Mobile Applications Development 2

Unity 2D Shooter

Design Doc

Darren Butler
(G00299944)

Contents

Research

2D Shooters - A Brief Outline

Shooter is the umbrella term used to describe a genre of action video games that focus on combat with projectile weapons. One could be forgiven for mistaking shooter for "First Person Shooter" (FPS) because it seems most modern AAA shooters are some variant of first- or third-person shooter. This can be seen by looking at the top selling, or top-rated lists of games on steam under the category "Shooter" where all the top 15 games in both lists are either first- or third-person shooters [1]. All modern first-person shooters owe their existence to the many shooters developed before the advent of 3D graphics in games like *Doom* or *Quake* from the early 90's. It was back in the late 70's and early 80's when games like *Space Invaders* and *Asteroids* were released that gamers had their first taste of shooter gameplay. Though first-person shooters dominate the AAA games development scene, indie and smaller developers have been churning out fun and interesting games in shooter sub-genres for years now. These 2D shooters are often referred to as "Shoot 'em ups", "shmup", or "STG", which is a Japanese abbreviation for "shooting games" [2]. There is a wide range of sub-genres of the 2D shooter, which vary in design elements such as, camera placement, movement, enemy types and the arsenal available to the player.

Classic

Perhaps the best example of a classic shooter is 1982's Japanese arcade game *Space Invaders*. Adjusted for inflation, Space Invaders is estimated to be the highest grossing video game of all time [3]. With simple controls, an interesting Sci-Fi premise, and addictive gameplay it's not hard to see why this game had such a massive cultural impact. The player controls a laser canon and must defend against waves of alien invaders. All gameplay takes place in one fixed screen, and player movement is limited to horizontal movement along the bottom of the screen. The waves of aliens advance in a predictable pattern and shoot directly down. The player can seek refuge under several bunkers, but this respite is short lived as the bunkers are susceptible to friendly and enemy fire alike. Player progression is measured by a high score where points are earned for each alien destroyed. As more alien ships are destroyed, the remaining invaders speed of advancement increases. This is how the game ramps up the difficulty over time. The games music also speeds up, matching the alien invasion, which gives the gameplay a real sense of urgency. It is this palpable tension that made Space Invaders the classic it is.

I believe Space Invaders owes its success to a few core gameplay elements which I will endeavor to implement in my own game. Space Invaders has such a simple concept and setup, the premise of aliens attacking, you are defending, is as lean as they come. The controls and screen layout are very straight forward, even a total novice to video games could probably figure out which character they can control within seconds of gameplay. Space Invaders masterfully increases tension by speeding up the enemy advancement and music in tandem. This facilitates real urgency when playing, coupled with chasing the pipe

Figure 1 Space Invaders

dream of an ever-higher score, these elements make Space Invaders easy to pick up and impossible to put down.

Top-down

This sub-genre of shooters has you looking directly down on your character and the environment they find themselves in. Where in classic shooters, strategy is often the name of the game, in top down shooters movement is usually the key to success. As such, fluid movement controls are as

Figure 2 Enter the Gungeon

important as gunplay in this style of 2D shooter. We can look to more recent years for examples of this genre, one such game is *Enter the Gungeon*. This 2016 release has you dodging an onslaught of enemy projectiles, making even just staying alive a real challenge. This makes Enter the Gungeon not only a top down shooter, but also a prime example of a "Bullet Hell" shooter, where expert movement and targeting are essential to success.

Horizontal

This style of shooter is like the Top-Down genre as they both have a greater emphasis on player movement than more classic 2D shooters. Where Enter the Gungeon had you frantically dodging enemy projectiles, this genre of shooter borrows some aspects of 2D platformers where ducking and diving between obstacles can be just as important as targeting your enemy. Though these games give the impression your character is constantly pushing forward (usually from left to right), it is often an illusion. In reality, the background, enemies and obstacles do the scrolling. It is up to the player to forge a path through.

