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Mobile Applications Development 3

Game Project

Design Document

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## Introduction

My name is Ivan McGann. I am a 4th year student in GMIT studying computing and software development. This is a design document to be used as an aid and an introduction to my project in the subject of Mobile Application Development. The aim of this project is to design and then make a 2D game of a specified genre in Unity. The created game needs to feature a balanced learning curve while also being simplistic enough to allow the player to be able to pick up and play. Before I describe and display the chosen design of the project, I will take a brief look at the genres of games for discussion followed then by taking a closer look at the game I intend to create and the inspirations or traits of the category. As always with a design document the initial design may not match the final design of the product due to unforeseen circumstances. I have little experience working within the development environment of Unity so the quality of the final project based on its design may not match the initial vision I had for the project.

## Overview

I plan on following the guideline principles of making the gameplay and overall design of the game as simplistic as possible and valuing them ahead of the aesthetic design of the game. This is a philosophy that some companies work diligently towards and try to master. Nintendo for example have used a design philosophy of creating and mastering the feel of a gameplay mechanic first then creating a game around that balanced mechanic.

A more classical take on game design was the subtle AI implemented on enemy ghosts in the arcade classic Pacman. Each ghost has different characteristics to differentiate it from other the ghosts when chasing the player. The red ghost will aggressively pursue the player, while the pink ghost will attempt to ambush the player by trying to predict the players path. The orange ghost will move around the map in a random unpredictable behaviour and finally the cyan ghost will patrol the area of the map he is in.

Meanwhile Bungie upon designing the gameplay of Halo looked at a 30 second loop of often repetitive actions that can be stretched out over a multiple hour game and even competitive multiplayer if that first 30 seconds of combat satisfies the user. This can be done by tweaking Artificial Intelligence (AI) and the feeling of offering the player more of a choice on how to deal with developing situations in the game. This demonstrates how important a good control scheme can be to the overall enjoyment of the game and how it can be used as a gauge to set a good game apart from the rest of the titles in its genre, a well-designed control scheme can become the standard for the genre even if at first it can seem unusual to the player.

With this project we are also allowed to tweak the formula of an existing game to expand upon the genre or take it in a different direction from the original vision. There could be many ways to expand on a genre from turning a game about completing levels to be a time-based mode or score attack focused games based more on leaderboards. Even something as simple as the design of giving the player the ability of restarting a game fast can itself become a key game mechanic. The Trials videogame series developed by RedLynx uses this mechanic to the best of its ability. The game itself is based on completing obstacle courses in the fastest possible time on a motorcycle, these courses feature obstacles to challenges to the player whether it’s a ramp or a drop. It also incentivises the player to replay the game and beat their previous times, this means the player will pursue a faster time and perfect runs. The key is to limit the level of frustration in the game, this is achieved with the use of a single button to immediately restart the course or send you back to the nearest checkpoint. This simple solution eliminates much of the frustration for the player and allows more of a focus on the end. As well as limiting frustration it also makes the overall user experience smoother for the player which benefits the enjoyment of the game.

## Aims and Objectives

I am choosing not to use the clone and tweak approach of a given game as I often feel with this method it can lead to mixed results. I’m basing this approach on several summations; often a developer can attempt to do this with a game and lead to unflattering comparisons of the game they try to imitate. Whether its not having the same level of feel with the gameplay or a level design that compliments the gameplay in a way to accentuate the platforming or shooting for example. There are modifications to some games that have proven to be useful like Nintendo reskinning the internally developed Yume Kōjō: Doki Doki Panic game for the Western release of Super Mario Bros 2 due to the perceived difficulty of the Japanese release of the NES game. There are some uses to modifying games with language translations of Japanese only releases of older Nintendo games to English which were never given a Western release. There are also interesting changes that can be made to finished games such as layout randomizer for A link to the Past which changes locations of weapons and Dungeons layouts, adding replayability. But often these can also result in the game having bugs or the introduction of unforeseen errors like the game freezing, save file issues and game crashes.

