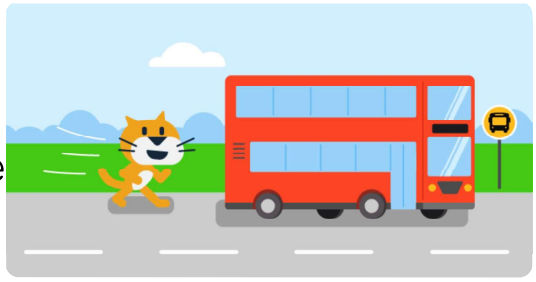
Catch the bus

Code sprites to walk or fly to the bus before it drives off



Step 1 Introduction

In this project, you will create an animation with sprites that run or fly to catch a bus.

You will:

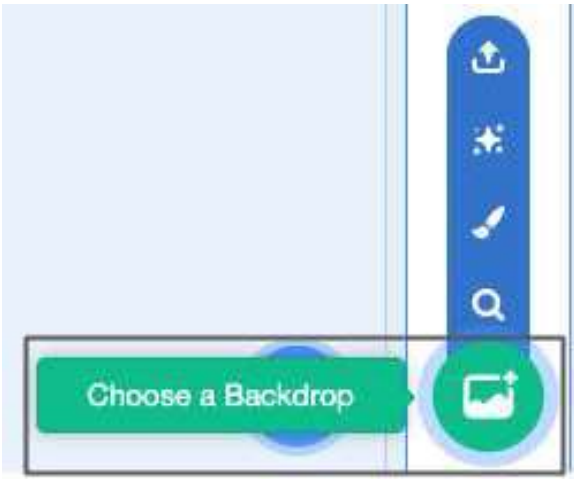
- Make sprites do different things `when green flag clicked`
- Position sprites on the **Stage**
- Use a `repeat` loop to `move` sprites and `switch costumes`

Animation creates the effect of movement by changing pictures quickly. The first animators carved pictures out of wooden blocks and used them as stamps. It is much faster to use Scratch to code your animation!

Step 2 Create your bus scene

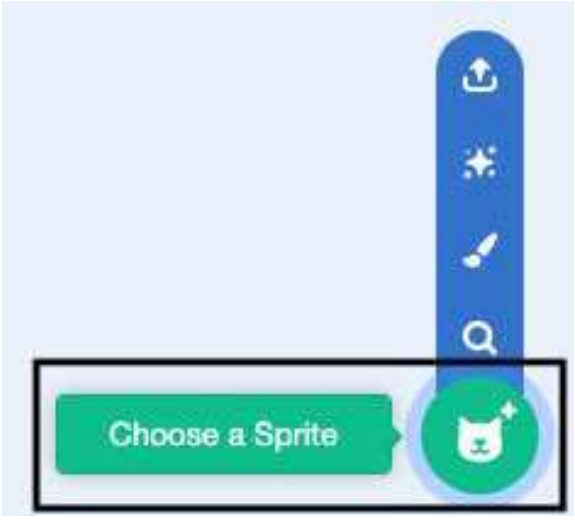
You will choose a backdrop and add a bus sprite.

Click (or on a tablet, tap) on **Choose a Backdrop** in the Stage pane (in the bottom right-hand corner of the screen):

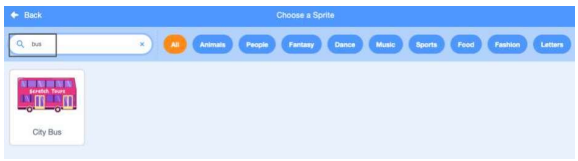


Click on the **Outdoors** category. Add a backdrop that makes a good starting point for your bus:

Click on **Choose a Sprite**:



Type `bus` in the search box at the top:

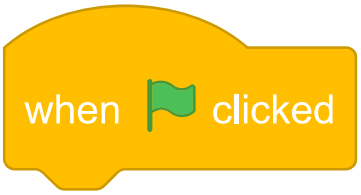


Add the **City Bus** sprite to your project.

In Scratch, you run projects by clicking on the green flag above the Stage. The bus needs to be in its starting position `when green flag clicked`.

Make sure that the **City Bus** sprite is selected in the Sprite list below the Stage.

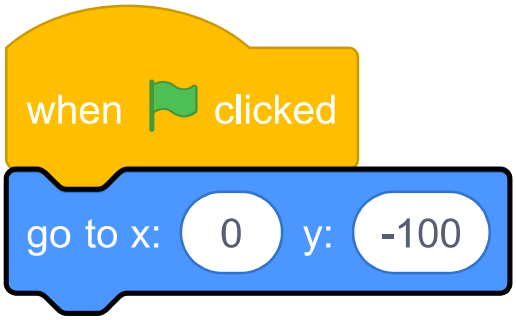
Drag a `when green flag clicked` block from the `Events` blocks menu to the Code area:



Drag the bus to a good position on the Stage:

The **x** and **y** coordinates (the numbers used to describe the position) of the bus are shown in the Sprite pane below the Stage:

Add a `go to x: y:` block:

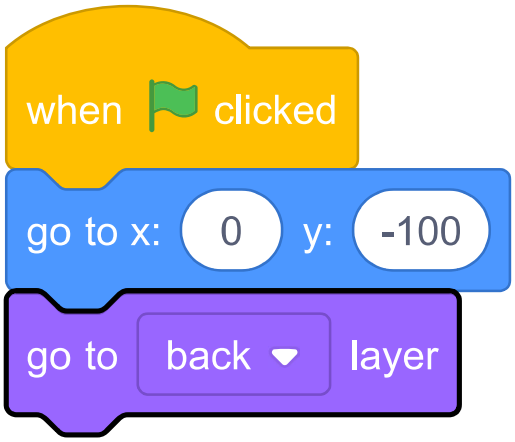


The numbers in the `go to x: y:` block are the current x and y coordinates of the bus. The numbers in your project might be a bit different.

Test: Drag the bus to anywhere on the Stage, and then click on the green flag. The bus should always go to its starting position.

