1. CUSTOMIZABLE PIXEL CHARACTER

Thank you for purchasing this asset pack. For any question, please email to *support@cainos.net*

2. QUICK TUTORIAL

Drag and drop one of the character presets in [Cainos\Customizable Pixel Character\Prefab \Character Preset] into the scene and there you go.

For customization details please read the CUSTOMIZABLE PARTS section.

3. NOTES

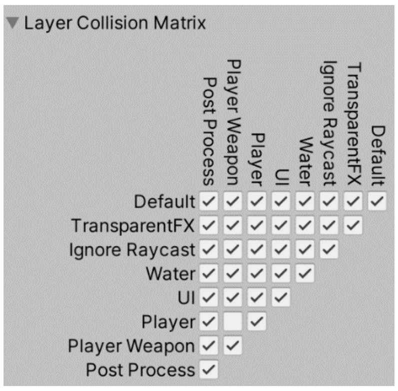
3.1 Layer Collision Settings

To avoid the character colliding with its own weapon. Put the character and weapon into different layer and in the project's Physics 2D settings, make sure these two layers do not collide.

You need to setup this by hand as project settings will not be imported with the asset pack

In this case we put characters into [Player] layer and weapons into [Player Weapon] layer. Of course, this may vary based on your need.

All the character preset prefabs are variation prefabs of [Cainos\Customizable Pixel Character\Prefab\PF Pixel Character]. So, for overall changes you only need to modify this one.

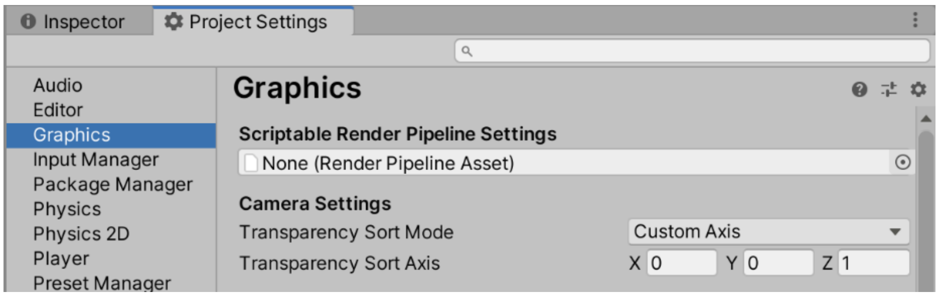


Layer Collision Matrix

	Post Process	Player Weapon	Player	UI	Water	Ignore Raycast	TransparentFX	Default
Default	✓	✓	✓	✓	✓	✓	✓	✓
TransparentFX	✓	✓	✓	✓	✓	✓	✓	
Ignore Raycast	✓	✓	✓	✓	✓	✓		
Water	✓	✓	✓	✓	✓			
UI	✓	✓	✓	✓				
Player	✓		✓					
Player Weapon	✓	✓						
Post Process	✓							

3.2 Custom Sort Axis

It is recommended that you set [Transparency Sort Mode] to [Custom Axis] and [Transparency Sort Axis] to [0,0,1] at the [Graphics] settings.



Inspector | Project Settings

Audio
Editor
Graphics
Input Manager
Package Manager
Physics
Physics 2D
Player
Preset Manager

Graphics

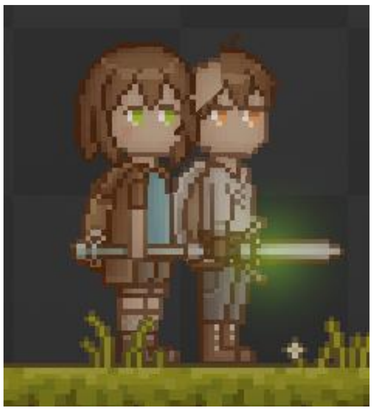
Scriptable Render Pipeline Settings
None (Render Pipeline Asset)

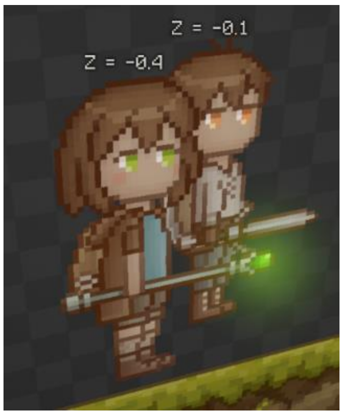
Camera Settings
Transparency Sort Mode: Custom Axis
Transparency Sort Axis: X 0 Y 0 Z 1

3.3 Sorting Order Glitch When Using Multiple Character

You may see some glitch when two characters are too close. It happens when the two characters take up the same z space. Give them different z position value will solve the problem.

