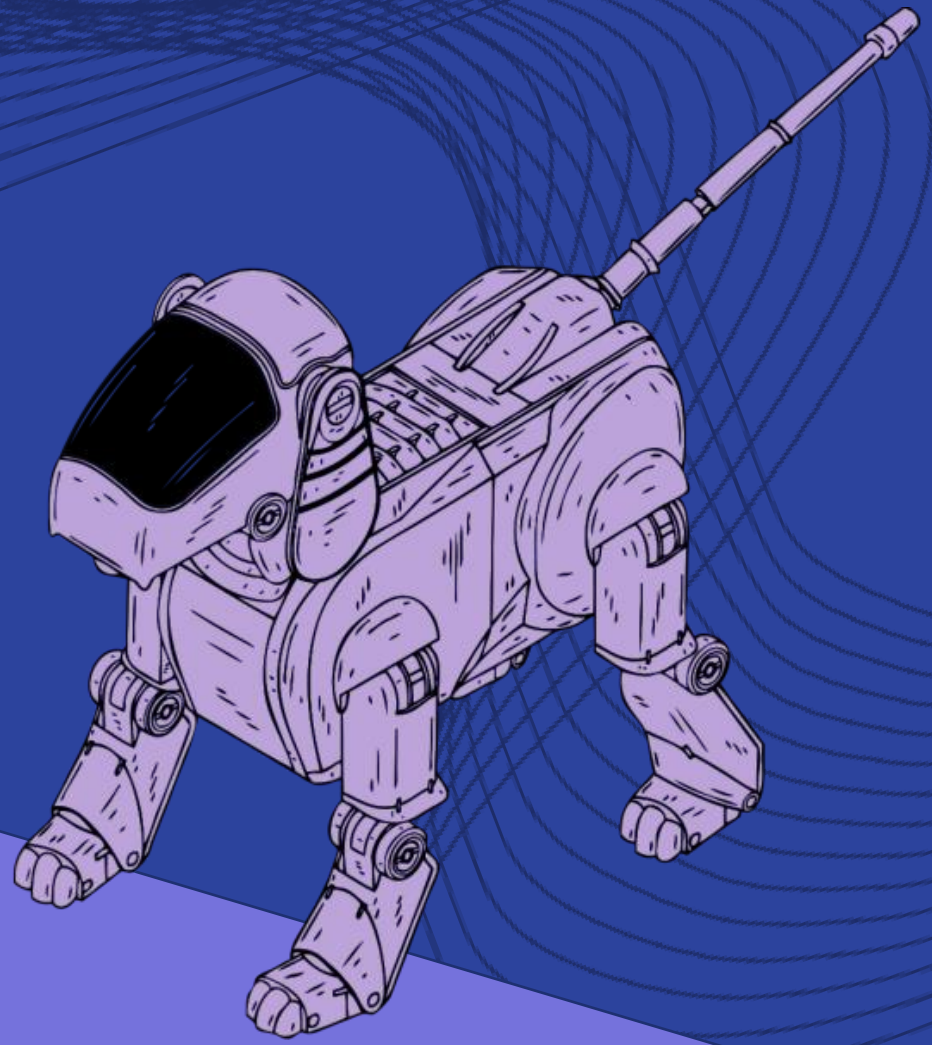
Recycling game

Level 2 – Scratch

Environment



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Task

Your task is to create a game in Scratch where the user will have to determine whether an object should be recycled by clicking on the object

You can find the final game here...
https://scratch.mit.edu/projects/649245975

Recyclable and not

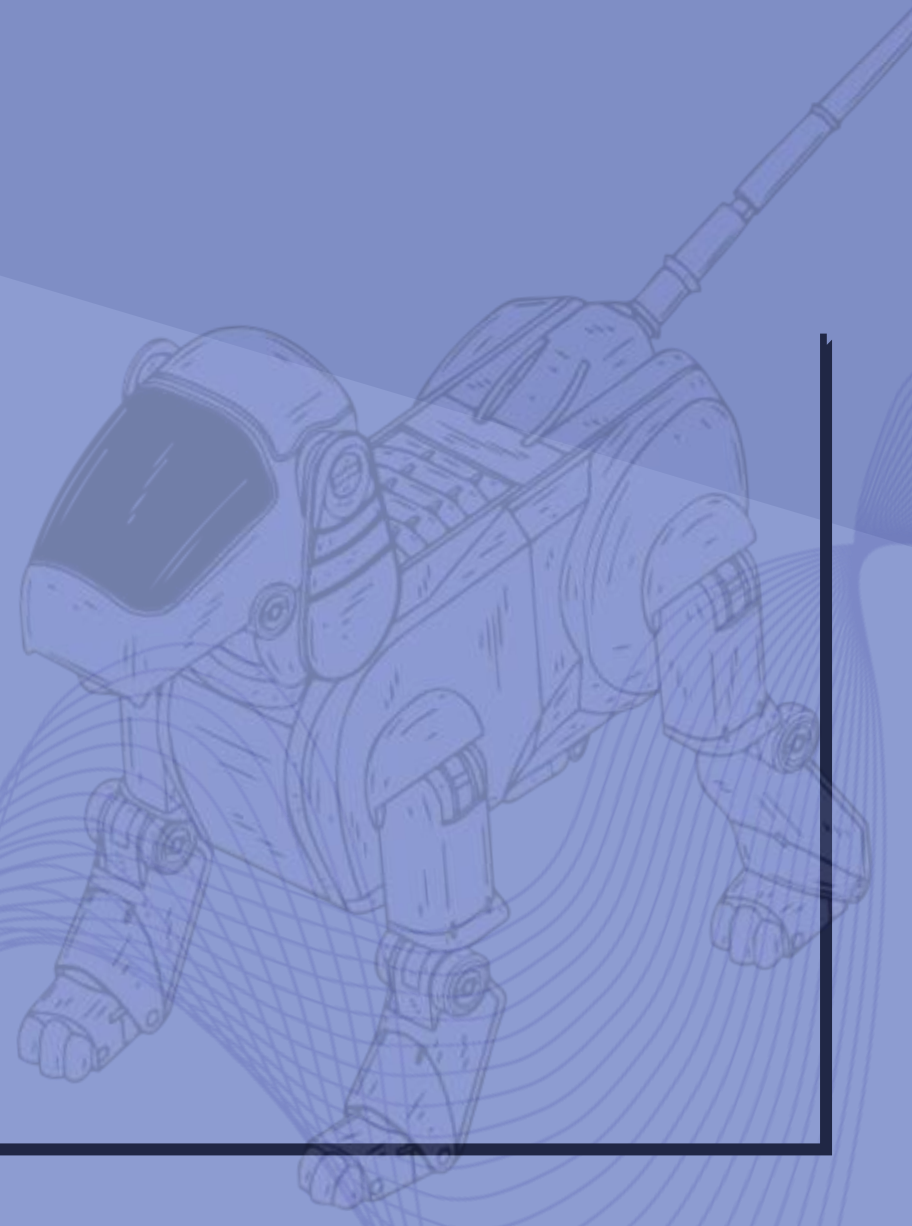
So... what can and cannot be recycled?

Recyclable	Non-recyclable

Process

Your code should...