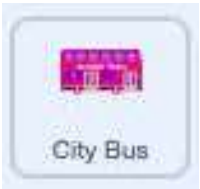
When you drag the bus, it goes in front of the Scratch Cat.

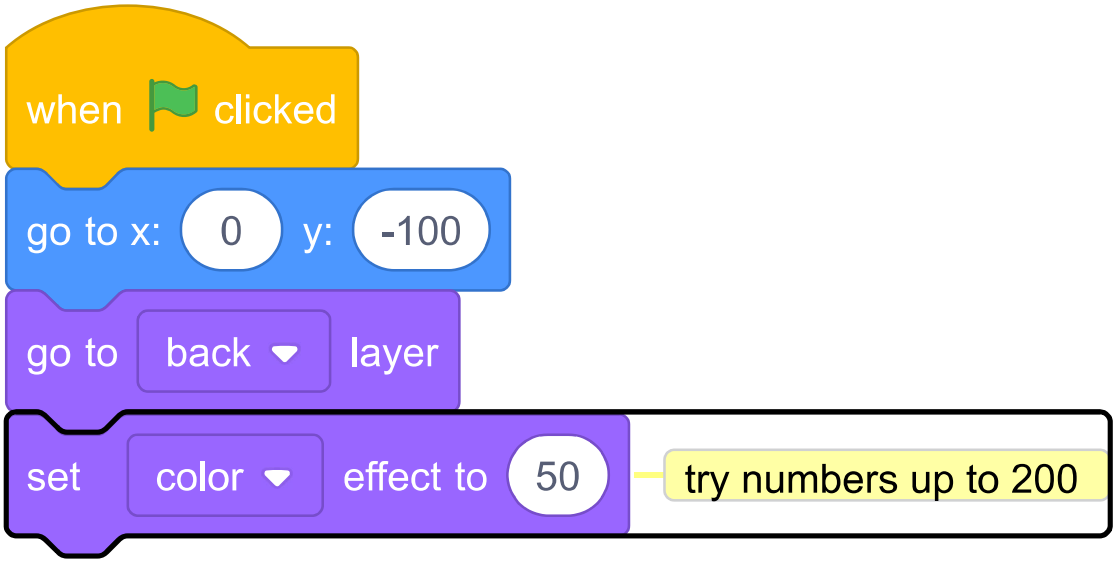
To make sure that the **City Bus** sprite is always behind all the character sprites, add a `go to front layer` block, then click on `front` and change it to `back`:



Tip: If you cannot see the `go to front layer` block, you need to scroll down in the `Looks` blocks menu.

You can change the colour of the bus:



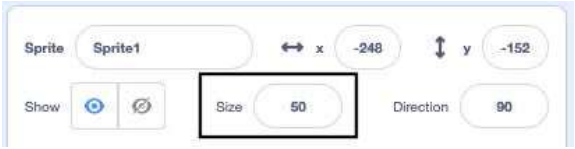


The Scratch Cat appears in all new Scratch projects as **Sprite1** in the Sprite list. Click on the **Sprite1** sprite in the Sprite list to get ready to animate the Scratch Cat:

Tip: If you have accidentally deleted the **Sprite1** (Scratch Cat) sprite, you can click on the **Choose a Sprite** icon and search for `cat`.

At the moment, the Scratch Cat is too big to fit on the bus.

In the Sprite pane, click in the **Size** property and change the Scratch Cat's size to `50`:



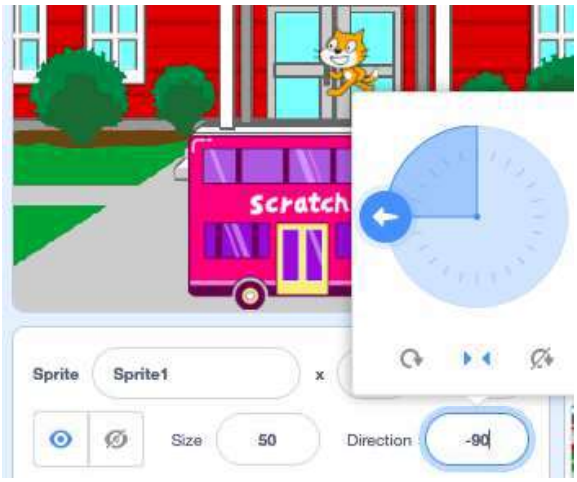
Save your project

Step 3 The Scratch Cat catches the bus

You will animate the Scratch Cat to appear on the **right-hand side** of the Stage and walk to the bus by repeating a small movement many times in a **loop**.

Get the Scratch Cat into their starting position

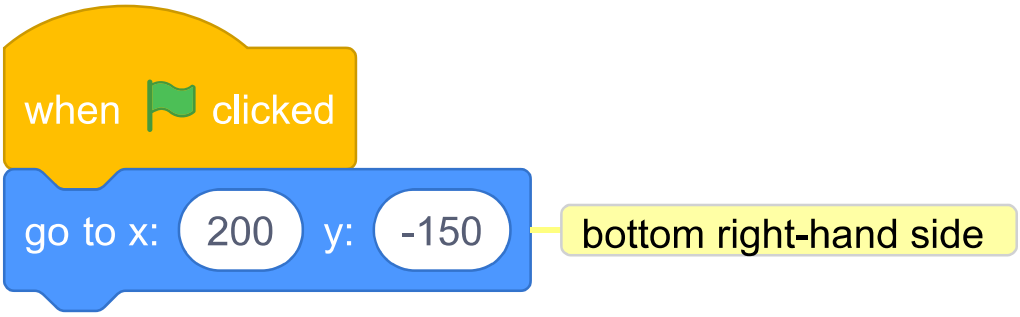
Click in the **Direction** property in the Sprite pane. Rotate the arrow to point to `-90`. Then, click on the **Left/Right** icon in the middle to change the rotation style to `left-right` to stop the Scratch Cat turning upside down:



Drag the Scratch Cat to the bottom right-hand side of the Stage.

Tip: If you try to position a sprite off the Stage, it will move back to its last position on the Stage.

