2019

Developers Diary

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MOBILE APP DEVELOPMENT 3: Project

Developer Diary

22/10/19

Created the Github repository for the Mobile App Development project. No final design is decided at this stage of the project, but I am considering a game that is an endless runner featuring platforming and shooting but that may be too much to do in this project. Also added a gitignore file that I will complete later when the project is near its full completion.

25/10/19

Downloaded and updated the recommended version of Unity 2019.2.4 along with the latest version of Visual Studio 2017 which I will use to write the code for the project. Unity recommended that I download Unity Hub to allow me to use the software sufficiently, particularly opening and creating of projects. I created a base project in Unity, the project requires that I create a 2D game. I created the base game and added the folder to my Github repository.

04/11/19

Added a basic developers diary to my Github repository. It was only partially completed as I still have not decided on the final design on the project. This project will be of my own design and want to create something where I will find helpful resources online if I get stuck in any part of development. Before I hand up the developer diary, I will have to convert the now word document into a PDF.

02/12/19

Updated the design document. The core outline was to discuss several genres of gaming. I chose to write about the shooter genre. I wrote an overview on my project and went into detail on gameplay and overall philosophy of videogame design. My aims and objectives aren't final as I want to use this to describe why I chose the final design and my initial aims for that. I tried to go into detail about the evolution and commonality of shooters. I wanted to convey how despite moving from 2D to 3D the base mechanics are still intact of shooting enemies, maintaining ammunition, and moving forward from level to level even if the environment changes. I have not written about the other genre's yet like platformers, puzzle and traditional games.

03/12/19

I wrote about the genres I have not already written about above. I looked at platformers closely as I wanted to design my game as a platformer that featured some light shooting elements. I did not write out the initial design as I wanted to try developing a working prototype that I could use as a starting point to begin the project before committing to the design fully. Part of writing about genres pushed me research them by reading articles and watching videos so I could discuss the genre, their evolution, and a light history of some of the more popular games in. For the traditional games I had to research the rules of some card and board games as I do not really play them regularly. I committed the design document to my repository before moving on to the next phase of my project.

05/12/19

I spent most of this day working on a basic prototype of a platform game. I wanted it to be an endless runner featuring mild form of shooting enemies and collecting pickups to contribute to a

high score. I would later try to implement a parallax scrolling background, to give the illusion of depth in a two-dimensional field. I had already created a starter project, so I worked on creating platforms and the player. Both right now are basically square blocks of different sizes. The platforms will be of different lengths to add variety to jumping. I have yet to create menus or other screens as I figure I should implement and stage them at a later point in the project. I also created a developer diary to log the progress and issues with the project. I will also write out test cases based on the project requirements to see if the game meets the expected standard.

08/12/19

Have created a scene that is going to be adapted into a game. The character block starts on the left of the scene and I plan to implement auto generating platforms. The start of the game features a long platform so the player can move from right to left at the start of the game. I have implemented a jump to the player, this required gravity to be implemented to the player's jump. I tweaked this so it is reactive but not overpowered to jump huge lengths. I did not implement any sprite work or character animations as the character is only a square right now. Have not committed as I want to get the platform generation and scrolling camera working. The platforms will be generating at different specified heights and the spaces in between each platform will be random but the gaps will never be too large.

09/12/19

In the last few days I am experiencing difficulties with the endless runner design as the platforms that the player will be jumping on at different heights are having issues when spawning. Some will spawn fine with a desired gap in between them but others spawn on top of each other which looks aesthetically unpleasant. There are also errors in spawning with huge gaps in between the platforms the longer the game is running for, these gaps are so large the player is not able to jump from one platform to the other without falling in between them. These platforms are of multiple lengths and generating randomly but even when I switch the spawning platforms to be of the same length, I still encounter errors. I have yet to introduce enemies, a weapon for the player or pickups to the game so I am going to give up on this initial design. I then attempted to refactor some of these to a just a basic platformer, but this led to old errors reappearing, so I abandoned this old code. I have now created a blank Unity project and will try to investigate into creating a new style of game for the project. This will require a few days of research. Committed this developer diary to my Github repository as I have not made a commit in nearly a week such are the issues outlined above.

12/12/19

The past few days I have been working on the game and have a basic working prototype now. The player character can shoot (albeit not in every direction right now), move with the camera following them and there is a single enemy character with knowledge to at least be aware of where the player is by following the player if they move far away from him. There is a bug that sometimes the player character disappears if they move around too much. Hoping that bug disappears, or the issue becomes clearer as I do not understand why it happens. It is at the stage in development where I am at the point of no return on the design and must move forward regardless of the issues or design limitations that might occur. I plan to tweak and adjust the controls, the overall speed of the game, and its complexity as I continue to create the game. The last few days were not as progressive as I was hoping but I am hoping the next few days will yield more progress. I updated the Design Document to reflect the current games design as being the final one. It's late in development to add

a final design but I was having issues with the project up to this point, my first design was an endless runner that ran in to some errors when I ran into trouble with the platforms generating on top of each other. I have sketched out what I plan to be the final designs but as always, those plans are subject to change if I come under pressure for time. I am not sure how I will add the sketches to the document, but I will try my best to make them as ascetically pleasing as possible. Right now, I plan to add a high score, but that plan may change if I get stuck at some point. I also added some test cases to the test plan that I plan to run once the game is completed.