- Prompt the user to click on the recyclable objects (for example a plastic water bottle or aluminium can).
- If the user clicks on the correct object, 1 should be added to the score.
- If the user clicks on an incorrect object (for example food waste or polystyrene), 1 should be subtracted from the score.
- A timer should stop and give the player a 10 second time limit.



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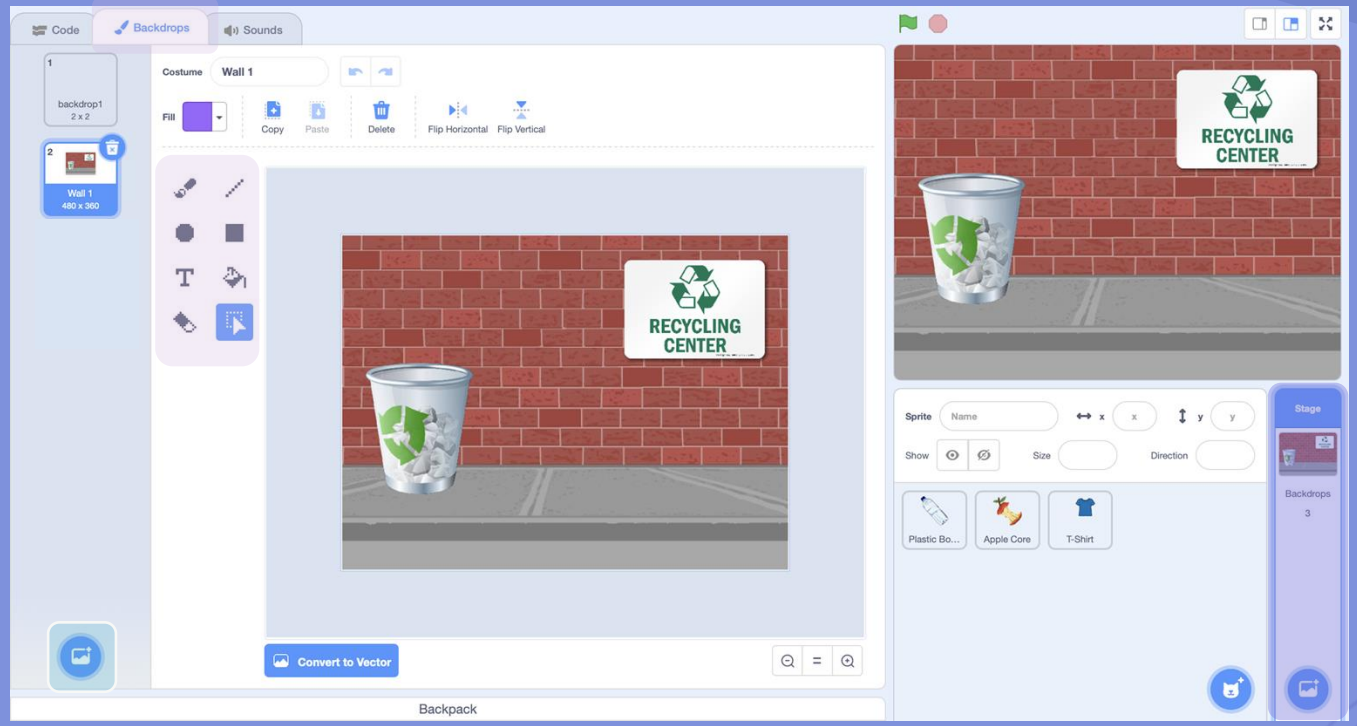
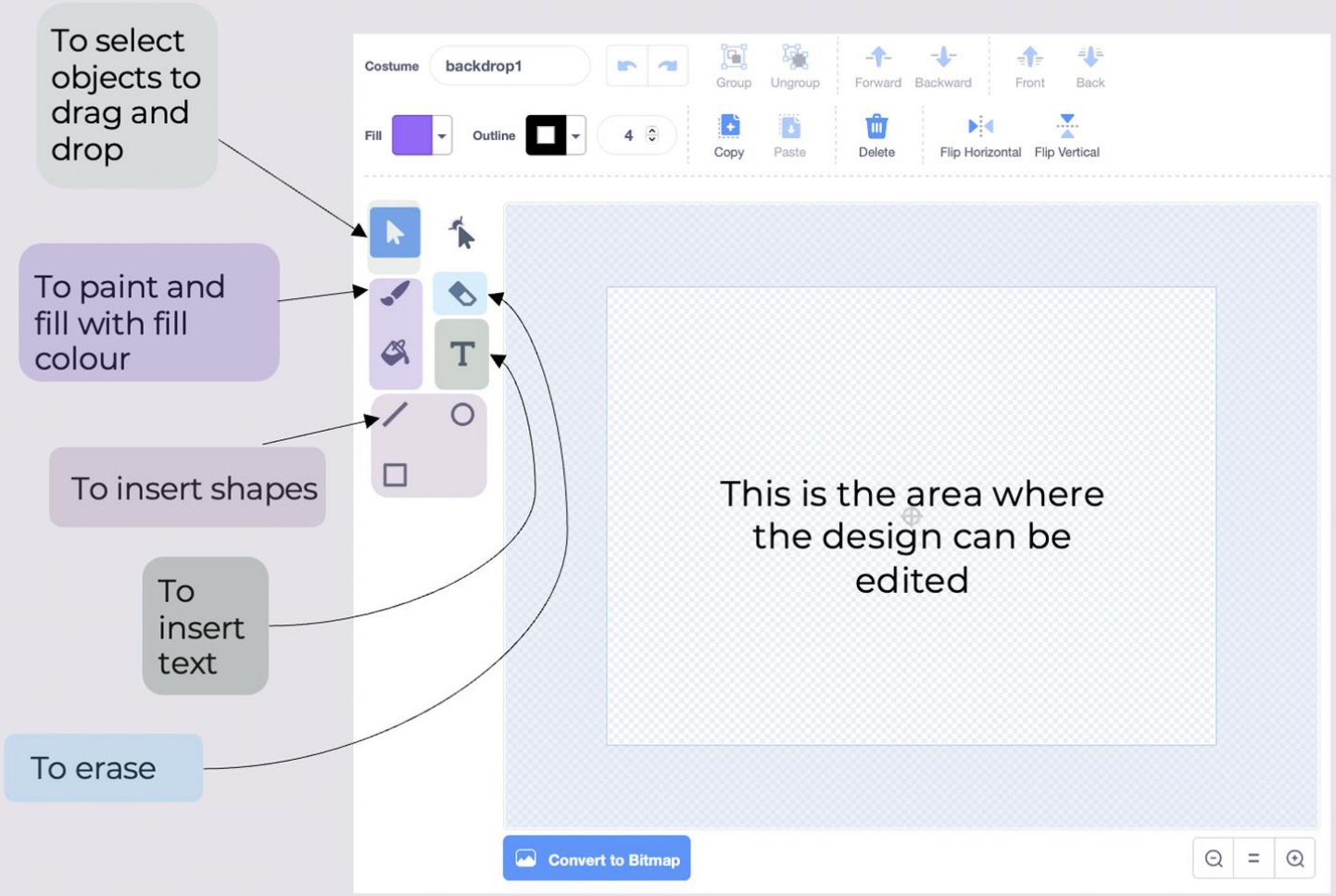
Step 1