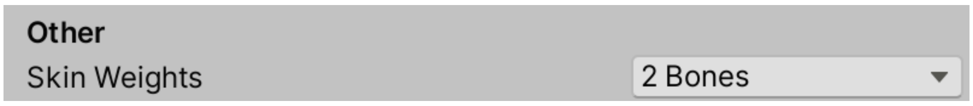
You can set the character's z scale to a smaller value like 0.1 (but avoid setting it to 0), so that it takes up less z space.





3.4 Skin Weights

For best animation quality, in [Project Settings] -> [Quality], [Skin Weights] should be set to at least [2 Bones].



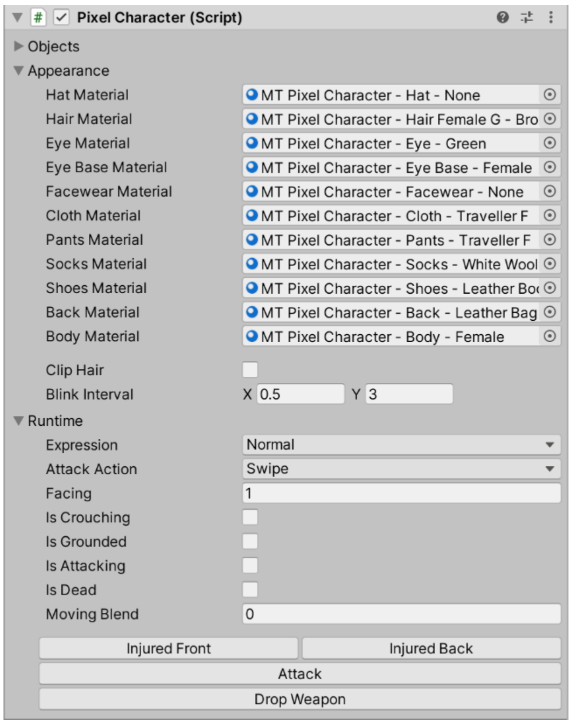
Other

Skin Weights: 2 Bones

4. SCRIPT EXPLANATION

4.1 Pixel Character

Script for customizing the character and controlling animation.



Pixel Character (Script)

Objects

Appearance

Hat Material	MT Pixel Character - Hat - None
Hair Material	MT Pixel Character - Hair Female G - Bro
Eye Material	MT Pixel Character - Eye - Green
Eye Base Material	MT Pixel Character - Eye Base - Female
Facewear Material	MT Pixel Character - Facewear - None
Cloth Material	MT Pixel Character - Cloth - Traveller F
Pants Material	MT Pixel Character - Pants - Traveller F
Socks Material	MT Pixel Character - Socks - White Wool
Shoes Material	MT Pixel Character - Shoes - Leather Boo
Back Material	MT Pixel Character - Back - Leather Bag
Body Material	MT Pixel Character - Body - Female
Clip Hair	☐
Blink Interval	X 0.5 Y 3

Runtime

Expression	Normal
Attack Action	Swipe
Facing	1
Is Crouching	☐
Is Grounded	☐
Is Attacking	☐
Is Dead	☐
Moving Blend	0

Objects Foldout

Contains reference to objects inside the character object.

Appearance Foldout

Parameters here is mainly for tweaking the character appearance. The customization is mainly done by changing the materials here. Can be changed both in editor and runtime.

Runtime Foldout

Parameters here is mainly for controlling the character's animation, should only be changed in runtime.

Clip Hair

Whether to hide part of the hair. When wearing hats with name ends with "C", you need to enable this.

Blink Interval

The interval range for the character to play an eye blink animation.

Expression

The character's expression.

Attack Action

The animation played when the character attack.

Facing

The character's facing.

1: Facing right   -1: Facing left

Is Crouching

Is the character crouching?

Is Grounded

Is the character stand on ground?

Is Attacking

Is the character performing a continuous attack action? Only works for [Point] and [Summon].

Is Dead

Is the character dead?

Moving Blend

Moving animation blend.

0.0: Idle   0.5: Walk   1.0: Run

Injured Front

Play [Injured Front] animation.

Injured Back

Play [Injured Back] animation.

Attack

Play attack animation for once. Only works for [Swipe] and [Stab].

