

# MOBILE DEVELOPMENT 3

## GAME DESIGN DOCUMENT

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## Introduction

For the game I am designing , I am taking a clone and tweak approach to the all-time favourite Rail Shooter classic of Star Fox 64, This game is probably one of the most famous Rail Shooters along with Time Crisis and House of the Dead. These two games revolutionised the Arcade Style Rail Shooter while Star Fox 64 brought the Rail Shooter genre to the home Screen.

### What is a Rail Shooter Game?

A Rail Shooter style game is a game where the player is either where a player is brought along a path and where at stages it stops and then the player has to kill all the enemies on the screen before they can proceed to the next part of the level, the can level is either finished when the player defeats all the enemies or defeats a boss at the end of the stage. These games are also timed and that if you do not beat the area within a certain time, the player loses. The time gets extended as the player beats an area and the aim of the game is to beat the level but to also do it in a quick time. A game that would best highlight this would be, Time Crisis.



<https://www.youtube.com/watch?v=Y-U4vVZ1TNI>

Another example of a Rail Shooter is where the player is brought on a constant course and that the player has to shoot enemies and survive until they reach the end of the stage where they have to defeat a boss at the end to proceed to the next level. An Example of this would be Star Fox 64.



<https://www.youtube.com/watch?v=FU-a6ZkF0io>

There has been many iterations of the rail shooter genre throughout the years with games first appearing on arcade machines in the 1980's like [Space Harrier](#) to more recent iterations of the genre like [Until Dawn: Rush of Blood](#) for the PlayStation VR.

Many Game and Movie Titles have lend their name to the genre such as Pokémon, Resident Evil, Jurassic Park, Star Wars and the Alien/ Predator Series , resulting in the genre being a huge hit with many gamers from the 1980s to the early 2000s. It is a genre that has been around for 40 years and has still gotten titles as early as 2016 with Until Dawn: Rush of Blood.

## Research into other Game Genres

### Endless Runner

An endless runner style game is as the name intends, the game only ends when the player loses all their lives or has run out of time. The aim of an endless runner game is to gain the highest score and to keep beating that score as the player gets better.

These types of games were wildly popular on mobile devices between 2011 and 2016 with the introduction of Temple Run with over 500,000,000 installs on the Google Play Store alone, it continued its success with a sequel called Temple Run 2.

These types of games were wildly popular with many game titles being released for the genre like, Subway surfer, Jetpack Joyride and Super Mario Run to name but a few.

### Traditional Game

Traditional games have been a part of human Society since ancient times, dating back as far as 3500 B.C with the Ancient Egyptians with the game of Senet, these games have been a part of human culture and shows that games have played an important role in humanity's evolution throughout the years.

Nowadays we still have many traditional games from ancient times still being played today like chess which derived from chaturanga most likely before the 7<sup>th</sup> Century and Backgammon which originated in Ancient Mesopotamia over 5000 years ago.

## Front End

From start to finish the switching between menus and game need to be seamless where the player, when they press a button on any menu it brings them to their desired outcome.

The Player will be first greeted by an opening Main Menu that depending on the button they press will be brought to the game.

### Start Menu

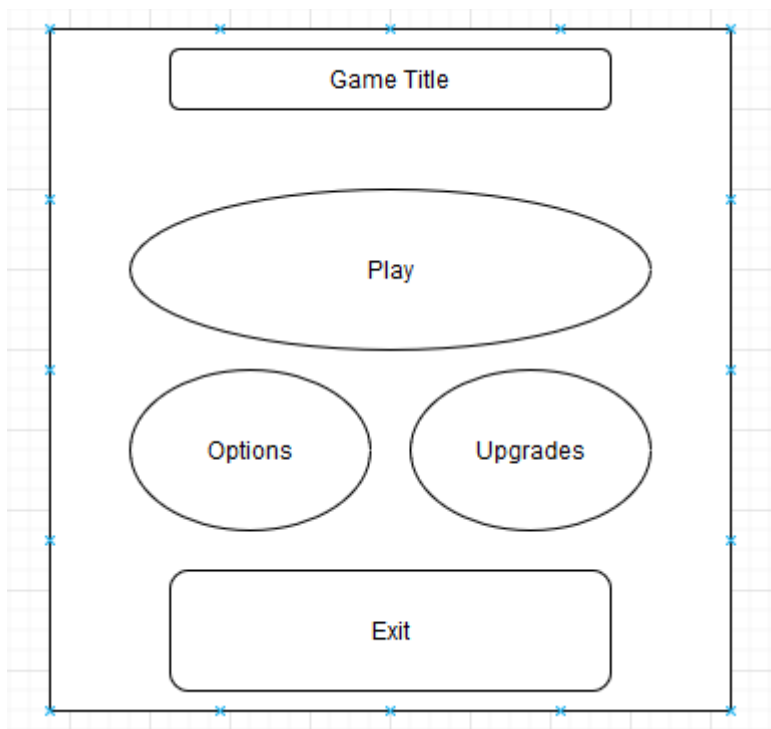
Play – brought to the start of the game if it is the first time playing or to where they left off if they were playing previously.