Add code to get the Scratch Cat to their starting position:

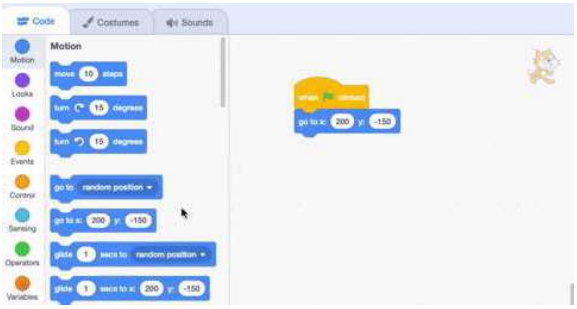


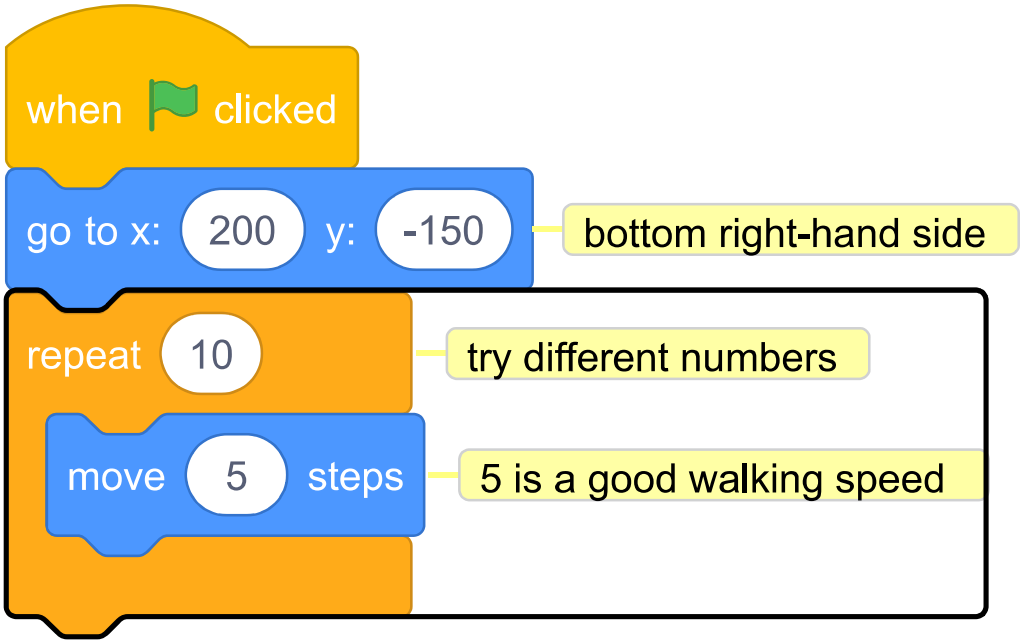
Test: Drag the Scratch Cat to a new position, then click on your `go to x: y:` block. The Scratch Cat should move back to the bottom right-hand side each time.

Animate the Scratch Cat

You will add code in a `repeat` loop to make the Scratch Cat repeat a small number of steps many times. This will make the Scratch Cat appear animated.

Add a `repeat` `10` block, then drag a `move` `10` `steps` block inside it:



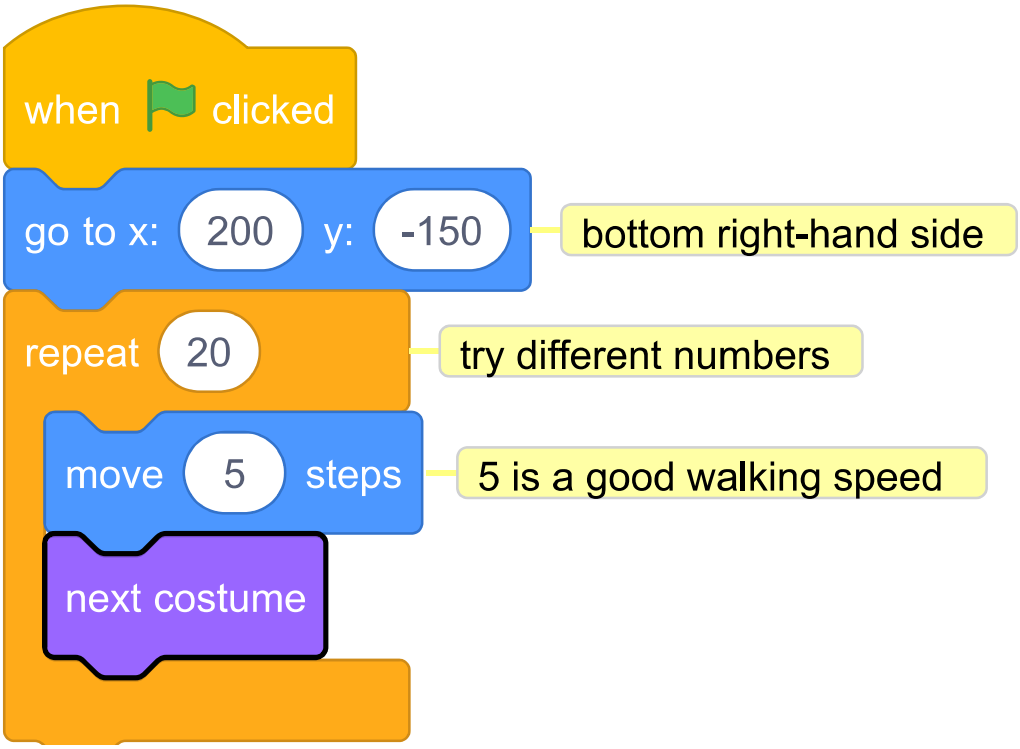


Test: Click on the green flag. Try changing the numbers so that the Scratch Cat stops at the bus.

Some sprites have more than one costume. You will use the **Scratch Cat** sprite's costumes to create an animation of the Scratch Cat walking.

Click on the **Costumes** tab. The **Scratch Cat** sprite has two costumes, and together, they can be used to make a walking movement.

