Overview

Our gamewill be a two-dimensional side-scrolling shooter. The player takes control of a space ship and must defeat enemies by dodging their attacks and firing his weaponry. The target audience of this game is males ages 20-30. It is designed to play like a hybrid of old NES games with a hint of more modern mechanics. The game is designed to be a fast-paced and intense shooter that rewards skill and survival over brute force gameplay. There will be a variety of enemies in the game, ranging from relatively weak and easy targets (designed to get the player familiar with the mechanics) to tough and powerful enemies (equipped with shields or heavy armaments to test the player's mastery of the game mechanics. In addition to the standard gameplay, some RPG elements will exist that will allow the player to outfit himself with more powerful loadouts that will allow him to traverse the game better the next time. The game is continuous, and the main goal of the game is to get the highest score, which is awarded from enemy kills and time alive.

Competitive Analysis

Our gameis heavily based off of *Gradius*, an old NES 2D space shooter. An old classic, *Gradius* features smooth control and addictive gameplay, yet suffers in its frustrating difficulty (similar to many old games), resulting from a large number of projectiles and one-hit kills. *Gradius* features a unique power-up system in that there is only one power-up, which advances a "power-up" list. The player can choose to buy the selected power-up in the list, which resets it to the bottom, or stockpile tokens to get a high rank power-up. In contrast, our game features both health and shield systems that do not overly punish the player too greatly if they make a mistake, but remove additional lives meaning that one death means game over. This strikes a balance of difficulty as the player will be able to survive multiple hits but cannot be reckless. In addition, our power-ups are bought and then equipped, and not gained through game play.

Design Document

**Movement**

* The screen boundaries are fixed and the player cannot move his aircraft past them. There is no wrapping (i.e. the player cannot move upwards and appear downwards). The player otherwise has free movement throughout the screen in all four directions, and diagonal movement will be permitted.
* The background will move continuously to the left and loop around, giving the impression of movement when none actually exists.

**Health**

* The player has two meters: a shield and a health bar. When the player takes damage, the shield is the first to drain. Once the shield has been fully drained, the ship itself begins to take damage. The health bar drains very quickly while the shield drains very slowly, meaning once the shield is down, the player is very vulnerable to death. The shield will slowly recharge (full recharge in about 8 seconds, after an 8-second delay) if no damage has been taken during that time. This system punishes the player for taking repeated hits while not heavily punishing them for accidental damage, reducing potential frustration (e.g. one-shot deaths might result in a player dying from an unseen projectile in a frantic fire-fight). By default, the player has **100** health and **100** shields.

**Experience**

* Defeating enemies in combat and surviving for long periods of gameplay will provide the player with experience, which they can use to upgrade and outfit their ship with new weaponry. Experience gain will contribute to a rank bar, which serves no other purpose except aesthetic tracking of a player's progress.
* Upgradeable equipment includes:
  + Shields (more resistance to explosives, projectiles, faster regeneration, less delay before regeneration)
  + Weapons (faster fire rate, more damage, larger spread)
* Unlockable weapons include:
  + Default Gun: Unlocked by default. Fires a single projectile when fired. Can be upgraded to fire multiple projectiles at a faster fire rate.