Within play the player will be given the option to have single or multiplayer.

Options – to control in game sounds, change controls...etc.

Exit – brings them out of the game.

Upgrades – this gives the player to upgrade their weapons to help them progress through the game.



### Multiplayer Menu

This menu should appear after pressing play, this menu gives the player the option of pressing single player or multiplayer.

Single Player – If the player presses this button, they should be brought to the game

Multiplayer – if the player presses multiplayer, they should be given two options, local or online

#### Local

If the player chooses this option, they should be given the option for a second player to join and then choose where each player wants to play either using the keyboard or the mouse.

## Multiplayer

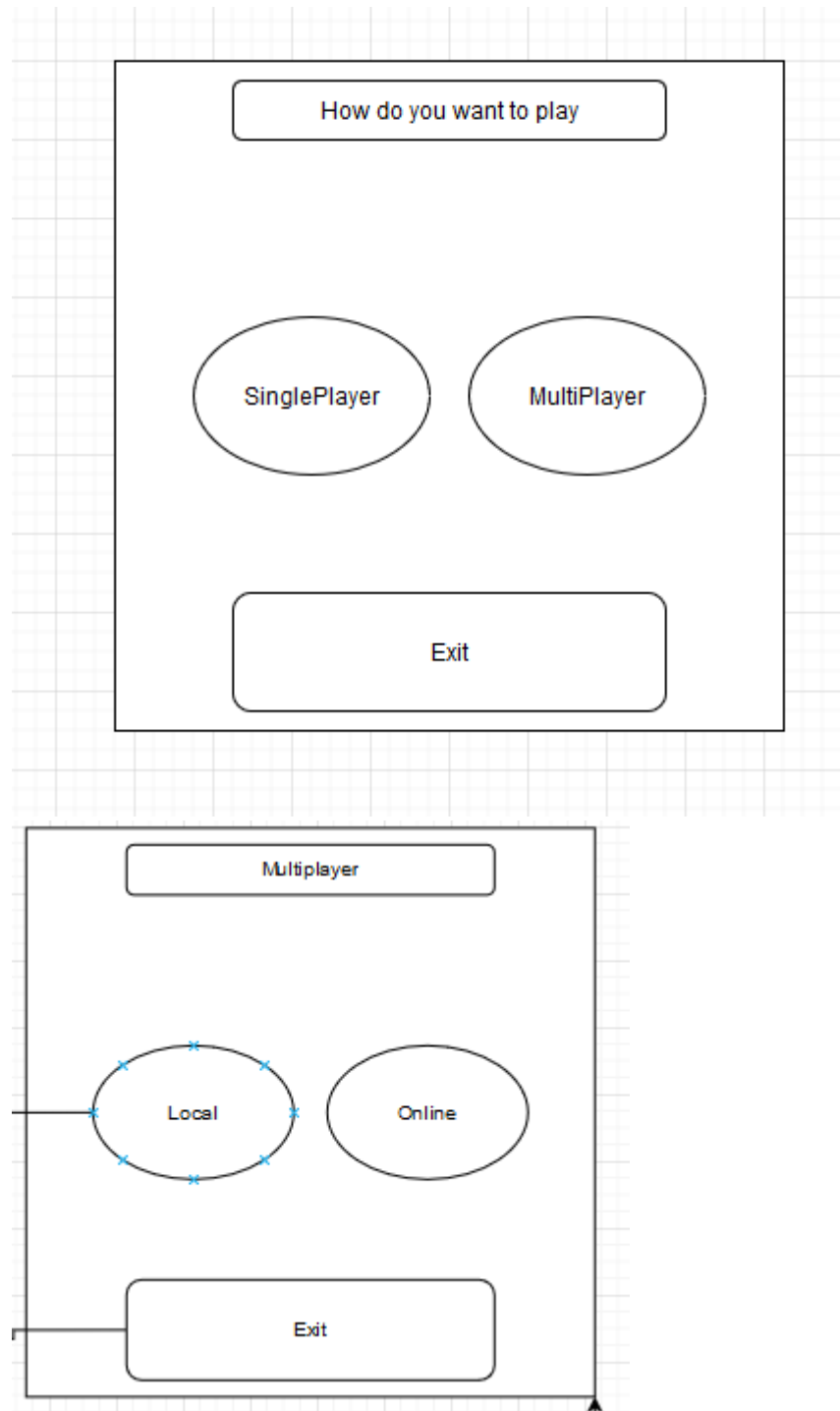
If the player chooses this option, they are brought to where they can search for a game or host a game.