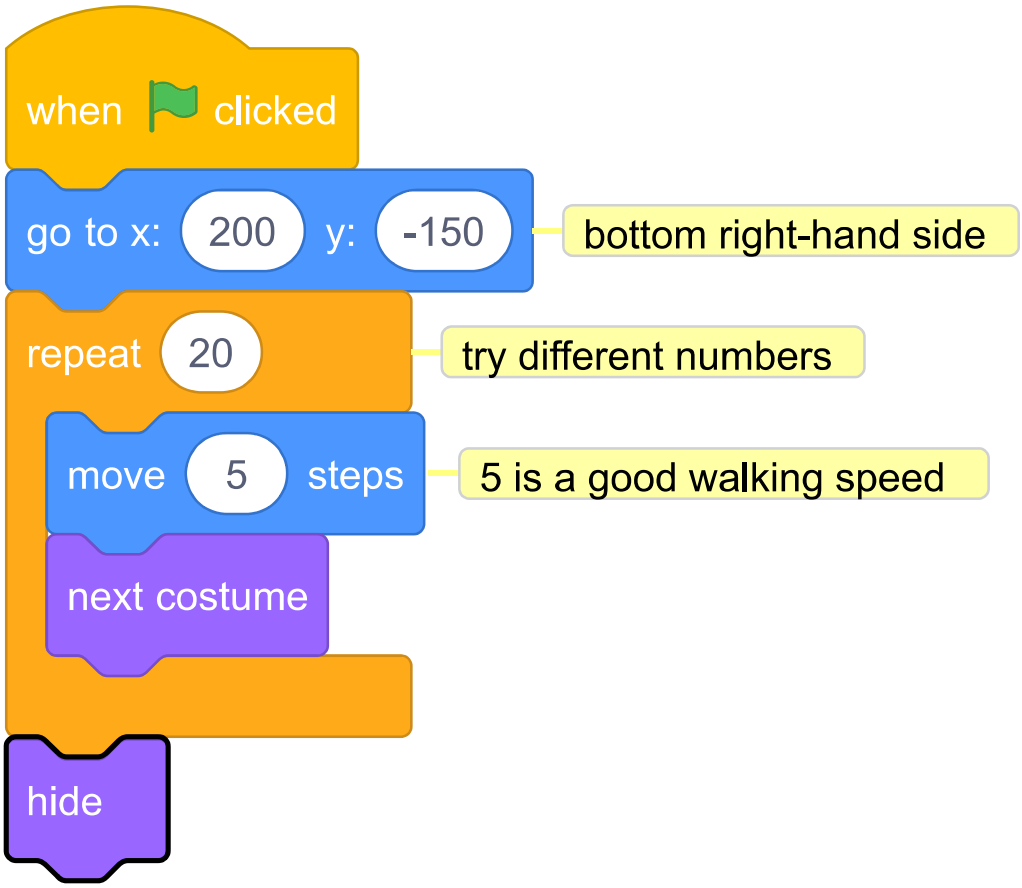
Click on the **Code** tab. Add a `next costume` block:



Test: Click on the green flag, and the Scratch Cat will walk to the bus.

Now, you will make the Scratch Cat seem to enter the bus.

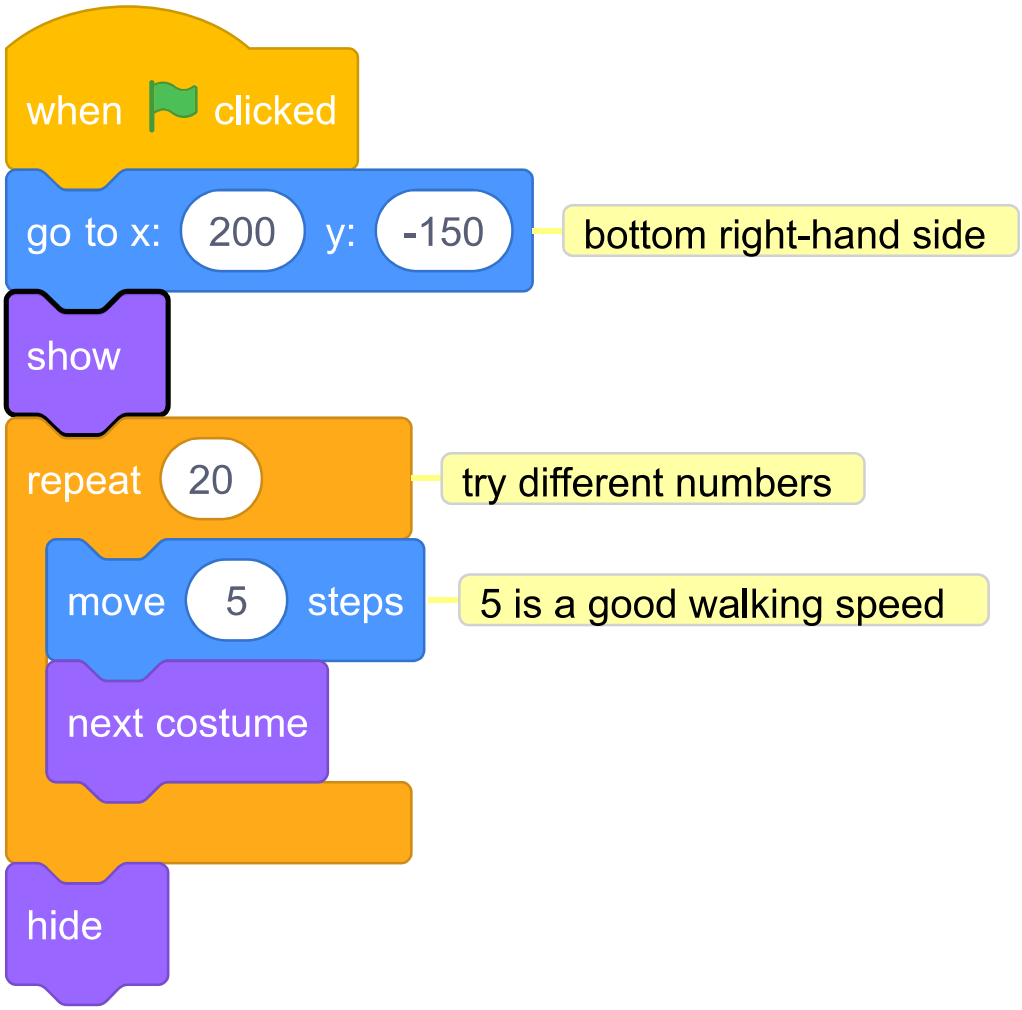
Add a block to `hide` the Scratch Cat when they reach the bus:



Test: Click on the green flag again, and you will see that the Scratch Cat has now disappeared.

