Scratch Programming
Topic 1.3
Create Animation
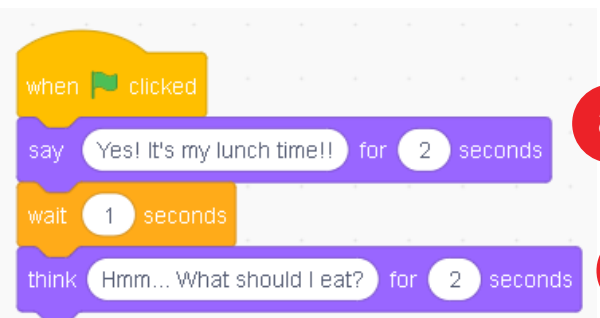
Presented by Advaspire Team

Review Last Topic – Say Block

a Yes! It's my lunch time!!

Say

b Hmm... What should I eat?
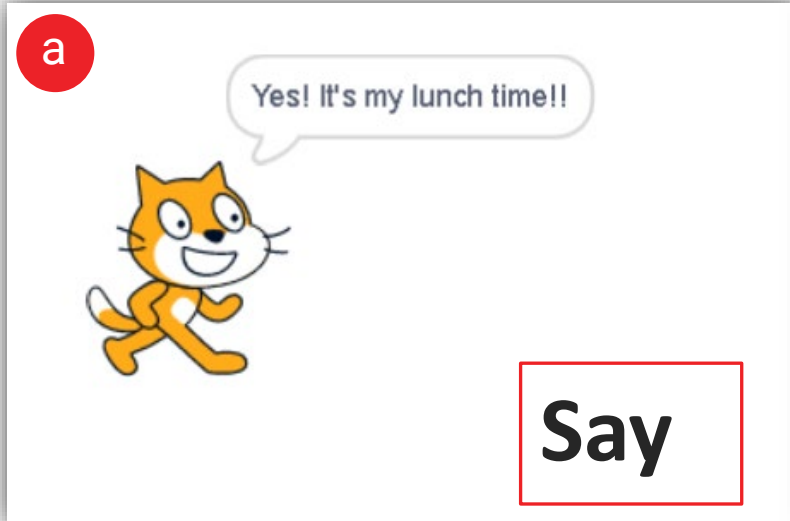
Think

You can either make your cat say something or think about something.

"say ____ for __ seconds" block is to make your cat to say a sentence for certain seconds.
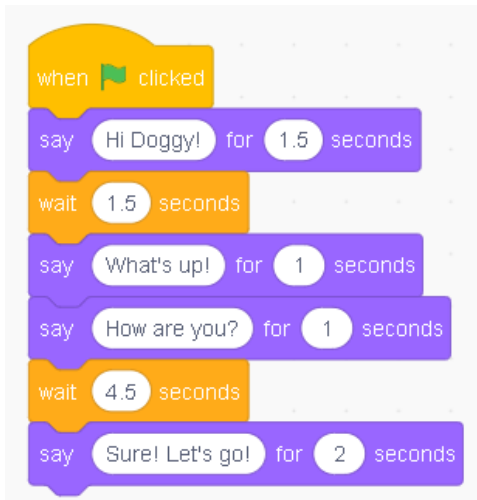
"think ____ for __ seconds" block is to make your cat think about something for certain seconds.
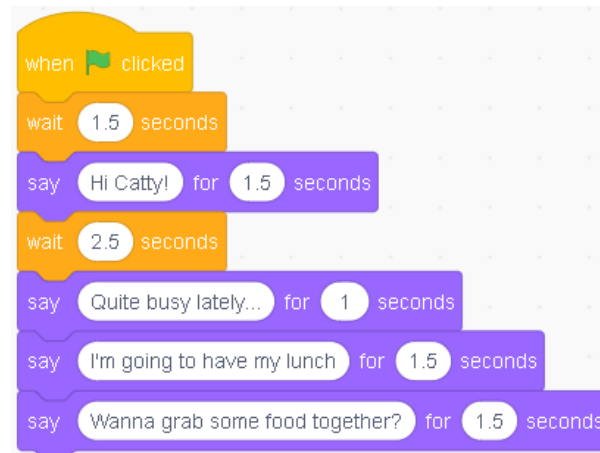
Script:

when 🏳 clicked

say Yes! It's my lunch time!! for 2 seconds **a**

wait 1 seconds

think Hmm... What should I eat? for 2 seconds **b**

Review Last Topic – Conversation Arrangement

Script:

```
when [green flag] clicked
say  Hi Doggy!  for  1.5  seconds
wait  1.5  seconds
say  What's up!  for  1  seconds
say  How are you?  for  1  seconds
wait  4.5  seconds
say  Sure! Let's go!  for  2  seconds
```

Script:

```
when [green flag] clicked
wait  1.5  seconds
say  Hi Catty!  for  1.5  seconds
wait  2.5  seconds
say  Quite busy lately...  for  1  seconds
say  I'm going to have my lunch  for  1.5  seconds
say  Wanna grab some food together?  for  1.5  seconds
```

Arrange the conversation accordingly.

For example, cat will be the first one to talk, then it will say "Hi Doggy!" for 1.5 seconds, then dog will wait for 1.5 seconds until cat finishes its speaking, then only say "Hi Catty!", so and so on.

Review Last Topic – Broadcast Method

Script:

Script:

We can also arrange the conversations with Broadcast function.

Broadcast function is like acting based on cues.

If Catty is the conversation starter, after first sentence, Catty will send a message to Doggy as it's Doggy's turn.

Then after Doggy ends it turn, it will tell Catty to start it's turn.

Today's Topic

1. Concept of Animation
2. Create Animation for Sprite
3. Combine Motion with Animation
4. Do Animation for different sprites
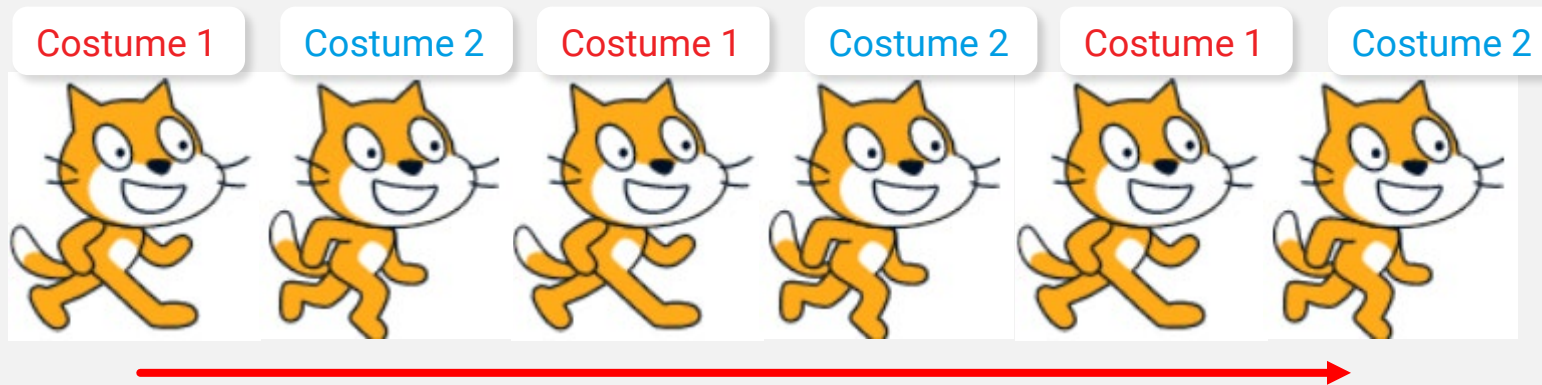5. Start Animation with specific costume

Learning Outcome

1. Understand the switch costume concept
2. Able to code your sprites with motion and animation
3. Understand how parallel scripting works and utilise it to do motion with animation