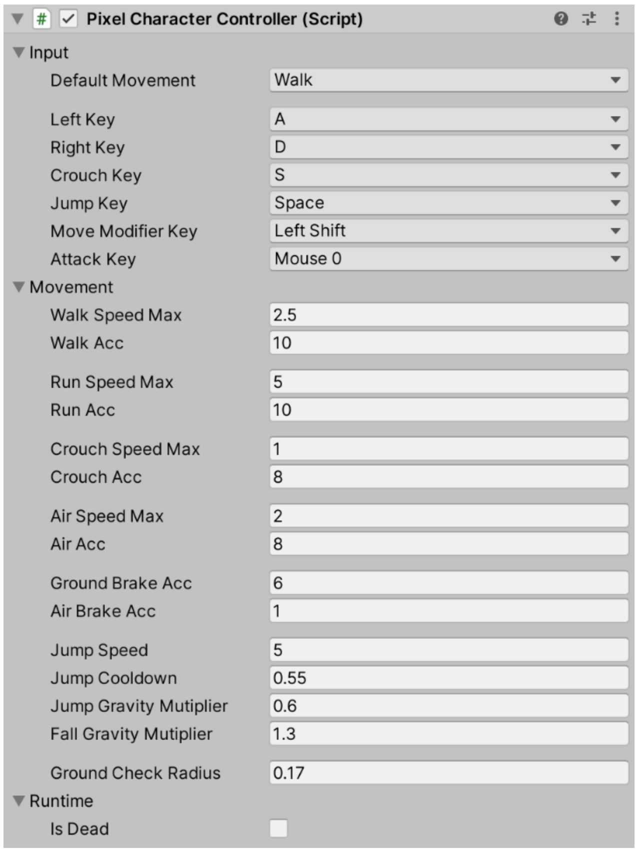
Drop Weapon

Drop the weapon the character is holding.

4.2 Pixel Character Controller

Script for controlling the character’s movement. It will modify some of the parameters in the [Pixel Character] script to control animation.

If you are going to use your own controller script, just remove this.



Pixel Character Controller (Script)

Input

Default Movement	Walk
Left Key	A
Right Key	D
Crouch Key	S
Jump Key	Space
Move Modifier Key	Left Shift
Attack Key	Mouse 0

Movement

Walk Speed Max	2.5
Walk Acc	10
Run Speed Max	5
Run Acc	10
Crouch Speed Max	1
Crouch Acc	8
Air Speed Max	2
Air Acc	8
Ground Brake Acc	6
Air Brake Acc	1
Jump Speed	5
Jump Cooldown	0.55
Jump Gravity Mutiplier	0.6
Fall Gravity Mutiplier	1.3
Ground Check Radius	0.17

Runtime

Is Dead	☐

Walks Speed Max

Max walking speed, ideally should be half of [Run Speed Max]

Walks Acc

Walking Acceleration

Run Speed Max

Max running speed

Run Acc

Running Acceleration

Crouch Speed Max

Max move speed while crouching

Crouch Acc

Crouching acceleration

Air Speed Max

Max move speed while in air

Air Acc

Air acceleration

Ground Brake Acc

Braking acceleration (from movement to still) while on ground

Air Brake Acc

Braking acceleration (from movement to still) while in air

Jump Speed

Speed applied to the character when jump

Jump Cooldown

Time needed to be able to jump again after landing

Jump Gravity Multiplier

Gravity multiplier when character is jumping.

Should be within [0.0,1.0], set it to lower value so that the longer you press the jump button, the higher the character can jump.

Fall Gravity Multiplier

Gravity multiplier when character is falling.

Should be equal or greater than 1.0

Ground Check Radius

Radius of the circle on character's bottom to determine whether the character is on ground.

Is Dead

Is the character dead?

5. CUSTOMIZABLE PARTS

Gender

By changing the [Body Material] in [Pixel Character] script. Also, pick a corresponding hair material to match the gender.

Skin Tone

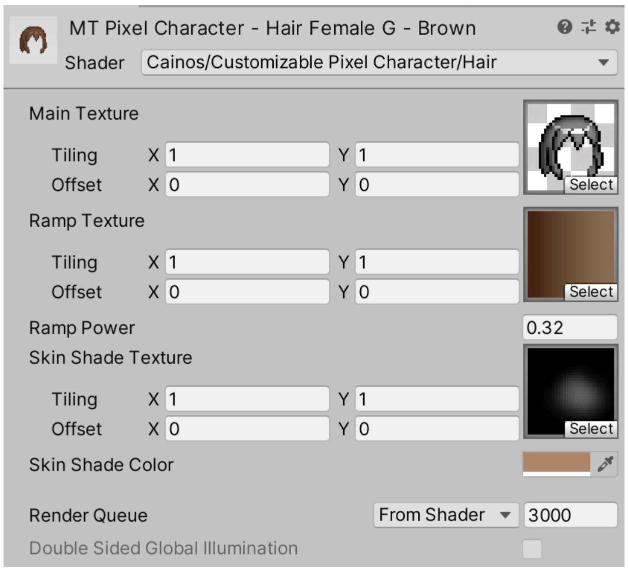
By changing the [Skin Tint] parameter in the [Body Material] of the character.