Designing your background



Design your background by clicking on the background in the stage section, and then editing the costume, as can be seen above. Scratch has tonnes of built-in backgrounds, that you can add PNG pictures to using the “upload picture button”

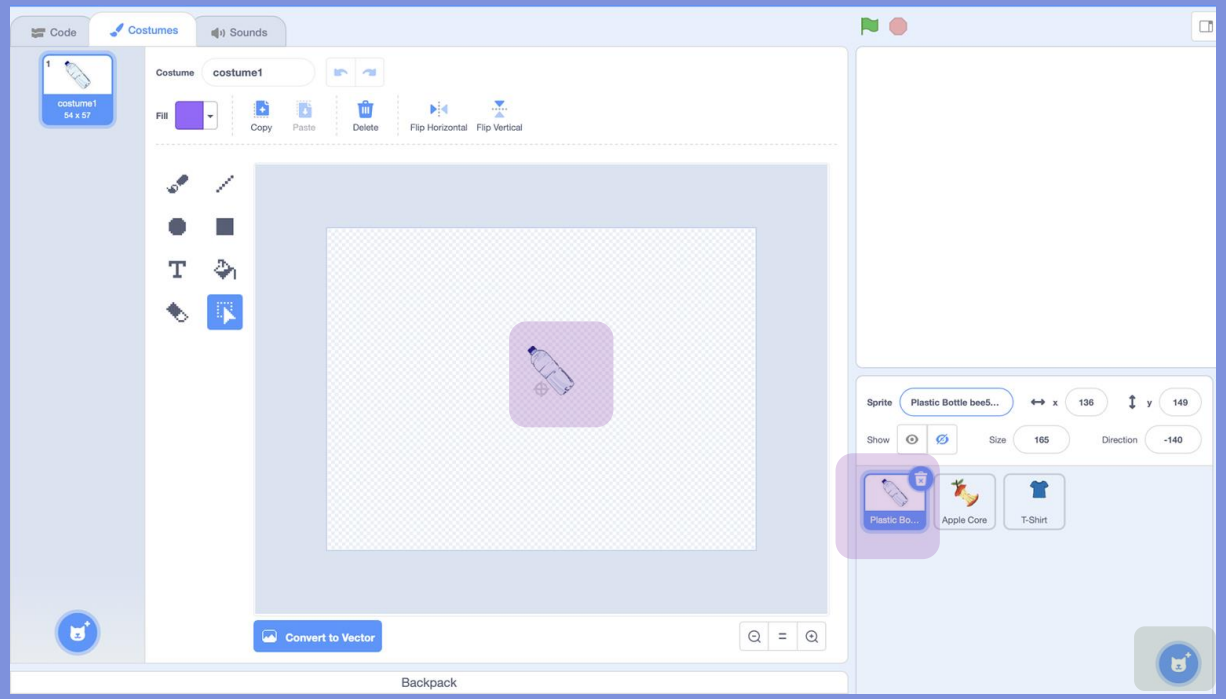
Designing a background in Scratch



This icon allows you to import your own background or pictures that you want to use on your background, after saving them to your computer.

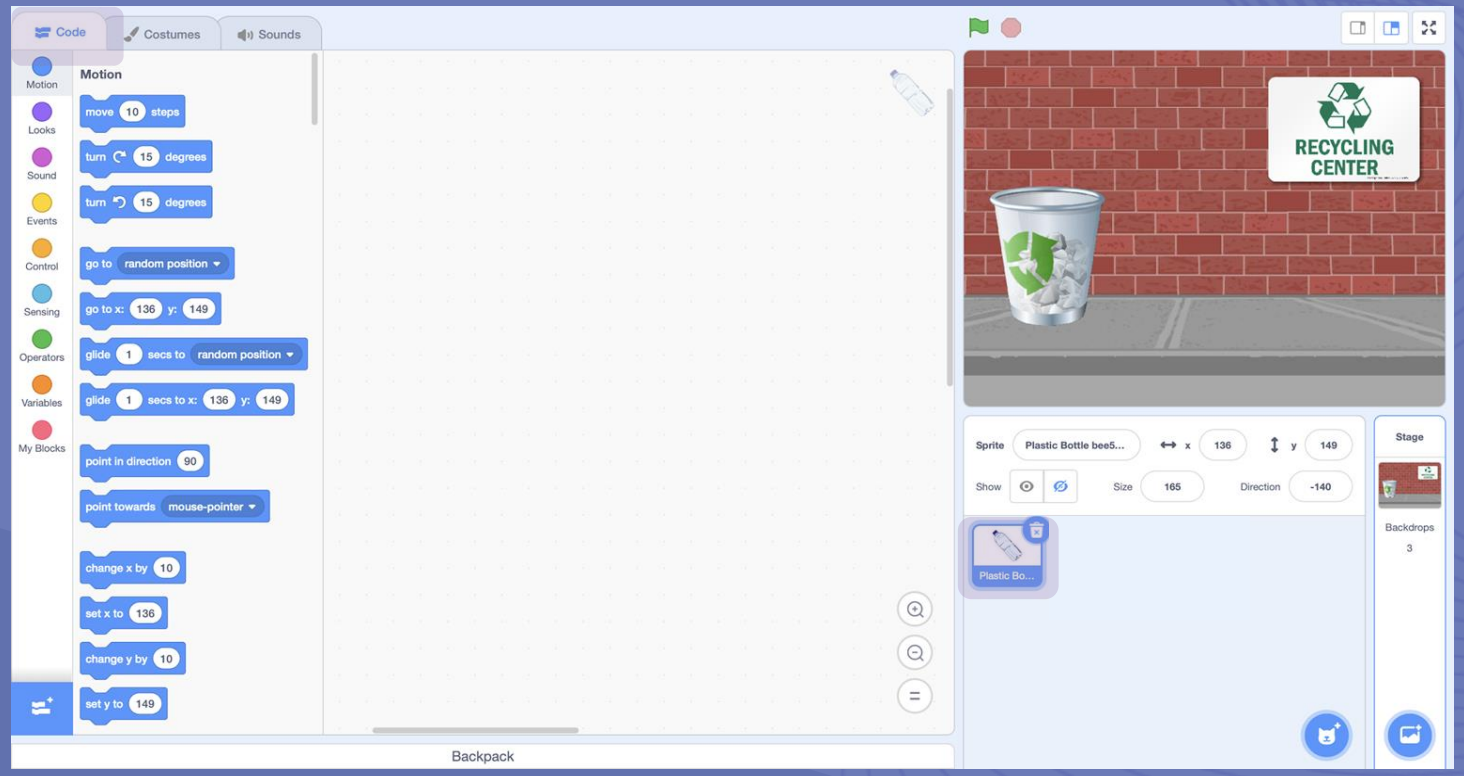
Step 2

Sprites



In scratch, your sprites are the things that you program, and all your code will be found when you click on the sprite you are coding for. To make your first sprite, click on the “new sprite” icon. This can be edited much like the background you have just created.

