Mobile Applications Development 3

Project Design Document

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Game types:

The following is research I carried out while trying to decide which style of game to develop in my Mobile Applications 3 module. The idea of the research was to look at the different types of games and decide which style I would be most interested in working on.

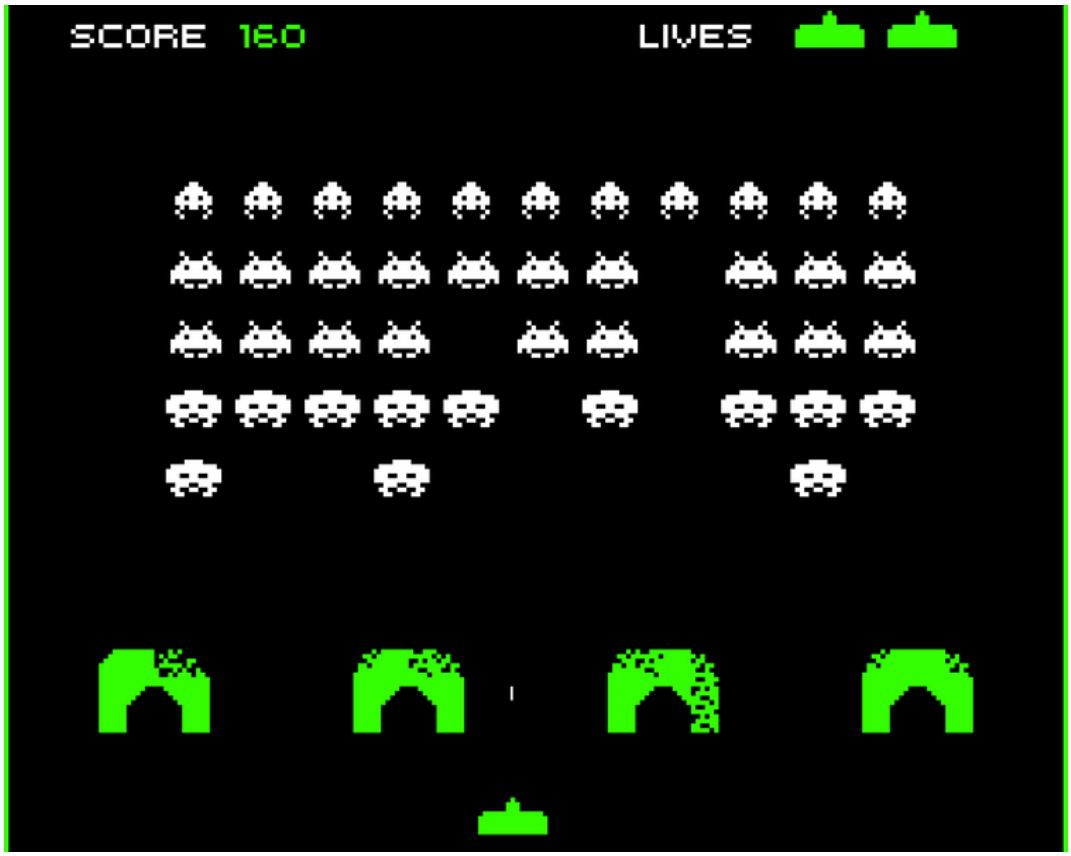
Shooters – Classic, horizontal or vertical scrolling

[1] - The classic style of shooter would be 1st person perspective and would have the player look into the game world as if they were the character, the idea is to provide a view of what an actual person would see and do in the game. This is a hugely popular type of game and some of the current and previous best-selling games are developed in this style.

Examples of this style would include Goldeneye (pictured below), Call of Duty or Doom.

[2] - Horizontal scrolling would be 3rd person perspective with the player controlling a character or object on screen that they can see. With horizontal scrolling the player would be moving form left to right or vice-versa. Examples of this style include Gradius or Space Impact (Nokia 3310) pictured below.

[3] - Vertical scrolling is the same idea as above but the game is moving it's environment by vertically instead of horizontally. Examples include one of the most famous games of all time in Space Invaders.



