

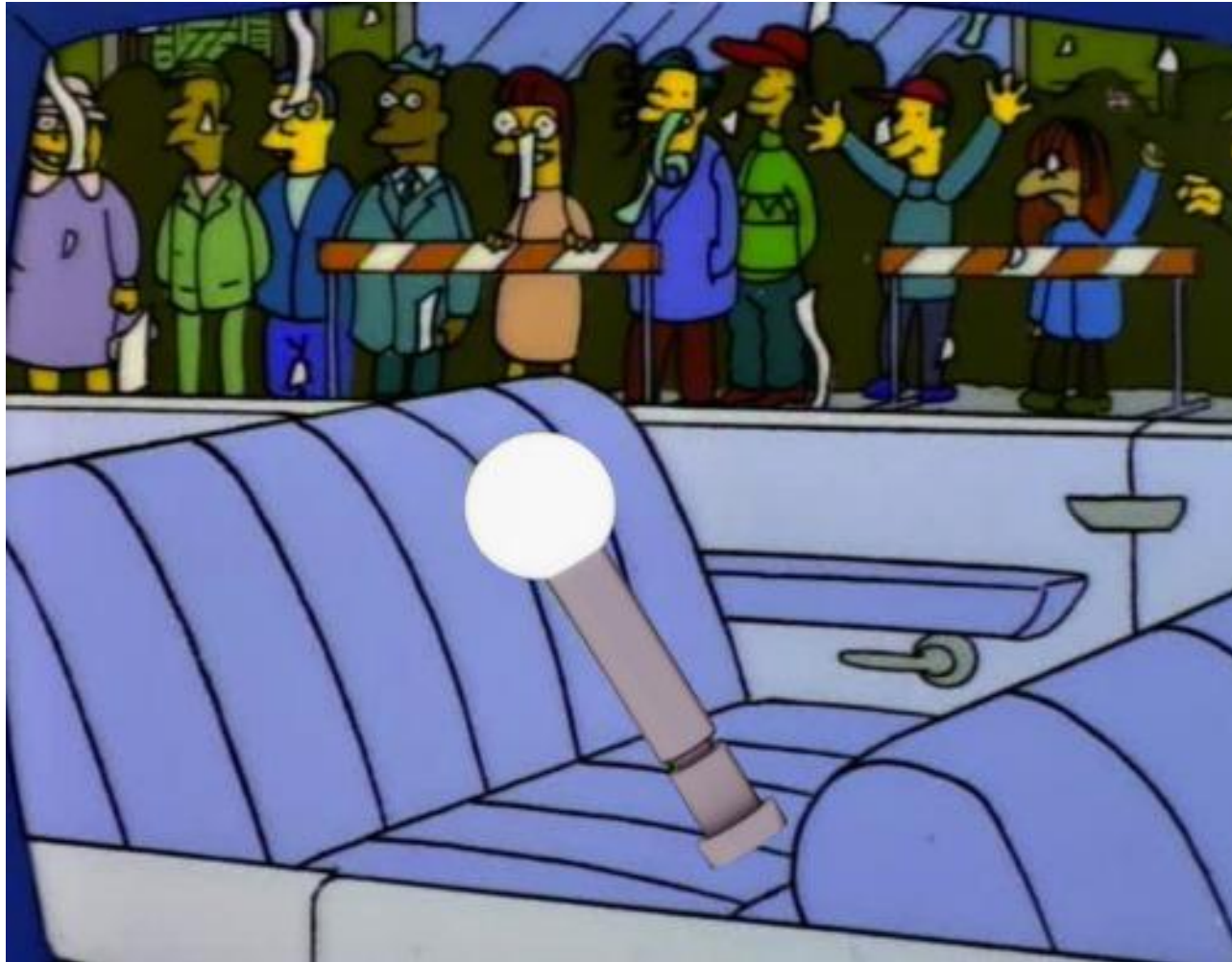
In Red Piston We Trust

Mod required: Node Constraints by Joan

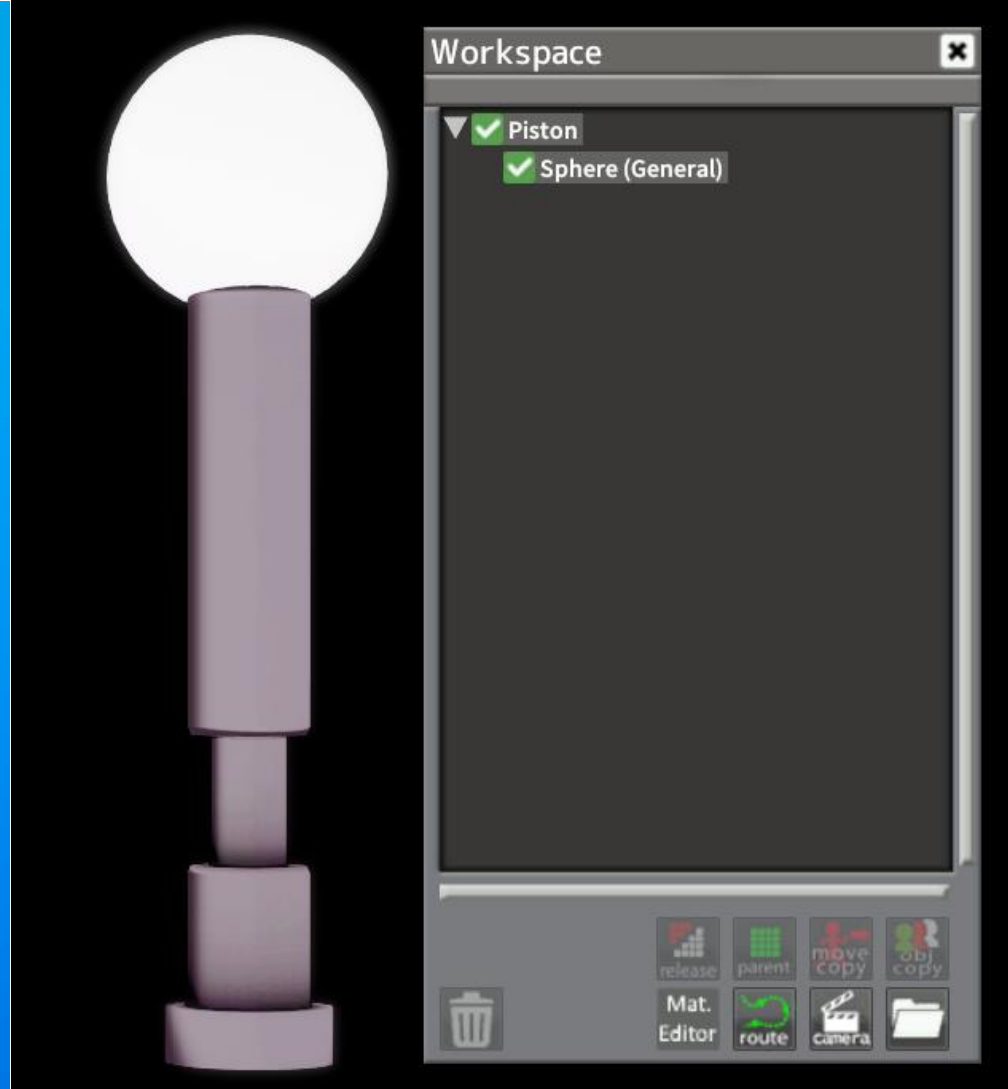
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This guide is going to assume that you already read the Brainlet Guide to Studio or you're familiar with using CharaStudio. I'm going to go over a simple introduction to pistons plus node constraints, and making simple animations using it. I will also be adding links to scenes you can download in sections of this guide, so it'll be easier for you to follow what I am doing.