The Scratch Cat needs to reappear when you run the animation again.

Add a `show` block so that the Scratch Cat appears before they walk to the bus:



Tip: When you use a `hide` block, you need to also add a `show` block to make sure that a sprite is visible when it needs to be.

Test: Click on the green flag to test your project, and make sure that the Scratch Cat appears.

Save your project

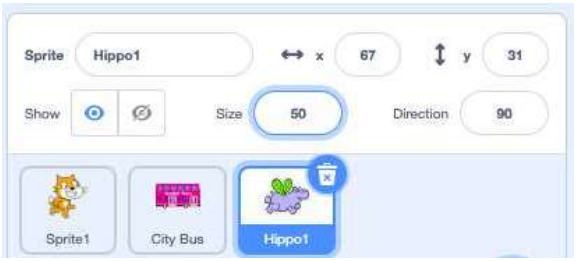
Step 4 The hippo flies to the bus

You will add a hippo sprite that flies to the bus.

The **Hippo1** sprite has two costumes with wings in different positions, so the sprite can be animated to fly to the bus.

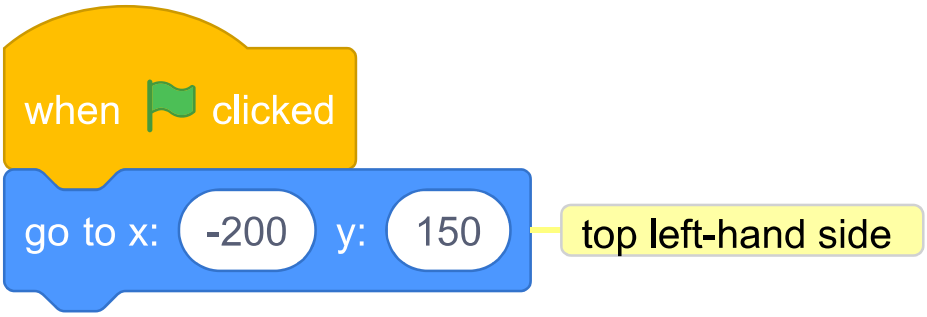
Add the **Hippo1** sprite to your project.

Change the **Size** of the **Hippo1** sprite:



Drag the hippo to the top left-hand side of the Stage.

Add code to get the hippo to their starting position:

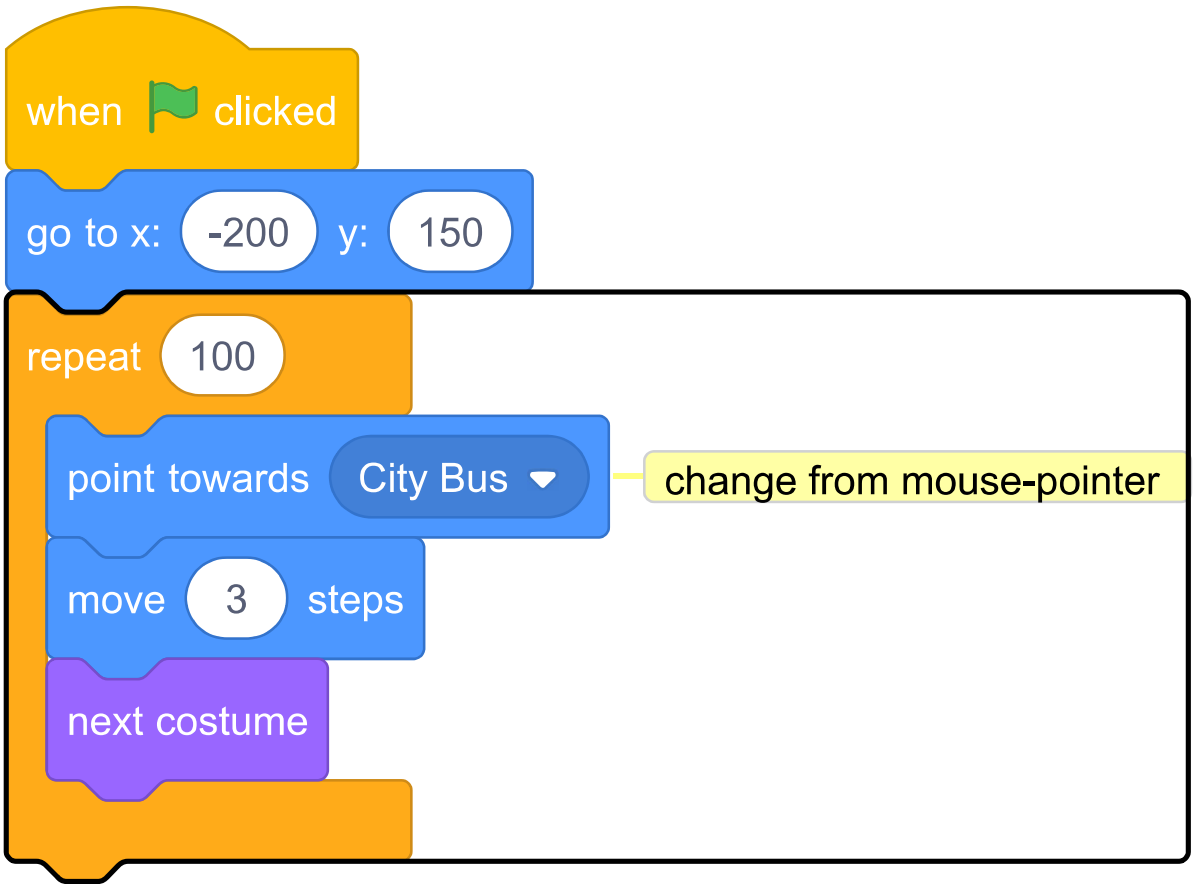


Tip: The `x` and `y` coordinates in the `go to x: y:` block will be the current position of the hippo, so you do not need to type them in.

