# 4 Implementation Chapter

## isGrounded() Function

This function returns a Boolean variable, it uses the variables “groundCheck.position”, which is the position of the empty game object that is placed just under the player’s collider, “radOfCircle”, which is the radius of the circle, and the layer mask called “groundMask”. The ground mask is applied to all objects that are in the layer “Ground”. The Boolean returns true if the ground mask overlaps with the circle under the player’s collider and false if it doesn’t.

 

Text

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The author also draws a Gizmo which can be seen in the editor but not in game. This makes it easier to see where the ground is intersecting with the player.

Graphical user interface, text

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Graphical user interface, text

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## Flip() Function

This function will change the direction of the object it is used on the author changes the scale of the object’s X value by multiplying it by -1 which just flips the direction the object is facing.

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This is how the flip function is used In the “Update()” function. This checks if the object is not facing right, and the direction value is greater than 0 then flip the object to the other direction and vice versa.

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## Player Movement

The author uses Unity’s new Input System for keyboard and mouse the player will use WASD to move direction, and Space to Jump.

Graphical user interface, application

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In the Events tab the author has their PlayerMvt script that is also attached to the player. They use both the “Move” and “Jump” functions. For example when the space bar is pressed that button press is send through to the “Jump” function and it then makes the player jump. Same for the movement using “A” or “D”.

Graphical user interface, application

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They created a Move function which gets the direction the player is trying to move (Left or Right). If the player is not moving the value is 0. This function also starts the run animation which happens when speed is not 0 however the jump animation take priority over the run animation.

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In the Update function the rigid body ( the player) is given a velocity which is a Vector 2 this value is the direction multiplied by the “speed” variable which is 8 by default. Because this is only changing which direction the player moves the y value is not changed.Text

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## Player Jump

## Coyote Time Jump

To make sure the player can’t jump indefinitely by pressing the jump button fast the timer has to be set to 0 once the jump button is released.

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## Double Jump

## Tile map

Tile maps are used to create 2D worlds they allow the creator to select the tile they would like to place and draw the tiles into the scene.



## Sprite sheet

The player’s sprite sheet has been downloaded from the Unity assets store, this came with different animations that weren’t set up properly, I fixed this by just re selecting the animation frames that went together.

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## 

## Animation

I have “Idle”, “Jump”, “JumptoFall” and “Run” animations working so far

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When the user doesn’t press any buttons and isn’t falling the idle animation will play, if the user presses the “A” or “D” key the run animation will play. if the user presses the “jump” key

From idle to jump I need to have a condition that checks when the parameter “jump” is toggled. Once the user reaches the peak of their jump the variable falling is set to true

Graphical user interface, application

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When the user stops pressing the “Jump” key or when the user reaches the peak of their jump the “JumptoFall” animation will play when the falling variable is set to true

Graphical user interface, application

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Once the Character lands on the ground falling is set to false and will no longer play the “JumptoFall” animation.

Graphical user interface

Description automatically generated

If the user falls off a platform the “JumptoFall” animation will play

A screenshot of a computer

Description automatically generated with low confidence

If the user presses the “A” or “D” key to move the “Run” animation will play. Checking if speed is greater than 0.0001 is making the response a bit quicker so the character will react faster to the input of the user.

Graphical user interface, application

Description automatically generated

If the user stops pressing the “A” or “D” keys the “Run” animation will stop playing. Checking if speed is less than 0.0001 is making the player character stop quicker.

A picture containing accessory, case

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