Moving into the realm of mobile games, *Jetpack Joyride* is a prime example of a horizontal shooter. Though this game has a unique twist compared to others in its genre. Instead of shooting directly forward, Jetpack Joyride has your character shoot bullets from the exhaust of their jetpack while you navigate between obstacles and collect coins.

Figure 3 Jetpack Joyride

Beyond 2D Shooters

It would be foolish to not also consider other genres when looking for inspiration. One design component where ideas from other games can be easily adapted is UI design. Blizzard are masters when it comes to UI design. This can be seen in their first-person hero shooter *Overwatch*.

Figure 4 Overwatch

Overwatch has quite a diverse cast of characters, all with their own weapon types, ammo, health, shields, armor and special ultimate abilities. It was a real challenge to design a UI that would work for so many different playstyles and character types. This UI is both out of the way, and easy to spot when you need it. So much so that while playing you may even subconsciously notice your health running low without needing to explicitly look at your health bar. Overwatch developer Blizzard's flawless UI design extends beyond just gameplay. Even their menus, loading screens and game lobby UI are superb [4].

Another element of game design where we can look to other genres for inspiration is charm and humor. This can be hard to quantify, and easy to get wrong, but can be the difference in making a game a long-lasting hit or another soulless and forgettable military shooter. The LEGO games have always done an excellent job of not taking themselves too seriously. Nearly all the humor in these games is at the expense of itself and the source material from which it comes.

Figure 5 Lego Star Wars III: The Clone Wars

Lastly there is one game mechanic that, when implemented properly, leads to fun and fluid and exciting gameplay. A personal favorite of mine, the "Blink". Also known as a dash, charge, or roll this movement ability can let players delay avoiding enemies until the last possible second, maximizing their damage done, with a payoff of narrowly escaping death. I think a blink mechanic leads to risk/reward gameplay [5] that can allow players who really master the controls to show off their skills. We can look to games like World of Warcraft or Celeste for examples of this mechanic.

Figure 6 World of Warcraft

Design

The Pitch

TrigWars. A 2D, top down shooter that focuses on well refined and effortless to play movement controls. The game will have you facing waves of faster and tougher enemies with the aim of chasing a high score like arcade classics. The player character and enemies will all be simple geometrical shapes. With the player controlling a triangle ship that shoots out of one point, the only way to aim is by moving to point at their enemy.

Philosophy

Overall, I want my game to be a "clone & tweak" of 2013's *Resogun*. A game that launched on the Playstation4, primarily as a tech demo to show off how the PS4 could handle advanced particle

effects [7]. However, my game will differ from Resogun, where you rotate around a fixed board that almost feels like you're moving on the outside of a cylinder. TrigWars will have your screen fixed, the player can move around the screen as they see fit, and enemies will spawn in from all angles and move in unpredictable patterns.

Controls

The game will use standard keyboard controls for character movement, which could be adapted to a mobile/touch environment by having the main controls overlaid on main gameplay.

- W – Move forward // I want this to have fast acceleration make moving your character feel snappy and responsive
- S – Deceleration & Revers // I don't envisage moving backwards to be an essential gameplay component
- A & D – Rotate Left & Right // Instead of moving your character left or right, these keys will rotate you, meaning to turn left you will have to angle yourself towards the direction you want to move. I think this will lead to movement that feels "slippery", like how driving on ice feels in Crash Team Racer

Figure 7 Crash Team Racing

- Space – Shoot // This key will have to be pressed each time the player wants to shoot instead of "hold to fire", I think this will make gunplay feel more deliberate and purposeful instead of spamming to victory.
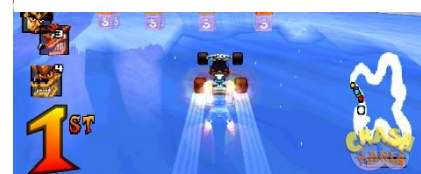
- Shift – Dash // This key will let the player charge forward in whatever direction they are facing for a few seconds. I want this to be used as a way of escaping danger as well as dealing damage to enemies you hit while charging. Celeste is a perfect example of a well implemented dash mechanic.
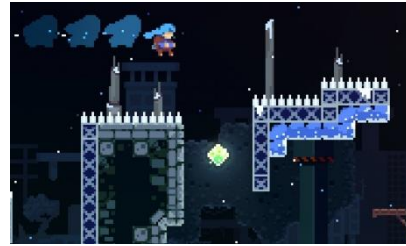