The hippo will fly towards the bus, flapping their wings.

The hippo will `point towards` the bus before moving.

Add code to make the hippo fly towards the **City Bus**:



Test: Click on the green flag and check that the hippo flies to the bus. You can change the number in the `repeat` block to get the hippo to stop in just the right place.

Now, the hippo will enter the bus.

Add `show` and `hide` blocks:

Test: Click on the green flag. The hippo will fly and enter the bus.

Save your project

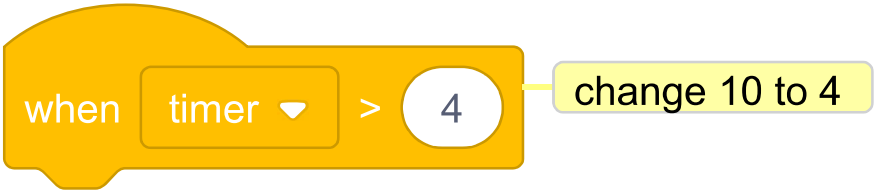
Step 5 The bus leaves

A group of connected blocks in Scratch is called a **script**. You will add a new script to make the bus drive off.

The bus will drive off to the right four seconds after the green flag is clicked. The `when timer` block will run the blocks below it after this time delay.

Select the **City Bus** sprite.

From the `Events` blocks menu, drag a `when loudness > 10` block to the Code area. Change `loudness` to `timer`. This will start a new script:

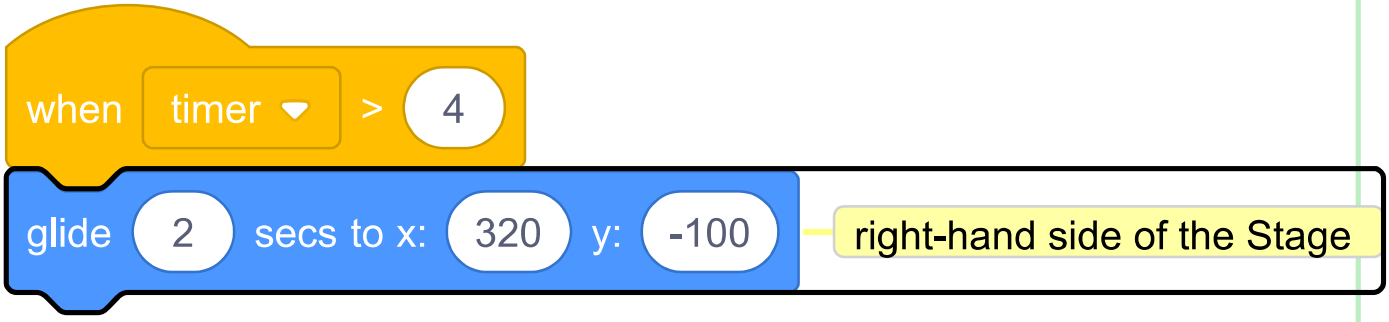


Drag your bus to the right-hand side of the Stage. This will be the `x` and `y` position that the bus will `glide` to.

Tip: If you move the bus too far to the right, it will jump back. Try again, but don't move it so far.

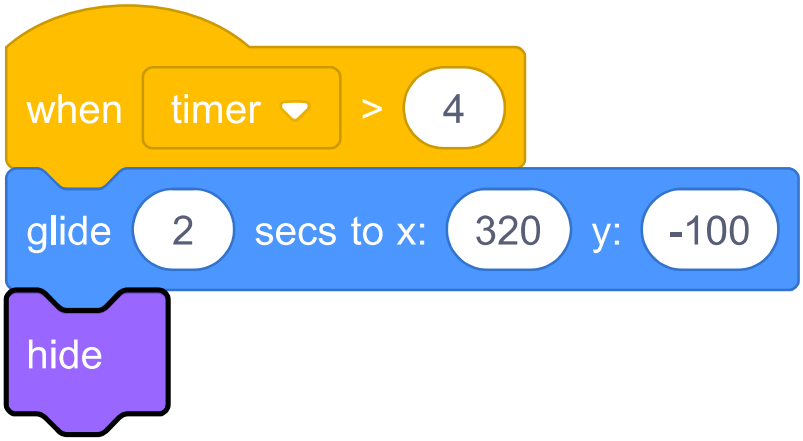
Add a `glide 2 secs to x: y:` block under the `when timer` block.

The `x` and `y` coordinates in your project might be a bit different.



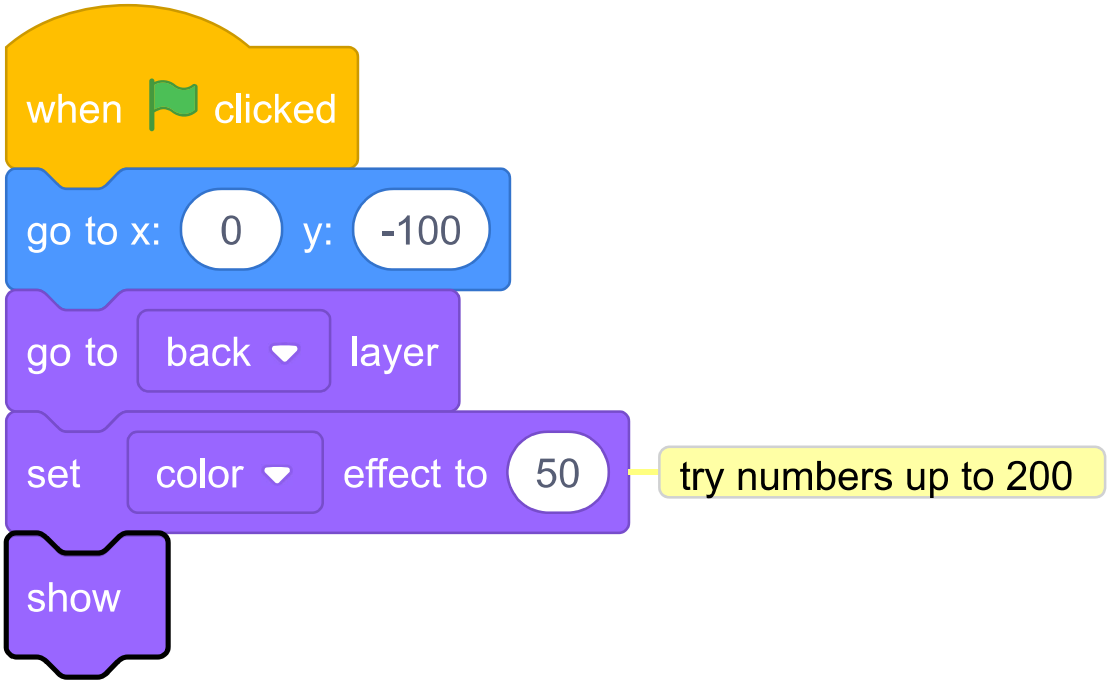
Test: Click on the green flag. The Scratch Cat and hippo will move to the bus, and the bus will drive off to the right after four seconds.