Looking at the choices of genres I am going to do a shooter, I have ideas for most of the genres, but I am tentatively choosing this as it’s a genre I have little experience in. While I do have experience playing first and third person shooters but being a novice in Unity development I find developing one of those that is entertaining and of a high quality is unlikely given the time restraints. Instead I will look at doing a side scroller shooter. The reason I’d like to do this genre is because of the difficulty that the genre is known for. Games like Ikaruga, Gunbird 2, R-Type II and Radiant Silvergun are known for their difficulty (often referred to a Bullet-Hell shooters) and some are considered the height of their genre. I will look to create a game that is less punishing that others like these that maybe focuses more on score than stage-based game design. I would however like to create a boss battle as a way of signalling the end of the game. I will go into more detail on the design below.

My ideas for other genres would be a 2D platformer where you need to avoid enemies and use the environment to get past them such as pushing objects from a height to block enemy paths and create ones for the player. For a puzzle game I was thinking about a game like Marble Madness where you would guide a ball through obstacle courses and use physics (maybe using a gyroscope in handheld mode) that would allow the ball to drop down to a lower area of ever increasing in difficulty levels.

## 

## Genres

### Shooters – Classic, horizontal or vertical scrolling

Shooters come in many variations of the genre and like many genres they often change and adapt to type as the technology they are created in becomes more powerful. I will look at shooters in each genre and talk about how they differ from each other and the

2D shooters are games where the camera perspective displays a two-dimensional surface where the player, the level layout and enemies are all on the same *flat* level. These can be side scrollers or even feature a mild use of platforming to offer variety and expanded level layouts. An example of these type of games would be Contra, Megaman or Gradius. Gradius is a classic space shooter where the player moves from left to right as oncoming enemies come from the right-hand side of the screen. The gameplay variety is in enemy patterns and weapon pickups where the player’s ship temporarily gains different bullet types to attack the enemy. Megaman, Contra and Shadow Complex are examples of 2D shooters that feature more of a use of platforming. This can offer more variety than the classic games do where most of the time you are only moving to dodge and shoot. These games still offer weapon/gun upgrades but find it easier to offer secrets and different ways to defeat a boss or finish a level. 2D shooters in general often feature less of an emphasis on ammunition preservation or objectives and more emphasises a use of different ammunition types, gaining scores and boss fights at the end of a level to add variety or challenge to the game.

Third person shooters feature the camera being behind the perspective of the player. There is a larger use of environment and level design. Many third person shooters feature more of a use of cover than 2D shooters do. Popularised by Gears of War which was partially influenced by the mainly unknown shooter Kill Switch the use of cover in third person games has unintentionally stunted the growth of the genre according to some. Examples of the genre are Gears of War, Uncharted and Dead Space.

First person features the camera predominantly in front of the player in a first-person perspective. This perspective requires a more limited use of some features such as platforming and more of an emphasis on environmental detail and design. It is a genre that has always been widely popular and is now a large part of the popularity in online multiplayer gaming. Examples of the genre include games such as Call of Duty, Doom and Half Life.

These genre’s themselves can be separated into genres within themselves such as survival horror, military based, *shmups* (an abbreviation of the term shoot-em-up, often used to describe old school shooters) or Battle Royale games which are seen as the new market leader in the genre from their popularity from titles such as PlayerUnknown’s BattleGround (PUBG), Fortnite and is featured in games such as Battlefield and Call of Duty. There is still a market however for more classical shooters like DOOM, Wolfenstein and Prey but many view single player shooters with no multiplayer features a risk; such is the evolution of the genre. Many shooters have also experimented with physics and mechanics to expand on the genre. Max Payne for instance used a slowdown of time mechanic popularised in mainstream media at the time in movies like The Matrix. Half-life 1 and 2 were also seen as milestones in the genre from a narrative sense to the player with environmental storytelling and for the sequel’s use of physics to solve puzzles and battle enemies using the gravity gun.