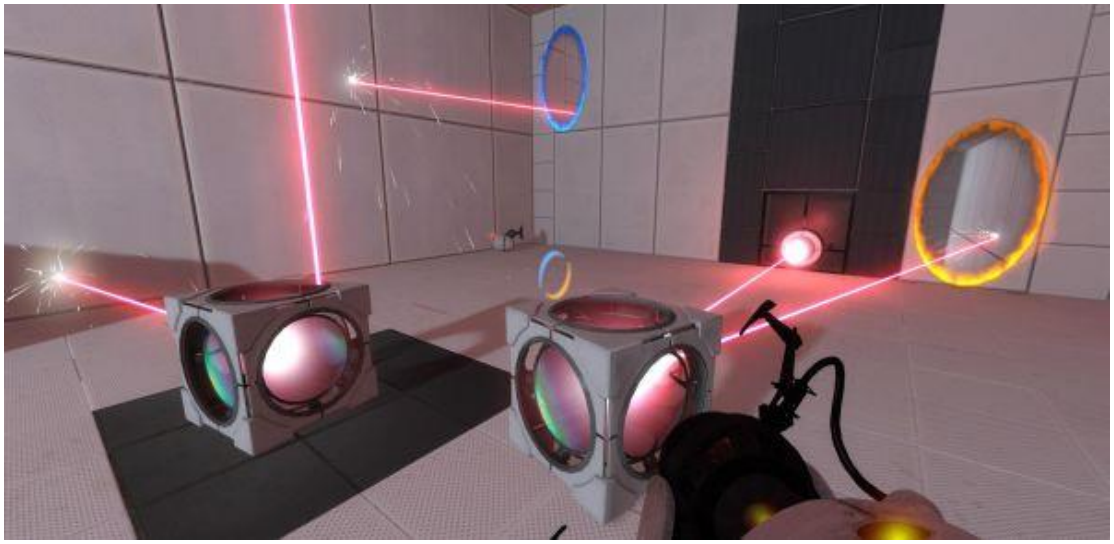
Platform – Classic or 2D

[4] - In a classic 3D platformer the player controls a character or avatar to jump between suspended platforms and avoid obstacles. Environments often feature uneven terrain requiring jumping and climbing in order to traverse them. The player usually views from behind the main character or object in 3D. Examples include Super Mario Odyssey and Crash Bandicoot (pictured below).

[5] - 2D platformers are side on views of the environment with the same types of obstacles to avoid just in a 2D setting. Examples include Super Mario Land and Sonic (pictured below).

Puzzle – Action Puzzle or Desktop Puzzle

[6] - An action puzzle is a game in which the player interacts with game pieces in a real-time environment to solve the puzzle or clear the level. This is a broad term used to describe several subsets of puzzle game. It covers falling-block puzzles such as Tetris and It includes games with characters moving through an environment. Additionally, it can include action games that require timing and accuracy with pattern-matching or logic skills. Like the first-person game Portal (pictured below).



[7] – Desktop puzzle games are games like solitaire (pictured below) and minesweeper which come pre-installed on most PC's. They are usually simple to play and quick to get into.

Traditional Game – Board Games

[8] - Fairly self-explanatory, taking a game which already exists in board game format and making a video game from it. Chess, Scrabble, Monopoly (pictured below).

Sports Simulation

[9] – Games designed to mimic real life sports like football (Soccer), F1 racing, American Football or Rugby. These games can go one of two routes, they can try to get as accurate to the real sport or the can go a more arcade route and focus on making a fun game that is more loosely based on the real sport. These days most developers seem to be going the route of accurate to the real sport. Examples include FIFA 19 (pictured below), F1 2018 and Madden 19.

Research Conclusion:

Unity can be used to develop in almost any style of game. Using things like the asset store, the developer doesn't need to be artistically gifted either. Unity is a game engine that targets many platforms, so you can write one game, and have it run on Windows, Mac, iOS, Android, consoles and WebGL. The aim of this project will be to get a game developed in Unity using the skills learned in class over the next semester. I am starting from a complete novice base with no experience with Unity and very little experience in making games of any sort, so the learning curve will probably be quite steep.

What is Unity?

[10] - Taken from their website, Unity is:

- All-in-one editor: Available on Windows and Mac, it includes a range of artist-friendly tools for designing immersive experiences and game worlds, as well as a strong suite of developer tools for implementing game logic and high-performance gameplay.
- 2D & 3D: Unity supports both 2D and 3D development with features and functionality for your specific needs across genres.
- AI pathfinding tools: Unity includes a navigation system that allows you to create NPCs that can intelligently move around the game world. The system uses navigation meshes that are created automatically from your Scene geometry, or even dynamic obstacles, to alter the navigation of the characters at runtime.
- User interfaces: Our built-in UI system allows you to create user interfaces fast and intuitively.
- Physics engines: Take advantage of Box2D and NVIDIA PhysX support for highly realistic and high-performance gameplay.
- Custom tools: You can extend the Editor with whatever tools you need to match your team's workflow. Create and add customized extensions or find what you need on our Asset Store, which features thousands of resources, tools and extensions to speed up your projects.