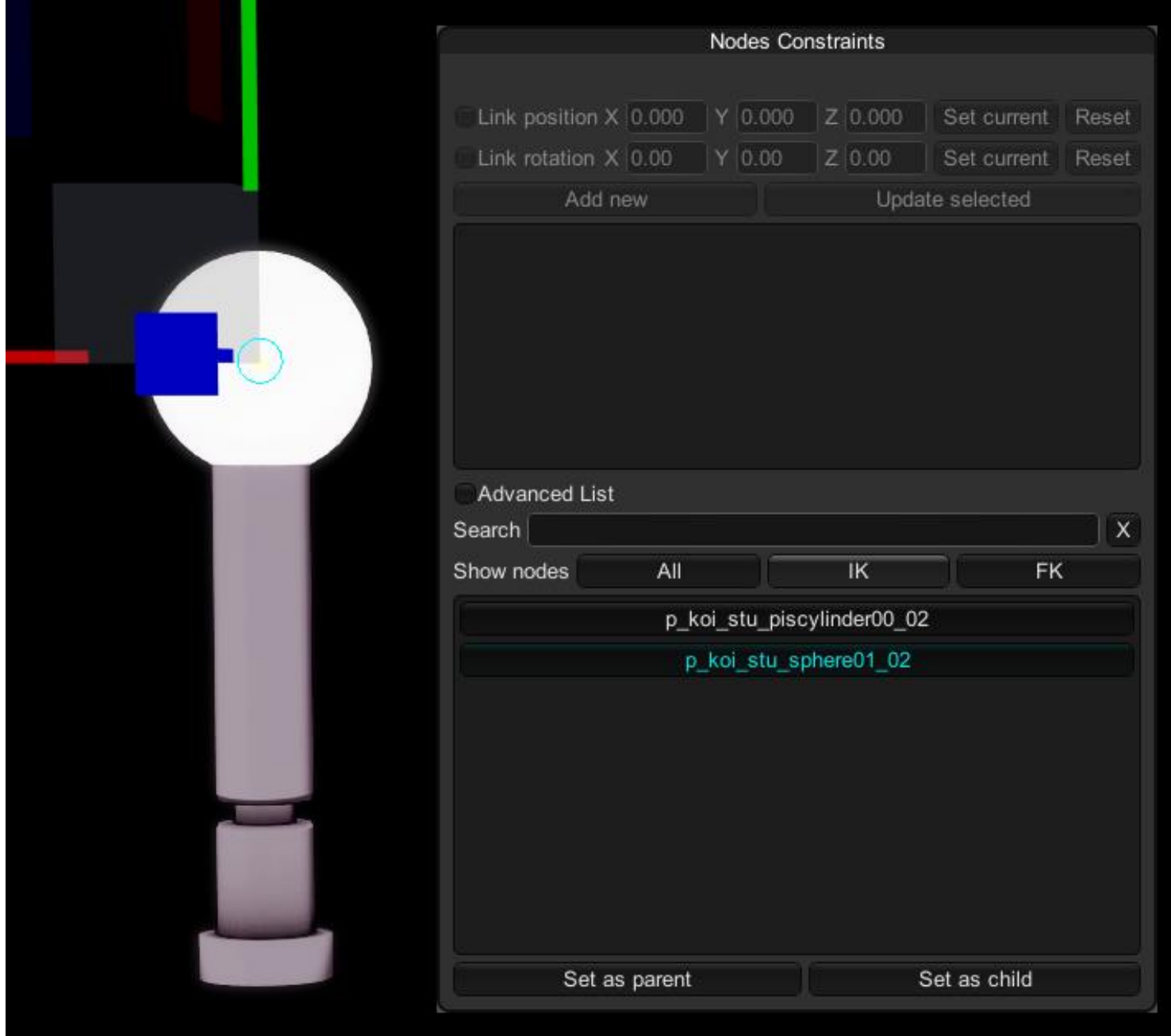


Get familiar with the basic tool you're going to be using, sphere parented to piston. You can find the

piston in : add → Items → Gimmicks.

sphere in : add → Items → Models → General

Why use this instead of just a piston by itself? The sphere allows you to easily adjust the point it parented to without having to adjust the piston position or size.



Using node constraints allows us to parent the sphere to specific nodes so it will move. You can access the Node Constraints menu by Ctrl + i. Now let's study this quick, the two IK nodes are points where you can link objects to it. One is for the piston itself which you will never use and the other is the sphere. You will always want to set the sphere was the parent node and any other node you attach to it the child.