Where the code will be

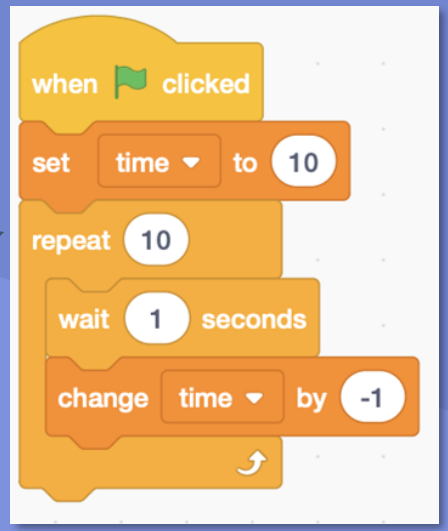


The code for the next few steps will be in your first sprite that you have created- make sure that the sprite you have picked is a recyclable object, as this will be important later on...

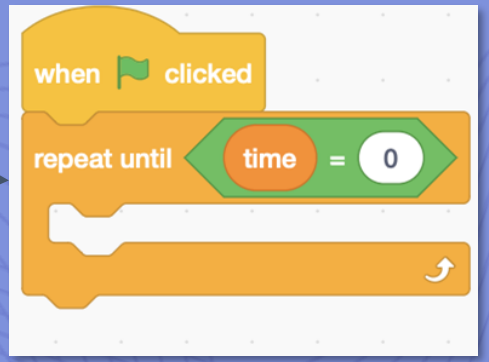
Step 3

The timer

This code will mean that when the game starts, the timer will be set to 10, and will decrease by 1 every second until it gets to 0 (determined by the number of counts specified for this repeated statement).



The code for your recyclable sprite will go in here. This just means that whatever is inside this statement will repeat until the time runs out.



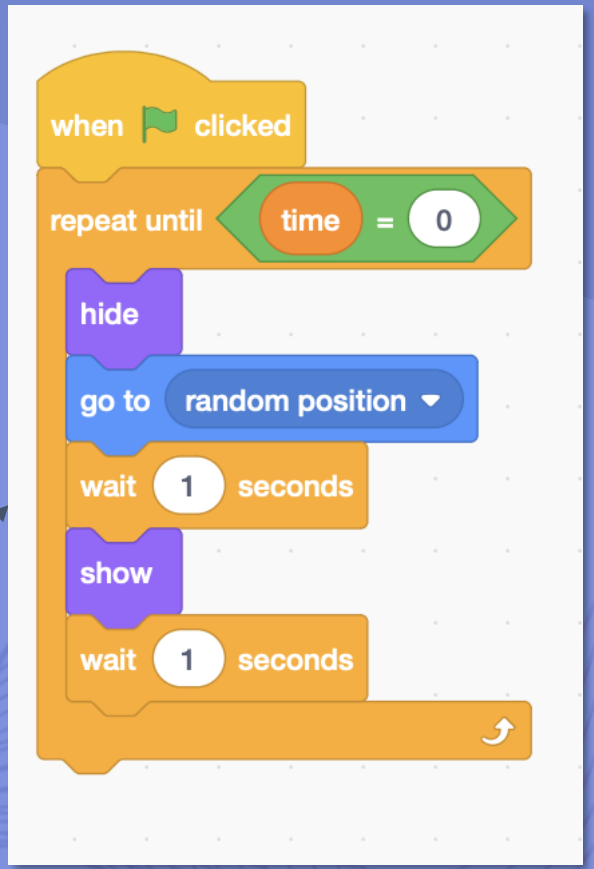
Step 4

The recyclable sprite

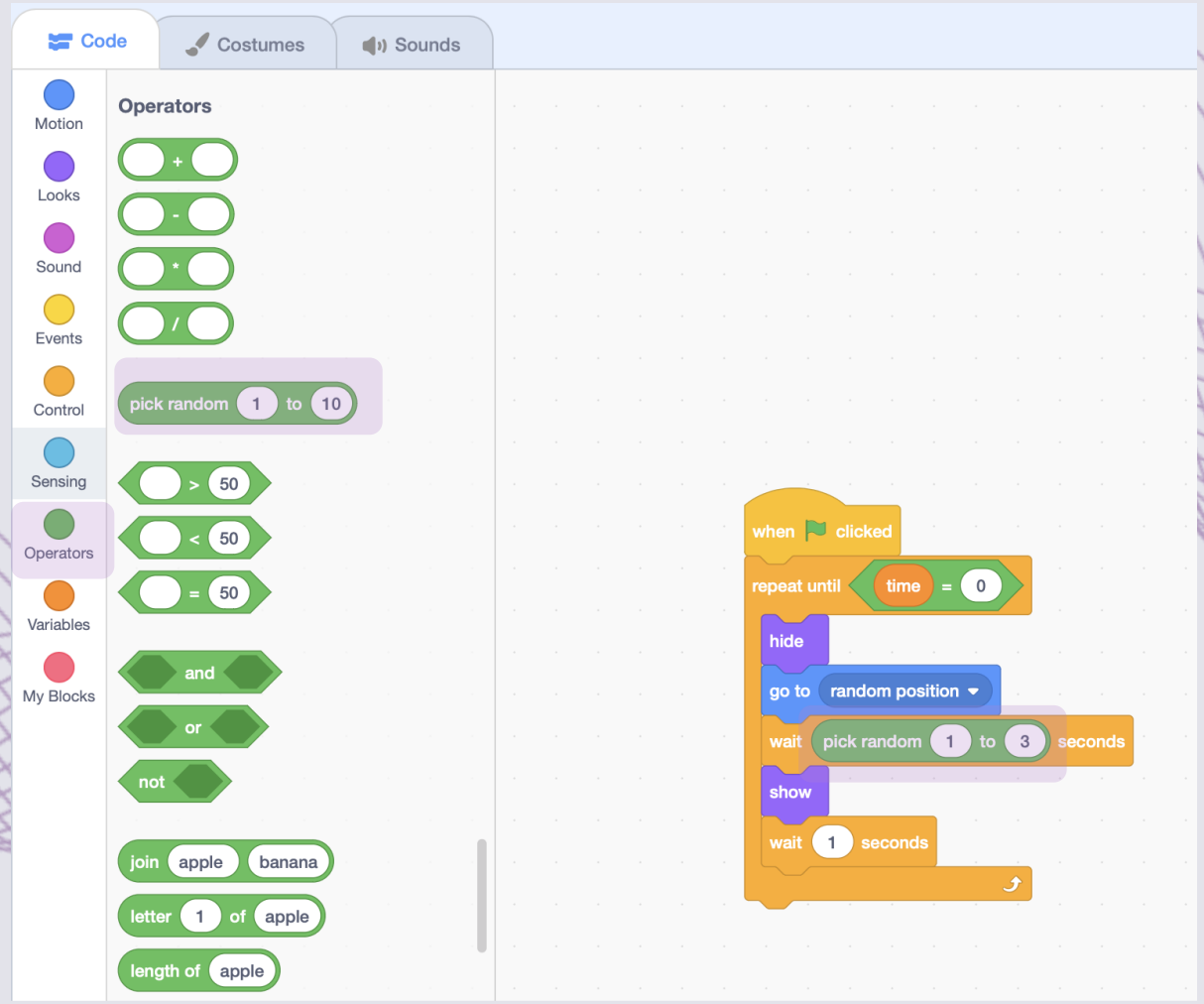
Next, we will be editing the movement of the recyclable sprite around the screen.