Hairstyle & Hair Color

By changing the [Hair Material] in [Pixel Character] script.

Notes that not every hairstyle & hair color combination has a material created in advance, but you can easily create your own:

Duplicate a hair material and change the "Main Texture" for hairstyle, "Ramp Texture" for hair color.



MT Pixel Character - Hair Female G - Brown
Shader Cainos/Customizable Pixel Character/Hair

Main Texture
Tiling X 1 Y 1
Offset X 0 Y 0
Ramp Texture
Tiling X 1 Y 1
Offset X 0 Y 0
Ramp Power 0.32
Skin Shade Texture
Tiling X 1 Y 1
Offset X 0 Y 0
Skin Shade Color
Render Queue From Shader 3000
Double Sided Global Illumination

Hat

By changing the [Hat Material] in [Pixel Character] script.

If a hat material's name ends with "C", you need to enable the [Clip Hair] toggle in the script.

Facewear

By changing the [Facewear Material] in [Pixel Character] script.

Cloth

By changing the [Cloth Material] in [Pixel Character] script.

Pants

By changing the [Pants Material] in [Pixel Character] script.

This slot is also used for skirt and dress.

Socks

By changing the [Socks Material] in [Pixel Character] script.

Shoes

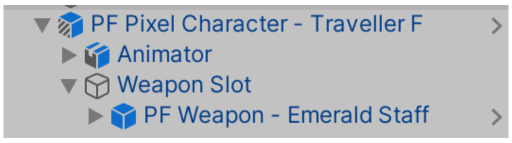
By changing the [Shoes Materia] in [Pixel Character] script.

Back

By changing the [Back Material] in [Pixel Character] script.

Weapon

By dragging one of the weapon prefabs in [Cainos\Customizable Pixel Character\Prefab\Weapon] into the [Weapon Slot] in the character's hierarchy.

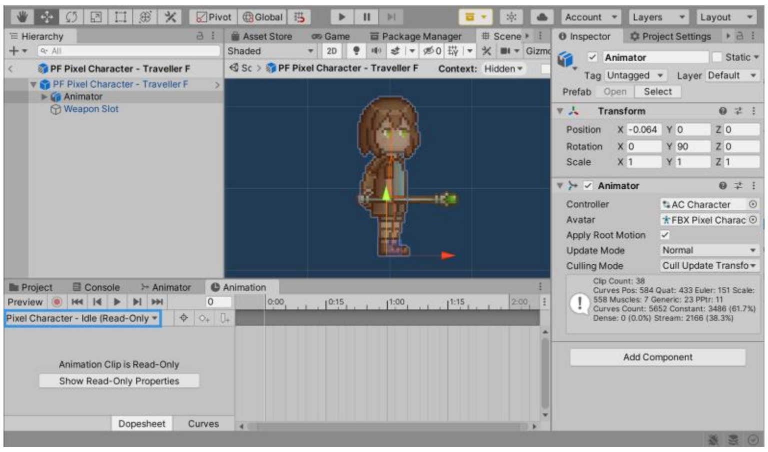


- PF Pixel Character - Traveller F
  - Animator
  - Weapon Slot
    - PF Weapon - Emerald Staff

6. MAKING YOUR OWN ANIMATIONS

Below is a short tutorial for making new animation for characters inside Unity.

Select any one of the character prefabs and go into Prefab Editing mode.
Select [Animator] in the Hierarchy.
Create a new clip in the Animation window.



