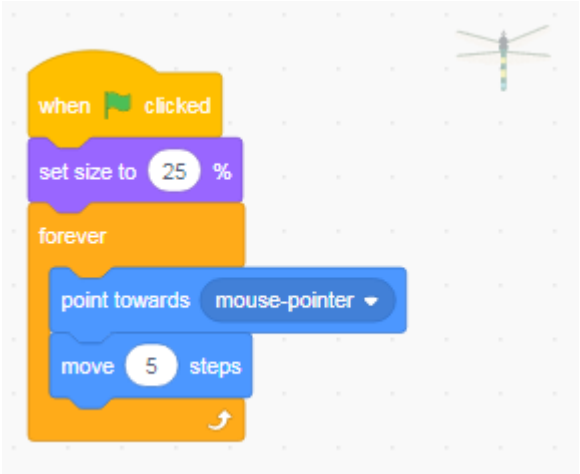
Grow a dragonfly!

We will help a dragonfly eat insects until it has grown really big!

See full instructions at https://projects.raspberrypi.org/en/projects/grow-a-dragonfly/, or the finished project at https://scratch.mit.edu/projects/1077515815/.

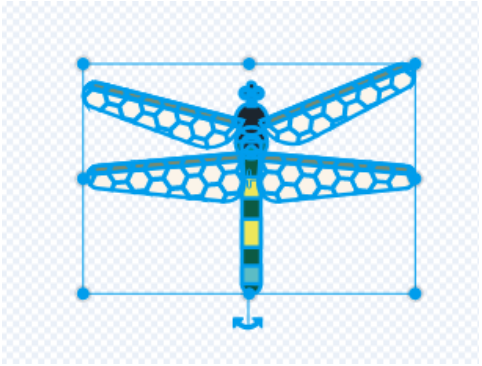
Step 1: Dragonfly

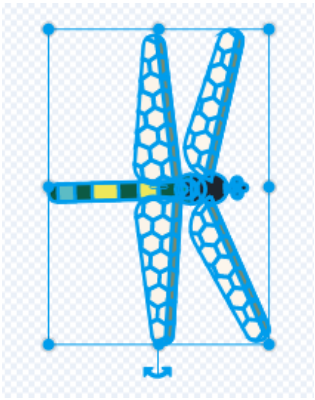
- Choose an outdoor backdrop, or draw one if you prefer.
- Choose the dragonfly sprite (or a different one).
- Add this code to move it:



- Test it out. Does it go sideways? You will need to rotate its costume so it points to the right (turn over for how to do this).

- On the Costumes tab, use the arrow to draw a box around the whole costume (it will light up blue once it is selected):



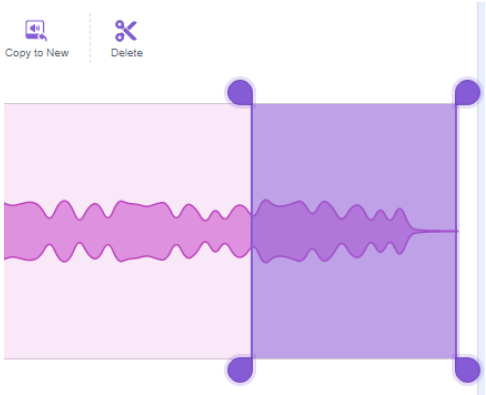


- Then use the 'handle' to rotate the costume to face to the right, like in the second picture.
- Test it again!

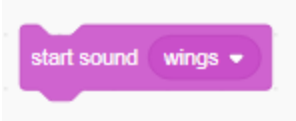
Save your project

Step 2: Fluttering wings

- There isn't a sound in Scratch for wings flapping, but we can edit one of the sounds (or import one of our own).
- On the Sounds tab, choose the sound 'Crank' and then select the end of the sound and 'Copy to New':



