

Basic Character Animation

[MUSIC PLAYING] So for the intro of this cartoon, I've developed the sloth character a little bit further. And he's just going to start off asleep. He's going to wake up. He's going to smile and wave.

So to be able to play with these in Synfig, or any other animation software, we have to get them out of Inkscape. And ideally, it would be nice if you could just open up your vector file in that animation file program, and your workflow is all smooth, and all your layers are already named, everything stays in vector. I couldn't get that to work for this workflow. So we're going to do it another way.

We are just going to export these as PNGs. Make sure you use PNG so that it has a transparent background. And for example, we wanted to export this one. I'm sure you can figure out how to do this. But let's walk through it real quick for one example.

We want to just change it to Drawing so that it doesn't export the whole page. It just exports the art that's on the artboard. We make sure we got the right name. We're going to call this left arm grab. Left arm grab. And we say Export.

Once that's done, we'll have all of our wonderful little pieces of our animation all named and organized. So we can jump on over to Synfig. And we're going to make a new project.

And real quick, I just want to set the properties. Make sure the resolution is nice and high. And this one, by default, is going to be 120 frames, or 5 seconds, long. And that's plenty.

So next, of course, we want to get our images and artwork into this program so we can start playing with it. If you go File, Import, unfortunately, you can only do it one at a time through this interface. But if you're on Windows or Linux, I think, you can open up your folder in your File Explorer. Select them all. Actually, we already did the eyes. We don't need those. And just drag and drop them into your workspace. And they will all import together.

Now, obviously, they're way too big already. So what we're going to do is we're going to size them down. This is easy enough. First, we select all the objects. We put them in a group. And that's just going to connect them all together temporarily. And we grab the scale transform. It's an orange dot on our handles here. And look how nicely everything scales and stays together.

But we can tell right away that something's not right. We've got to change the order of these layers. So the tree one on the top. That's obviously bad.

So our character put together. Let's save our work. And let's close his eyes. So our little buddy is asleep. So our cutout animation is pretty much assembled for this scene.

The first thing you always want to do when you assemble a new cutout animation, or like a paper doll kind of effect, is make sure that all the pivot points make sense. Anything that's going to move or rotate or scale or change in any way has to have the correct pivot points. So, for example, these eyes, the pivot point perfectly started, just thankfully by accident, right here in the middle of these eyes.

I want to just show you real quick what pivot points are about because they are important. If I have a pivot point in the right spot and I scale it up and down, they're going to squash the correct way. But let's hold down Control. And just for an example, let's move the pivot point off axis here.

So let's see if you can predict what might happen if we try to scale this the same way but the pivot point this time is far off. Let's take a look. Do you think he's going to blink correctly? Oops. See? So we want to make sure that the origin of every object is correct.

This is also pretty important when it comes to any kind of limbs, arms and legs, anything that's attached to a body. So, for example, we've got our left arm here. Now, again, see if you can predict what might happen. If we rotate, where is our pivot point? Well, it's right here in the center of this bounding box. What do you think is going to happen? We want it to rotate from the shoulder. What do you think is going to happen if we start trying to rotate this with the incorrect pivot point?

Well, if you thought it might look like that, you are correct. See, it just breaks off of his shoulder. That's not good for anyone. So let's reset that. Hold down Control. And we're going to put our pivot point right where it belongs here.

And now as we rotate, you just grab the little blue handle. That movement looks much more reasonable. Do the same thing with this bottom leg. Hold down Control. And move it to his hip.

I'm also going to put him to sleep. That sounds bad. I don't mean it that way, Mr. Sloth. Don't worry about it. Now he's just snoozing.

So this is how our scene is going to start. And now it's time to get animating. Let's go ahead and save our work again. Then I want to turn on the automatic animation.

And as you can see, if you put on the Keyframes tab, Synfig sets an initial keyframe at frame 0. Let's set a new keyframe where we want our action to start. And Synfig is a little different because it treats keyframes separate from something they call waypoints. And so waypoints are basically for individual objects or properties. And keyframes are for your entire scene. They set the state for the entire scene.

But what I want to do now is I want to have his eyes slowly ease open. We've set a keyframe at 1 second. Let's move forward to maybe 33 frames. And then we'll ease his eyes open nice and slow.

Maybe he'll keep them open for a second. We can duplicate that keyframe to maintain that state the entire time. And then he'll close them again. We can reuse this keyframe as well. Duplicate. His eyes slightly open. Is he going to go back to sleep?

And then let's pretend that you're interesting enough that he's actually going to open his eyes all the way. But this might take him a second. So we move forward. And we're probably going to have him blink once or twice too.

So if you press Duplicate, it's just going to use that keyframe, whatever it was, on that part of the timeline. And right now, it's just kind of rough. Maybe he'll blink one more time. You know how when you wake up, you blink your eyes to get used to the light? Let's see if we can get that effect going.

So I think the movements are there. I think we want to work on our timing, which is another principle of animation, if you remember. Maybe we can make all this blinking happen quite a bit faster.

So let's preview this animation one more time. All right. That looks fine. So now I'd like to work on the wave. And let's remember that our automatic animation is off.