### Platformers – Classic or 2D

Platformers are seen by many as a classic genre as their popularity has declined in popularity overall with the exception of a few select companies. Most notably Nintendo games such as the Mario series and other first party titles. Mainly the platform genre is seen to have had its popularity decrease since the days of arcades, Atari’s and Super Nintendo. The market became oversaturated with mascot platformers in the 90’s which cannibalised one another until the idea of a AAA platformer was seen to be risky. But in recent years the market has grown though independent games as the cost is seen favourably to consumers paying fifteen dollars/euros for games like Super Meat Boy, Braid and Limbo all of which were critically and commercially well received. Many games outside the genre also made platforming part of their structure such as titles like Super Metroid, Megaman and Castlevania.

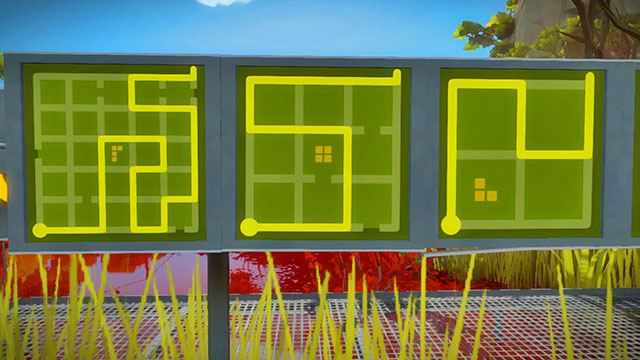
Examples of platformers would be Shovel Knight, Pitfall, Crash Bandicoot and Mario 64.



### Puzzle – Action Puzzle or Desktop Puzzle

Puzzle video games involve the use and solving of puzzles as its key gameplay mechanic. The types of puzzles can test many problem-solving skills including logic, pattern recognition, sequence solving, and word completion. The player can have a limit on attempts and time as a way of testing the players skills. They can also use an aspect of memory as a means to test the player as solutions to previous solved puzzles may not work on new puzzles or the solution may be tweaked to trick the player. In more recent years the puzzle genre has been expanded to be based around a narrative of a story as a reward for progression such as the Zero Escape series where the character is asked to solve puzzles as a way to escape a room to progress the story.

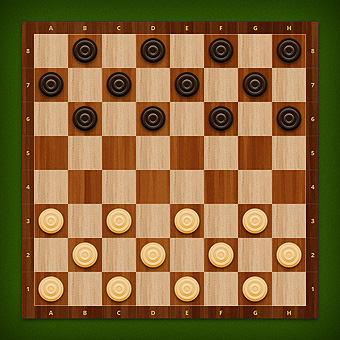
Examples of puzzle games include Tetris, Minesweeper, Candy Crush, 2048 and the Witness.



### Traditional Game – Board Games

Traditional games would be more of a convenient way for some to play games that you would play with family or friends. Card games like solitaire or board games such as chess or checkers. You would often see these sold as compilations or preinstalled on computers. There is a market for these games but many are freely available there may not be the appetite for a traditional game as there would be of other genres.

Examples of traditional games would be 247 Checkers, Board Game Arena, Solitaire and chess apps.



## Appendix

### Articles for research:

Mark Brown video on Nintendo game design:

<https://www.youtube.com/watch?v=2u6HTG8LuXQ>

Pacman Ghost Characteristics:

<https://www.webpacman.com/ghosts.html>

Halo half minute hero article:

<https://www.engadget.com/2011/07/14/half-minute-halo-an-interview-with-jaime-griesemer/?guccounter=1>

2D Shooters:

<http://www.racketboy.com/retro/shmups-101-a-beginners-guide-to-2d-shooters>

### Screenshots

Contra:

<https://gamefaqs.gamespot.com/nes/563399-contra/images/227>

Super Meat Boy:

<http://supermeatboy.wikia.com/wiki/File:Screenshot_1.jpg>

The Witness:

<https://guides.gamepressure.com/thewitness/guide.asp?ID=33914>

Online Checkers:

<https://skillgamesboard.com/play-checkers-online.aspx>

Game template:

<https://developer.mozilla.org/en-US/docs/Games/Techniques/Control_mechanisms/Desktop_with_mouse_and_keyboard>