This code will mean that the sprite will be hidden from the player and then go to a random area on the screen before reappearing.

The amount of time the sprite is hidden for however remains the same each time... so how could we change it to be a random number of seconds that pass before the sprite reappears?

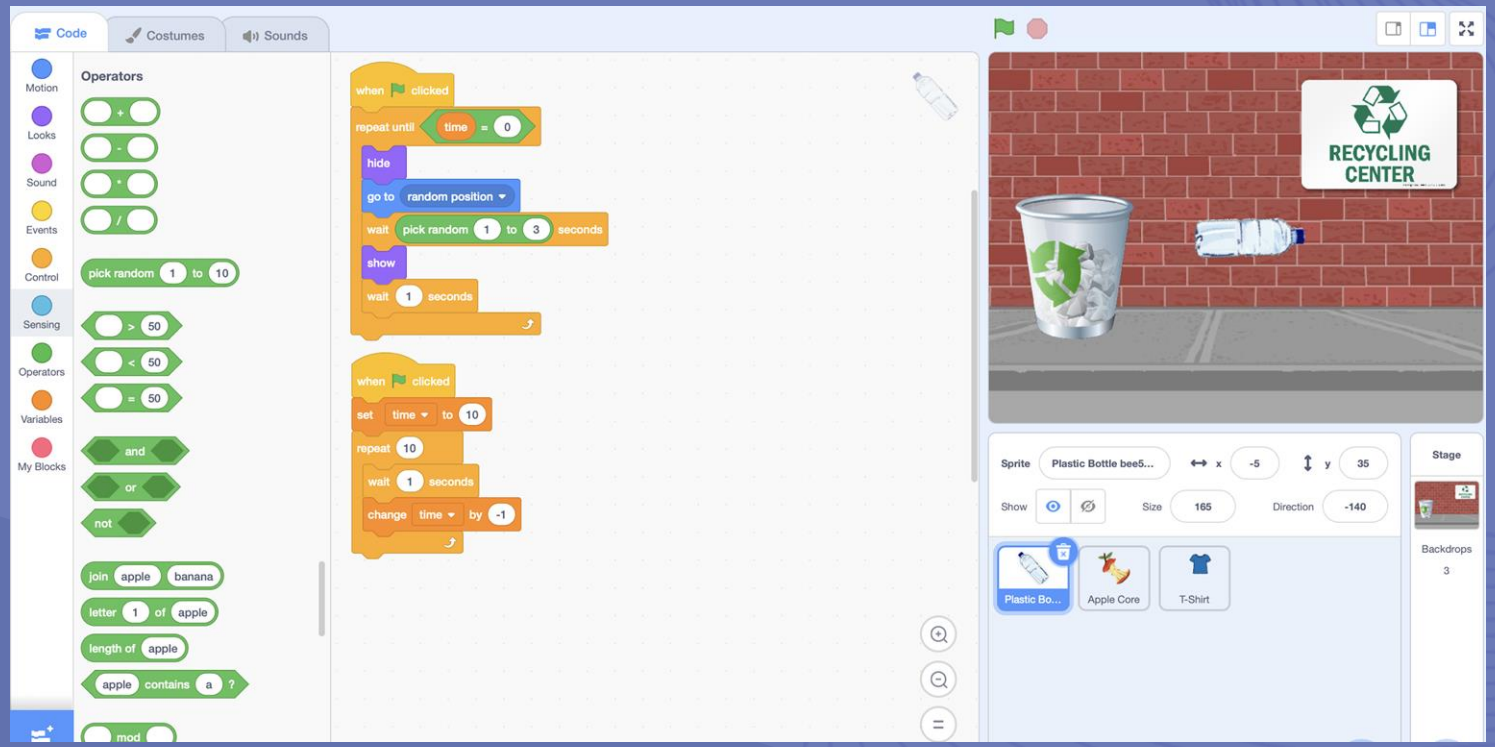


Random number operator



This operator will allow the computer to generate a random number (between 1 and 3 for the sake of our code) and can replace the 1 second that was there before. This will make the game harder for the user, as it will be more unpredictable as and when the recyclable object will appear.

What next?



At the minute, the water bottle will appear and disappear from different spots on the screen, at random times. But how can we make it more interesting? See if you can have a go rotating the water bottle and changing its size every time it appears to add variety and difficulty to your game.