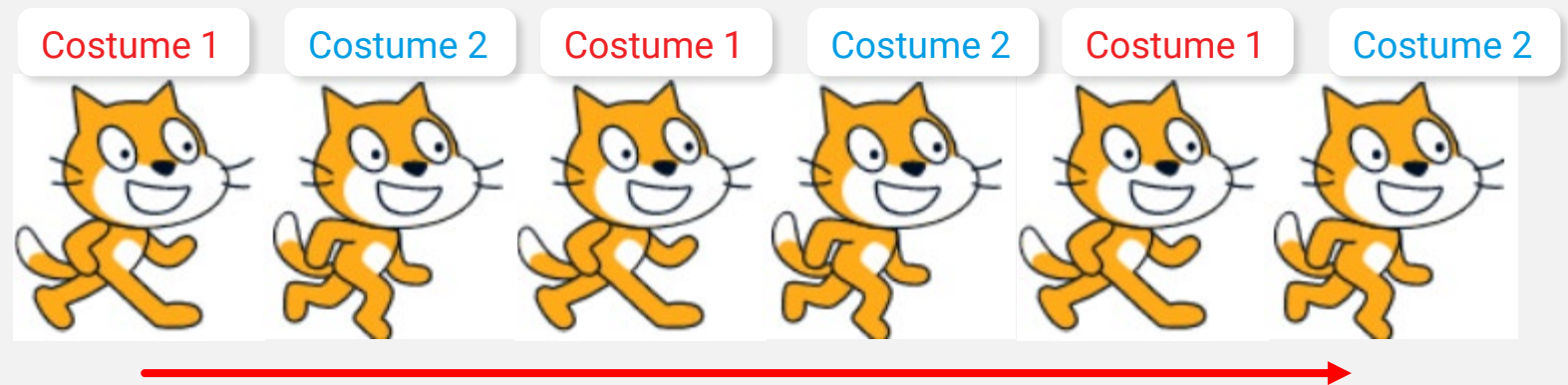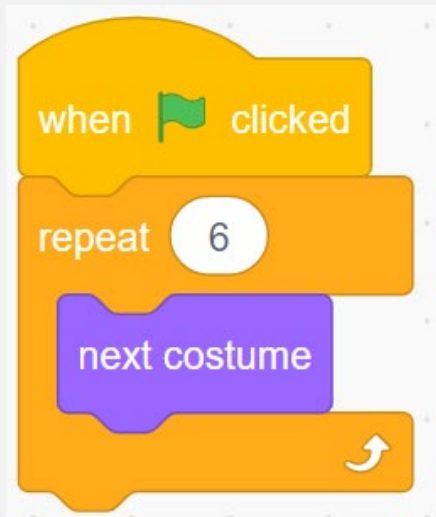# Concept of Adding animation to a Sprite

Costume 1 | Costume 2 | Costume 1 | Costume 2 | Costume 1 | Costume 2

We keep switching the costume with repeat block when we move the cat into the scene, this is how we script animation for the sprite.

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Script for Adding animation to a Sprite

when 🚩 clicked
repeat 6
next costume

| Costume 1 | Costume 2 | Costume 1 | Costume 2 | Costume 1 | Costume 2 |

By adding these codes into your cat's script, you can animate your cat.

As the internal repeat loop is going to take 0.03 second to complete a loop, so your cat will move super fast in this case.
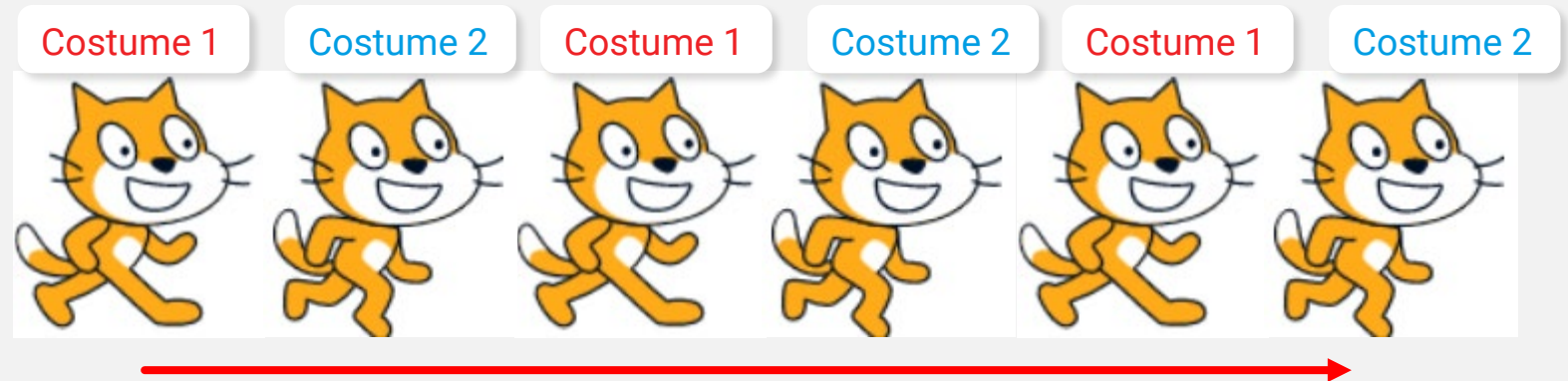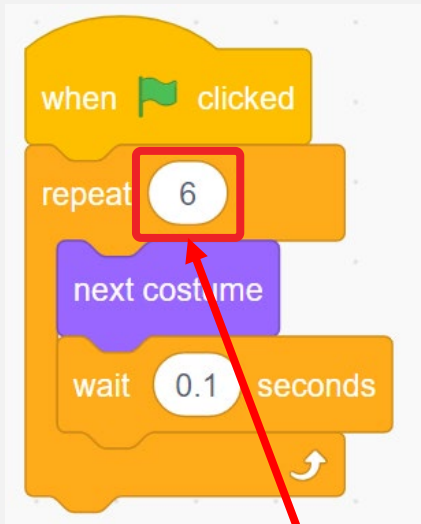
Time Interval for switching costume