15/12/19

Have been having developing issues the past few days as I try to move forward with the project. I was having issues with the player sprite disappearing. I believe it was related to the layers I had implemented and whenever the player sprite would travel away from the enemy sprite the player and bullet objects would not appear. I tried to implement some sprite art on the player sprite, but it would not implement like I intended. I restarted the project from the beginning just to see where I was going wrong but ran into the same issues and errors with the player sprite disappearing and the bullet prefabs were often not working as the Player object was saying it could not find the bullet object when I would attempt to shoot with the space button. I was still having issues with the player disappearing into the background. The enemies would still follow me so the AI for following the player was slightly working even if not visible. As expecting with these bugs and errors I have gotten further behind on my timetable and I feel I may have to make sacrifices on the project's quality to get it over the line if I cannot fix the errors I am experiencing. I was able to get the camera to follow where the player is on the screen.

16/12/19

Finally got the sprites to consistently appear when I would move them on screen along with improved gravity. Took a while to understand why the enemies would drop to the bottom of the screen but it had to do with the gravity scale. The enemy objects now follow the player works now after understanding that, currently the player must roam for the enemies, I'd like to maybe have the player be pursued by the enemies if possible. I'm aware that would be hard to implement as I want to have multiple enemies and I don't want them to pursue the player all at once. When creating weapons, I did this using a scriptable object class which would help me add more of a variety of weapon types moving forward. I want to do that later towards the end of the project after I deal with menus, audio and other unforeseen issues. I switched controls to ask the user shoot with a mouse rather than the space key. I figured this would be easier to play in unity and I wanted to not make the game playable only with a keyboard. I also added weapon damage but could not get the enemy to disappear once killed even though it would be marked as killed in the console interface. Even though I feel like I made progress on the project I still feel like I am still significantly behind. I have restarted the project several times and often my problem-solving skills in Unity show my lack of experience as its often a basic mistake like forgetting to add an object or a prefab to make it appear or clicking on a box. I have had to do a few rollbacks too the last few weeks trying to fix what often was a broken situation.

17/12/19

Fixed the enemy sprint to disappear when they are killed. Previously the enemies and player would be invincible. Once I had this working, I created enemy object prefabs so I could display multiple enemies. I set the limit to twenty as the map is quite large but sometimes the enemies spawn on top of the player. For testing purposes, I have not set the player to die yet. Like other issues I have put it as a task on the to do list after I get the project in a presentable state. Created a UI for the game to count down the ammunition limit of ten, the player reloads rather than running out of ammunition.

Maybe if I give the player more than one weapon the more powerful weapons will have a limit of three or five. Once I got this working, I put a new sprite on the player object, it was basic as I was limited by time and skill in Microsoft paint. I used a website to crop the image into a round object. It worked but it was not aesthetically pleasing but at least it differentiated the player from the enemies more but I didn't use my enemy sprite as I want to go back and work on a more technical design, when I have the time. I tried to resize the sprites but kept on getting running errors where the player object would not move so I had to stick with the original (tiny) sizes after a rollback. I had at this stage implemented audio functionality which was working. But after I resized the sprites and the audio would not work for background music or weapon firing. I wanted to use audio where the enemy ships exploding would produce an audible noise, but I could not get the audio working again for whatever reason on the game or sound effects. I registered and used wav audio files sourced from the Freedsound website. I then had to stop working on the audio and get a functioning menu. I got this mainly working but I lost a significant amount of time trying to deal with the audio issues which ultimately were never fixed. This has been an issue for me throughout the project. Now with a day left I am short on time and ultimately features, some of which were required such as a high score implementation, multiple levels, and audio problems. I will attempt to make changes to the project before the deadline, but I am fighting time as well as issues.

18/19/20

This is my last post regarding the project, and I am treating it like a basic literal review of I was unfortunately unable to implement all that I wanted in it. Thee game runs fine from what I can see but its very basic. Both the calculation of high scores and leaderboards were not implemented as I expected them to be. The audio no longer works after it initially worked in testing and failed after I performed a rollback on the project. I left sprite work until the end and ran out of time; I had planned to make my own unique background and sprite for the ships but only did so for the player (which I had planned to improve upon). The menu is functional but maybe requires some artwork. I wanted to implement maybe weapon and enemy variety as I had made prefabs of both but was not able to make the key changes required. I also wanted to implement floating health bars for the enemies and implement the method to allow the player take damage and have a health bar for the player at the bottom of the screen.

I maybe spent too much time the planning and research phase as I often got lost early on trying to create a working prototype of a platformer and should have learned to deal with the issues and try pushforward more on that design rather than scrapping it for a 2D space shooter which I encountered many issues with anyway. I wish I were able to problem solve with more experience and skill. I learned more about Unity from my errors than my successes in the duration of this project but I did feel any time I did encounter issues that it would cost me hours trying to problem solve as the versions of Unity have different layouts, fields and settings than can be tweaked and altered. My last task is to finish my test cases many of which point towards the failings of the project.