Now before we can start linking objects together, we first must activate IK or FK+IK and turn on all the nodes on the character we're animating for the piston to have any effect. Next, move the piston and place the sphere near the node we want to link. We're going for a simple up and down arm movement for this demonstration, so we moved the piston near her right hand.



Enable the node constraints menu. Select the sphere object in the Workspace window, and set the sphere object as the parent by clicking the “Set as parent” button in the bottom left corner. You should now see the sphere object be set as the parent of the link in the top left corner.



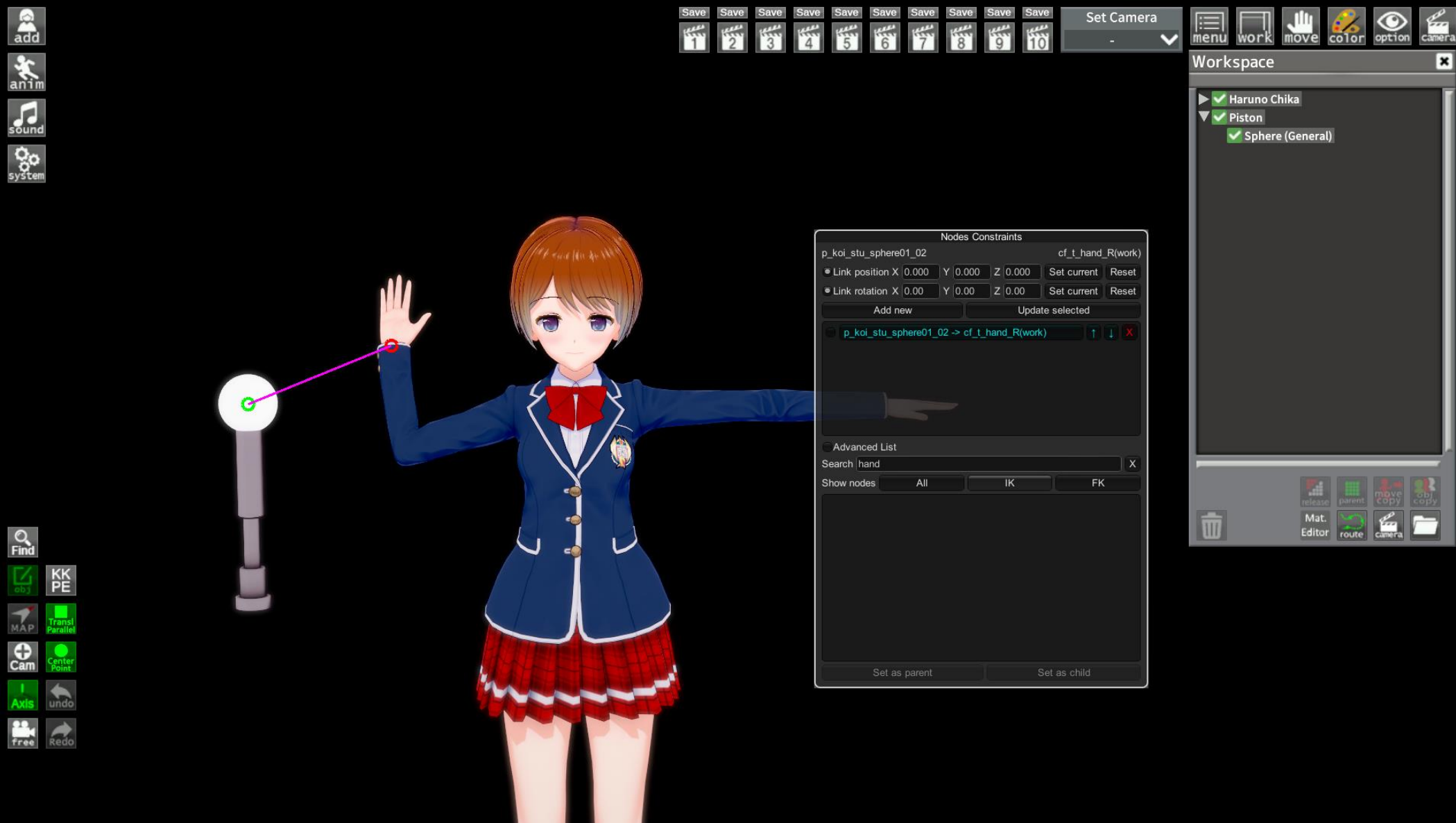
Selecting Chika in the workspace window will now show all the link points you can use. An easy way to find the specific node you're looking for is by using the search bar instead of scrolling through the entire list. We'll search for hand and select the right hand. Click the set as child button to set the right hand as the child.