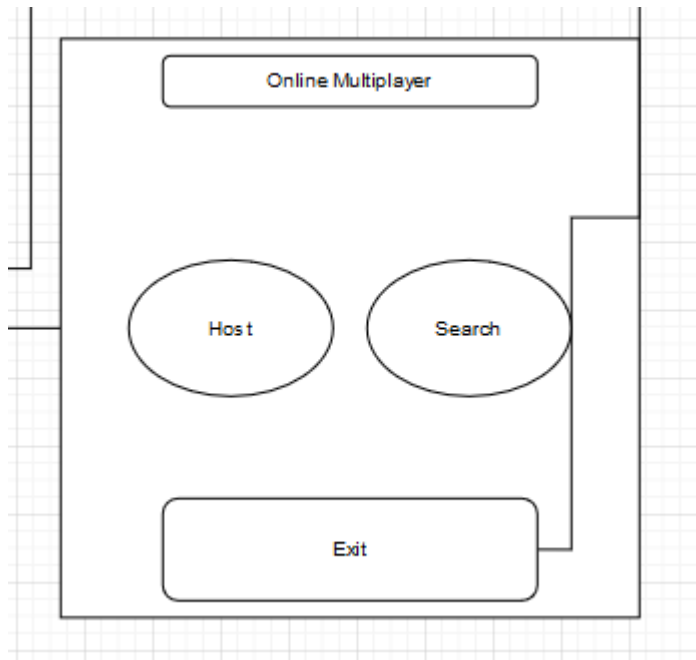
### Host

If the player presses host, it makes their game the one, the second player joins

### Search

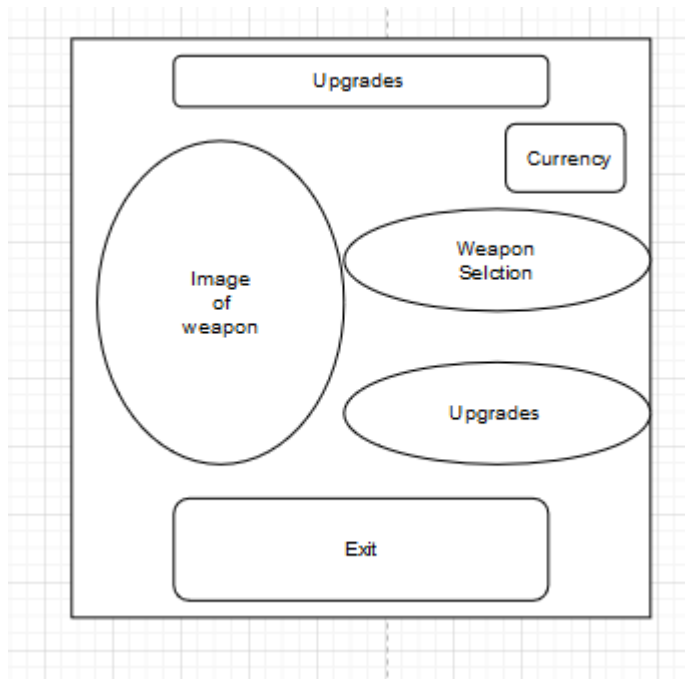
If the player presses this option, the player then searches for a game that another player is hosting and joins that game.