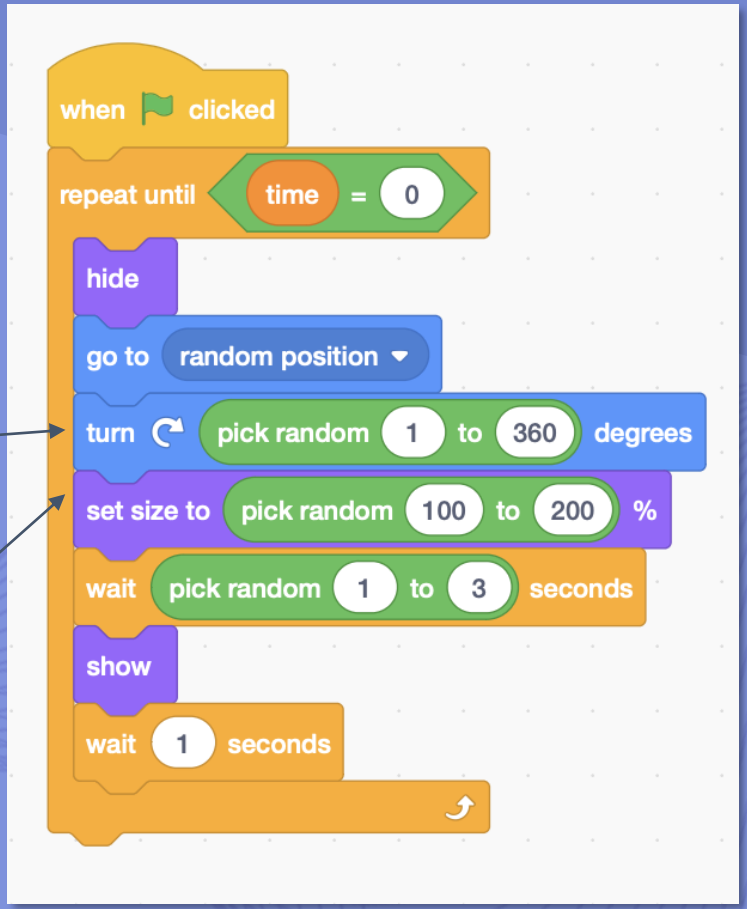
Step 5

Rotating and changing size before disappearing

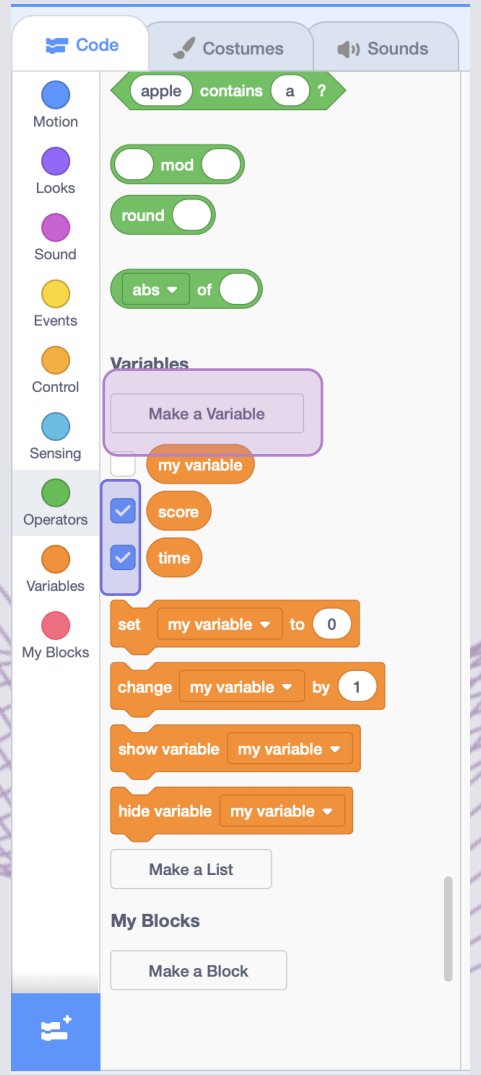
Here are the lines of code which will enable your sprite to rotate and change size before reappearing.

This code will turn the sprite by a random number of degrees each time.

This code will change the size by enlarging it (from 100-200 because if the size of the sprite was too small, then the user would not be able to see it).



Keeping score

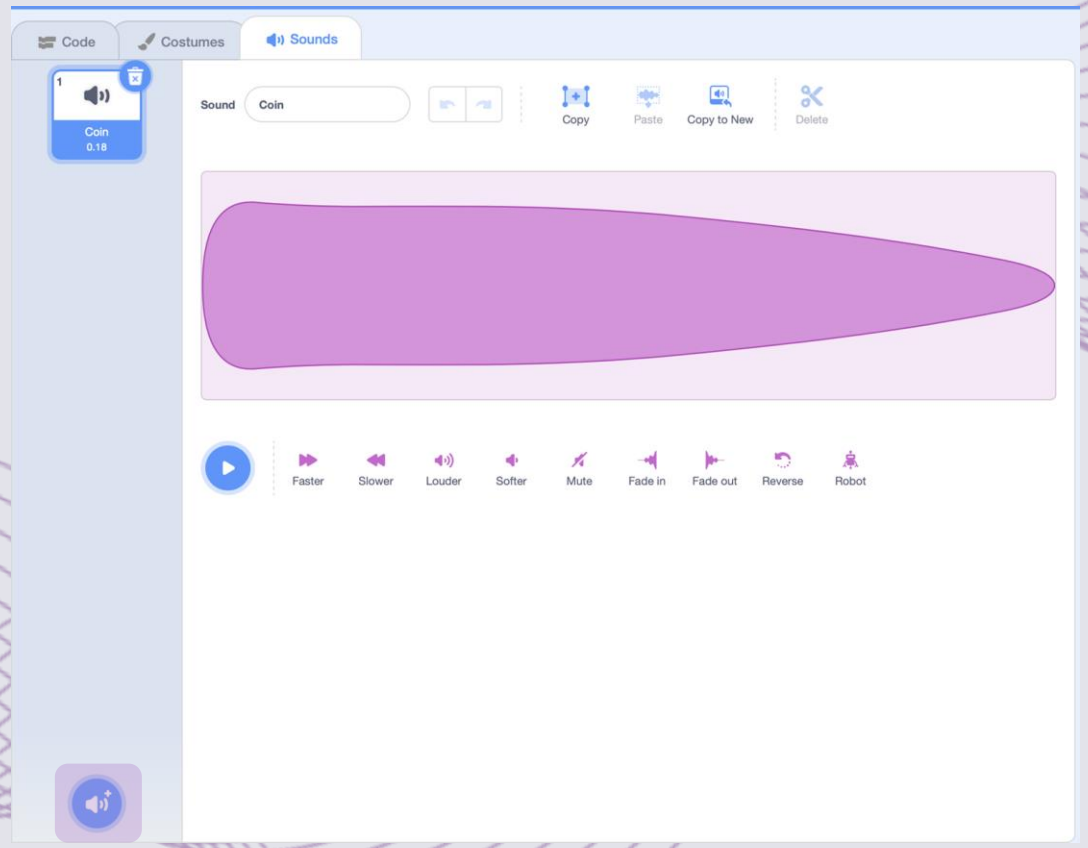


We need to make a variable called score, much like the variable we have used for timer. Here is a reminder of how to create a variable in scratch.

In our game, 1 will be added to the score every time the user clicks the object that can be recycled.

When the blue boxes are ticked, the variable will be displayed on the screen like here...

Adding sound



Scratch contains a built-in library of sound effects that can be accessed. This means that when the user gains a point, they can be alerted by a sound. To do this, simply add the sound to the sprite by clicking the “add sound” button.

For this code, the sound effect “coin” has been used, however, there are hundreds of sounds to choose from and explore.

Back

Choose a Sound

Search

All | Animals | Effects | Loops | Notes | Percussion | Space | Sports | Voice | Wacky

Alert | Alien Creak1 | Alien Creak2 | Basketball ... | Bell Toll | Big Boing | Bite | Boing

Bonk | Boom Cloud | Boop Bing ... | Bowling Str... | Car Horn | Chomp | Clang | Clock Ticking

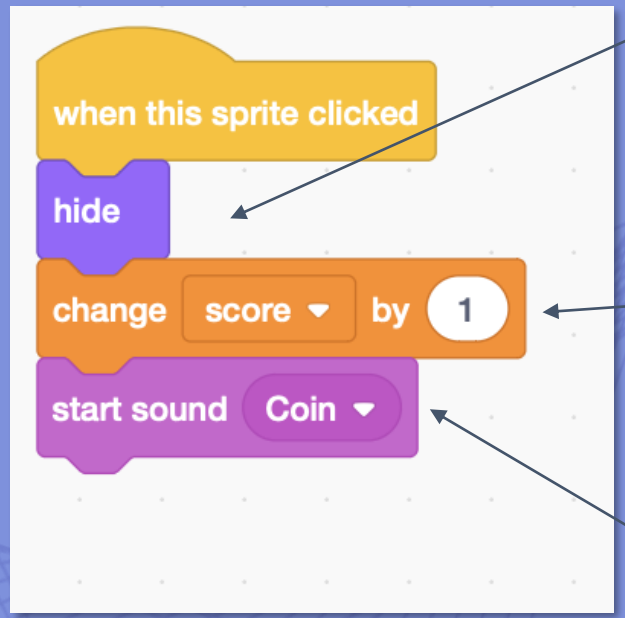
Coin | Collect | Computer ... | Connect

Door Creak | Doorbell | Drum Boing | Dun Dun D...

As you can see, the scratch sound library contains hundreds of sounds for you to pick from!

