Developer Diary

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INTRODUCTION

This is the Developer Diary that I will be using for the module, Mobile Applications Development 3. This diary will be used to keep track of the progress I make on the game and keep notes of my thought process on how I implement the different parts of the game. This developer diary is my account of development. I hope to do frequent updates on my progress and the development of the game.

ENTRY 1.   24/10/20

After reading the design document that I was provided by my designer, I could see that I had to develop an endless runner. The main concept of the game was to control an avatar through an endless map while trying to avoid objects in the way by jumping or moving out of the way. The overall aim of the game is to last as long as possible and get the highest score. I will discuss some of the features with the designer and see if I could add some additional features or change a couple features around to best suit the game. I started creating small ideas on how I wanted to go about developing the game.

ENTRY 2.   27/10/20

I have started doing research into the game and how I should go about developing the game. I searched the asset store and other places for sprites or tiles that I could use. I have also created a github repository to get the project started. The project requires me to find a pig character because the main character of the game is a pig. I struggled to find a character online and on the asset store because most assets required me to pay. I finally found a good sprite that I could use. My next step is to start developing the game.

ENTRY 3.   29/10/20

I have started developing the game. After the initial struggle of finding the correct assets, I wanted to make the player run and move side to side. After achieving this I decided to create a simple level

that I could use to test the movement. I had to do a lot of research on how to implement all of this. I watched a lot of online tutorials. Unity has good amount of documentation that I watched and read on creating levels and terrains. I also sent a picture of the test level to the designer to get their opinion on the design. The designer said that the level looks good and I should keep working on it. I started to work on the player movement. The designer wanted the player to be able to move using the A and D keys. I did this by getting the player position and changing the transformation when the keys are pressed. Now the player is able to move with the A and D keys, but I plan on implementing the jump and touch controls later in the development stage.

## ENTRY 4.   04/11/20

The character is now able to move along the x axis and run straight. My next step was to get the character jumping. I used the space key to make the character jump. I next wanted to make the terrain for the character to run through. The initial terrain that the developer wants is a terrain with hills. I used a terrain with houses and a couple trees and sent a pic to the developer, who approved of the idea. The character will be initially running on the road. I next had to test that the character was able to run along the terrain and move on the road. I had a few difficulties here because of the character's x position. The terrain was not reset, and the player kept moving to a different position after the game started. I had to change the terrain to the characters position. My next aim is to add obstacles on the path for the character to avoid.