- PF Pixel Character - Traveller F
  - PF Pixel Character - Traveller F
    - Animator
    - Weapon Slot

Sc > PF Pixel Character - Traveller F   Context: Hidden

Pixel Character - Idle (Read-Only)

Animation Clip is Read-Only

Show Read-Only Properties

Animator   Static
Tag Untagged   Layer Default
Prefab Open Select

Transform

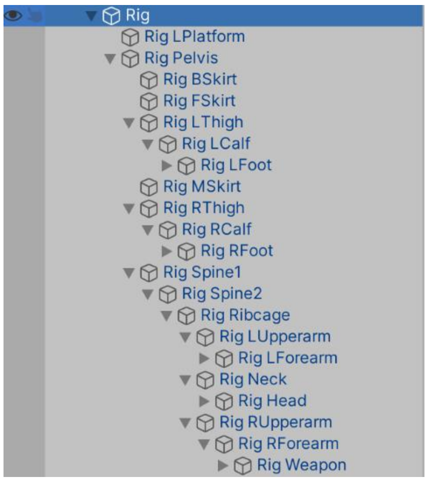
Position	X -0.064	Y 0	Z 0
Rotation	X 0	Y 90	Z 0
Scale	X 1	Y 1	Z 1

Animator

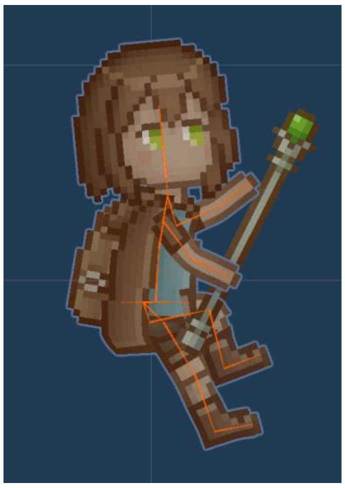
Controller	AC Character
Avatar	FBX Pixel Charac
Apply Root Motion	✓
Update Mode	Normal
Culling Mode	Cull Update Transfo

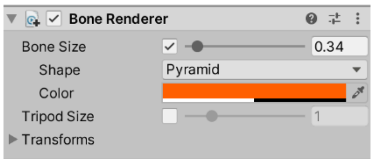
Clip Count: 38
Curves Pos: 584 Quat: 433 Euler: 151 Scale: 558 Muscles: 7 Generic: 23 PPtr: 11
Curves Count: 5652 Constant: 3486 (61.7%) Dense: 0 (0.0%) Stream: 2166 (38.3%)

Then you can start keying your animation.
You should only key on objects under the [Animator] object.
All the character's bones are in the [Rig] hierarchy



```
▼ Rig
    Rig LPlatform
  ▼ Rig Pelvis
      Rig BSkirt
      Rig FSkirt
    ▼ Rig LThigh
      ▼ Rig LCalf
        ▶ Rig LFoot
      Rig MSkirt
    ▼ Rig RThigh
      ▼ Rig RCalf
        ▶ Rig RFoot
    ▼ Rig Spine1
      ▼ Rig Spine2
        ▼ Rig Ribcage
          ▼ Rig LUpperarm
            ▶ Rig LForearm
          ▼ Rig Neck
            ▶ Rig Head
          ▼ Rig RUpperarm
            ▼ Rig RForearm
              ▶ Rig Weapon
```





