has to defend their core until they can reach the next hangar(repair station)
- Multiple turrets that attack enemies with at least 3 types of projectiles

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**Want**

- Boss enemies
  - Special attack sequences, etc.
- Cool art
  - Make the game look good
- Ray tracing
- Interesting Enemy AI
  - Enemies are fun to play against and not completely random
- Upgrades to Towers

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**Stretch**

- Music track and sound effects
- Microtransactions using PayPal API (I like money)
- Collisions between platform and terrain
- ChatGPT api interface that generates funny things

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**Classes****Combat**

- Hangar.java
  - Goal entity for player to reach
- Map.java
  - Manages enemies,projectiles, and interactions
- Waves.java
  - Manages spawning of enemies

**Combat.Enemies**

- EnemyAI.java
  - Super class for AI
- Enemy.java
  - Super class for enemy
- AngelAI.java
- AngelEnemy.java
  - Game ender enemy
- DemonAI.java
- DemonEnemy.java
  - Basic enemy
- GearAI.java

- GearEnemy.java
  - Close range enemy
- GateAI.java
- GateEnemy.java
  - Sniper enemy
- Routine.java
  - Used by AI classes to manage actions

## Combat.Player

- DamageModel.java
  - Represents the player's health in the context of every position and tower
- PlayerModel.java
  - Represents the array of towers that can shoot or be displayed on the player
- Player.java
  - Represents a controllable player
  - Contains a DamageModel and PlayerModel
- Position.java
  - Represents a position that can contain a tower

## Combat.Physics

- Hitbox.java
  - Literally 3 method interface
- PhysicsEngine.java
  - Does the physics

## Combat.Projectiles

- Projectile.java
  - Abstract class that represents a projectile that can be fired
- AngelProjectile.java
  - Used by AngelEnemy, red laser
- BaconProjectile.java
  - Used by Bacon, bacon
- BoneProjectile.java
  - Used by Milk projectile, bone
- DelayedProjectile.java
  - Used to preload projectiles that haven't been fired
- DemonProjectile.java
  - Used by DemonEnemy, skull
- EggProjectile.java
  - Used by Egg, egg
- GateProjectile.java
  - Used by GateEnemy, blue laser
- GearProjectile.java

- Used by GearEnemy, gear
- MilkProjectile.java
  - Used by Milk, cow

## Construct

- Bacon.java
  - Shotgun tower that fires bacon
- Core.java
  - Represents the player's base, most important tower to protect
- Egg.java
  - Semi-automatic tower that fires eggs
- Farm.java
  - Represents a farm of chicken/pig/cow and generates resources
- Milk.java
  - Sniper tower that fires exploding cows
- Reactor.java
  - Defense tower that generates nuclear energy, and accelerates the player
- Shield.java
  - Defense tower that has high health
- Thruster.java
  - Defense tower that increases player turn rate
- Tower.java
  - Abstract class for anything that the player can build

## Engine

- Game.java
  - Primary PApplet that runs
- Globals.java
  - Static class for global variables
- Main.java
  - public static void main (String[] args)

## Screen

- Build.java
  - Screen for Phase 2 (construction) has a 2d grid to build and features drag and drop mechanics to arrange towers
- End.java
  - Screen for when the player loses
- GameImage.java
  - Image class for commonly used assets
- Screen.java
  - Super class for different screens that can be drawn
- Battle.java
  - Screen for Phase 1 (combat), has the player, enemies, projectiles and acts like a 2d top down shooter

- Title.java
  - Screen for Phase 0 (start), runs on start as it is the title screen and transitions to Build on start
- waveFunctionCollapse.java
  - Background images for battle

## Terra

- Map.java
  - 2d array of tiles
- Tile.java
  - Tile of land, can be active(owned) or not, contains a tower and the player can build a tower on it if it is active.

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## Credits

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### External:

- Processing Library, Java Library
- Tiffany Xu - AngelEnemy asset

### Internal

- Jiaming Situ - Battle, Combat.[Enemies/Physics/Player/Projectile] Packages, Leader
- Eddie Ouyang - Art assets and graphics, Terra Package, Screen Package, Construct Package, Screen management
- Pratham Hebbar
  - End.java
  - Main.java
  - Map.java (inside the Combat folder)
  - Projectile.java
  - Player.java
  - DamageModel.java
  - Enemy.java