Add a `hide` block to make the bus seem to drive off the Stage:



Test: Click on the green flag. The bus will now hide after driving off. Do you remember how to make sure that a sprite reappears when you click on the green flag?

Add a `show` block to your `when green flag clicked` script to make the bus appear when you run your project:



Test: Click on the green flag and watch your animation. The bus should appear in the centre of the Stage and then drive off to the right and disappear.

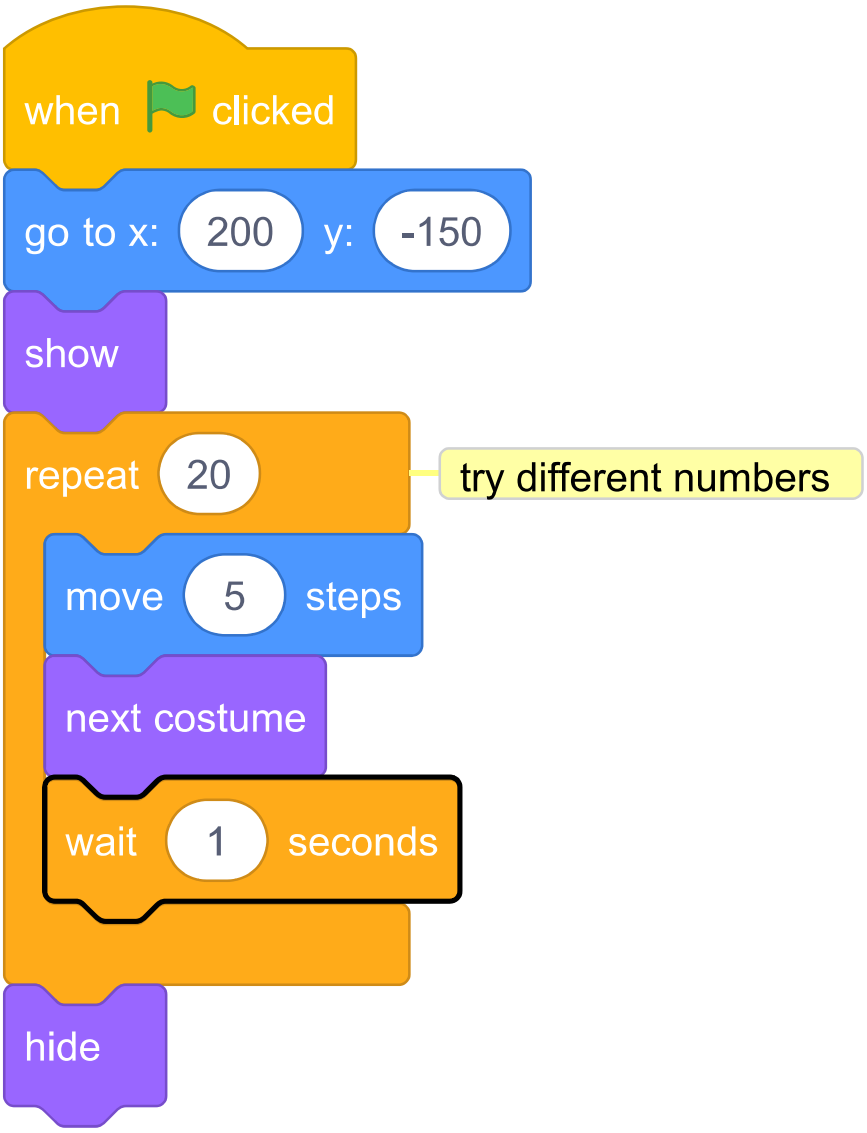
Is everyone on the bus when it leaves? You can change the amount of time that the bus waits, if you need to.

Save your project

Step 6 Missing the bus

What if the Scratch Cat did not run fast enough to catch the bus?

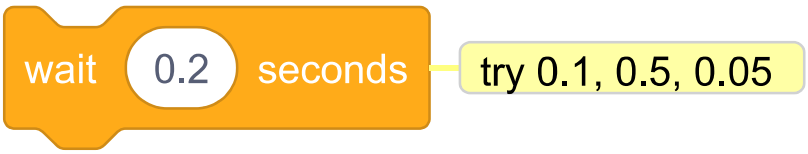
Select the **Scratch Cat** sprite and add a `wait` block:



Test: Click on the green flag. The Scratch Cat will walk too slowly and miss the bus!

You will want delays of less than one second. 0.5 is half a second, 0.25 is a quarter of a second, and 0.1 is a tenth of a second.