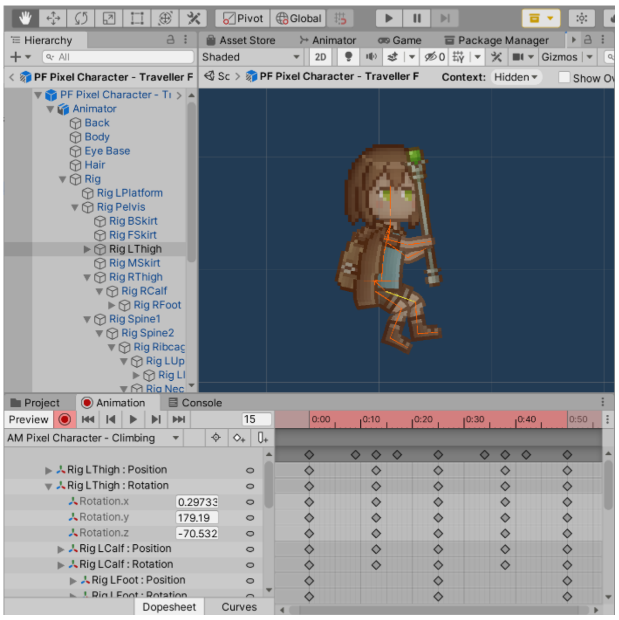
Bone Renderer

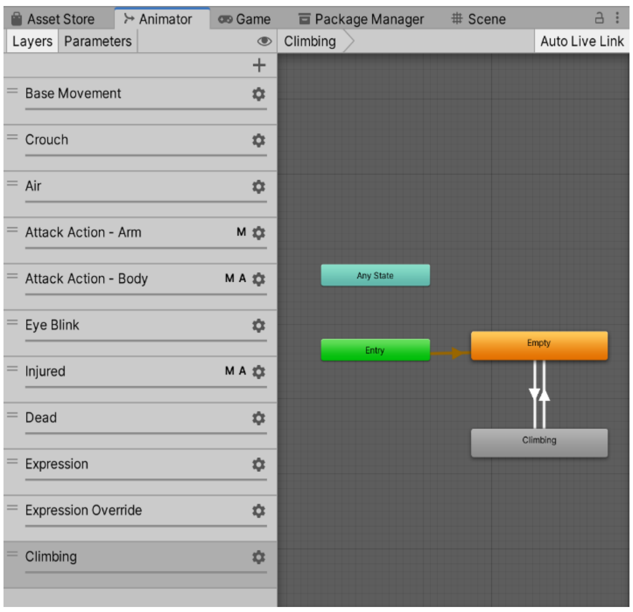
Bone Size	✓ 0.34
Shape	Pyramid
Color	🟧
Tripod Size	1
Transforms	

You can use the [Bone Renderer] script of Unity's [Animation Rigging] package (available in Package Manager) for displaying and easy selecting bones in the scene.

When your animation is done, you need to put the clip into the character's Animator Controller and add controlling codes to the script.

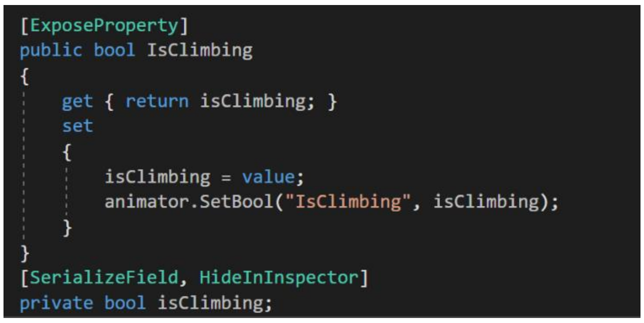
In this case we made a climbing animation, so we add a new layer in the Animator called [Climbing], a new bool parameter call [IsClimbing] and setup the animation state as the picture below.





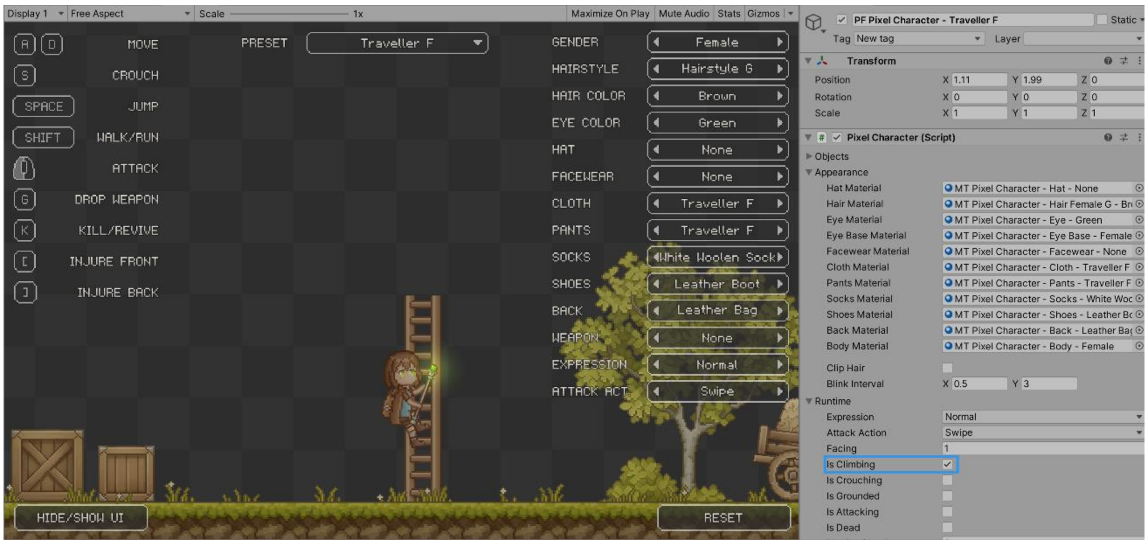
We use an empty state (with no motion clip) as the entry state. When [IsClimbing] becomes true, it transits to the Climbing state with the animation clip we just made. When [IsClimbing] is false, it goes back to the empty state.