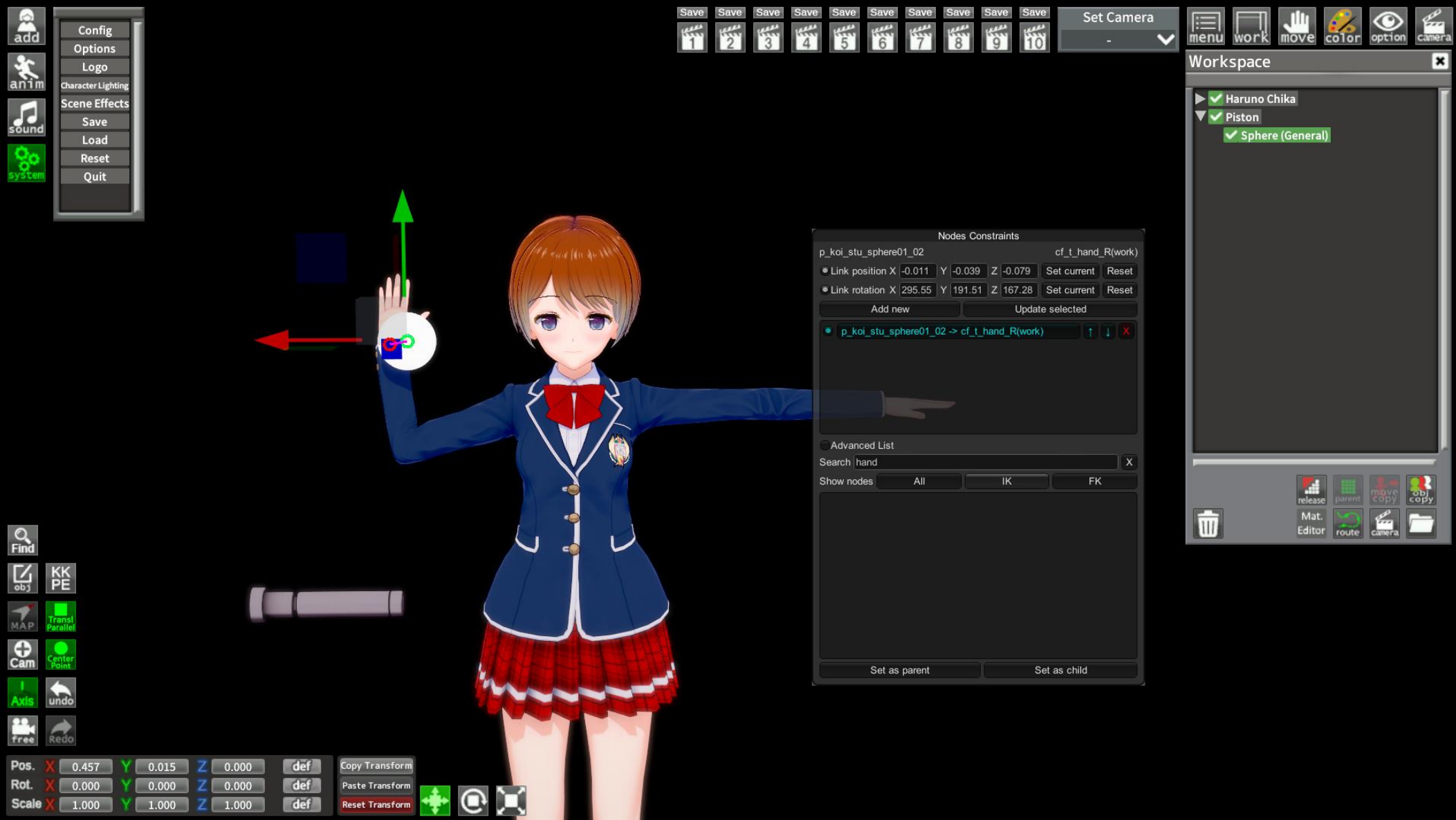
We're now ready to link the two nodes together. Click both checkbox next to link position and press the add button beneath to link it together. You should now see the new link indicated by the node constraints menu and the arm is moving up and down. Congratulations, you made your first shitty animated scene. You can turn off the piston object in the Workspace window to hide it. Here is a link to the scene: <https://files.catbox.moe/ez085w.png>