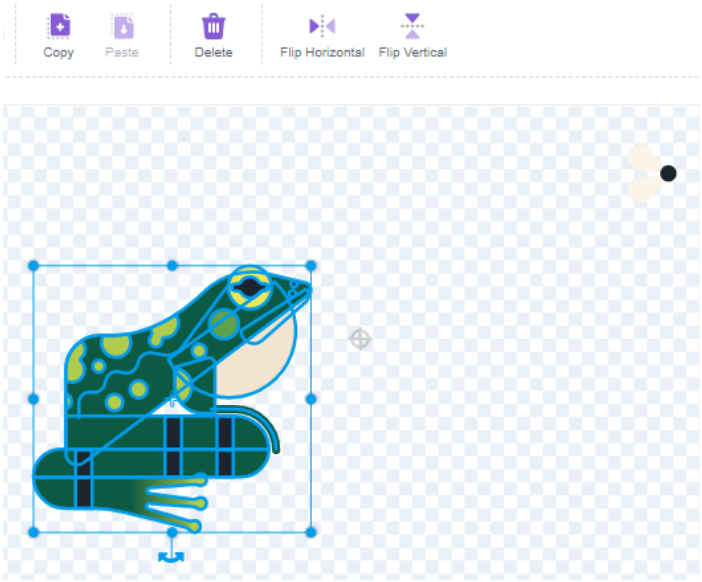
- Call the new sound 'wings' and speed it up by clicking the 'Faster' button until you are happy with it – you can also edit it more if you like.
- Then add the block to play the sound, inside the 'forever' loop:



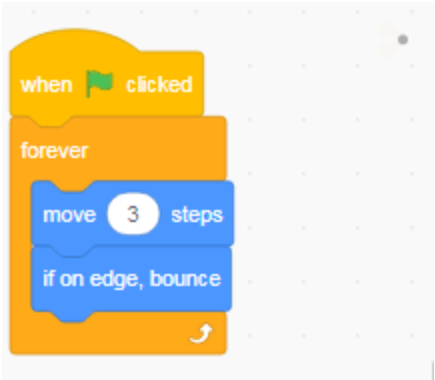
Save your project

Step 3: Add an insect

- There isn't a flying insect sprite in Scratch, but we can make one from the 'Frog 2' sprite!
- Choose this sprite, and go to the Costumes tab. We want to edit the first costume, to keep the fly and delete the frog.
- Select the frog using the arrow tool again, and click 'Delete':



- Now select the fly the same way, and drag it to the centre of the costume.
- We can rename this costume and the sprite, and delete the other costumes – I called mine 'fly'.
- Next add the code below to make the fly move about:

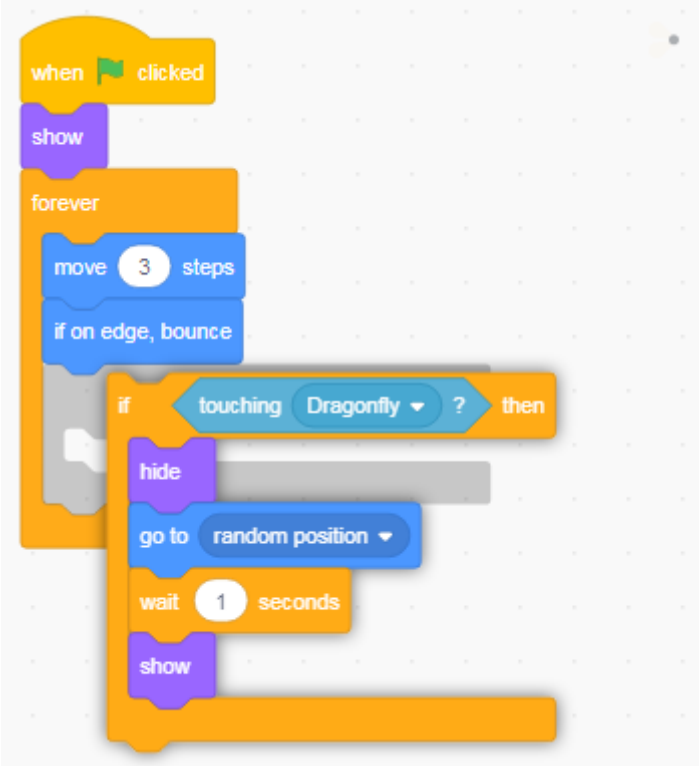


- Test your code, does the fly move?

Save your project

Step 4: Eat the insect!

- We want the fly to disappear when it touches the dragonfly, so add an 'if' statement that checks for this and hides (then reappears somewhere else).



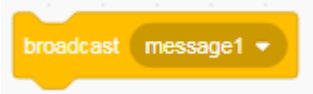
- You will also need a 'show' block at the start.
- Test it out!

Save your project

Step 5: Tell the dragonfly to grow!

