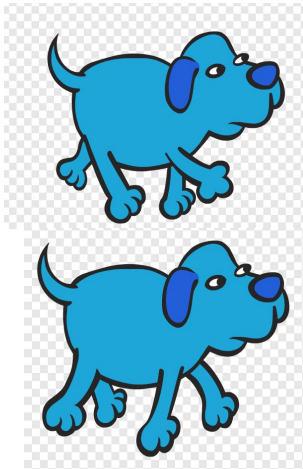
Walk Cycles

Programming game characters

A walk cycle is a series of frames, or costumes, used in such a way to simulate the action of walking or other methods of transportation. They can range from simple loops to complex 100-frame cycles.

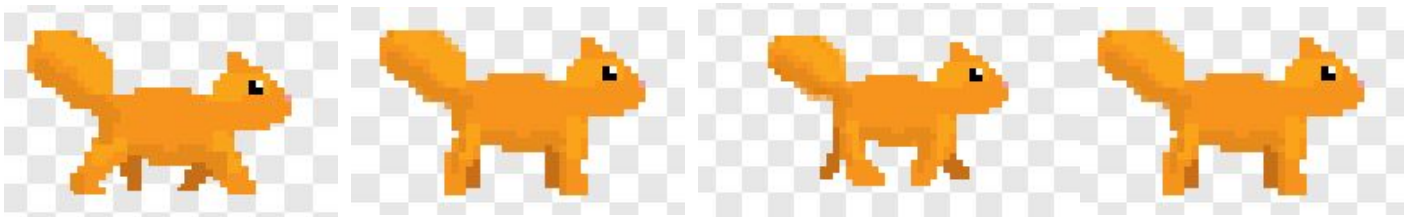
Walk cycles are often a big part of character animation too. You'll have seen then in many cartoons.



Walk Cycles in Scratch
In scratch we use costumes for the different frames of character animation. You could draw your costumes in scratch, or in another program like paint, or photoshop, and then import them. You can also work with ready made sprites that have different costumes for a walk cycle.

This dog example is already in the sprite library. His legs cross and uncross like different stages of walking.

I made this example in Photoshop, in a pixel art style - using a square brush and blocky shapes. It's a squirrel!



1 **2** **3** **4 (copy of 2)**

1. start with the front leg closest to us put forward
2. In the middle both legs are directly under the body. this is the middle step
3. and finally the front leg furthest away is put forward.
4. Then I will need to return to the middle pose

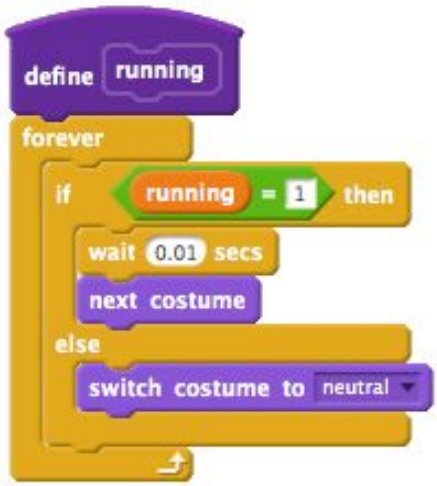
When the walk cycle will run, the sequence 1 2 3 2 1 2 3 2 1 2 3 2 1 ….
It counts up to 3, then counts backwards. In the code, put another middle pose at the end.

You want the character to start this cycle when a movement key is held down. You also want it to stop when the key is not held, and for it to return to a neutral pose when not moving.

So here's my code.
Try it out, or maybe even think of a different way?
What's the least code possible to make this work?

First, I made a *custom block* to define when my squirrel is moving. I called it 'running'.

I also created a *variable* called running, which will check if my squirrel is supposed to be moving.



In this block:

I define a block called *running*

I add a *forever loop*

I put an *if else* inside the *forever loop*

I use an equal operator to check if the variable called running is = 1, if it is, I wait 0.01 seconds before changing to the next costume.

If else I switch to my neutral costume.

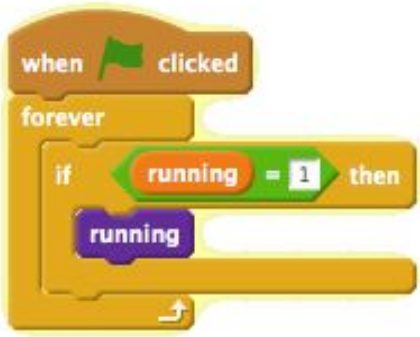
But how my I set my running variable?
One of the most responsive ways to control a character with arrow keys is to Check for key presses in a forever loop.

