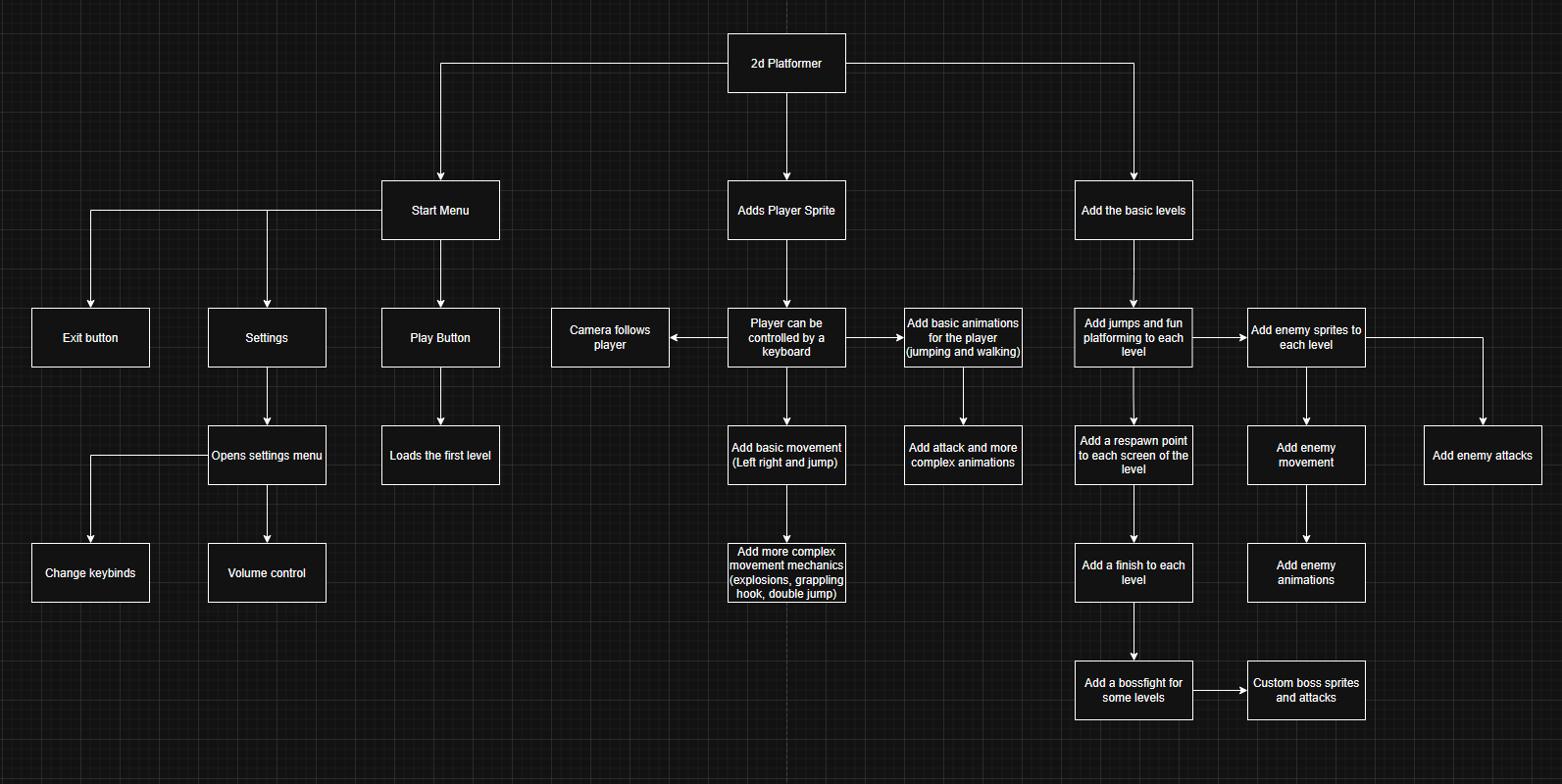
2d Platformer Design:

Structure Diagram:

DESCRIBE AND EXPLAIN WITH JUSTIFICATION

# Stages of Development Plan:

# Stage 1:

Before I go in depth for any feature of the project, like mechanics, level design and user interface, I should make a simple version of the game. This will include simple movement and a few jumps to test everything works properly.

## **The simple version will have the following features:**

The ability to move left, right and jump, make sure that the movement is enjoyable and responsive from the start.

Add some objects to the scene to see how they interact as they should, e.g being able to stand on top/ not walk through.

Add a respawn platform for the player to go to when they die/fall off the map.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test No. | Description | Type of test | Test data | Expected  Result | Actual  Result |
| 1 | Can the  player move? |  | Input  movement button | Player moves |  |
| 2 | Does the camera follow the  player? |  | Input movement button | Camera moves with the player |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 3 | Can the player interact with  objects? |  | Place player on top of a platform | Player stands on top |  |
| 4 | Does the player respawn? |  | Move the player off the map | Player is  placed back on its  respawn  point |  |
| 5 |  |  |  |  |  |

# Stage 2:

To make the game more complex, I will have to add more features to the game, this includes more movement mechanics and. The first of these will be a double jump,

which hopefully is the simplest, and a rope that can be used to swing. I will also add a start menu and a pause menu during the game.