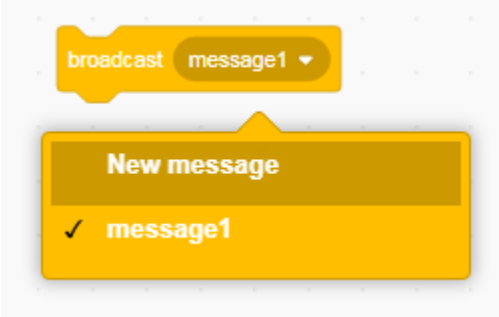
- When the fly has been eaten, we want it to tell the dragonfly to grow bigger, so we will use messages:

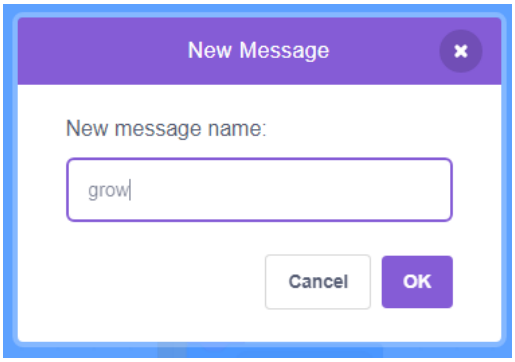
On the fly sprite



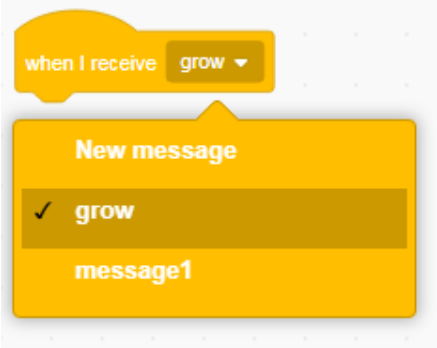
On the dragonfly sprite

- Add the 'broadcast message' block on the fly sprite, and click the dropdown arrow to make a new message – I called mine 'grow':

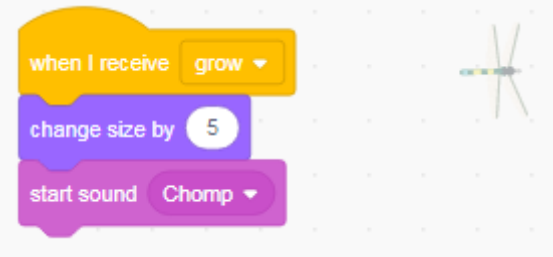




- The 'broadcast message' block goes inside the 'if' statement, at the top.
- Next, on the dragonfly sprite, start a new block of code with 'When I receive grow':



- Choose an eating sound for your dragonfly, and make it grow. Your code should look like this:



- How big will your dragonfly get?

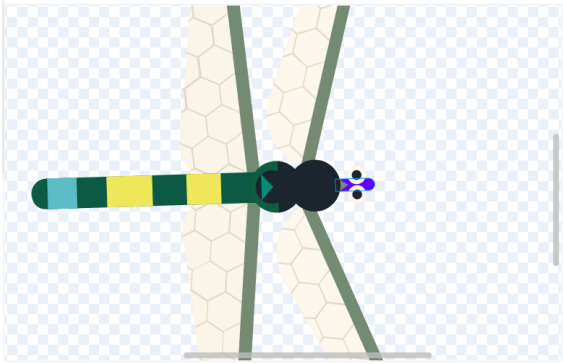
Save your project

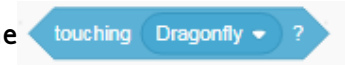
Dragonfly extension

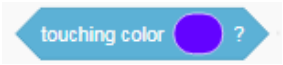
Step 6: Only eat with its mouth

So far, any part of the dragonfly can touch the fly and it counts as eating it. This step makes the game a bit more accurate (and harder!).

- We will change the colour of the dragonfly's head, so we can use the colour sensing block.
- Open the costume tab for the dragonfly, and use the magnifying glass to zoom in on its head:



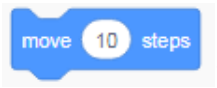
- Pick a colour that is not in the backdrop or any costume; I chose purple.
- Use the paintcan tool to change the colour of the dragonfly's head.
- Now go to the fly sprite, and replace the 

block with 

(you can use the colour-picker tool to get the colour right).
- Test it out!

Save your project

Extras:

- Add an extra fly by duplicating the fly sprite. You can change how fast it goes 

, and how soon it appears again 

, as well as the colour and shape of its costume.
- If you want to see the exact size of the dragonfly on the screen, you can tick the box next to 'size' (at the very bottom of the 'Looks' blocks):