Now you might be asking, what if I want my arm to move up and down even higher or lower? All you need to do is adjust the piston Y scale to make the arm go higher or lower. Reposition the sphere if necessary.



Let's adjust this shitty up and down arm movement to a simple wave. You might have noticed that Chika's right hand cannot be manually manipulated now after it was linked to the sphere. To adjust objects after they were linked, you need to click the checkbox next to the link in the node constraints menu to turn off the link. Move the arm and rotate the hand so it looks like a wave. You should also see a pink line indicating that the piston is still linked to the hand.



Rotate the piston 90 degrees and reposition the sphere near the hand. We now press both of the “Set current” button near the top right corner to update the link position of the parent and child objects. Press the Update selected to save the update and reenale the link to see the wave.

Scene: <https://files.catbox.moe/8zugld.png>

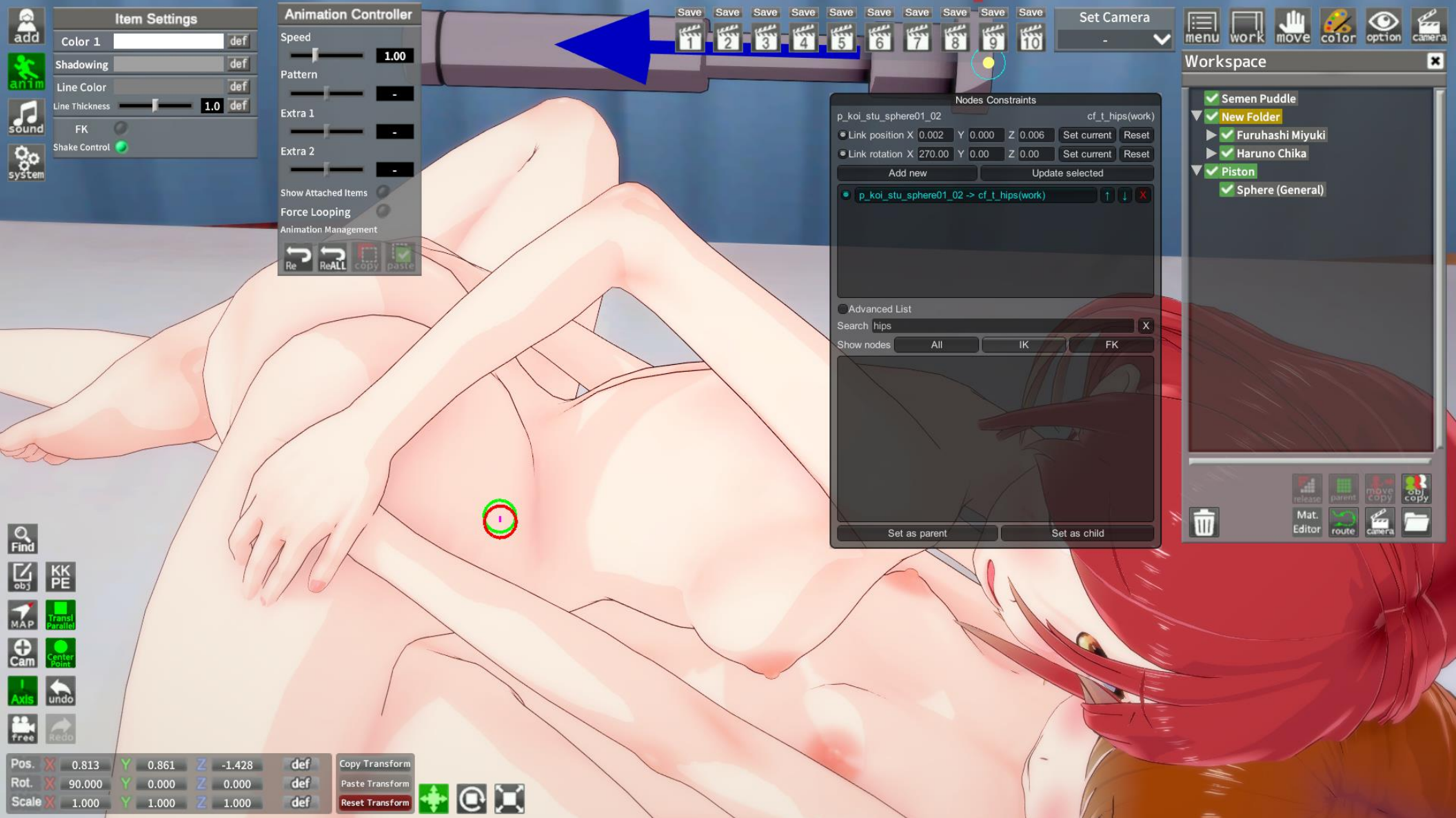


Now let's do something a bit more difficult and take an existing scene and make it into an animated one. This is the scene we will be using.

Scene: <https://files.catbox.moe/px9k01.png>



First step is to make a piston + sphere object and rotate it 90 degrees. Set the sphere as the parent object like usual. We're going to make the top character a move first.



Now we want to set the child node to be the hips of the character in order to make the whole body move. We're going to want to use FK + IK for this scene to readjust the hands and fingers but this scene was made with FK, so we need to go to FK click the "Copy to IK" button and then enable FK + IK. Now search for the hips and set it as the child link and move the sphere to be in the same position as the hip node. Link the new nodes and you should see the top body moving.



You may see the top body clip through the hands of the lower body. You can adjust the height of the piston to fix that issue.

Here's the scene up to this point: <https://files.catbox.moe/0wsgq8.png>