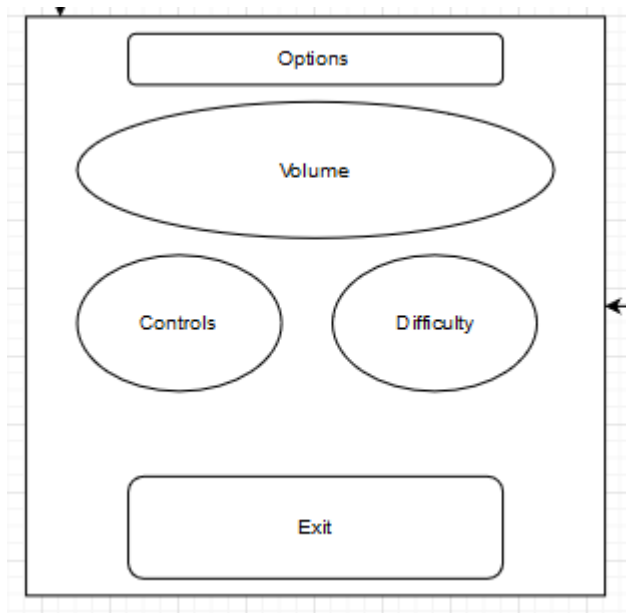
### Upgrades Menu

If the player chooses this menu from start menu a display will be shown giving the player to upgrade their weapons using currency earned in game. It should give them the option of also choosing the weapon they wish to bring into the next level.



### Options

In this menu the player will be given the ability to select the volume, view the controls and to potentially change the difficulty of the game.

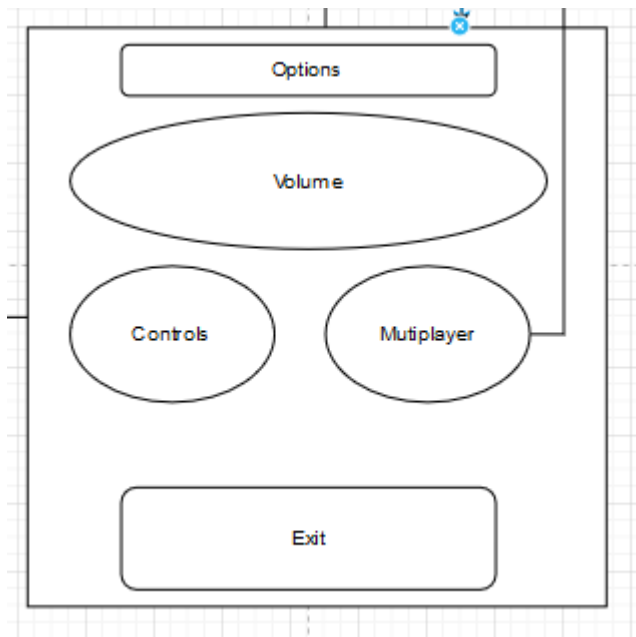


## In-Game Menus

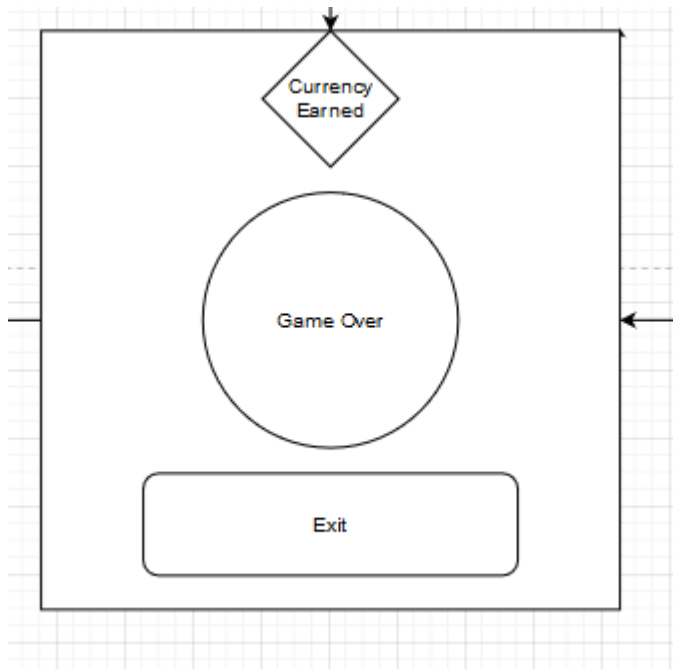
Within the game, when the player presses the Esc Key, a pause menu should be displayed that offers the same options as the initial options but also potentially the option for a second player to join in for local co-op.