| Costume 1 | Costume 2 | Costume 1 | Costume 2 | Costume 1 | Costume 2 |
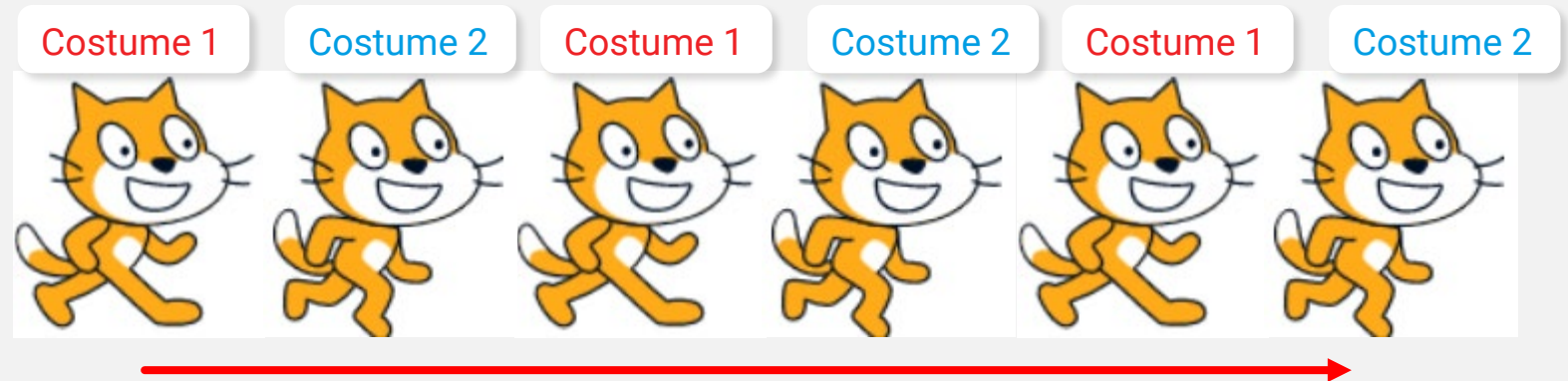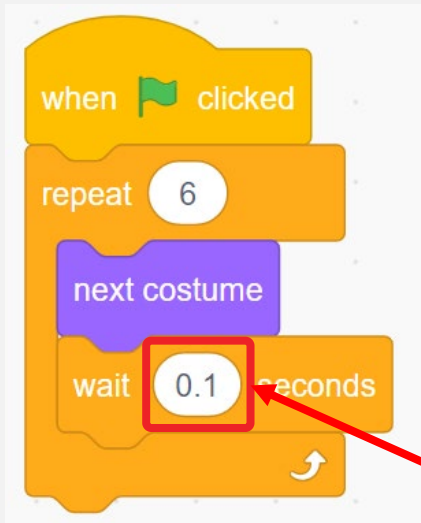
We can add a time interval for 0.1 second every time when it switches the costume.
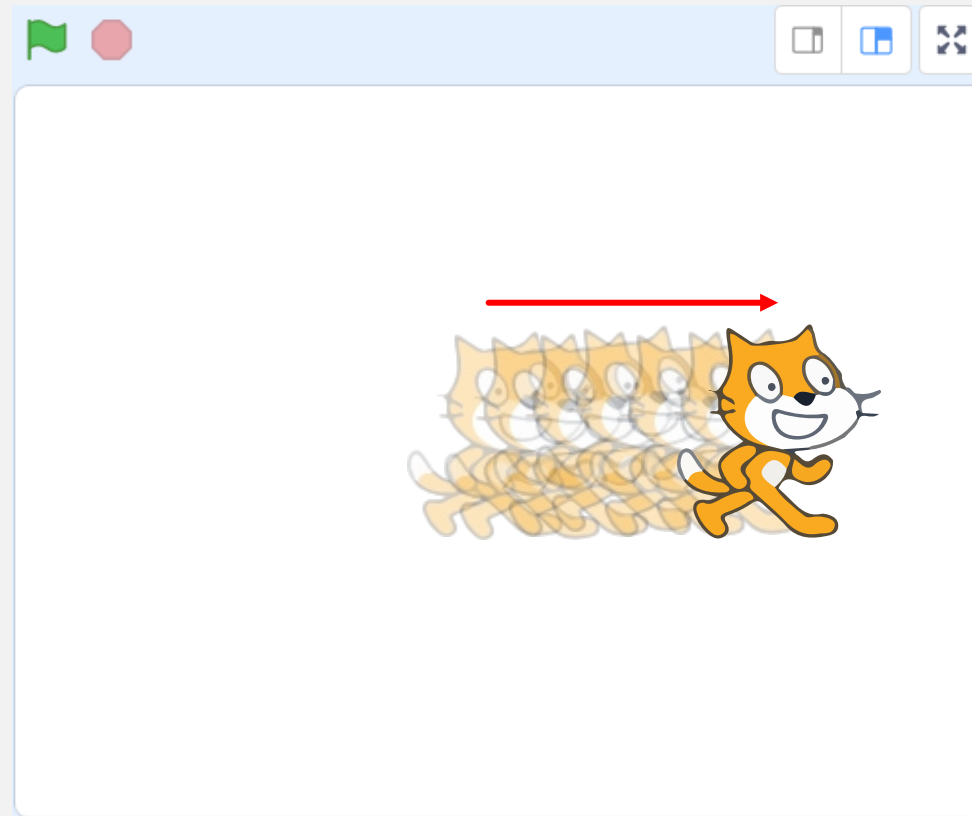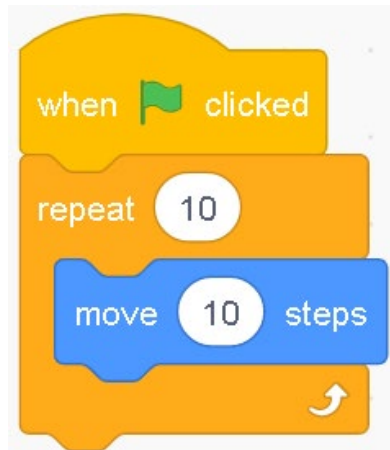
Time Interval for switching costume

when 🚩 clicked
repeat [6]
next costume
wait [0.1] seconds

| Costume 1 | Costume 2 | Costume 1 | Costume 2 | Costume 1 | Costume 2 |

The value of the repeat loop basically control how many times you want to switch the costumes, if your cat need longer animation, you can put in higher value for number of repeat.

Combine Animation and Motion

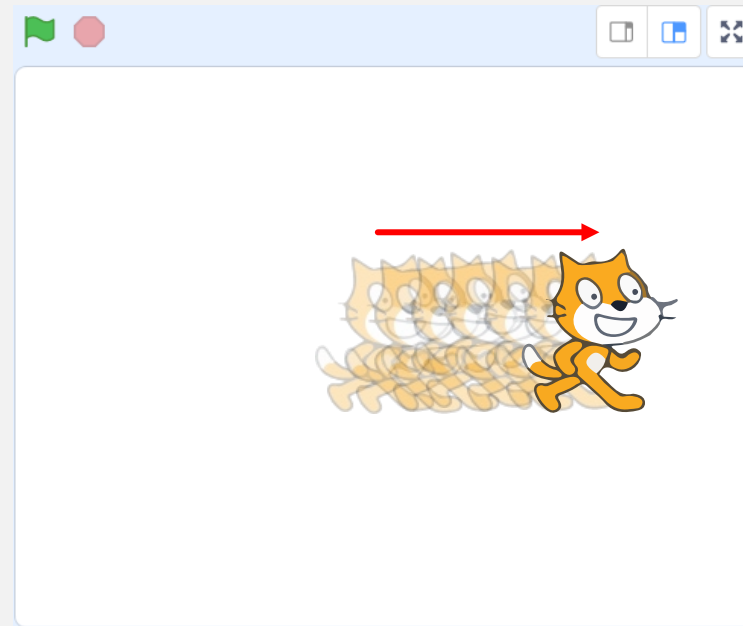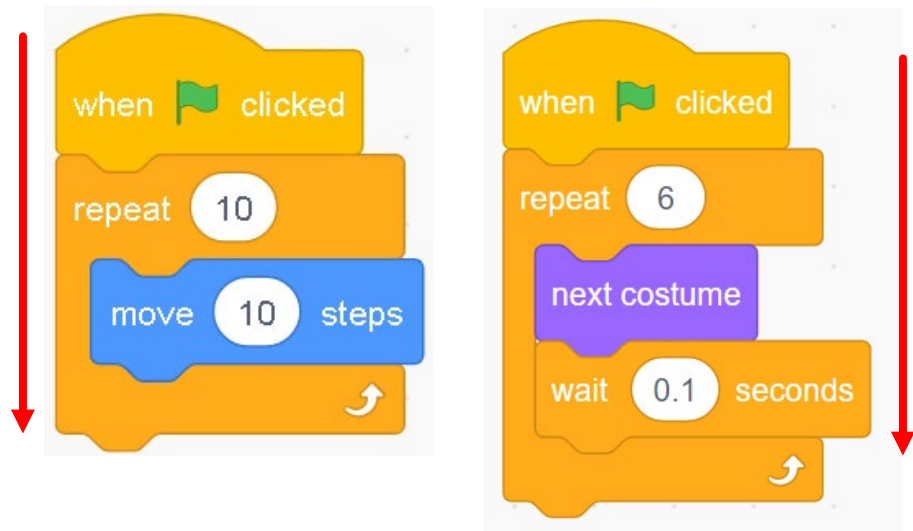## Script:

Still remember in topic 1 we learn how to move the cat with repeat block and move steps?

We can pair this with the animation script together.

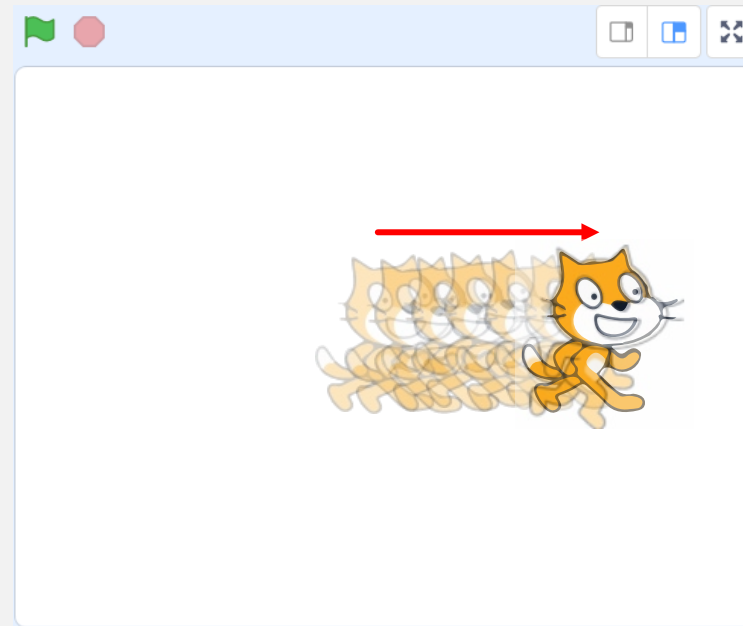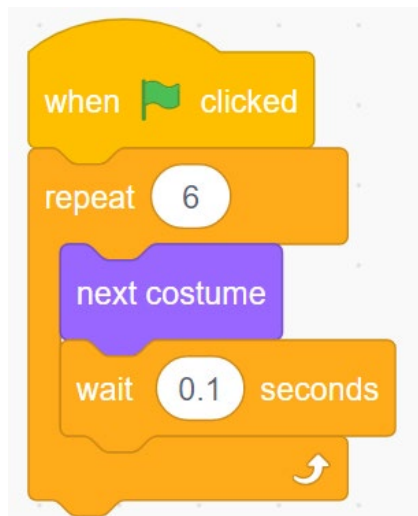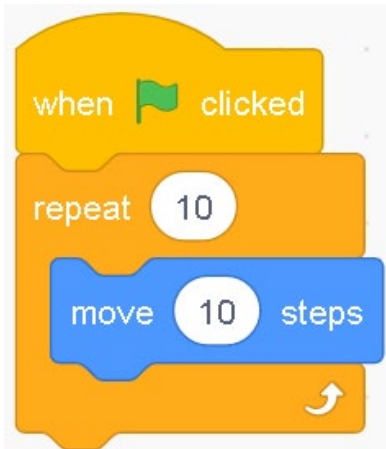# Parallel Scripting – Run the script concurrently