Figure 8 Celeste

Theme

The games visuals and sound will take from the *Synthwave* [6] aesthetic. Also known as Vaporwave, Retrowave or Future Synth. This music genre and accompanying art style are perfect for the world of arcade like video games.
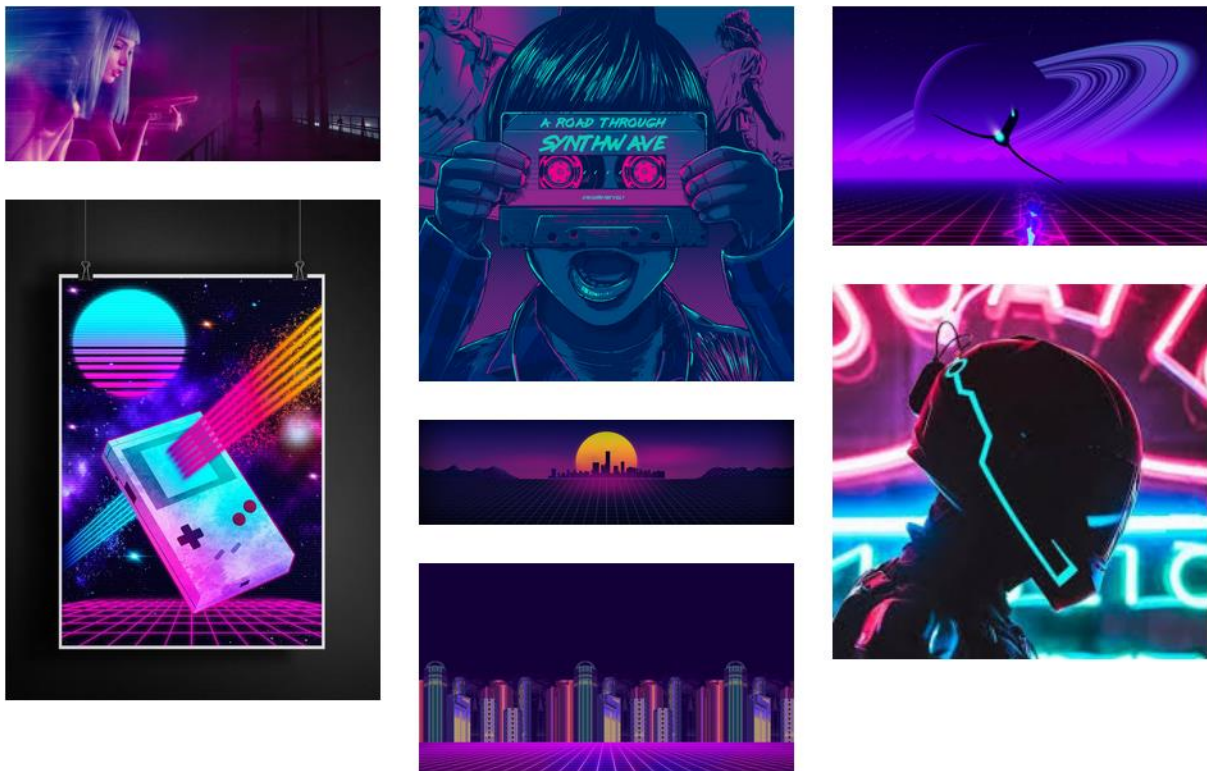