If the player exits from this screen to give a game over screen that displays, there current score

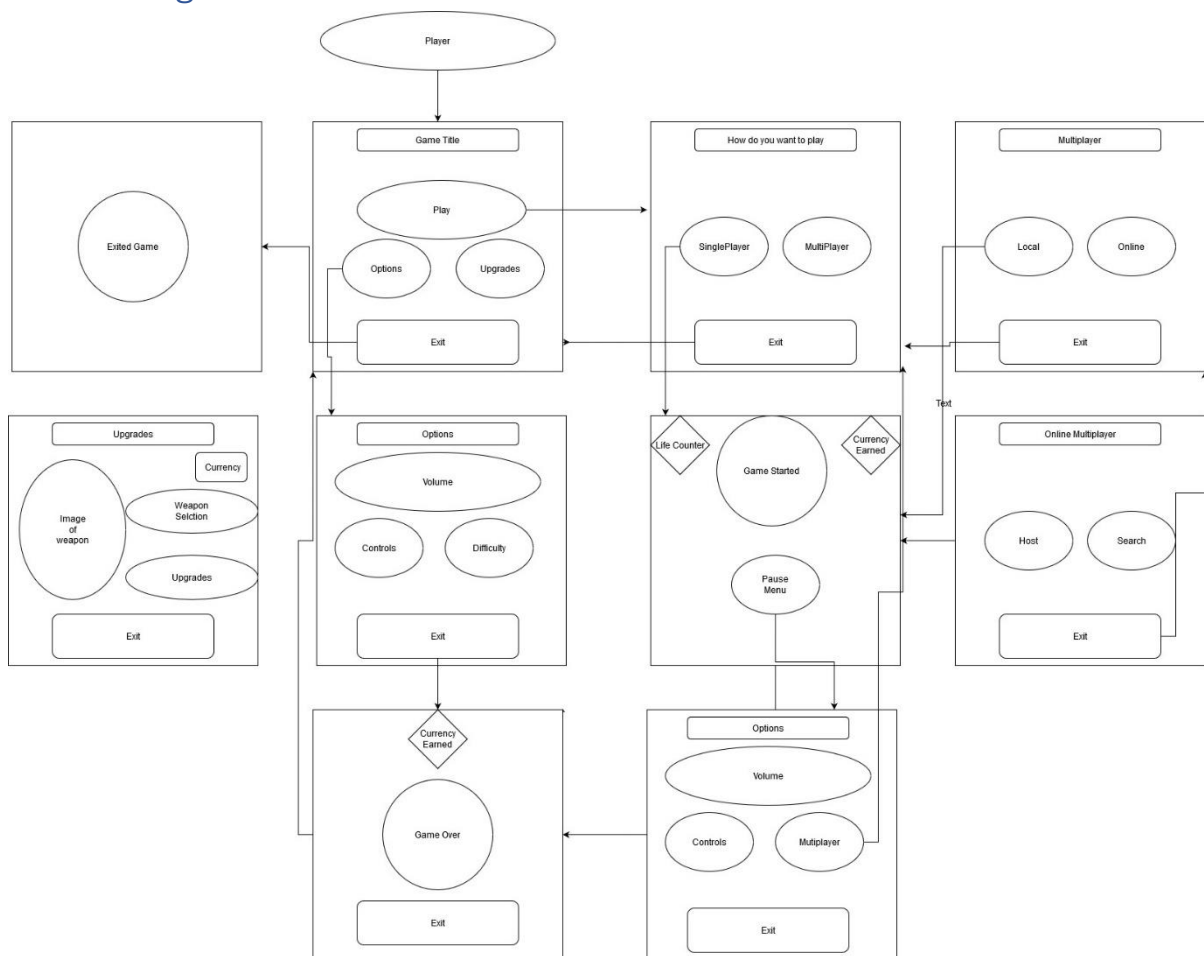
Also, a final game over screen when the player dies that would be different to the Quit game over screen.







## Entire Diagram



## Control Mechanisms

Controls for this game will mainly consist of the player just using the mouse to control the player with mouse movement controlling the X and y axis of the player while the rail brings the player along with the left click used for shooting

In Multiplayer, this then changes with the fact that both players will be playing with a single keyboard and mouse , for this I would like for player one to use the mouse while Player 2 uses the keyboard with W,A,S,D but it's up down left and right and Space Bar used for shooting

## The Game

The Game will be a clone and tweak approach of Star Fox 64 where the player will be guided on a guided rail where the player will control a spaceship that they can move up, down , left and right. The aim is to defeat several enemies to proceed to fighting the boss at the end of the stage.