Script:

We can straight add another when flag clicked with the animation script.
This method is called the parallel scripting, both scripts will run concurrently to make the audience to feel like cat is walking to the front.

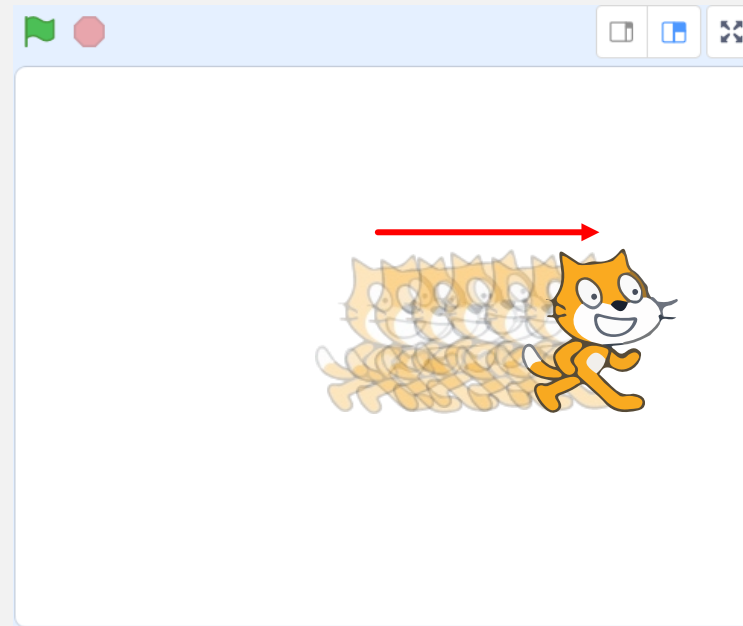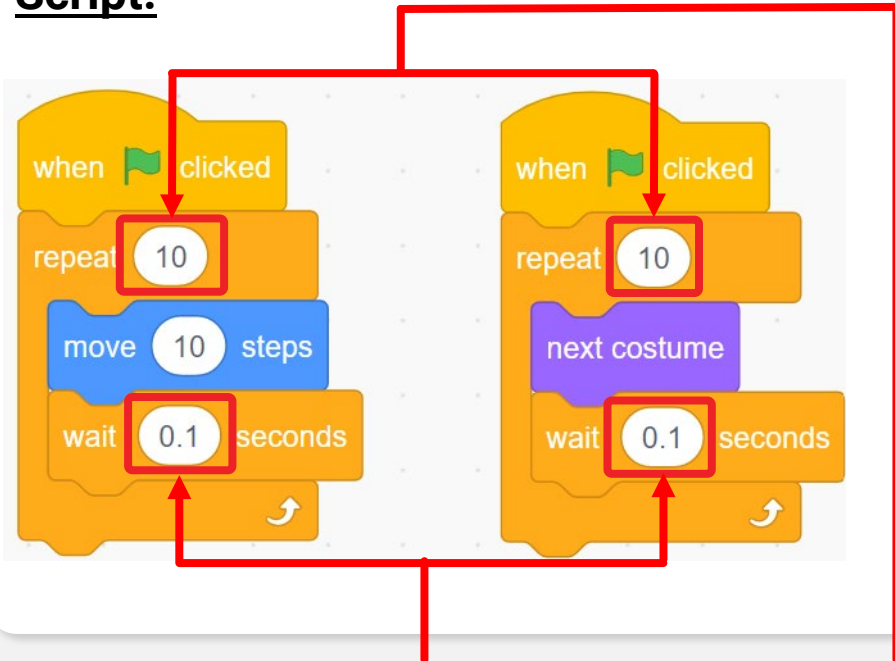# Animation and Motion not matching correctly

Script:

There is a problem that after the cat reached the target position (stop moving forward anymore), but the animation keeps working.
It is because the time to complete the motion is less than the animation.

Animation and Motion not matching correctly
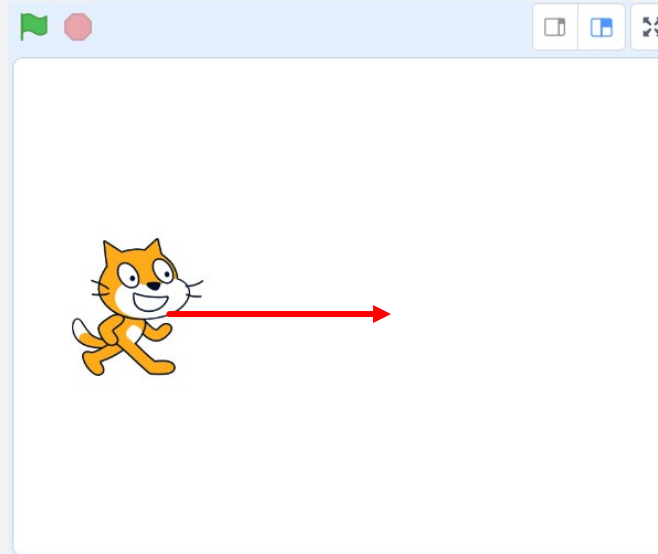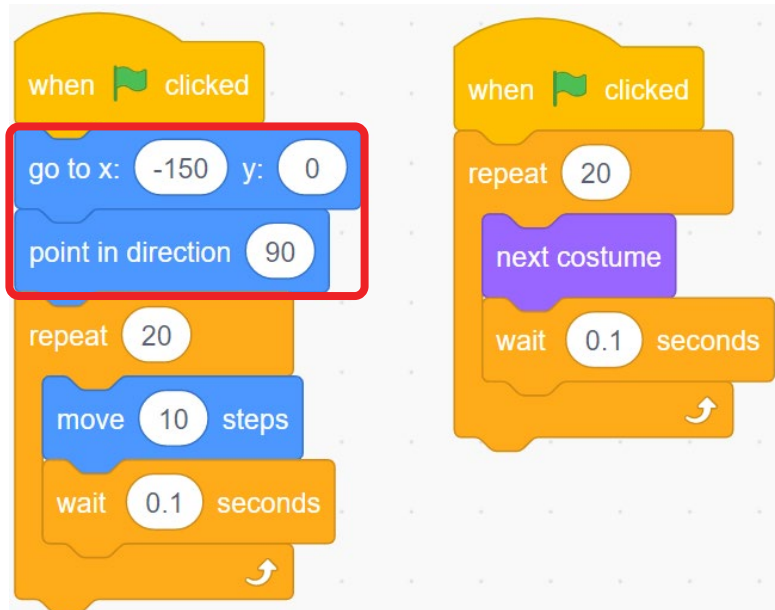
Script:

To solve the unmatching motion and animation problem, we can make both duration to be same by setting both repeat and time interval between to be same.