ENTRY 5.   07/11/20

I started to add obstacles to the course. I got some assets from the asset store and used these as the obstacle blocks. After adding the obstacles, I wanted the player to be able to collide into them, so I had to add colliders to the obstacles and a killPlayer script. I had it so that when the player collides with an obstacle, the dying animation plays. I had to use a player animator to do this. I also added a running animation, so the game feels better when playing. My next aim is to add the coins to the game.
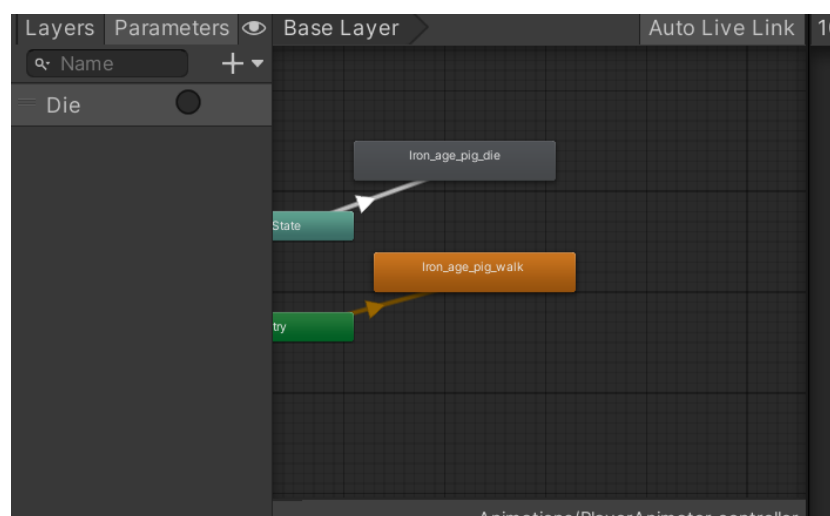
After the player dies the player just lies on the floor. Next, I worked on the jumping part of the game so the player can jump over obstacles and not die.
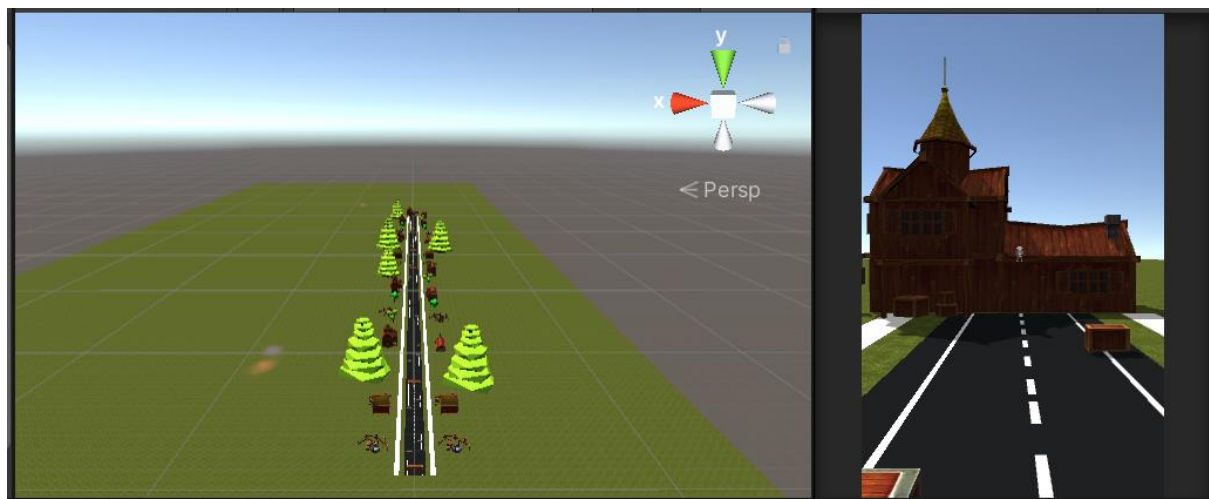
ENTRY 6.

I added more obstacles to the course to make it more challenging for the player. I am now working on the coins and power ups aspect of the game. The game originally had no power ups or coins so I had to message the designer if I could add these into the game. The designer was happy to let me add these into the game. Adding the coins to the game is proving to be a little difficult. I am getting a few errors from unity and have to do research on how to fix these. The problem I kept getting by the coins was that when the coins appeared on the screen the player picked up one coin and that got rid of all the coins and the coin sound played even before and after the coin was picked up.

ENTRY 7.

I have been working on the coins and I am still getting errors. I have decided to move on from the coins and work on the level design of the game. I will come back to the coins at a later stage and fix the errors. I now want to make the game endless and make it so the player can play infinitely. I am struggling with the endless part of the game because the roads are not repeating properly, and the game is not endless. I have to do more research into this and try to fix the problem so I can work more on the game. I have spent a lot of time researching the problem and different methods on fixing the issue. I found the issue was very small but caused a lot of problems. The road was repeating but the x and y position was not accurate, and this was due to the terrain in the back, was static, so it was not moving properly. I made it so the terrain was not static. This fixed the level and the level is now endless.

I made the level with two road game objects so when the player moves from the first segment into the second, the first one will be deleted and moved to the front of the next one. This is how the endless part of the game works.

ENTRY 8.