The game itself consists of three levels that either run seamlessly into each other once a certain criterion is met, either with a completion of a boss fight or after a certain amount enemies or targets are destroyed.

Another way the levels could be designed is that the player loads into the level at the beginning and when after a boss is defeated at the end they progress into in the next level and autosaves that they have beaten the previous level.

## Difficulty

Difficulty for the game should be a big factor for the game where as the player progresses they are met with increasingly more difficult stages with longer stages and more enemies to face with either a boss at the end of each stage or a major boss at the very end.

Difficulty should be scaled when multiplayer is introduced so that by adding a second player makes it too easy but rather either the same difficulty with either enemy spawn rates being doubled , health being doubled or damage being doubled.

## Scoring

The game will have different enemy types and that once they are defeated, they will give a certain score depending on the difficulty to defeat that enemy. Example 1000 for the easiest enemy and 5000 for the more difficult default enemies.

Bosses would give larger scores and even drop special player drops that can better the player.

## The Player

The player consists of a single ship that is controlled by the user, is used to help defeat enemies in game

## Player Weapons

The player should begin with a default weapon that either shoots one or two bullets a click, other weapons can be introduced like a beam attack, auto rifle that when the player holds down left click it automatically fires

Other weapons like temporary weapons can be introduced like bombs that wipe everything on the screen or allies that add increased fire rate and more bullet firing to the player

## Player Upgrades

As the player progresses, the difficulty of the game increases, I believe the player should have the ability to upgrade weapons, either through unlocks like in story based games or through in game currency like in more mobile games.

Another idea instead of upgrades is the ability to switch weapons that can help with dealing with different enemies either through in game switching or at the start before the player begins the level.

## Player Assets that can be used

<https://assetstore.unity.com/packages/3d/vehicles/space/hi-rez-spaceships-creator-free-sample-153363>

<https://assetstore.unity.com/packages/3d/vehicles/space/star-sparrow-modular-spaceship-73167>

<https://assetstore.unity.com/packages/3d/vehicles/space/spacefighter-87056>

## Level Design

### Levels

The game should consist of three levels where the player must progress from one level to another almost as soon as they finish the last level similar to how endless runner levels merge into each other when the difficulty is increased, that seamless level progression should be a big factor in the development of the game, almost making all three levels look like one big level.

### Level 1

This level should be at the beginning almost like a tutorial Stage where the player is taught how to play the game at the first instances of the game and then when they have defeated a certain amount of enemies they move into the actual level but what they defeated in the tutorial stage continues into the level. They should have to defeat 20-40 enemies to meet the boss which is just the third most powerful of the default enemies.

### Level 2

After beating level 1, they should be brought to level 2 where they are introduced to the concept of weapon upgrades and are given the option to upgrade their weapons with the points they have earned through playing the game. They should have to beat 80-150 enemies to meet the boss and when they beat the first of the real bosses.

### Level 3

This level should test the players skill with having 200 – 300 enemies to beat before facing the most difficult and powerful boss. This level should be the most difficult boss as this is game ending boss if the player should win, the player should have to rely on upgrades and should not be capable of beating the boss with the default weapons.

## Level progression

There can be two ways in which the player can proceed to the next level, these could be where either a certain score is met or a where a certain amount of enemies are destroyed and then a boss appears and once the boss is defeated , the player proceeds to the next level

Another way level progression can be done is where the player plays along the entire level and when they get to the end of the level a boss appears and then once the boss is defeated they progress to the next level.

## Checkpoint system

With this type of game , death is inevitable , that's why I believe a checkpoint system should be introduced where that once the player dies that they are loaded back up again to a previous point before they died and have the same points at the time of crossing that checkpoint

This can be done like for every 100 kills that becomes the new checkpoint or when the reach a certain point in a game, a checkpoint appears

## Level Design Tools

<https://assetstore.unity.com/packages/tools/modeling/sabrecsg-level-design-tools-47418>

<https://assetstore.unity.com/packages/3d/environments/lowpoly-rocks-137970>

<https://assetstore.unity.com/packages/3d/environments/fantasy/aircraft-level-6758>

<https://assetstore.unity.com/packages/3d/environments/sci-fi/warzone-vehicle-pack-57826>

## Enemies/Targets

Within the game itself, there should be multiple types of enemies ranging from smaller enemies that are easy to kill to large bosses that take time and skill to defeat.