Adding Starting Position and Direction
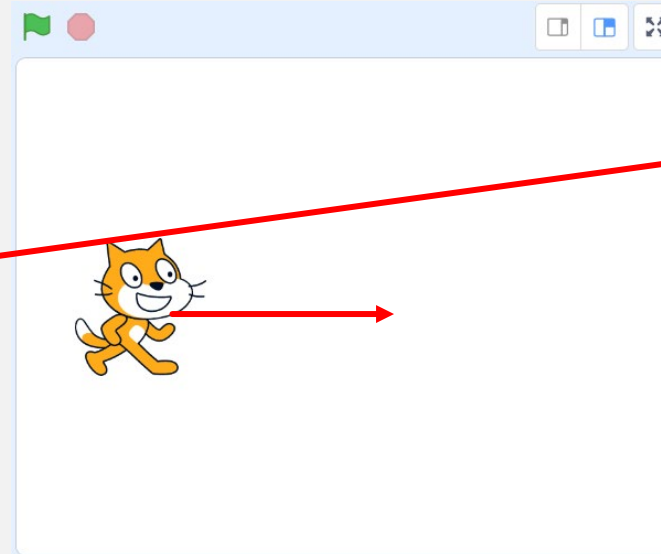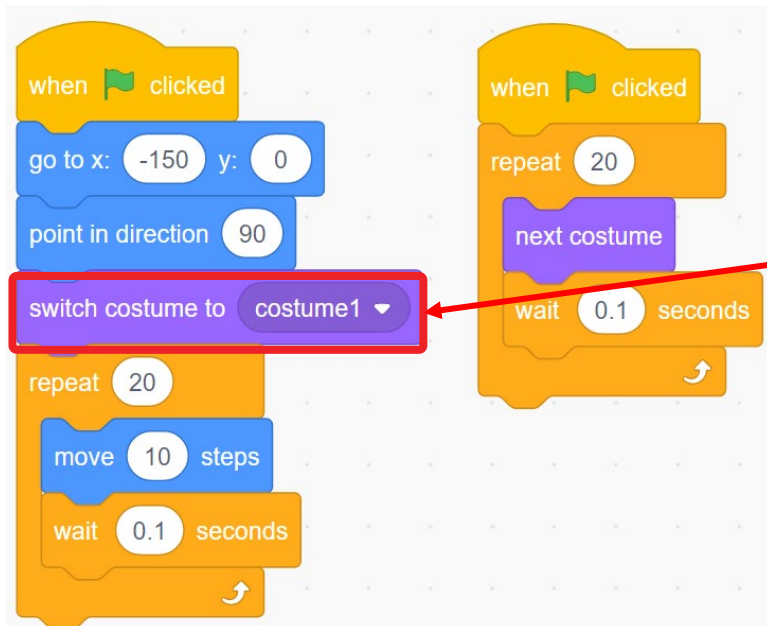
Script:

Recall back our topic 1, we talked about how to set starting position and direction.

Now we will add in the starting position and direction to our sprite before it starts to move.
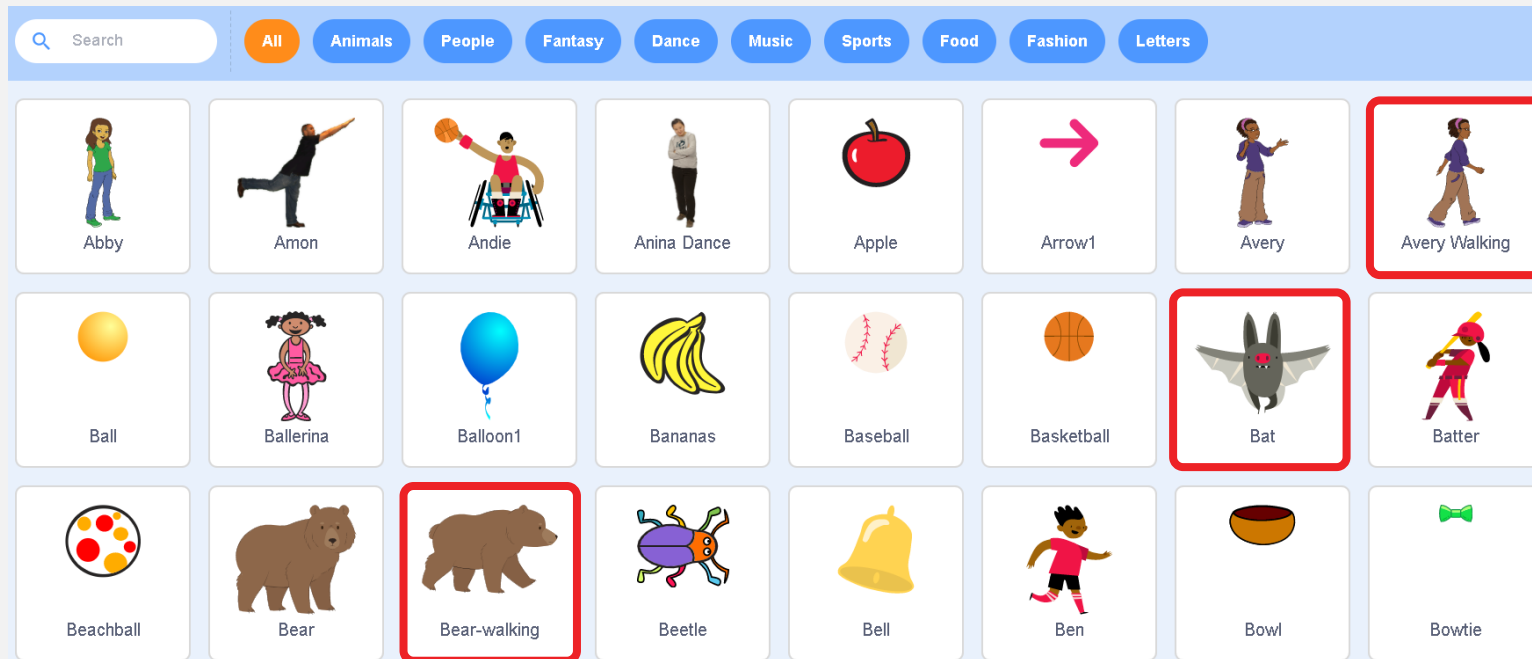
Set the starting costume

Script:

Same concept as the starting position and direction.

If you have many costumes in your sprite, you might want to set a starting costume when it start moving, you can use "switch costume to" block to set the first costume.
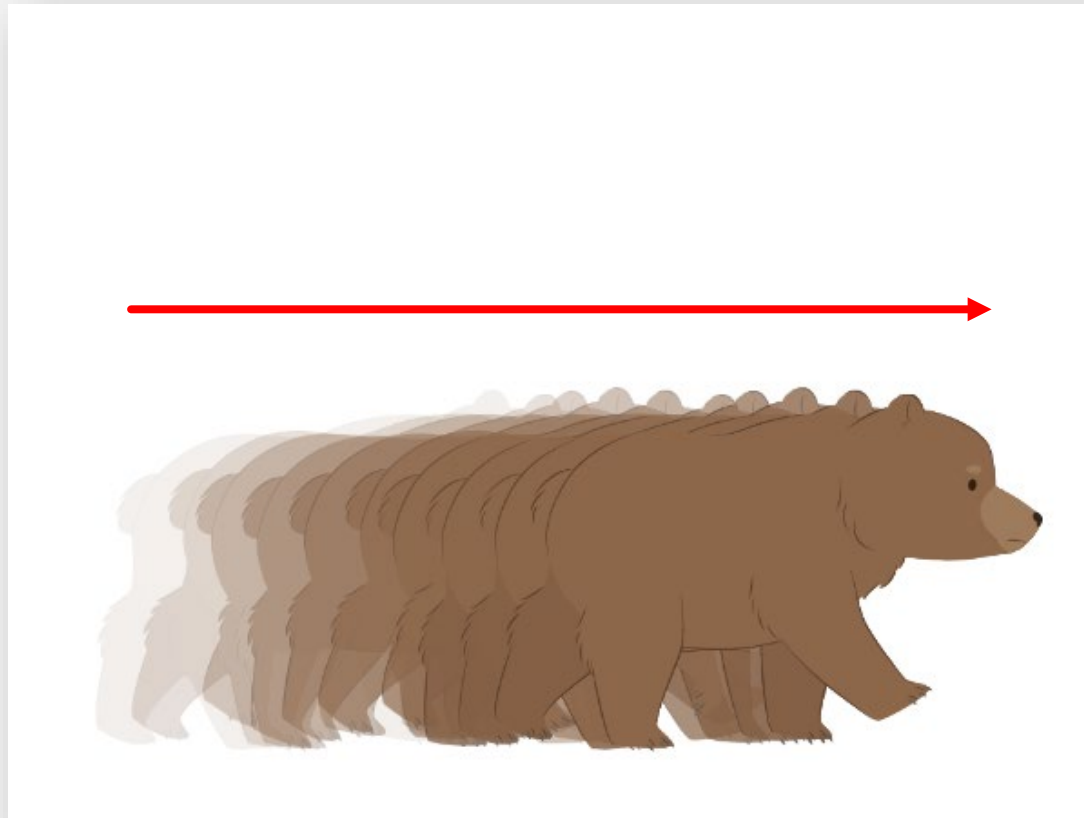
Animation Challenge