In this code:

1. I start with a when clicked block, and a forever loop. I put an if else inside the forever.
2. I use an OR operator to check if either left or right arrow is pressed.
3. If one of those keys is pressed, I set running to 1, else I set running to 0.

Using the running animation

Now, I create another black to tell the sprite so move when the running variable says so.



when start is clicked clicked, I have a forever loop.

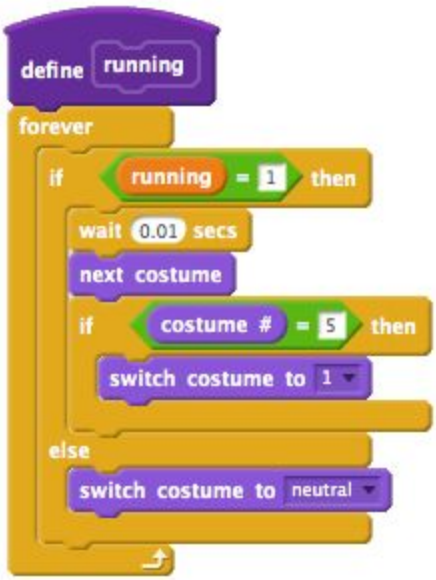
I use an if then, and an equals operator to check is the variable called ‘running’ equals 1.

If it does, we will use our custom block to cycle through our costumes, animating the walk cycle.

Final tweak

In my cycle, I have a ‘neutral’ pose that is not part of the walk cycle, So I need to make sure this is skipped over when the squirrel is running.

I have set my neutral pose to costume number 5.