22/11/20

I next want to add a script that will start the game with one camera and change to a different camera once the player is out of view. I will do this by creating an empty object that will have a box collider. This box collider will be a trigger for the camera change. When the player hits the collider. It will run a script that will set the active status of the main camera to false and make the camera following the player to true. While trying to do this there were a few issues that I had to deal with. The player had a script that triggered the road repeating script everyone the player collided with a collider. In order to fix this problem, I had to remove this part from the script and create a new script and apply that to the spawnTrigger gameObject. I messaged the designer and sent him a video explaining the game so far. The video demonstrates the endless part of the game along with the obstacles and the terrain. I am still waiting on a reply from the designer regarding the video.
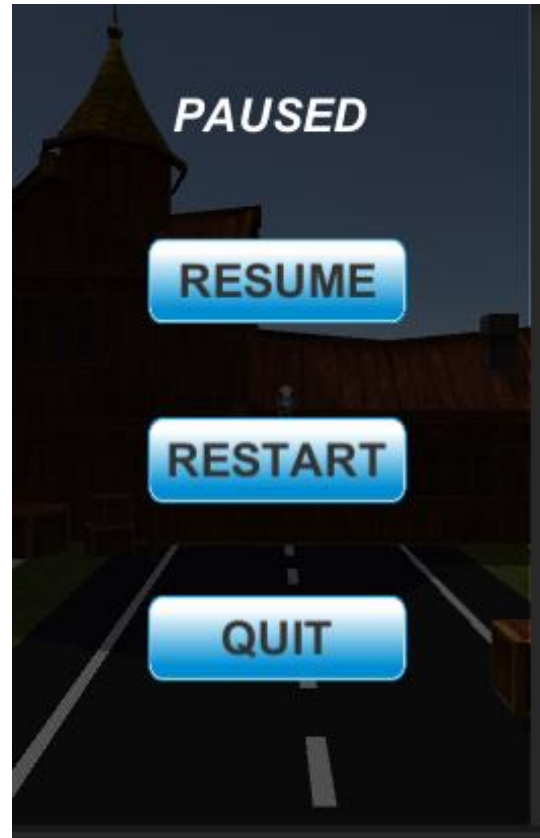

ENTRY 9.

24/11/20

I want to work on a camera switch mechanic in this entry. I want the game to start off with the camera in front of the player. When the player is out of the camera angle, it will switch to a different camera that will follow the player. This will be done through another collider. When the player hits a collider that will deactivate the main camera and activate the follow camera. I wrote a script that will take two camera objects and activate and deactivate them. I had a few issues with this because the main camera was glitching out and it would not work. I had to turn the main camera off and insert a new camera module. After doing this, the camera switching was working.

ENTRY 10.

26/11/20

I have started working on the main menu and the pause menu. I created a canvas with a panel and put buttons inside the panel. The panel contains 3 buttons, for sound, help and quit. When the user presses these buttons, separate actions will be taken. The sound button will allow the player to turn on and off the sound. The help button plays an animation that brings up a small panel with information about the game. The quit button allows the user to exit the game. The pause menu is very similar to the main menu, where it contains 3 buttons. These are the resume, restart and quit button. I have sent pictures to the designer to confirm if the menu system is okay.

Entry 11.   29/11/20

I have been talking to the designer about the menu design and how the game looks, and the designer confirmed that it looks fine and I should continue with that design. The menu system took a bit longer than I expected, I had a couple issues with the menu system that took a while to fix. One of these issues was that when the user pressed the help button, it was covered up the start button, so the player was not able to read the information. I fixed this by adding a function to the help function in the script where it takes the button game object and sets it to false and true when the help button is pressed. I also started the player canvas to showcase the score, lives, coins and the player distance travelled. I created a simple canvas with picture and panels to showcase a hard-coded value so I can see how it will look. Everything looked fine and I changed the colour of the panels to match the overall game design.

Entry 12.   02/12/20

I started to work on the player canvas more by connecting the hard-coded values to actual functions that calculate the score and the distance travelled. I used a formula which uses the frame count element from the time class to do this. But this would not reset to zero when the player restarted the game, so I had to use a different formula. I did a bit of research and found a video that uses the players z position to calculate the distance travelled and changed it around to match my game. My next aim was to get the coins working which previously caused me errors. I found a better way to spawn the coins. I created a coin manager class, which took a coin prefab and instantiates the prefab in a random position using the math.random class. The manager also uses a variable to set the time

for how often the coins spawn. I set the timer to be two seconds. So, when the player picks up a coin, another coin spawns in 2 seconds in front of them. I used the same logic for spawning extra player lives but changed the time to be longer because lives are rarer to pick up. The designer initially had no pick-ups, so I contacted the developer in order to add these pickups. The designer agreed with me and said that it will make the game better. I thought it would give the player more of a reason to keep playing and not give up.