We can go add some free sprites to do animation for them.
Let's choose 1 out of these 3 sprites (bear, bat and Avery Walking) to try.
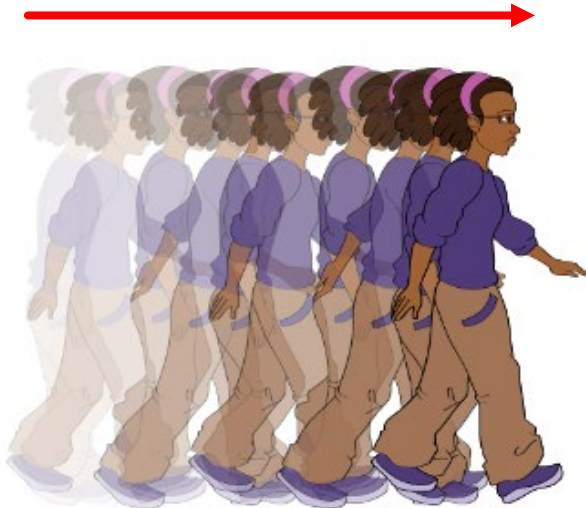
Setup the sprite and animate it

Let's import a bear and make it move forward to the right with animation.

Pull your sleeves up and put your hands on to work on this.
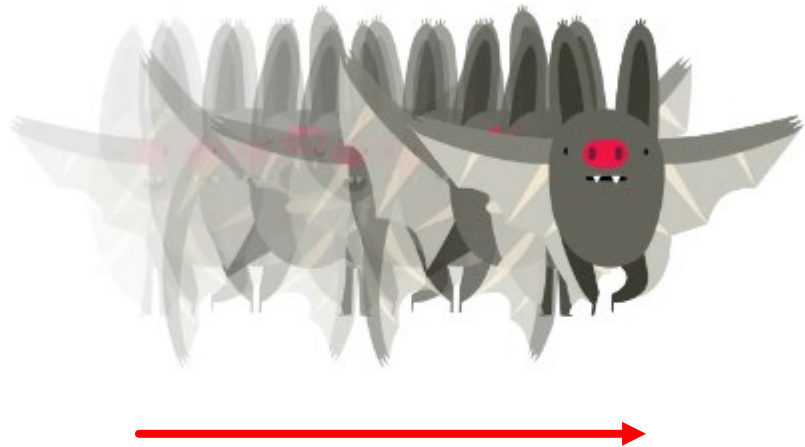
Challenge II – Avery Walking

Now let's try Avery Walking.

Make it walk from left to right with animation.
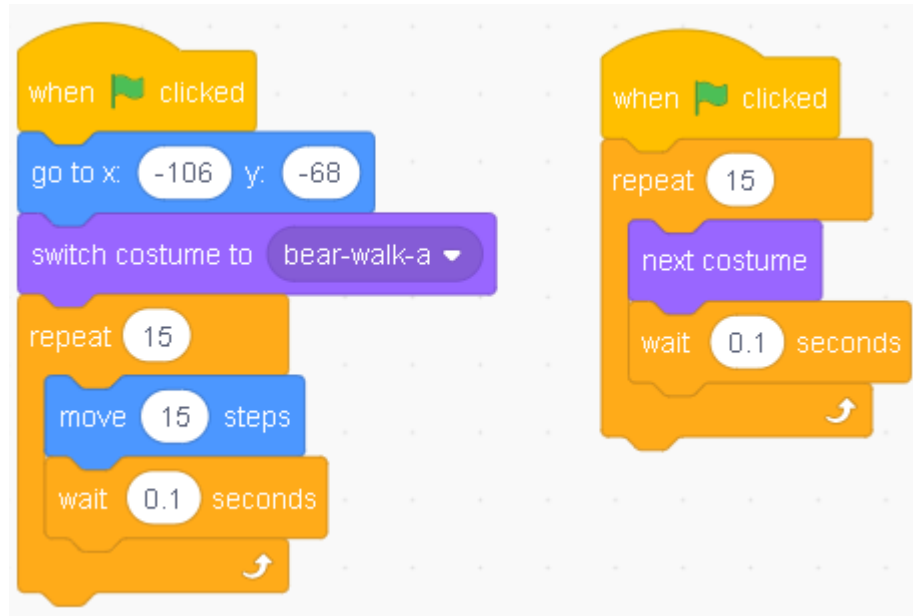
Challenge III – Bat Moving

Let's try the bat.

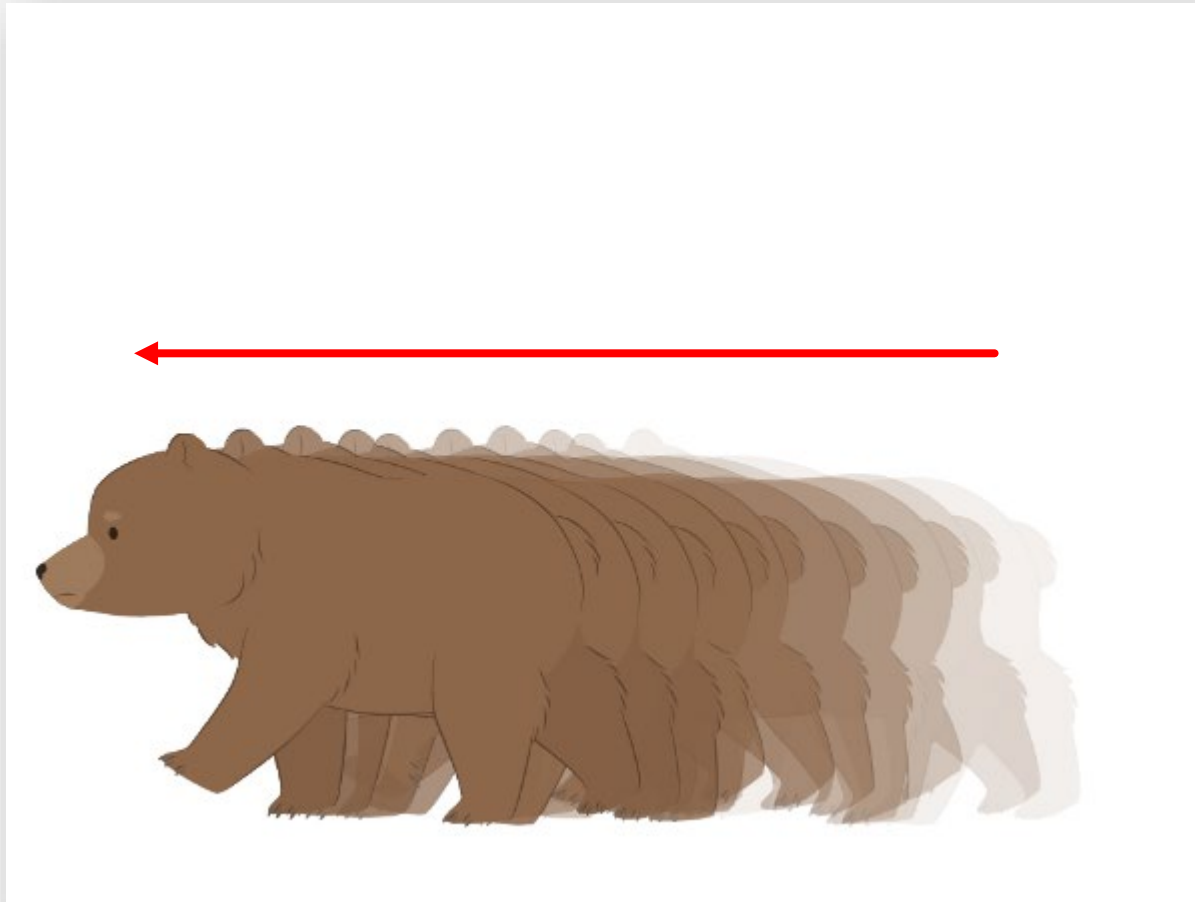# Solution I – Bear Walking Animation

Script:

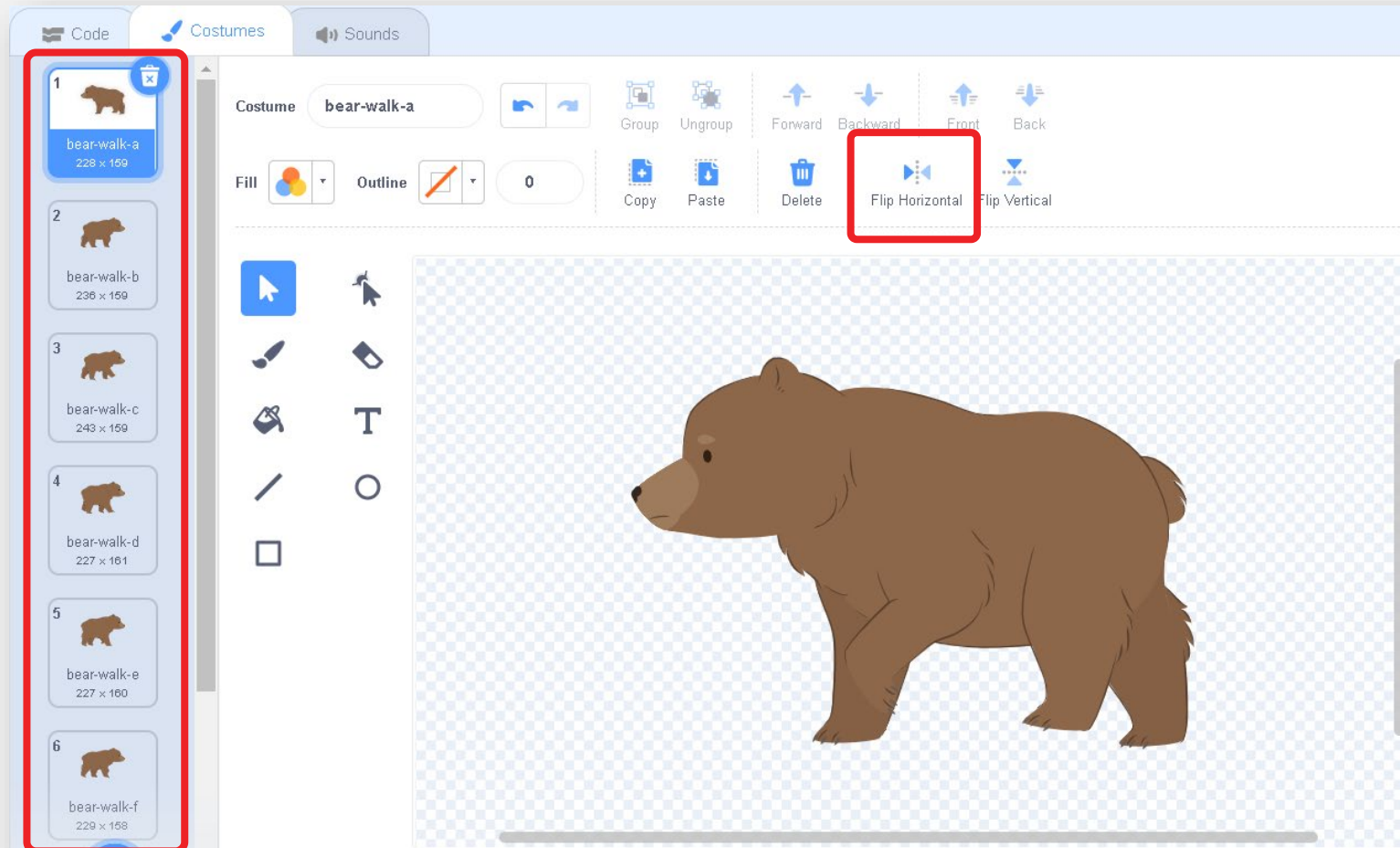This is the solution for bear walking animation.

Make the bear walk to the left

How do we make the bear walk from right to left?

Solution 1 – Flip all costumes

One of the solutions is that you can flip each of the costumes in the bear to make it face to the left.

Then code it to start at the right and move to the left with switching costumes.

Solution 2 – Set Rotation Style

We have 1 motion block that can set the rotation style of the sprite to left-right only.

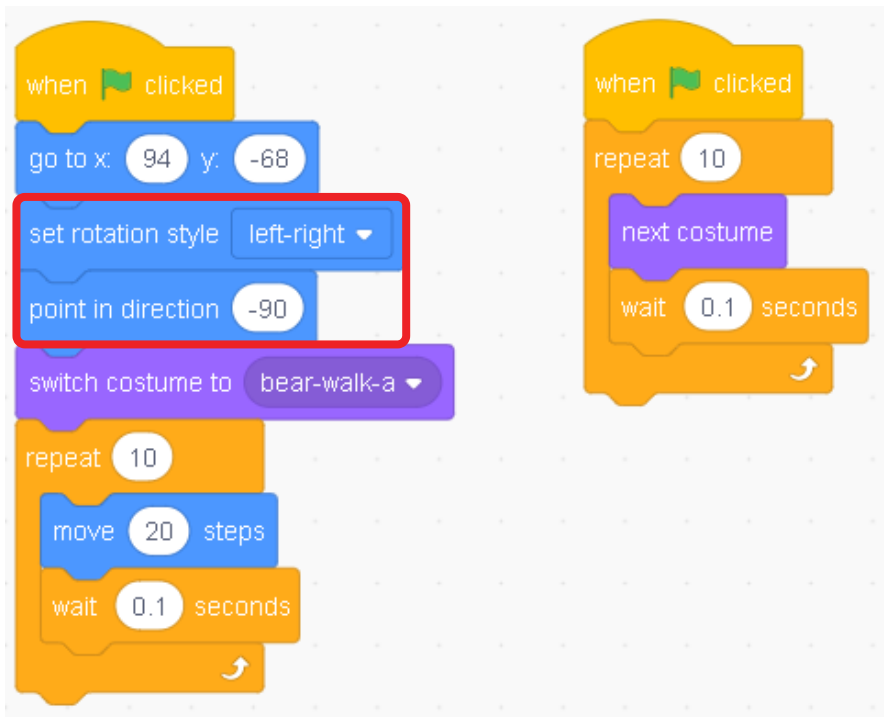This means that even if you turn the bear to -90 degree, it won't be outside down.

Then this will be the way to make the point in direction of the bear to -90 at start.

Move 10 steps will make the bear to move in pointing direction (to the left).

Solution 2 – Set Rotation Style

Script:

The easier solution will be this, set rotation style to left-right, then set point in direction to -90 degree.