Now repeat the same steps for the bottom character to move. We can use a shortcut and use the same piston for the bottom character by just copying the sphere object. Set the new sphere as the parent and link it to the hips of the character on the bottom.



Now your bottom character might be bending the arm in a strange way after linking it to the sphere. We can fix that issue by adjusting the arms and hands so that it will follow the top character's movements. First, get the top character's left thigh in FK and set it as the parent. Then set the bottom character's right hand IK and set it as the child. Link the two nodes. You should now see that the hand parented, but inside the bottom character's body for some reason.

Scene: <https://files.catbox.moe/kcir2u.png>



We need to readjust the location and position of the hand to fix this issue. Turn off the link by clicking the checkbox next to it and adjust the hand. Click the “set current” button for both nodes and click the update selected to save the changes. The hand should be following the top character’s body movements correctly now.

Scene: <https://files.catbox.moe/qmvanu.png>



Do the same thing for the other hand as well.

Scene: <https://files.catbox.moe/or7iw2.png>



We now just need to make the top character's right hand move correctly as well by selecting the right hand and linking it to her right thigh. You should have a pretty nice looking animated scene if you followed all the steps correctly.

Scene: <https://files.catbox.moe/bppr3m.png>

You can finish this scene by adding a boy and do the same parent and adjustment steps, but I'm sure you can do that on your own without my help. The scene used in this example is extremely basic, you can use multiple pistons, attach pistons to different parts of the body for different effects, use joan's dynamic bone colliders object to do better bounce physics etc. I'll add a couple of good animated scenes you guys should try to study to understand different approaches to make animated scenes.

Dynamic bone colliders example: <https://files.catbox.moe/5bokh0.png>

Using a route instead of a piston for the animation: <https://files.catbox.moe/i6qnvm.png>

Repurposing one animation into another: <https://files.catbox.moe/qu5ub5.png>

Multiple gimmicks example by rem27: <https://files.catbox.moe/m2w2qm.png>