Entry 13. 05/12/20

I have started working on the sound aspect of the game, I had to find something that would match the game and the environment. I used open game art to find music and sound effects. I have a main menu theme that plays at the start of the game and once the player presses the start button it will start playing the actual theme song. There is also a sound effect for picking up coins and hearts. These play once when the user picks up the collectibles. When the player hits any obstacle, it plays a different sound effect to indicate the player has died. I had to test multiple different sounds and pick the best one. I also made the game more difficult by adding more obstacles to the game because the course was too easy for the player. This way the player has to keep playing more to get better at the game.

Entry 14. 07/12/20

I wanted to work on the swiping controls next. This is for when the game is exported to mobile, the player can swipe on the screen to control the player and play the game. I found a helpful video on this feature, which is mentioned below to help me with this. After implementing this feature, I had to test it. In order to test this feature, I used the mouse and swiped on the screen to change the player position. I then exported the game to mobile and see if that worked. The player can swipe left to go right, swipe left to go left and swipe up to jump.

Entry 15. 09/12/20

I have started working on the multiplayer element of the game. I attempted to do an online multiplayer and I tried to use photon to get this working. I looked at a few tutorials and still could not figure out how to figure it out. I messaged my designer regarding the multiplayer. I asked him if I would be able to change it to a local multiplayer. I also told him that I would try a bit more to get online working and he agreed that it was okay to do local multiplayer. I created a new canvas that will save the players highest score and if the player can beat that high score it will be updated. The aim here that a user will play the game and set a new high score. Then another user will take the phone and try to beat the high score. I did this using player prefs and it saves the score perfectly well.

I had a small glitch while implementing this, I used the wrong calculation for the player score which caused the player score to increase really quickly. This set the highest score to be really big. But I fixed this issue by fixing the player score. I could not test the highscore anymore due to it being so high. In order to test the game I downloaded it on my phone and tested the high score on that and everything seems to be working.

ENTRY 16.   12/12/20

I decided to work on adding a new dimension to the game. The player will enter a portal that will allow him to go into a different dimension for a short period of time and then come back to the main level. I was talking to the designer who told me that I did not have to add any extra dimensions but said that he was happy that implemented a new dimension anyway. The new dimension is a cold icy dimension filled ice blocks and snowmen. The snowmen are friendly and will not the kill the players, but the ice blocks will kill the players. The background is filled with snowy mountains.
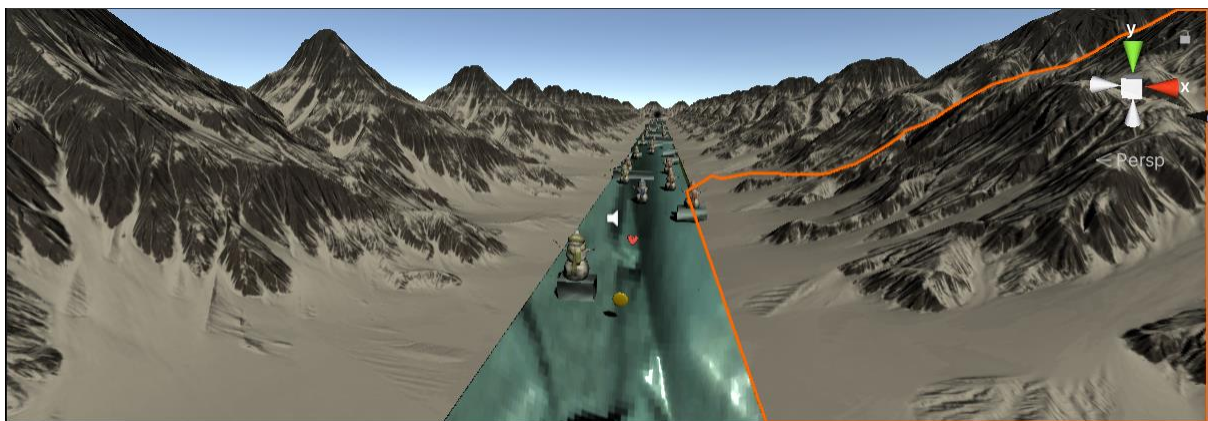
ENTRY 17.