## **The 2nd version will have the following features:**

A menu that appears when the game starts that lets you start the game or enter settings.

A pause menu that will let you return to the menu during the game.

A double jump that allows the player to jump again while already in the air, potentially playing an animation, letting the player jump further.

A rope/grappling hook that can be thrown/shot to attach to the ceiling, to let the player swing across a gap that would otherwise be too large to travel across

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test No. | Description | Type of test | Test data | Expected  Result | Actual  Result |
| 1 | Does the game start? |  | Press start | Scene, and sprites  appear |  |
| 2 | Does a  pause menu appear? |  | Press the pause  button | Pause menu appears |  |
| 3 | Can the player double  jump? |  | Press space twice | Player can jump |  |
| 4 | Can the rope attach to the  ceiling |  | Touch the two objects | Rope  attaches to the object |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 5 |  |  |  |  |  |

# Stage 3:

After adding more complex mechanics to the game, I would like to start making it more playable and fun. This means adding things like enemies and fighting, plus changing features to be higher quality.

## **The 3rd version will have the following features:**

Enemies that can move towards or fire objects at the player. The player should also be able to take damage from these attacks or by touching an enemy. But, they can fight back using the tools they have been given (bomb/grappling hook) to damage the enemies.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test No. | Description | Type of test | Test data | Expected  Result | Actual  Result |
| 1 | Do the enemies try to attack the player? |  | Move player towards enemy. | Enemies aggress towards the player, once they get close enough |  |
| 2 | Does an animation play when the enemies move? |  | Move the enemy | Movement animation plays |  |
| 3 | When hit by an attack, does the player take damage/get reset? |  | Player touches component that damages them | Teleported to the beginning of the screen |  |
| 4 | Do the enemies take damage from the player’s attacks? |  | Enemy touches player attack. | Enemy takes damage/ disappears. |  |
| 5 | Is the player able to attack? |  | Press attack key | Player attacks |  |
| 6 | Does an animation play while attacking? |  | Press attack key | Attack animation plays |  |

# GUI Design:

A screenshot of a game

AI-generated content may be incorrect.

The game will open to this page which contains the title of the game, and multiple buttons below. I have done it in this way as it makes the name more prominent, letting the player know what game it is instantly, as opposed to something else being more noticeable, making the game name less obvious. The buttons are just below the title, in an easy-to-read font that stands out compared to the orange background. I have decided to use the colour orange as it stands out against the blue background, which is blue as it will contain backgrounds from the game, which is mainly set outside, with a blue sky.

A screenshot of a computer

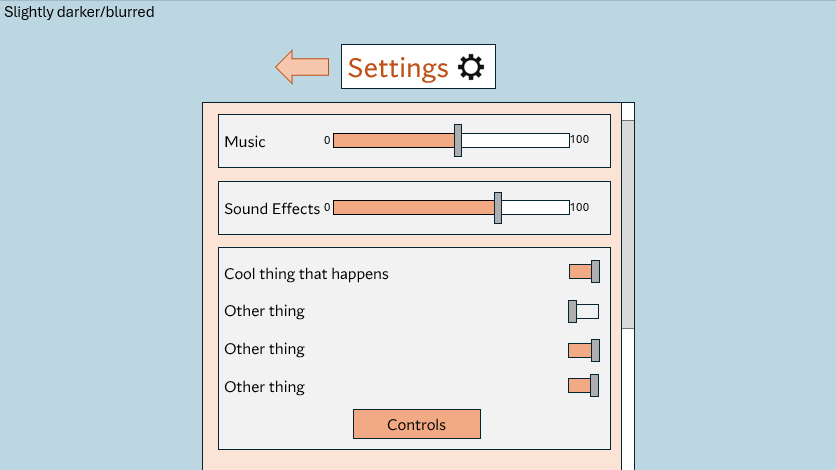
AI-generated content may be incorrect.

Back arrow indicates that it will bring the user back to the main menu. This is used instead of ‘back’ as it became too cluttered with words and I preferred it to be more simple

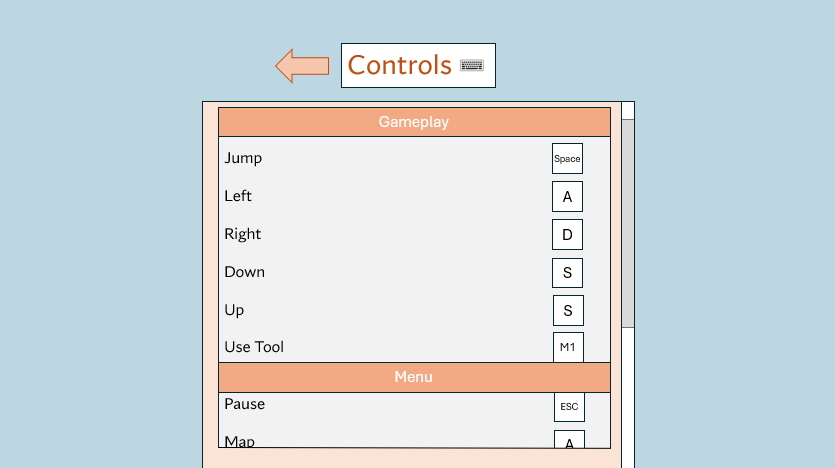
The settings background is slightly darker compared to the main menu, the background will also become blurred; I think this helps to indicate that it is a sub-page and take the attention away from the background and focus on the main point of the page