As the difficulty of the game increases, stronger, more difficult to defeat enemies should appear

At a glance I would like two relatively easy enemies to appear that although have very low life and are easy to kill in the beginning but as the difficulty increases that they spawn more like a horde and that become more difficult to defeat that, the larger the amount of enemies that spawn appear.

Then there would be the medium range enemies that should make an appearance towards the end of the first stage and more frequently in the second stage that fires at the player and that they have to dodge and shoot the enemy as to not get killed

Finally I would 1-2 Hard level enemies that could almost appear as a boss in the first stage but are more frequent in the third stage , they could be designed as a fusion of the first two types of enemies with high spawn rates and have the intent to defeat the player.

Bosses should appear at least once in the game, especially at the end of the final stage, the player should feel sense of euphoria when they defeat these very difficult enemies. After defeating these types of enemies, they could drop rewards to incentivise the player to continue playing the game until they beat it.

Enemy Assets that can be used

<https://assetstore.unity.com/packages/3d/vehicles/space/space-droid-32200>

<https://assetstore.unity.com/packages/3d/vehicles/space/shoot-em-up-enemy-spikeball-116938>

<https://assetstore.unity.com/packages/3d/vehicles/space/alien-ships-pack-131137>

<https://assetstore.unity.com/packages/3d/vehicles/space/federation-corvette-f3-79860>

<https://assetstore.unity.com/packages/3d/vehicles/space/oxar-light-freighter-82240>

<https://assetstore.unity.com/packages/3d/vehicles/space/highres-shuttle-class-starship-7480>

## Collectibles/Power Ups

There should be a few power ups for the player with basic power ups that heal the player, increase fire rate, or increase the number of bullets produced or a power up that gives the player shields...etc.

Assets are provided to give the player an advantage at certain points in the game or as part of an unlock before a boss fight and can then be a permanent attachment

Temporary power ups should appear in higher capacity at easier stages and more sparingly at more difficult stages. These could be weapons like bombs that wipe out all enemies currently on the display, or extra ships that add additional fire power for a certain amount of time or bullets.

Permanent power ups like upgrades to weapons, health, shields should be unlocked either after meeting certain milestones, beating bosses or just before a boss fight and is needed to defeat that boss.

Assets have been attached as an example and can be changed if better and more suitable assets can be found

### Power Up Assets

<https://assetstore.unity.com/packages/vfx/particles/powerup-particles-16458>

## Multiplayer Functionality

### Local Multiplayer

For local multiplayer on this game I would like for 2-player Co-op where the second player can join either at the start of the game or during the game from the pause screen. This feature would only be available on the PC version of the game as it would be difficult to implement on a mobile system.

For local multiplayer I would like it to be on a single keyboard and mouse with player 1 controlling the mouse and player 2 controlling the keyboard and mouse or vice versa, this can be subject to change as this is a difficult playstyle for any player to adjust to.

### Online Multiplayer

Online Multiplayer is another option that can be undertaken, where a second player can join remotely from another device and play on the same level as the player. The same concept for local multiplayer still applies regarding the difficulty of the game but instead of having to share the same device they can play on separate devices.

This gives the option of multiplayer to mobile devices and the ability for players to play together.

## References

Star fox 64

[https://en.wikipedia.org/wiki/Star\\_Fox\\_64](https://en.wikipedia.org/wiki/Star_Fox_64)

Time Crisis

[https://en.wikipedia.org/wiki/Time\\_Crisis](https://en.wikipedia.org/wiki/Time_Crisis)

Rail Shooter Genre

<https://tvtropes.org/pmwiki/pmwiki.php/Main/RailShooter>

<https://glitchwave.com/games/genre/rail-shooter/>

Rail Shooter Games

[https://en.wikipedia.org/wiki/Category:Rail\\_shooters](https://en.wikipedia.org/wiki/Category:Rail_shooters)

Endless Runner

<http://retrogamingmagazine.com/2016/09/10/brief-history-endless-runners/>

Traditional Games

[https://en.wikipedia.org/wiki/History\\_of\\_games](https://en.wikipedia.org/wiki/History_of_games)