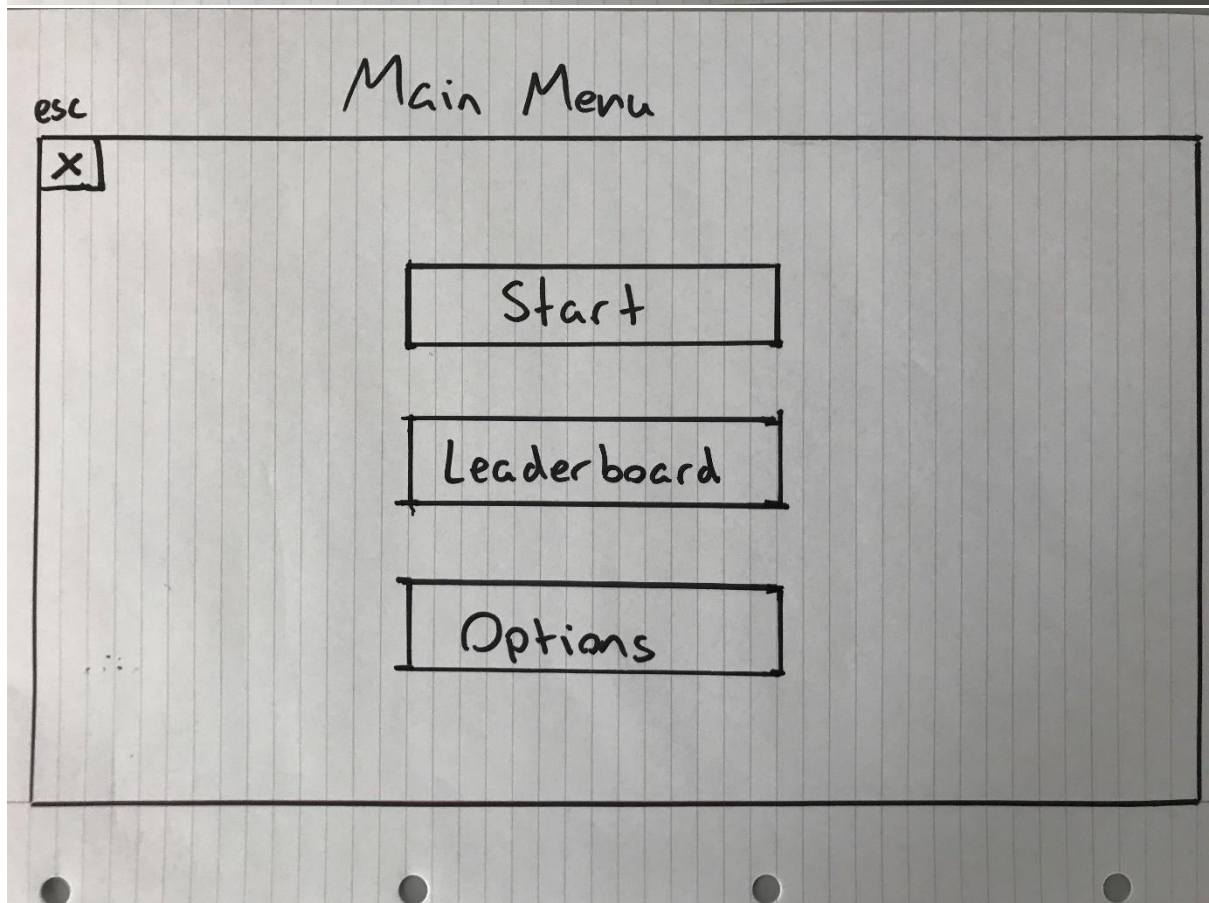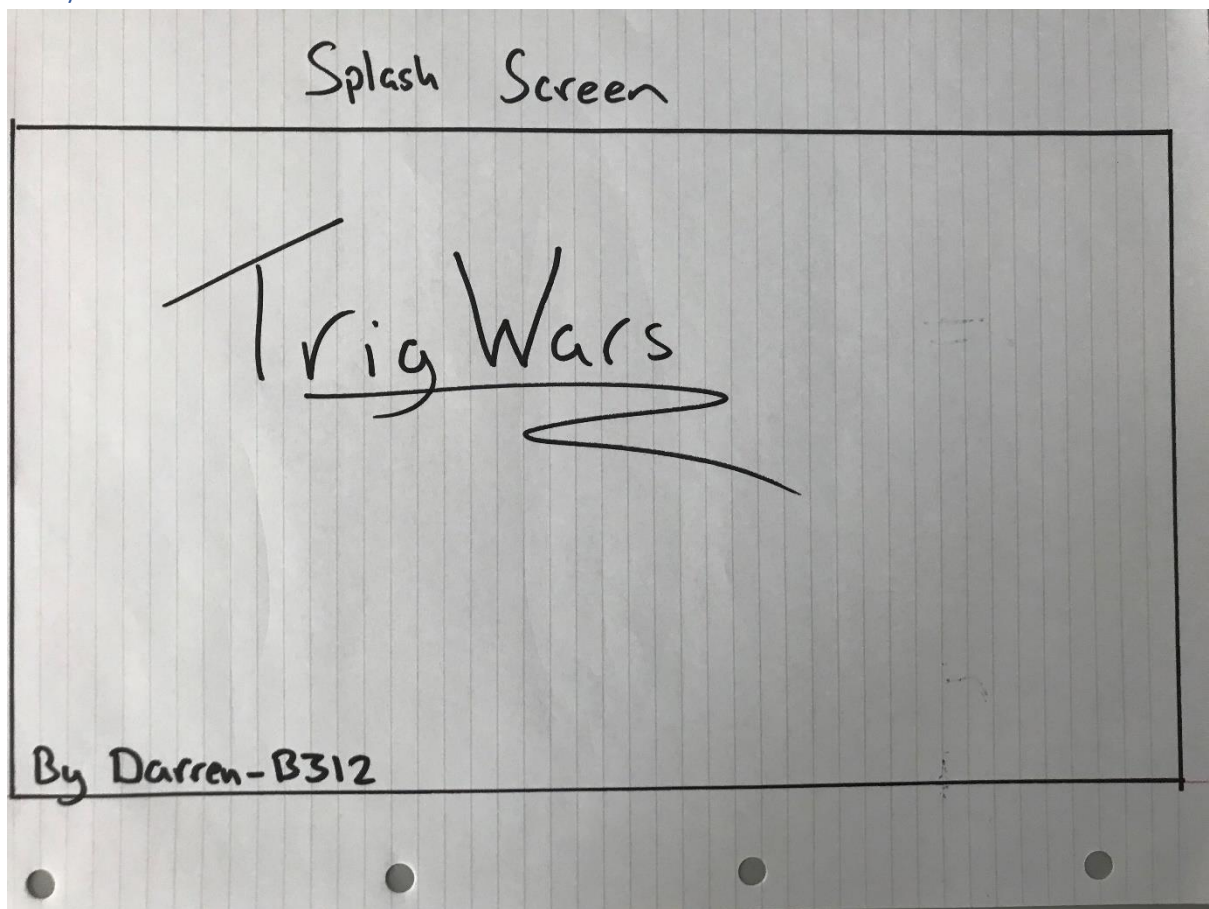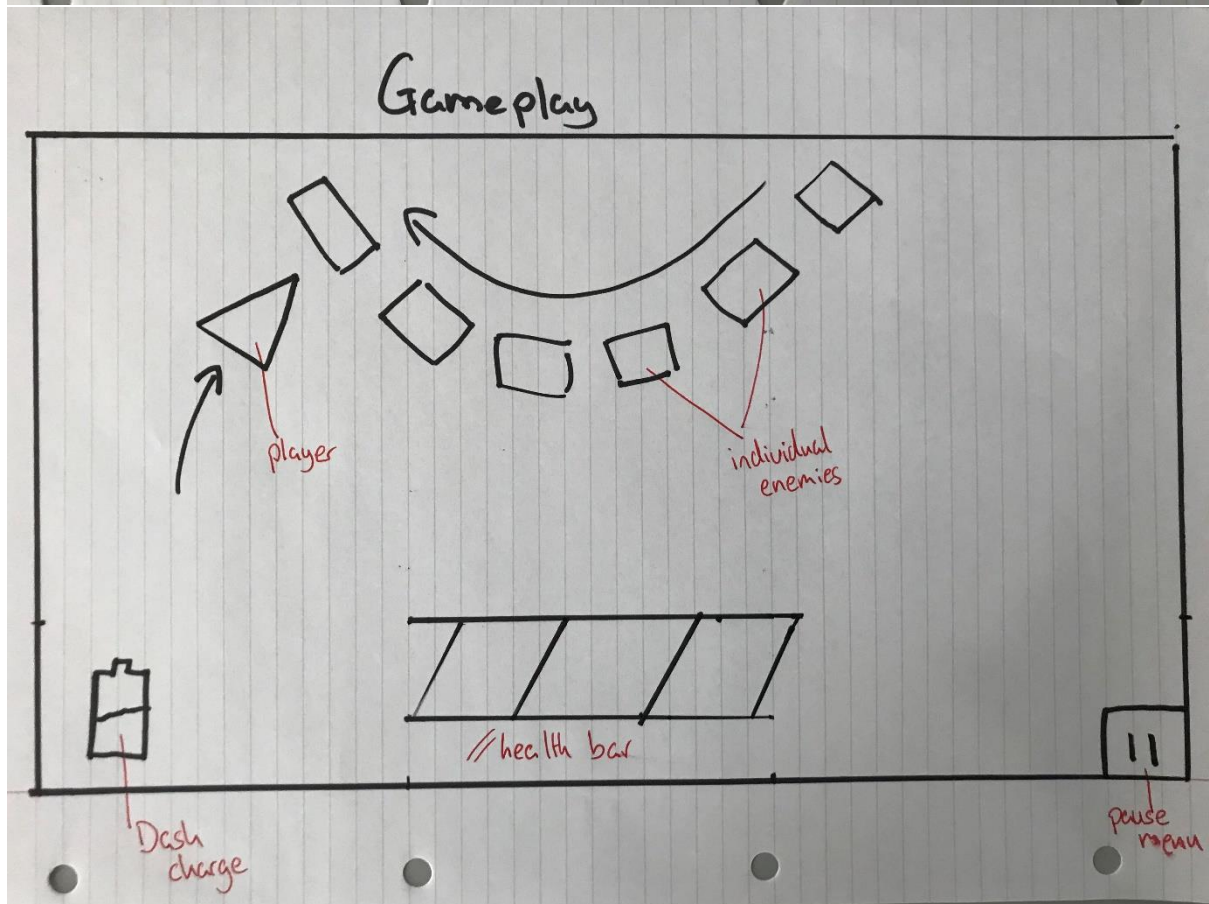