In the [Pixel Character] script, we add a new property for controlling the climbing state.
As we are using a custom editor script for [Pixel Character], we also need to modify the [Pixel Character Editor] script for properly displaying this property in the Inspector. For details about modifying the editor script, please refer to the code and see how other properties are dealt with. It should be an easy task.



```
[ExposeProperty]
public bool IsClimbing
{
    get { return isClimbing; }
    set
    {
        isClimbing = value;
        animator.SetBool("IsClimbing", isClimbing);
    }
}
[SerializeField, HideInInspector]
private bool isClimbing;
```

Then, we are able to trigger the climbing animation using this property.



A D MOVE
S CROUCH
SPACE JUMP
SHIFT WALK/RUN
ATTACK
G DROP WEAPON
K KILL/REVIVE
[INJURE FRONT
] INJURE BACK

PRESET Traveller F

GENDER	Female
HAIRSTYLE	Hairstyle G
HAIR COLOR	Brown
EYE COLOR	Green
HAT	None
FACEWEAR	None
CLOTH	Traveller F
PANTS	Traveller F
SOCKS	White Woolen Sock
SHOES	Leather Boot
BACK	Leather Bag
WEAPON	None
EXPRESSION	Normal
ATTACK ACT	Swipe

PF Pixel Character - Traveller F Static
Tag New tag Layer

Transform

	X	Y	Z
Position	1.11	1.99	0
Rotation	0	0	0
Scale	1	1	1

Pixel Character (Script)
Objects
Appearance

Hat Material	MT Pixel Character - Hat - None
Hair Material	MT Pixel Character - Hair Female G - Br
Eye Material	MT Pixel Character - Eye - Green
Eye Base Material	MT Pixel Character - Eye Base - Female
Facewear Material	MT Pixel Character - Facewear - None
Cloth Material	MT Pixel Character - Cloth - Traveller F
Pants Material	MT Pixel Character - Pants - Traveller F
Socks Material	MT Pixel Character - Socks - White Woo
Shoes Material	MT Pixel Character - Shoes - Leather Bo
Back Material	MT Pixel Character - Back - Leather Bag
Body Material	MT Pixel Character - Body - Female
Clip Hair	☐
Blink Interval	X 0.5 Y 3

Runtime

Expression	Normal
Attack Action	Swipe
Facing	1
Is Climbing	✓
Is Crouching	☐
Is Grounded	☐
Is Attacking	☐
Is Dead	☐

6.1 Tip for Setting Up Character Object for Making Animation

Adding Bones

Add a [Bone Renderer] script to the character and click on the lock button on the top-right corner of the Inspector window.

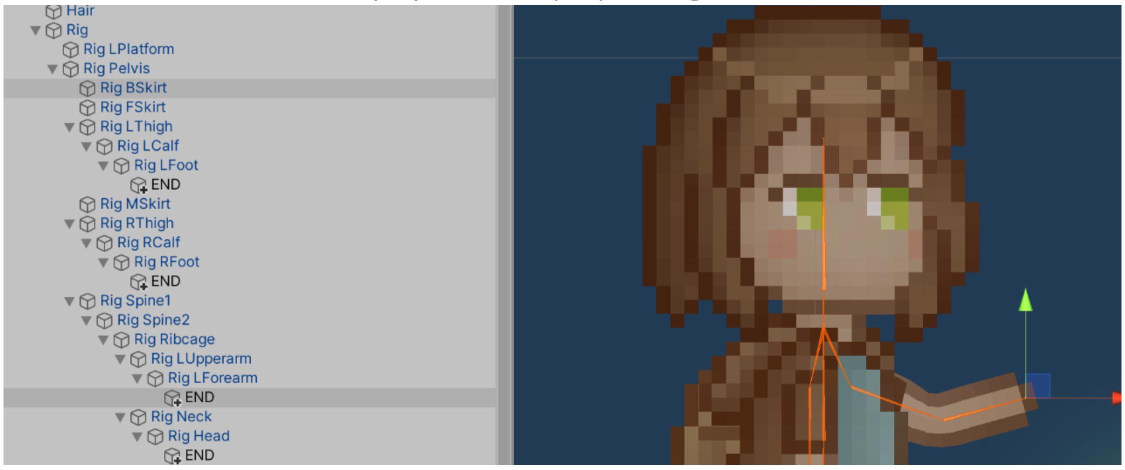
Right click on [Rig] object inside the character hierarchy and select [Select Children].

Drag all the objects selected to the [Transforms] list of the [Bone Renderer] script.

Cleaning Up the Rig for Cleaner Display

Some of the Rig objects are just helper objects (for example [Rig], [Rig LPlatform], [Rig RPlatform]). You can delete them from the "Transforms" list to stop them from being displayed.