Basically, unity is a tool designed to make game development easier. Over the next semester I will hopefully become fully capable of using Unity to develop a good quality game.

Design:

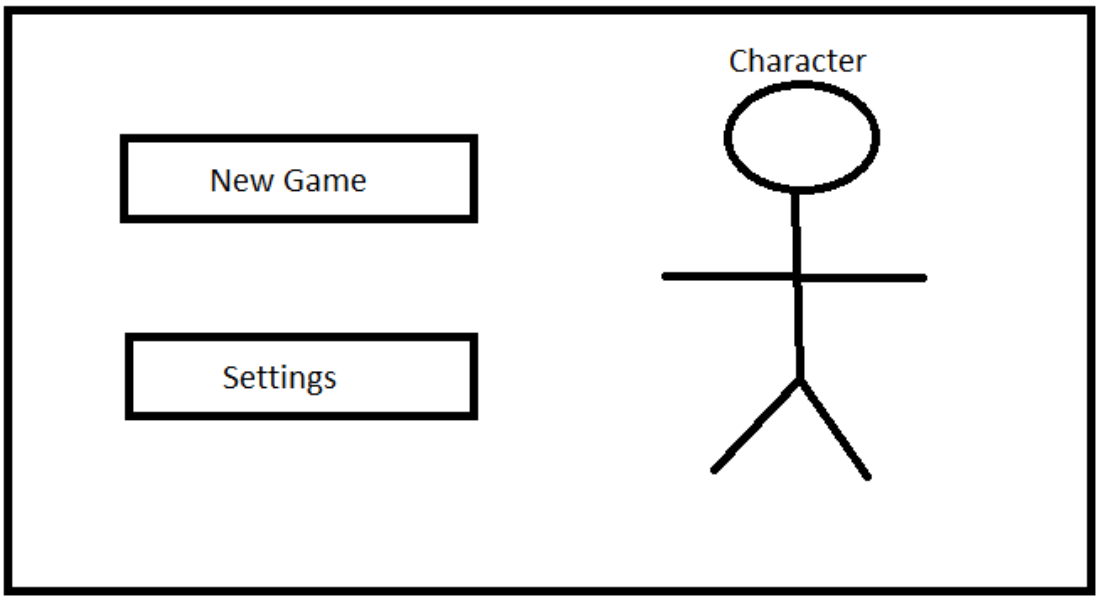
Overview

The game I will be making will be a 2D platform style game. I have chosen this style as I think it gives plenty of room for creativity in the development process. This style of game has been hugely popular over the years so there is plenty of inspiration to use in the conception/design stage. I will look to get this game up on one of the main stores at least. Most likely I will aim for the windows store as I have a developer account already from the college.

Below are some very early stage concept sketches for the game. They show what the bones of the game will be, but they are mainly rough ideas as to the direction I want to go.