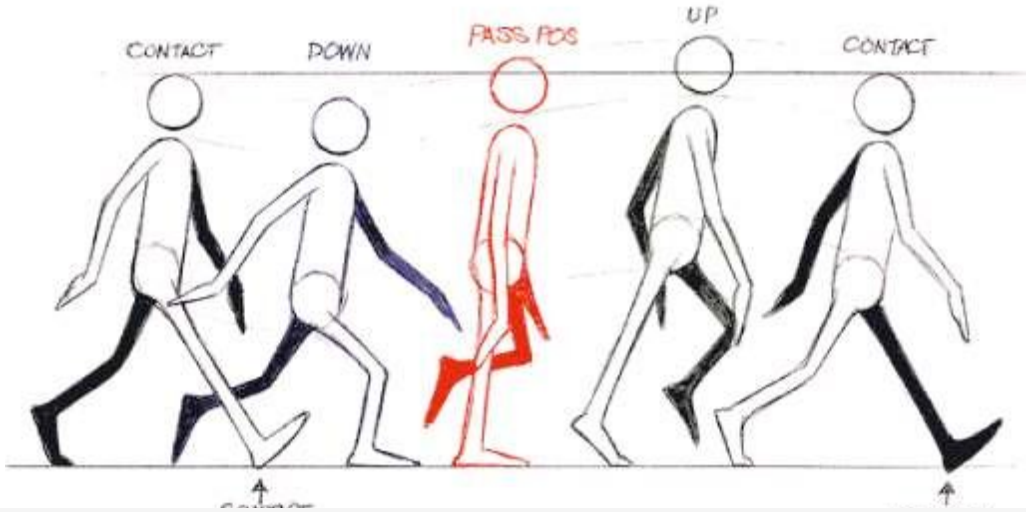


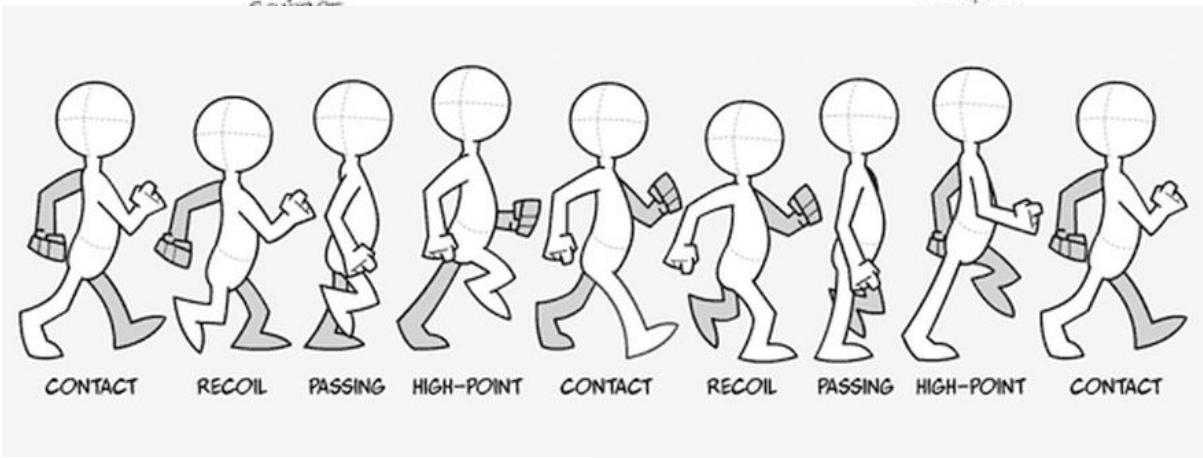
I added this to the original running block definition.

When the costume gets to number 5, my neutral pose, it will jump back to costume 1, and I will not see it.

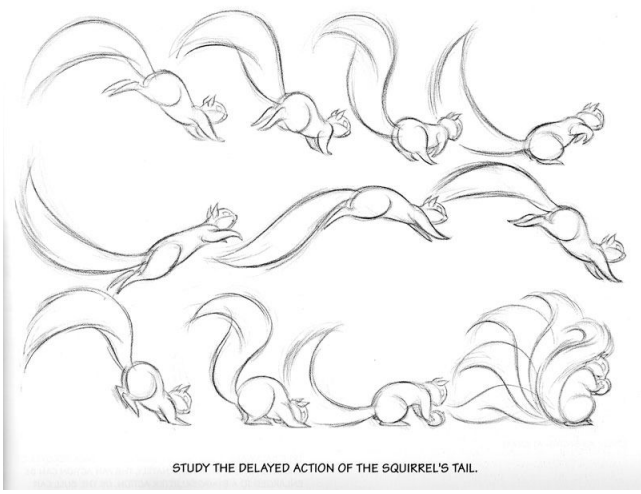
Now I have a character that walks when the keys are pressed. But what’s next?

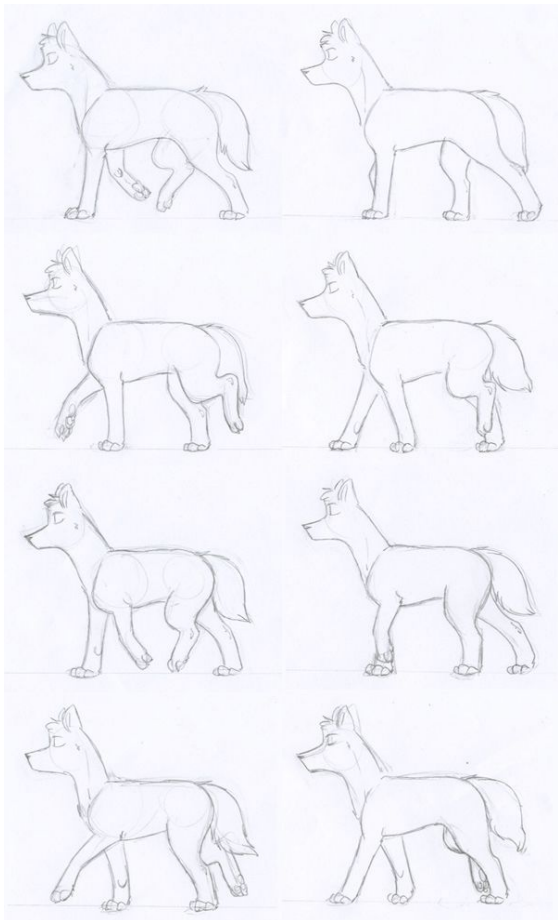
Other cycles? Jump animations?
Idle animations? turning animations?
Moving around the screen?
A scrolling background so it looks like your character is moving?
Platforms and obstacles?





From “Cartoon Animation” by Preston Blair





Here are some walk cycles to look at,
Animators put a lot of work into these.

Try walking in slow motion and paying attention to the movements of your legs.