As the [Bone Renderer] cannot properly display end bone's length correctly. You can manually and a new object to the end bone and place it at the end position, then drag it to the [Transforms] list, to force the end bone to be displayed with a proper length.



Weapon Movement

The weapon object place inside [Weapon Slot] is syncing its position with [Rig Weapon] bone through script. So, in the editor, the weapon object will not move with the "Rig Weapon" bone. This brings inconvenience when making animation. To solve this, simply drag the weapon object into the [Rig Weapon].

Create a Specific Prefab for Making Animation

As mentioned above, there are some modifications we may do to the character prefab to prepare it for making animation. So, my suggestion is that you copy the character prefab you want to make animation for and make your modifications to the clone instead of directly to the prefab you are going to use in game. Animations created in any one of the character prefabs are also compatible in other characters.

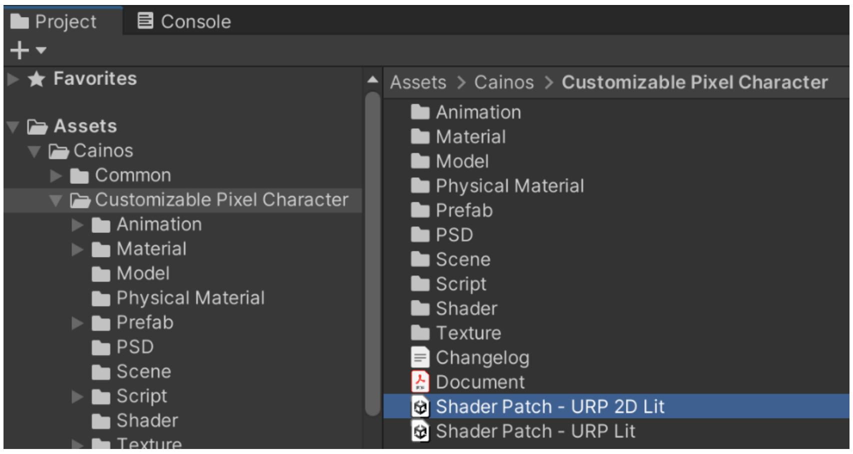
7. LIGHTING SUPPOSRT

By default, the character shaders behave like an unlit sprite shader. You can install additional shaders to make them support different lighting.

7.1 Universal Render Pipeline 2D Lighting

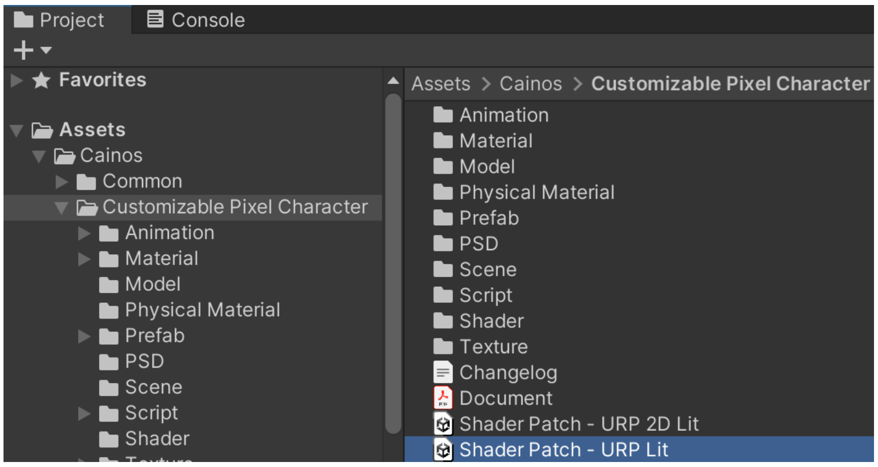
Import files from [Shader Patch - URP 2D Lit]. It will replace current character shaders with URP 2D Lighting supported version.

Make sure your 2D lighting is properly set up so the character can be displayed correctly.



7.2 Universal Render Pipeline 3D Lighting

Import files from [Shader Patch - URP Lit]. It will replace current character shaders with URP 3D Lit supported version.


Project
Console
Favorites
Assets
Cainos
Common
Customizable Pixel Character
Animation
Material
Model
Physical Material
Prefab
PSD
Scene
Script
Shader
Assets > Cainos > Customizable Pixel Character
Animation
Material
Model
Physical Material
Prefab
PSD
Scene
Script
Shader
Texture
Changelog
Document
Shader Patch - URP 2D Lit
Shader Patch - URP Lit