**Ship Customization**

* The player's ship can be outfitted with one primary and one secondary weapon. The primary weapon can always be fired and the secondary weapon has a recharge time.
  + Primary Weapons
    - Default Gun: Unlocked by default. Fires a single projectile when fired. Can be upgraded to fire multiple projectiles. Once contact with a target is made, the projectile disappears. Fires at a high fire rate. Projectile velocity is high. Good for all situations: accuracy and speed is encouraged.
    - Laser Cannon: Exchanges fire rate for the ability to remain active after hitting a target. Deals damage for every second it remains in a target's hitbox. Good for dispatching multiple enemies in a straight line. Slow fire rate. Medium projectile velocity.
    - Flame Shot: A ball of energy with a larger radius than other weapons, but fires at a medium rate of fire.
  + Secondary Weapons
    - Homing Rockets: Secondary weapon which can track enemy targets. Will track a specified enemy (highest threat at the time of fired chosen) and will track it until the enemy is defeated or something else gets in its way. Default capacity of two homing rockets. Fires one rocket at a time. (Reload: 30 seconds)
    - Missile Volley: Fires a single volley of high-velocity, high-damage rockets at the enemy. Rockets travel in a straight line from the ship. Explodes on contact with an enemy. Default 10 rockets per volley. (Reload: 30 seconds)
    - Lynx Missile: Fires a remote-detonated missile that slowly moves forward. When the secondary fire button is pushed again, the missile is detonated.
* The player's ship can be customized in different ways, allowing one offensive, defensive, and utility to be active at a time:
  + Offensive Upgrade
    - Accelerated Munitions System: Secondary weapons reload 50% faster.
    - Railgun Munitions Delivery: Primary weapon fire rate increased by 33%.
    - Combat Training: Experience gain from defeating enemy ships increased by 50%.
  + Defensive Upgrade
    - Automated Repair System: Grants the ship a passive health repair every 5 seconds (7.5% per repair). Repair only remains activate when the ship's shields are active.
    - Concentrated Automatic Defense (CAD): Small defense module surrounded by harmful energy which circles the player and damages any projectile or enemy that comes in contact with it.
    - Intelligent Shield Power: Increases the shield strength on impact points, reducing shield damage taken by 30%.
    - Shield Energy Reactor: Increases shield regeneration by 50% and reduces the delay on shield regeneration by 25%.
  + Activated Utility:
    - Overshield: When activated, it will triple the ship's shields (300%), but drains every second for 60 seconds (3.333....% per second) until the shield reaches 100% shield level again. The shield absorbs damage like normal. (each 100% of the shield is denoted by a special color). Once activated, it is disabled for 5 minutes.
    - Overdrive: When activated, the ship's firerate on all weapons will increase by 50% for 15 seconds, giving it enhanced firepower. In addition, the ship's movement speed will increase by 25%. Once activated, it is disabled for 5 minutes.
    - Emergency Munitions Delivery: When activated, immediately refill the ship's secondary weaponry. Once activated, it is disabled for 3 minutes.
    - Invincibility: Overload the ship's shield capacitors, creating a temporary overshield that rejects all incoming attacks (and damages all enemy ships). The invincibility lasts for 6 seconds, after which the ship's shields will fail and need to be recharged again. Once activated, it is disabled for 5 minutes.
    - EMP: Fire an EMP on the screen, disabling all enemy fire for 5 seconds. Once activated, disabled for 5 minutes.

**Enemies**

* Enemies are chosen to attack at randomized intervals, and will have a variety of different attack patterns, strategies, and armaments. There are three tiers of enemies: weak, medium, and strong.
  + Weak enemies are very numerous and can be defeated very easily by the player. They appear in groups of 5-15 and will oftentimes try to swarm the player. Their tactics are aggressive but simplistic: for example, they might track towards the player or group up and fire projectiles as one larger entity. They have limited fire modes (such as firing a single slow projectile) and they serve very little purpose other than to give the player a break from dealing with stronger enemies (but still keep them engaged in the combat. They provide little experience when shot.
  + Medium enemies are less numerous than weak enemies, but provide a much tougher challenge. On average, these enemies will require a few shots from the player to take down. They will appear in smaller numbers than weak enemies, attacking in groups of 1-3. These enemies can have the standard bullet projectiles, but may possess shields or heavier shots (like a laser or rockets).
  + Strong enemies are very rare and do not appear often, but when they do, they pose a large threat to the player. Strong enemies will always appear by themselves but possess a large health pool, requiring a large amount of shots by the player to kill. These enemies function as "mini-bosses" to break up the play from monotonous minion killing. They provide a large xp bonus for defeating. They will have a variety of weapons, for example:
    - the standard bullets
    - homing rockets (slow-moving projectiles that home in on the player's location and can be destroyed mid-flight)
    - lasers (large rectangular attack that damages a large portion of the screen)
    - bombs (stationary\* objects that deal a large amount of damage if touched). Can be destroyed.

\*due to the nature of the design, the bombs will move at the same speed as the background in the negative x direction.

Change Loadout

Game Over

Profile Page

Main Game Loop

Main Menu Screen

**Story Bible:**

The player assumes control of a space ship in outer space. The player is trying to escape enemy space and must survive a barrage of an enemy fleet - and other threats - and make it back to friendly space successfully.

**Art Bible:**

**Storyboard:**

**Development Schedule:**

1. Implement Basic Mechanics

- Movement

- Shooting

- Collision Detection

- Health/Shield

2. Implement Enemy Generation

- Create an opponent that follows a set movement pattern and attacks the player

- Create a group of enemies

- Create enemy waves that attack the player in several intervals

3. Implement Basic Aesthetics

- Scrolling background

- Simple animation

- Graphical UI (Health/Shield)

- Singular music track

- Menu Screen

- Help Screen

4. Implement Loadouts

- Allow players to swap weapons

- Implement weapon functionality

5. Implement RPG mechanics

- Implement experience gain from defeating opponents

- Implement purchasing of upgrades/equipment

6. Implement Advanced Aesthetics

- Advanced Animation/Sound FX

- Multiple music tracks

- Profile/Loadout Menu

7. Implement Miscellaneous Features

- Rank

- Statistics in Profile Page