Step 6

Interacting with the sprite



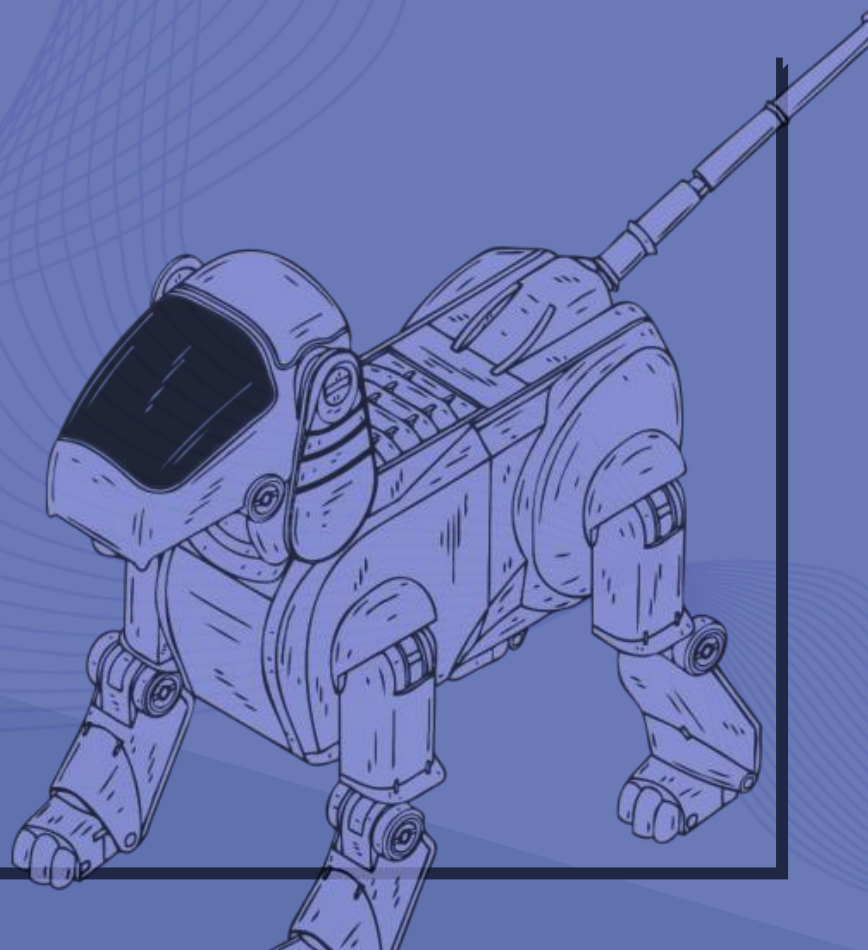
The sprite will disappear when clicked (and then will be moved, rotated and randomly sized before appearing again)

The aim of the game is to click the object that can be recycled. If the user does this, then 1 will be added to their score.

The sound “coin” will be played if the user clicks the recyclable object before it disappears from the screen.

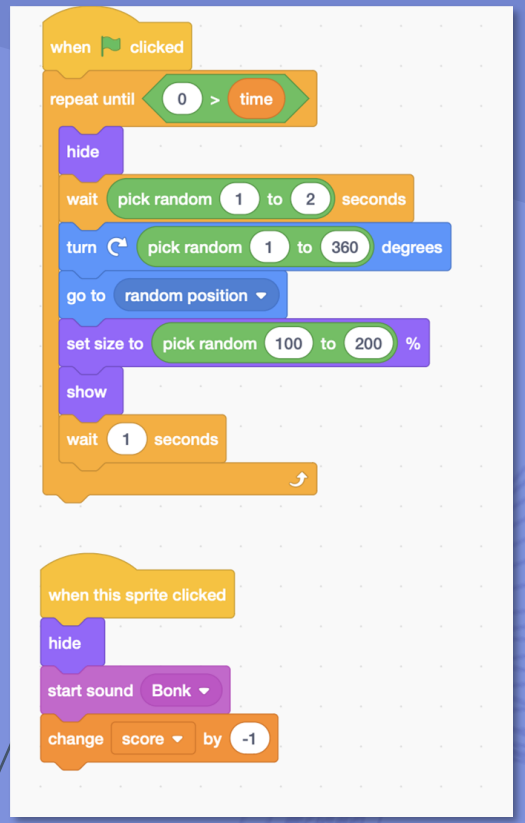
Making the game harder

At the minute, the game we have created is quite easy. The user simply must click on the object when they see it appear. To make the game more difficult, see if you can create a new sprite, called “decoys” (which will be our non-recyclable garbage) and use similar code to what we have just used, however, if the player clicks on one of these decoys, they will have 1 deducted from their score.



Step 7

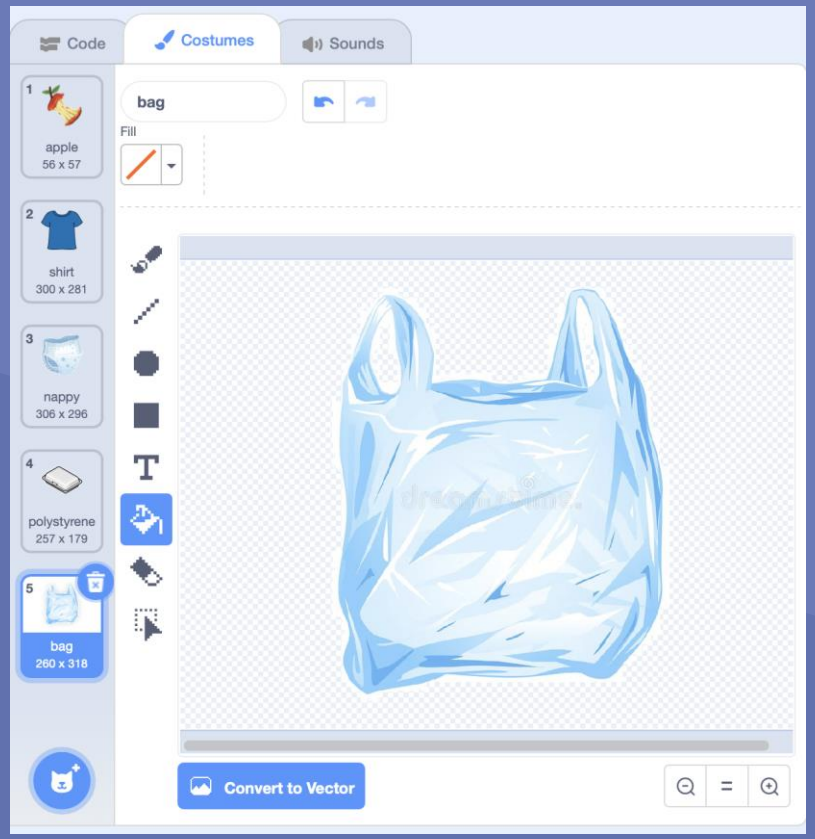
The timer



The sound “bonk” will play now and the score will be -1 rather than +1

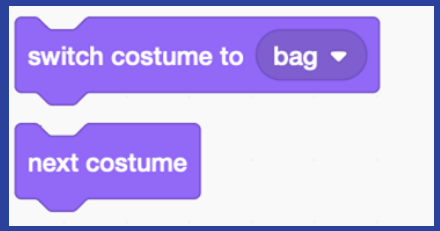
All code will be written in the decoys sprite, rather than the plastic bottle sprite.