Figure 9 Synthwave Aesthetic

Splash Screen

Trig Wars

By Darren-B312

esc

Main Menu

X

Start

Leaderboard

Options

Leaderboard

High Scores.

DNB - 99999 - 7/2/20	
AAA - 90000 - 1/1/1	

Gameplay

player

individual
enemies

health bar

Dash
charge

pause
menu
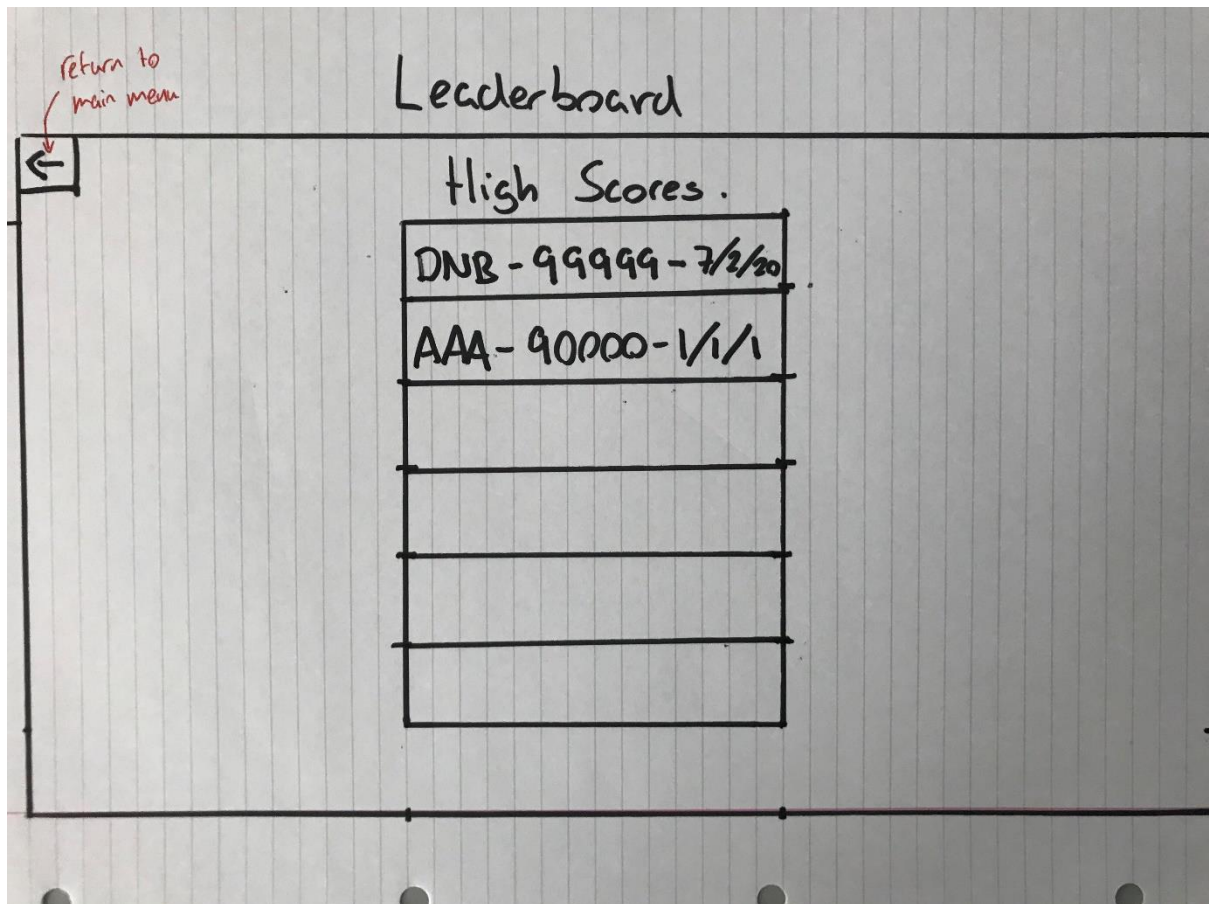
Options

←

Toggle Sound ☒

music:

effects:

References

- [1] - https://store.steampowered.com/tags/en/Shooter/#p=0&tab=TopSellers
- [2] - https://en.wikipedia.org/wiki/Shoot_%27em_up4
- [3] - https://en.wikipedia.org/wiki/Space_Invaders
- [4] - https://www.akendi.com/blog/overwatch-review-a-masterpiece-in-ux-design/
- [5] - https://www.gamasutra.com/view/feature/130243/the_importance_of_risk_in_basic_.php?print=1
- [6] - https://en.wikipedia.org/wiki/Synthwave
- [7] - https://www.eurogamer.net/articles/digitalfoundry-2017-how-housemarque-engineered-a-4k-resogun-for-ps4-pro