14/12/20

I wanted to get the last few things done from the design document. I started working on the dash function. I had a few issues with this function. I got the player to dash through obstacles, but the player would not die again when he hit more obstacles. I tried a couple of things to fix this, like using if statements and Booleans but could not fix it. In the end I left the dash function in, but the user cannot dash through obstacles, the player can only get a small speed boost. The player can use the dash function by pressing b or by swiping down on mobile. I sent a video of the game to the designer to get their opinion on it. The designer seemed to be happy with the game. I also did last few checks to see if everything was working.

REVIEW AND FINAL COMMENTS.

I had a lot of fun working on this game and my designer was very helpful and willing to collaborate with me. He gave me helpful comments and allowed me to change things to make the game a small bit easier. I think I covered most of the design document and implemented all the required features and the ones I could not I talked to the designer and changed it to a different feature.

My developer was also very nice and messaged me regularly about the game. He asked me for help and wanted my opinion on the game. I thought that was very good of him. I tried to help him as much as I can, and he gave me regular updates of the game.

I could not include the conversation I had with my designer due to GDPR, but they can be shown if required.

TESTING.

I tested the game in a couple ways. The first way I tested the game was playing it on the pc. I tested the A and D keys as well as the space bar to jump. I then exported the game to mobile and checked all the functions to see if everything is working. I also downloaded the game on another phone to see if that would work. Everything worked perfectly and how I wanted it to. I also created test cases and the game passed the test cases. The test cases are included in this folder and were done using Excel. These are some of the test cases that were included in the excel sheet.

Game Screen	Test	Result
Main Menu	Press start button	Goes to Difficulty Screen
Main Menu	Press mute button	The game mutes and unmutes
Main Menu	Press quit button	Quit game
The Game	Move the player (A and D keys)	Player moves in the correct direction
The Game	The game is Endless	The game goes on forever
The Game	Hits obstacle	Player loses a heart
In Game Menu	Press resume	Resume the game

In Game Menu	Press restart button	Game restarts
In Game Menu	Press quit button	Quit game
Game Over screen	Press save score button	Saves the score
Game Over screen	Press quit button	Quit the game

REFERENCES

Moving the Player:

[https://www.youtube.com/watch?v=rA_JDSGgZlw&list=PL0WgRP7BtOez8O7UAQiW0qAp-XfKZXA9W&index=2&ab_channel=Developer3.5Pro]

Camera Following Player:

[https://www.youtube.com/watch?v=8JHrM7yS0Xw&ab_channel=N3KEN]

[https://www.youtube.com/watch?v=86dUTj3IqPY&list=PLtCJJ3_ORPtXIooz-XGurvbVOmLdkXFg8&index=9&ab_channel=incern]

Making the Level Endless:

[https://www.youtube.com/watch?v=RYouWeqZbPc&ab_channel=Quick%27nDirty]

How to Switch the Camera:

[https://answers.unity.com/questions/265759/camera-switching-by-trigger.html]

How to randomly generate coins:

[https://www.youtube.com/watch?v=daWbDGhXScM&list=PLgAF6rpCsTCieHJNlivXJY8fSOdwTLtGD&index=16&ab_channel=FastSolution]

How to use Set Trigger:

[https://docs.unity3d.com/ScriptReference/Animator.SetTrigger.html]

Adding Swipe Controls:

[https://www.youtube.com/watch?v=rDK_3qXHAFg&ab_channel=N3KEN]

Adding Animation:

[https://www.youtube.com/watch?v=55Mu5ol6wtE&list=PLtCJJ3_ORPtXIooz-XGurvbVOmLdkXFg8&index=5&ab_channel=incern]

Collectibles:

[https://www.youtube.com/watch?v=daWbDGhXScM&list=PLgAF6rpCsTCieHJNlivXJY8fSOdwTLtGD&index=16&ab_channel=FastSolution]

Game Continue:

[https://www.youtube.com/watch?v=k6aqJbZ-4jY&list=PLtCJJ3_ORPtXIooz-XGurvbVOmLdkXFg8&index=39&ab_channel=incern]

Score:

[https://www.youtube.com/watch?v=k40NlzXmqHw&list=PL2xbYe8TgQDPsXgVmd8RJdoIJ3eLio7R6&index=7&ab_channel=Quick%27nDirty]

Menu System:

[https://www.youtube.com/watch?v=D6D40tgkBB4&list=PLtCJJ3_ORPtXIooz-XGurvbVOmLdkXFg8&index=20&ab_channel=incern]