And I'd like to arrange these layers a little bit more intelligently because, as it is now, the arms pass behind the eyes and the mouth when they rotate. That doesn't make any sense. So let's flip on our Animation tool. Let's set our keyframes again to ease in and out.

And I'd like to jump forward in the animation to right about when he wakes up and notices there's something worth looking at, right about there. So that's where his arm might start waving. So just like before, let's set a keyframe.

Make sure that we are in the time track. And then move forward in time. We can move far forward because this is a sloth. And they are not known for moving fast. And let's just rotate this arm up. You notice it rotates around the pivot point.

And if we look at that animation, movement seems OK. But it still seems a little weird. It seems like he's reaching up to scratch his back or throw something. It doesn't look natural. And that's because when you go to wave, you don't just move your arm on a hinge. You twist your shoulder. And your elbow comes out. And you face the palm towards the person you're looking at. So there's a lot of complicated movements that happen.

We don't want to do all those. So we're just going to fake it. And so to fake it, what we're going to do is right at the top of that movement, we're just going to flip that image. We're going to mirror that image. And we're going to just take one frame to do it. And it's a cheat. It's not going to look perfect. But it'll save us some time. And it'll get the job done.

So right at the top of the movement, I would say, would be right about here. This is where the motion starts to look a little weird. So let's, first thing, set a keyframe. Then I want to turn on our automatic animator.

And if we notice, the keyframes now say clamped. We want them clamped. We want them linear. We don't want to apply any kind of easing or any kind of slow in and out, because what we're trying to do for this effect is we're trying to swap it out super quick so nobody notices it.

Now that we have our keyframe, we can just advance forward one frame. And then we're going to just really quick flip-flop it. Grab that yellow handle. And if you drag it through the pivot point and just about the same distance on the other side, it will mirror that image. So you can see that we've generated two

keyframes. And if we zoom in, these keyframes are really close together. They go from one frame to the next.

So now it doesn't look so awkward when that hand reaches the top. And now that it's up here, I just want to wave it back and forth a little bit. Let's go ahead and change these keyframes back to ease in and ease out, because now we're trying to get natural motion. And we'll have the hand wave back and forth a couple times.

And let's preview that. So that wave is a little bit too fast for a sloth. I'm going here and tweak it just a little bit, maybe make it take a little bit longer. You can't have a sloth being that excited.

And let's see. Maybe we could put some follow-through here. Just have it bounce back a little bit before it goes back the other way. So here's our preview.

And the last thing I'd like to do is change his mouth to a smile. And to do that, we're going to use replacement animation. And this is very useful when you-- I'm going to go ahead and turn off the automatic animator.

Replacement animation is very useful if you just want to swap out one drawing for another. So if you're doing lip syncing, you could draw a bunch of different mouths and swap those out. If you have hands, you might not want to animate hands opening and closing in lots of different, complicated ways. So you might just draw a few positions and then swap those out.

And Synfig has a lot of tools to make replacement animation easy. In fact, when you import an image into Synfig, they automatically put it into a folder that's called a switch folder. And if you look, you can see this little triangle filter. That means it's a switch folder. And if you spin down and look, you can actually see the PNG that lives inside that folder.

So you can see here, I have this folder called `mouth_smile`. And it's off. That's the folder on. And all I'm going to do is grab this other drawing and put it in the same switch folder as its friend. And then when the time comes, all I have to do is tell this program which layer to show.

So active layer name is `mouth_rest`. And I think we want to keep it that way until he opens his eyes right about here. Maybe he'll smile right here. So let's turn back on our animator. Let's go ahead and clamp our keyframes because we want them to be as tight as possible.

And then we'll set a new keyframe. Move forward one frame. And then we just want to change this property to the other mouth. It did automatically add a keyframe we don't want. So let's just go ahead and get rid of that. That way, the smile stays on for the rest of the animation.

So just a quick review-- if you see what the layer name is for this switch, up until these keyframes, it's all `mouth_rest`. And then once it hits these keyframes, it becomes `mouth_smile`. And you could add multiple PNGs inside of a switch folder and then animate switching in between those drawings. And you can create lots of cool effects that way as well.

And one last thing, I want to show you how to render your animation in Synfig. It's a little complicated. We're going to go to the Show the Renders Dialog box and make some settings here. First of all, you have to choose where you want your folder to go. And you also might have to rename it to the right file type.

So in this case, I renamed this as an MP4 because that's the kind of file I'm going to want-- slothwave_01. And we have to change the target to the correct type. So we're going to choose ffmpeg, which is the MP4 video renderer.

Let's go ahead and increase the quality as high as it'll go. And we want to anti-alias these a little bit better as well. So maybe 2 is fine. The higher the quality, the longer the render time. However, the nicer it's going to look. These settings look all right. And let's go ahead and render.

And what I saw on my computer-- it might be different if you have a different operating system-- is this window comes up. And you really don't see anything. But it's calculating the render. It's actually rendering it out. So I would advise you, just don't touch it. Just let that window do its thing. And when it's done, it'll close. And that's how you know that your render is complete.

So now we can watch it. Here's the outputted MP4 file. And you can use that MP4 to turn it into your teacher or to get feedback on certain parts. Or you can use it in your final composition.
