

Learning Journal

NOTE: The codes I created between the dates of 18th February and 21st February were either altered or NOT used in my final components, the reasons why are mentioned further down in the journal.

18th February 2020 – Programming Component 1 – Colour Changing Component – Colour Changing Script

On this day I started to create a colour changing component, my first component out of the four. This is a component which allows the player object to change into the colour of any object it touches in the scene, providing that the object has a material and the correct tag on it. This is a component which can easily be added to any project to add a colour changing mechanic into it, as long as the manual is followed. I will also add extra scripts and pieces to this project to show an example of this component working in first person controller mode. To find out how to create the colour changing aspect of this component, I searched around the Unity forums to find a line of code which changes/accesses the materials of objects and found out that a code which accesses the “shared material” on the renderer of the object is what I was looking for (renderer.sharedMaterial). I knew about how to create arrays before, so was able to create an array of materials which were the materials that the object could change into.

20th February 2020 – Programming Component 1 – Colour Changing Component - 3D Movement

This is not necessary to get the behaviour to work but to show an example of the colour changing script working, I added 3D movement to the player object so that you are able to move around the level/scene using WASD keys and reach the objects to change into their colours. This wasn't too hard to do as it is something I have made a lot of times before, though this time, I referenced the “Character Controller” within Unity rather than coding the entire movement myself which is not something I had tried before so I researched on Google how the Character Controller works.

20th February 2020 – Programming Component 1 – Colour Changing Component – A 1st person Camera Controller

This is also not necessary to get the behaviour to work but, after the 3D movement script, I created a 1st person camera controller to match with the 3D movement made earlier and allows the player to look around and find the objects which the player can change colours with. I have also made this a few times before so knew how to do most of it, but still had to research a little to keep my memory fresh. I also made it so the camera cannot move past certain boundaries on the screen by using “Mathf.Clamp” which is not something which I knew how to use before.

21th February 2020 – Programming Component 1 – Colour Changing Component - A ‘Mirror’/Reflective Component

This is another component not necessary to get the behaviour itself to work. However, since in this component's example version the player is in 1st person perspective, the player cannot see themselves. Therefore, I decided to add a mirror/reflective component which allows you to see your

reflection in-game, this will allow you to see what colour you are in the example. This is not something I have made before and is not something which requires a script. I watched a video titled “How To Create A True Mirror Reflection In Unity Tutorial” by a YouTube channel called ‘Jimmy Vegas’ to work out how to do this and it worked very well. I did not think it would be as simple as it was as I did not know you could add a camera view as a texture in Unity, and therefore I also didn’t know how to do it, but now I do.

25th February 2020 – Programming Component 2 – A 2D Wall Jump and Movement Component

The second component which I decided to make is a ‘2D wall jump and movement’ component. This component allows the player character to move horizontally and jump, and also wall jump. I knew about the basics of making a 2D movement script as I have made a few before, however I had never made a wall jumping script and so had to look it up. The best source I found which helped me the most and was the easiest to understand for me was a video series on YouTube titled “2D Platformer Player Controller” by a YouTube channel called ‘Bardent’. This video took me through the basics of how to create a wall jump script and also taught me about gizmos in C#, which I did not know much about before. The gizmos in this case were used to show how far away the character is to the ground and to the walls in order to decide whether it “is grounded” or is touching a wall.

3rd March 2020 – Programming Component 3 – A UI Drag and Drop Component

The third component which I decided to make is a UI Drag and Drop component. In this component, you can drag and drop certain parts of the UI onto a certain section on the screen, and it will snap into the middle of that section. If you drag and drop the correct item in, “Correct!” is displayed on the screen, on the other hand, if you drag and drop the incorrect item in, “Incorrect” is displayed on the screen. The text display aspect of this component is something which I already knew how to do, however, I had never created a drag and drop component before and so I had to look up how to do it. A video which perfectly explained to me how to do it was a video titled “Simple Drag Drop (Unity Tutorial for Beginners)” by ‘Code Monkey’. I had some trouble at some points as the items I dragged and dropped into the item slot did not go right into the centre (which is what I needed to happen), after some research, I found out that this was because the anchor points were not in the centre and had to adjust those, it then worked correctly.

17th March 2020 – Programming Component 4 – Character Switching

This is the final component which I decided to make. It is a component which allows the player to switch control between multiple characters with just one button press, in this case that button was ‘Q’. I knew how to do most parts of this code, such as disabling the script of any other character which you weren’t playing as at that moment, and creating arrays, but I did not know too much about arrays and therefore had to research on them a little, specifically how to go between each number in an array. The only issue I had with this was that at first, at the start of the game, both characters were moving and then when I pressed ‘Q’ the actual character switching started to work, this is not what I wanted to happen and I realised that by adding a code which disables movement of characters which aren’t the current character in the Start() function, I was able to stop this from happening and fixed it.

24th March 2020 – Issues – 3D to 2D Colour Change

At this point, I came across some issues with a certain component I had made. Since my final game requires all four of my components, and 3 out of 4 of my components were made for 2D projects, I had to make my final game 2D. This was a problem because my first component, the 'Colour Changing component', was made for 3D projects. Because of this, I had to alter that component to make it more fit for a 2D game, it wasn't too hard as all I had to do was change the code which accessed the 'Mesh Renderer' of the object to instead access the 'Sprite Renderer' of the object. I also had to unfortunately remove the mirror component, the 1st person camera controller, and 3D movement, and replaced it with 2D movement from my '2D movement and Wall Jump' component (for the example).

14th April 2020 – Final Small Game Programming Project

On this day, I started creating my final small game project. I used all four of my components to create a game in which you have to drag and drop UI boxes onto certain numbered areas to create platforms, which will allow you to wall jump to reach coloured squares, these coloured squares change the colour of your character, and once you are a certain colour, you can go through the coloured gates on either side of the screen to beat the level. I implemented my 'Character Switch' component by making it so that there are two characters on the screen that you can switch between, and both characters must go through their respectively coloured gates. I added an extra script on this project which was not part of my main four components which removed the colliders of the gates once the player character touched them whilst being the same colour as them.