Each button takes the user to its respective page

Background contains scenes from the game, so the placeholder colour is blue, as it is abundant due to the game being outside



When the settings button of the previous layout is pressed, this page will appear. There is a title at the top of the page telling the user it is the settings, plus an icon, just in case the user isn’t able to read English. This tells them they are in the settings. Below the title, there are different sliders and buttons you can press. For the sliders, there are contrasting colours: orange and white, which is a good visual representation to show how far along it is. Similarly, the buttons have that feature, where it is obvious if they are on or not. These are helpful as they make navigating settings as easy as possible.



After the Controls button has been pressed, this page appears, it shows the user what each key does in game, this is helpful in case they do not know. The background is a different colour to the key binds’ background, this makes them stand out more and easier to see. I have also used a keyboard icon next to the title to help indicate the usage of the page, like the settings icon. The user can also change the keys by clicking on them. There is also a heading that groups the controls into categories, this makes a certain one easier to find as they are grouped together, as opposed to all in a list, which is harder to sort through.

Clicking this will allow the user to change the key the action is bound to

A screenshot of a computer

AI-generated content may be incorrect.

The background is again darker, to indicate what page the game is focused on.

When the user tries to change their key binds, this window will appear, where they can press any button to change the key. The background becomes darker as it takes attention away and places it on the new window. It is orange as it matches with the colour scheme of the other components of the GUI.

A screenshot of a computer

AI-generated content may be incorrect.

The Customisation page is clearly labelled at the top, I would like to add an icon, like an item of clothing or something similar. The character is located in the middle of the screen, surrounded by windows that can be used to change the design. On the left, it is clearly labelled ‘clothing’ and there are arrows on each component that can be used to cycle along to the next one. This Is the same for the ‘appearance’ window, but the height has a slider. I chose this over something else like a set height/ a few set heights, as it allows the user to fully customize the character. And there are a few select colours to choose from.

Allows the user to cycle along the different options/ change the appearance

Large arrow to indicate that it will take the user back to the main menu.

The level select screen contains a list of the different levels the user has unlocked, in the form of multiple different images in a row. Levels that haven’t been unlocked are hidden behind a lock icon and potentially a blurry image of the level to be unlocked. There are arrows to the left and right of the ‘Play Level’ button, which can be used to scroll along the row. When the level is the one that can be selected, it is larger, indicating it’s the one the user is on.

A screenshot of a game

AI-generated content may be incorrect.

Locked levels have a lock icon covering the image.

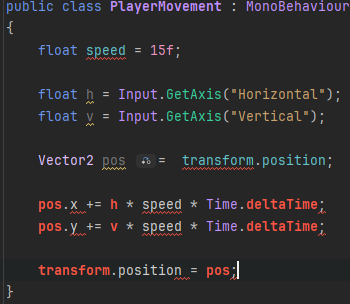
Larger level image to show it’s the one selected.

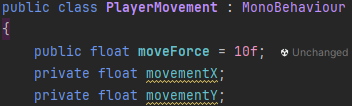
Large arrow to indicate that it will take the user back to the main menu.

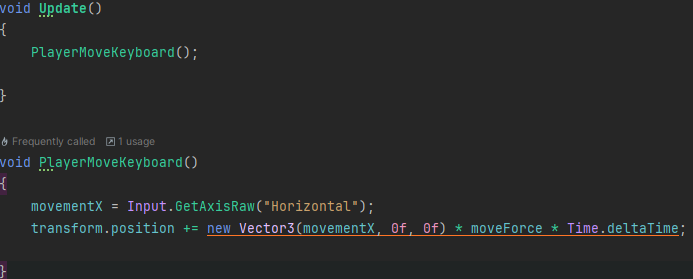
# Development:

Player:

# 









Fixed by changing ‘Active Input Handling’ to ‘bothA screenshot of a computer

AI-generated content may be incorrect.A screenshot of a video game

AI-generated content may be incorrect.

A screen shot of a computer program

AI-generated content may be incorrect.Camera:

Does not follow player

This is because the character is not called ‘player’ in unity.

So I renamed it to player for it to work

Camera only followed player horizontally

A screen shot of a computer program

AI-generated content may be incorrect.

Tools:

Added a placeholder grappling hook that the player could hold, at first I thought I could attach the player movement script to it and have them move together, but that didn’t work.

(Unity, 2025)

A screenshot of a computer

AI-generated content may be incorrect.

I used this to connect the player and the grappling hook

I wanted to have the tool point towards the player’s mouse cursor.

(Brackeys, 2025) – this video on top down shooting provides code that makes the player look at the mouse position.

A computer screen with white text

AI-generated content may be incorrect.