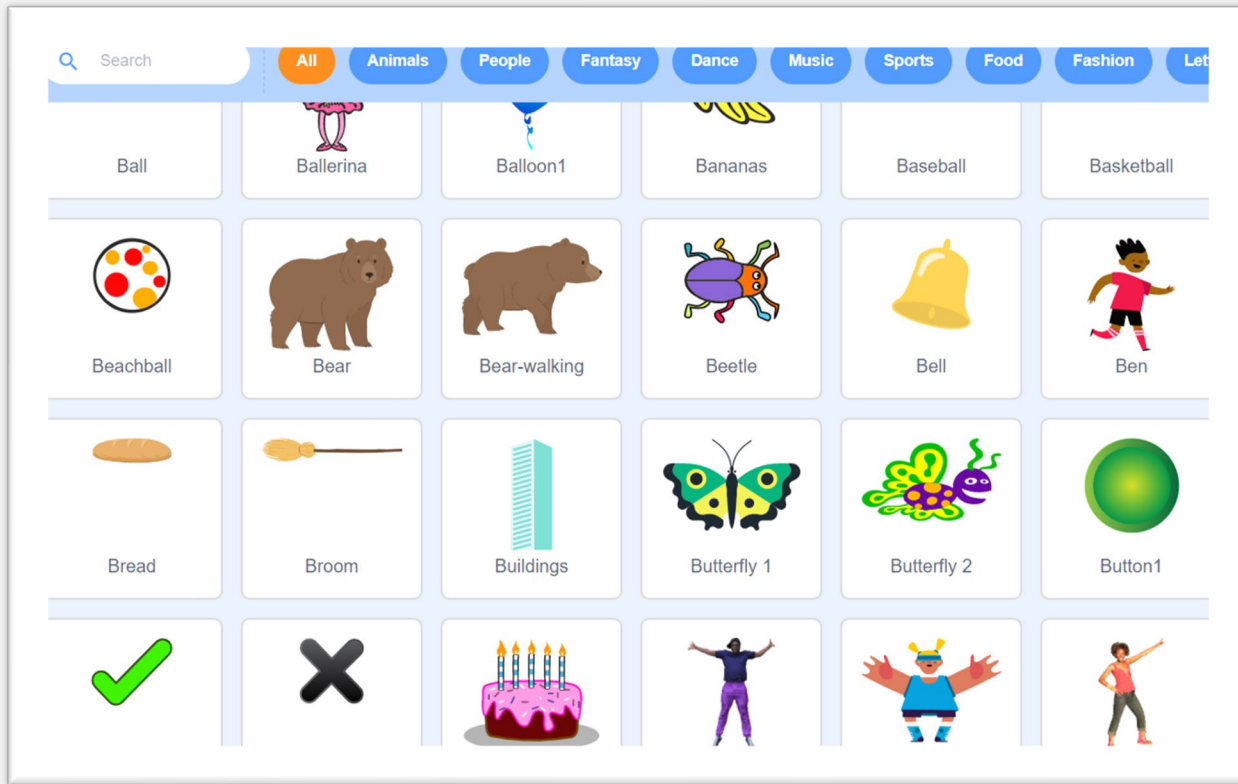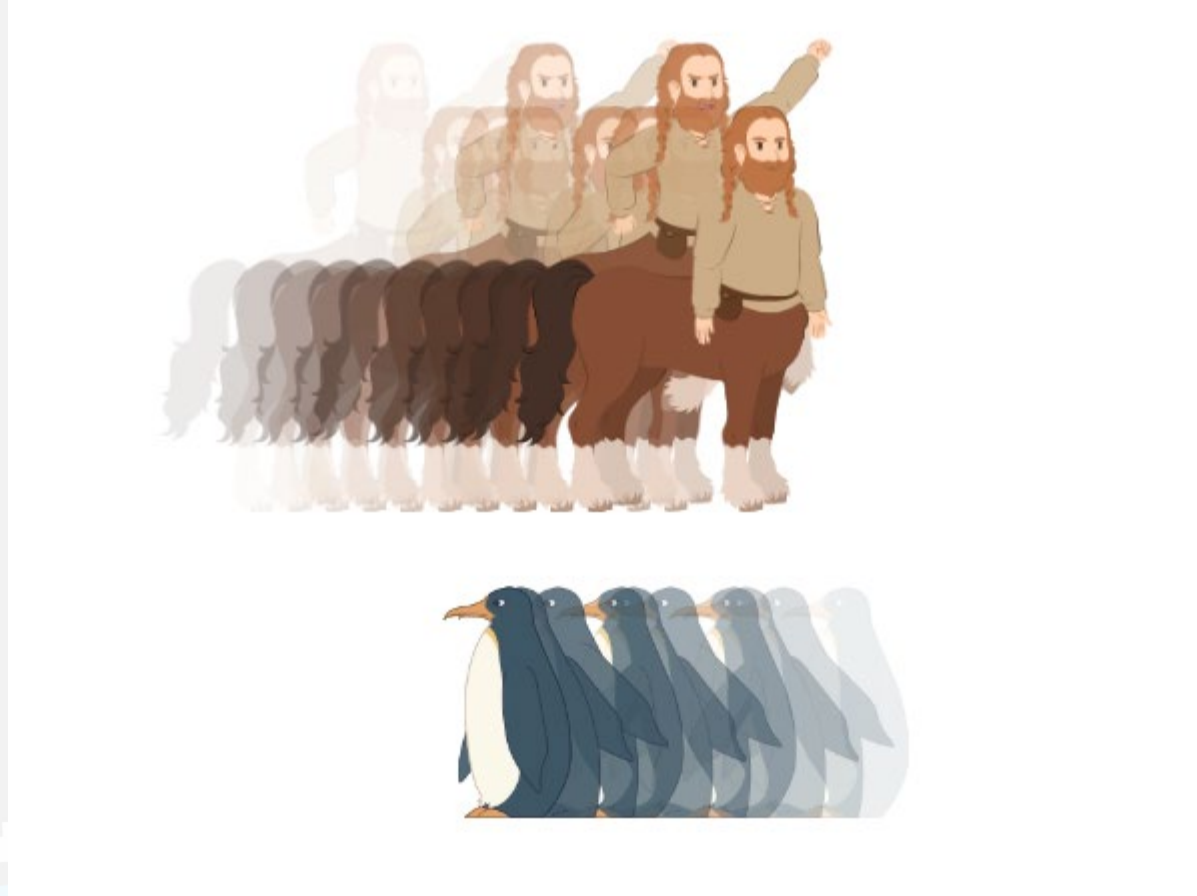And make the bear move from right to left.

ASSIGNMENT *for*

Topic 1.3

T1.3 – Mission 1

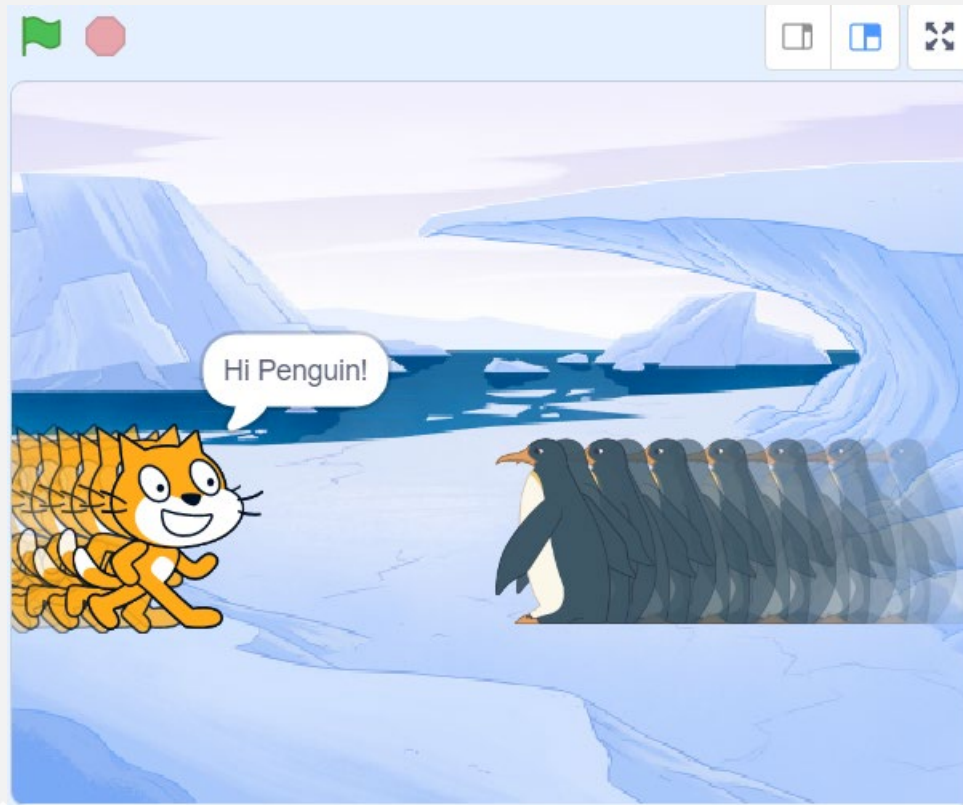Let's try and find 3 other sprites and animate them to walk forward for at least 200 steps.

T1.3 – Mission 2

<u>Let's add 2 sprites on the screen:</u>

1. **First character move from left to right**
2. **Second character move from right to left**
3. **Add animation for both**

T1.3 – Mission 3

Add animation and motion to your story with conversation.

1. Cat walk in and talk to penguin
2. Try to do animation while talking

Summary

1. We can use "repeat" block and "next costume" to keep switching the sprite's costume to animate the sprite (it is like the flipping comic concept).

2. We can add wait block to set the time interval for costume switching (depends on how many costumes in your sprite)

3. We can set starting position and direction before we move our sprite at start, and we also can set which costume to start from before our animation starts.

4. Use parallel scripting method to combine motion and animation

You can direct message your teacher and ask your question through **Slack Robotene Community** or arrange a **One-to-One Consultation** with your teacher.

Q&A

Any Questions?

Thank you ;)