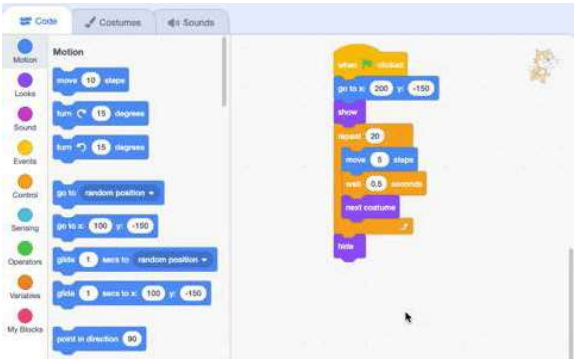
Change the delay in the `wait` block:



Test: Click on the green flag, and the Scratch Cat will walk faster. Choose the delay that you like the most.

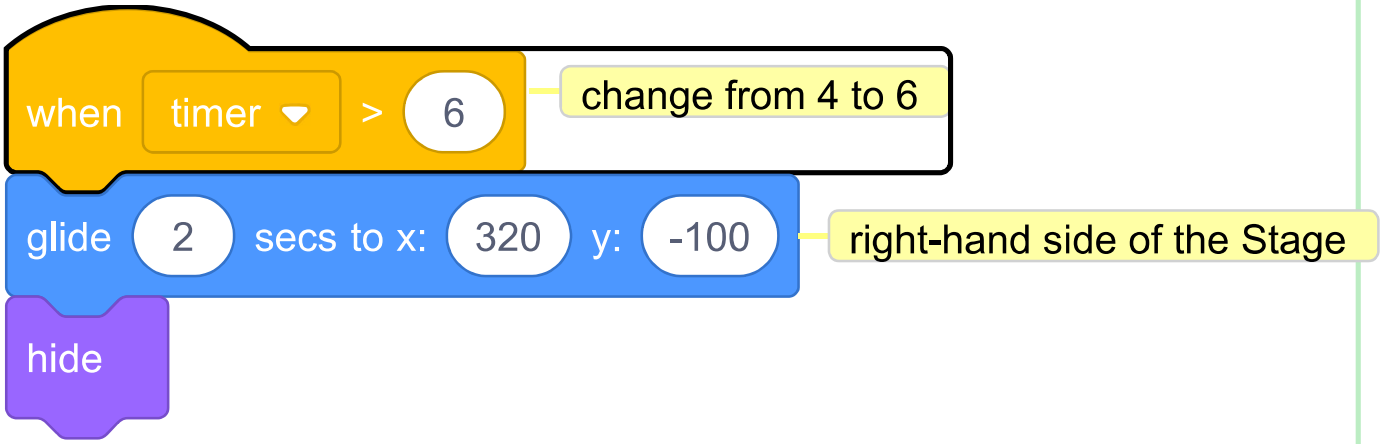
Choose: Choose if you want the Scratch Cat to **miss the bus** or **catch the bus**.

If you want the Scratch Cat to **miss the bus**, remove the `hide` block from your code so that the Scratch Cat stays on the Stage:




when clicked
go to x: 200 y: -150
show
repeat 20
move 5 steps
next costume
wait 0.5 seconds
hide

If you want the Scratch Cat to **catch the bus**, make the bus wait longer before it leaves:



You will need to put the `hide` block back in the **Scratch Cat** sprite's code if you have removed it and want the Scratch Cat to successfully catch the bus.

Make changes until you get the animation to work the way that you want it to.

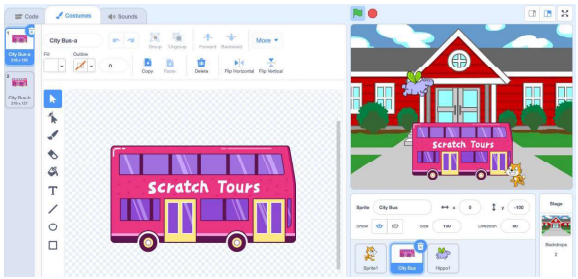
When working on a project, you often go back and change or improve your code as you get new ideas.

Save your project

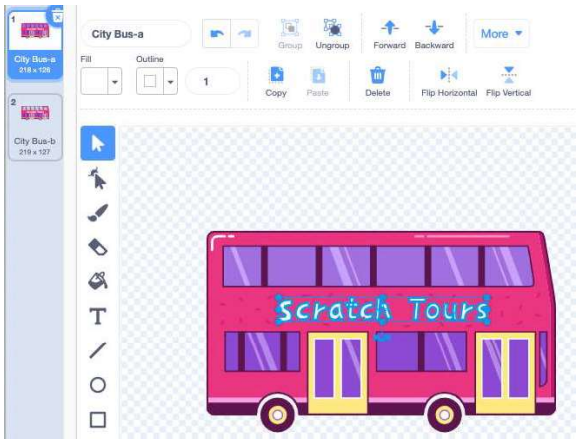
Step 7 Change the destination

The writing on the bus says “Scratch Tours”, but you can change the destination to one of your choice. Where do you want your bus to go?

Select the **City Bus** sprite and click on the **Costumes** tab:



Click on the white “Scratch Tours” text to select it, and then click on **Delete** to remove it.

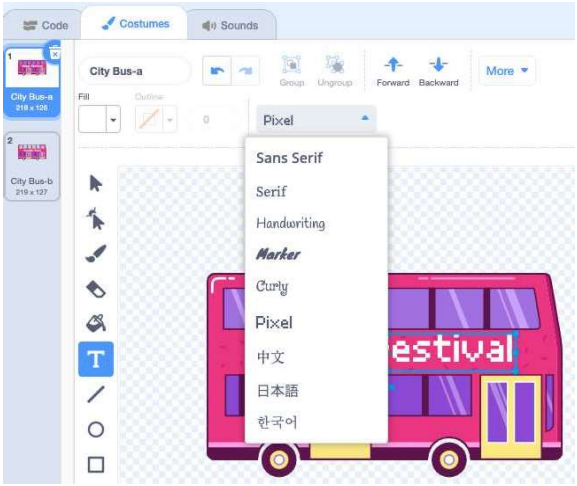


Tip: You can use the **Delete** icon in the Paint editor or the `Delete` key on your keyboard.

Select the **Text** (writing) tool.

Click on the bus where you want your text to start, and type the destination of your choice.

To change the font (writing style), you can click on the **Font** drop-down menu:



Click on the **Select** (Arrow) tool, then drag the text to position it on the bus.

Save your project