Front End

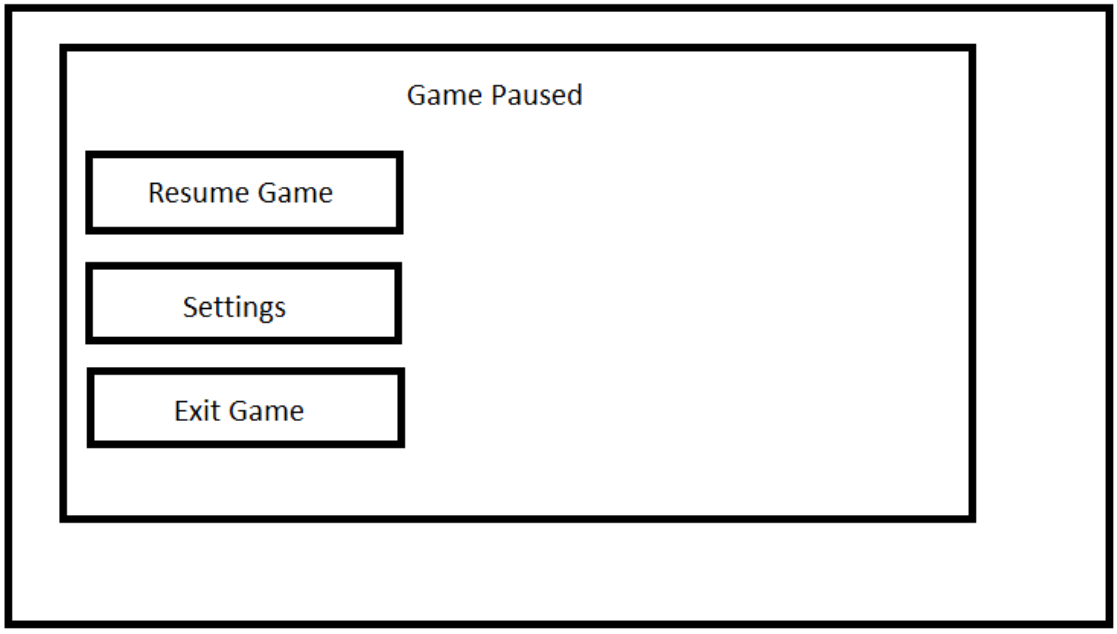
Set of title screens that takes the user from the main menu on game load to the actual game. These should be pleasing on the eye and clear in what options they offer to the player. The user should select new game and be brought straight to the start of the first level. I will add another option to continue previous game once this is working.



In-Game Menus

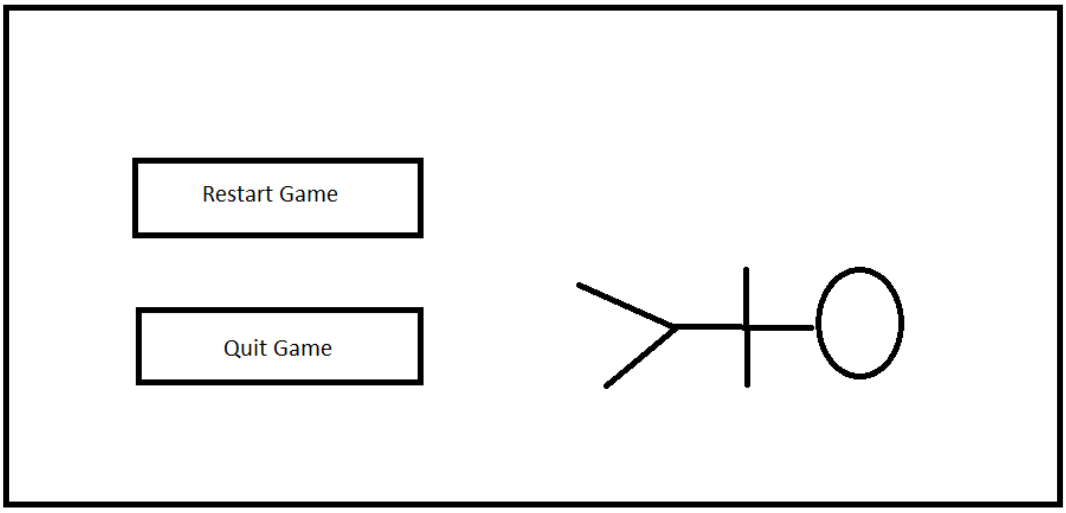
On pause the player should be presented with a set of options along the lines of resume game, settings and exit. Like the front-end menus these should be pleasing in their appearance and clear in their functions. The user shouldn't be spending any more time than is necessary in the game's menu system as a bad experience here could hinder them from going any further with the game.

I would like to add the option for the user to load a previous save from here as well once I have the main parts working.



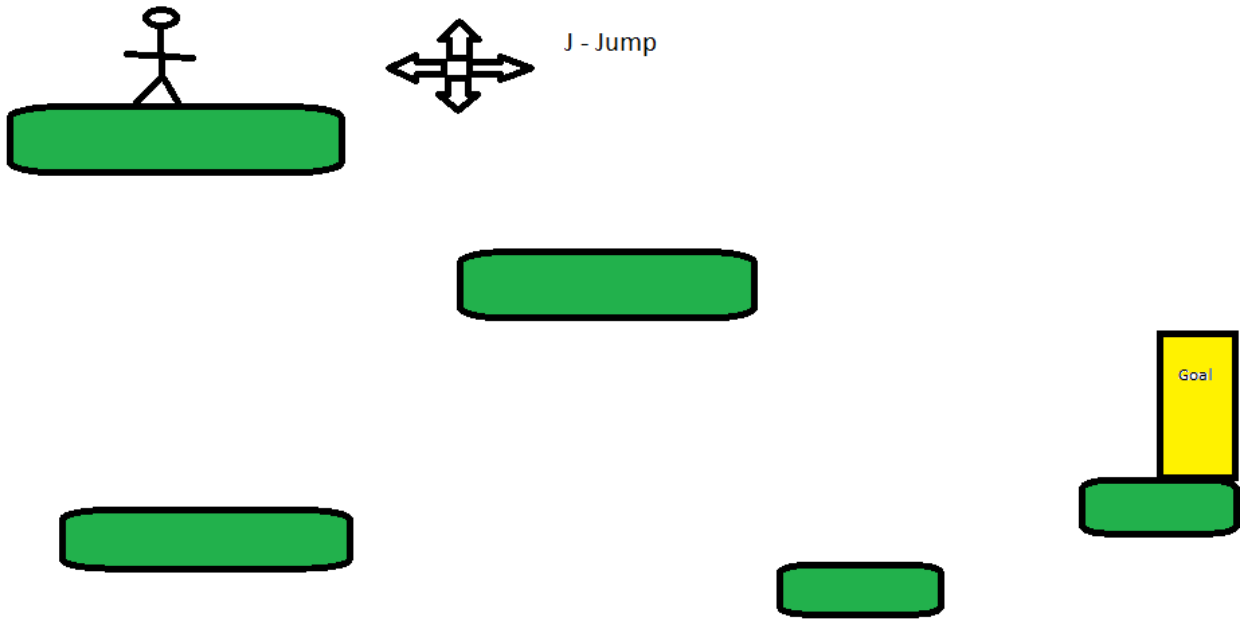
The pause menu could also either have some game info on the right-hand side or an Image of the main character, so the menu is more pleasing on the eye.

The game over menu will offer the player the choice between starting again or quitting the game.



Controls

The user will interact with the character through keyboard inputs. Arrow keys and J to jump or a plugged-in controller will be supported with direction buttons providing movement and the X/A button for jump. The character will have to avoid objects and traverse the environment to reach the end of each level.



Should I release this for Android or IOS then I will likely have to include onscreen controls as mobile phones don't have the physical input keys required to play such a game.

The Game

The main game will revolve around a main character moving through a 2D platform game world and avoiding objects and enemies. The number of objects and enemies should vary depending on difficulty desired. In the concept image above there are currently no enemies, I hope to add them in during the actual development process. The stickman image is just a placeholder at the moment as I don't have a character design at this stage of the process.

I want to keep the design of this game simple enough in the sense that almost anybody could, in a couple minutes, pick up and learn how to play the game. An increase in difficulty can come after the user has got an understanding of the core controls of the game.

Sources:

Game types:

[1] - https://www.usgamer.net/articles/the-best-classic-first-person-shooters

https://www.cerebrosgames.com/development-blog/history-of-first-person-shooter-games-second-era

[2] - http://www.denofgeek.com/games/shoot-em-ups/31744/the-side-scrolling-shooter-1980-2004

https://www.cnet.com/news/the-10-greatest-mobile-games-of-all-time/

https://www.reddit.com/r/nostalgia/comments/8sr4p0/nokia_3310_space_impact_i_hated_this_boss_battle/

[3] - https://en.wikipedia.org/wiki/Space_Invaders

https://www.smithsonianmag.com/science-nature/original-space-invaders-icon-1970s-America-180969393/

[4] - https://en.wikipedia.org/wiki/Platform_game

https://store.playstation.com/en-us/product/UP0002-CUSA07402_00-CRASHNSANETRLOGY

[5] - https://itunes.apple.com/us/app/sonic-the-hedgehog-classic/id316025912?mt=8

[6] - https://en.wikipedia.org/wiki/Puzzle_video_game#Action_puzzle

https://www.rockpapershotgun.com/2011/04/19/lets-address-some-portal-2-nonsense/

[7] - https://chrome.google.com/webstore/detail/solitaire/lkbhppfbabandkdmgjmifahoabeodiep

[8] - https://store.steampowered.com/app/562810/MONOPOLY_PLUS/

[9] - https://www.express.co.uk/entertainment/gaming/993490/FIFA-19-preview-five-ways-EA-has-changed-this-year-football-title

What is Unity?

[10] - https://unity3d.com/unity