Extension opportunity

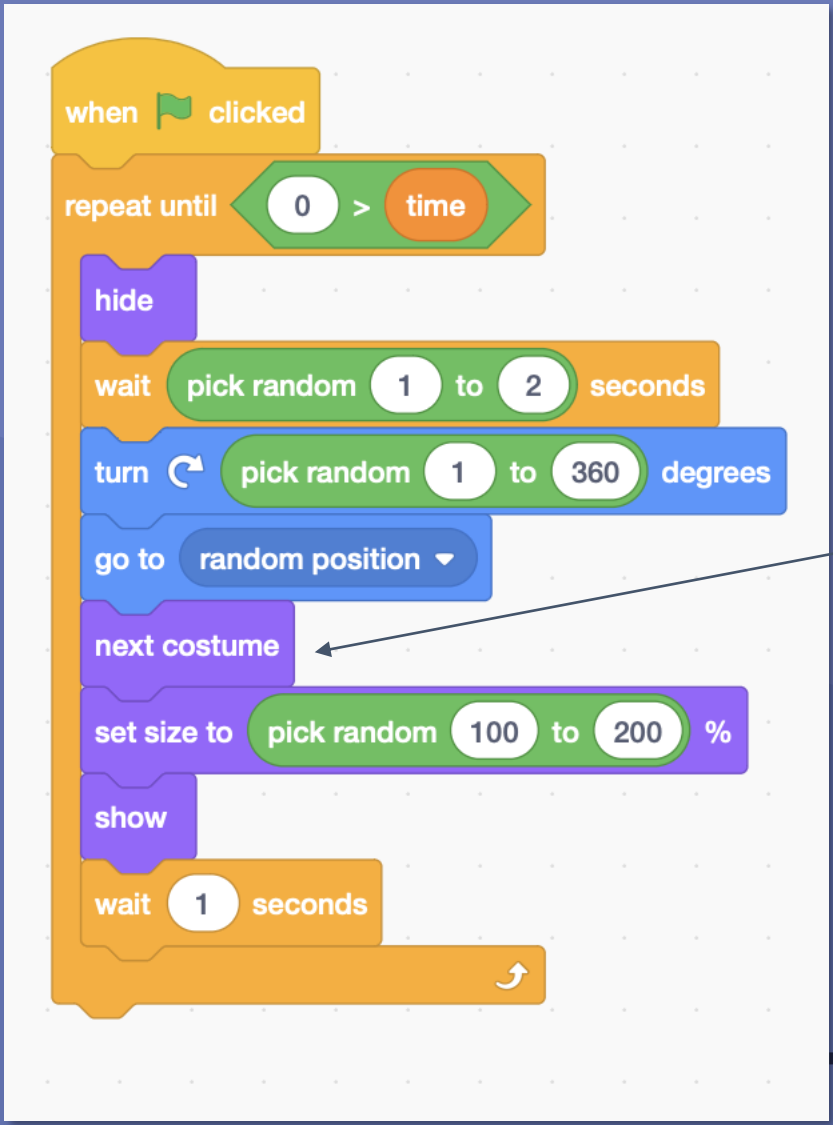


Explore the different costumes that your sprite can have, to vary which object will be the recyclable one (that the user will get points for clicking) and which object will be the decoy (the one the user will lose points for clicking)

Where would these icons be incorporated? Click them to find out!

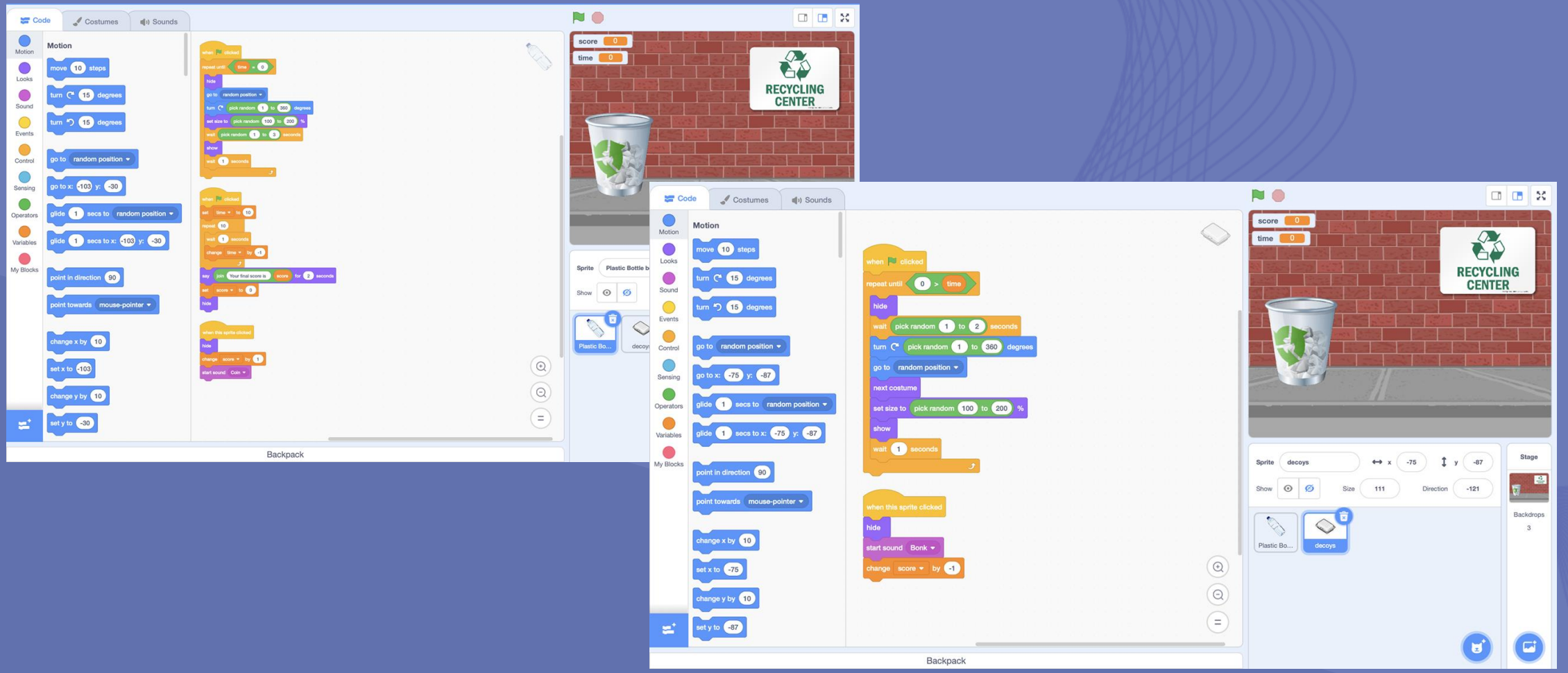


Extension opportunity solution...



The next costume will be the most appropriate to use and will flick through each of the sprites costumes in order.

What the code should look like...



Links to everyday life

Climate change

In most cases, recycling uses less energy, which translates into fewer fossil fuels burned and reduced emissions of greenhouse gases that contribute to climate change.

Protecting ecosystems

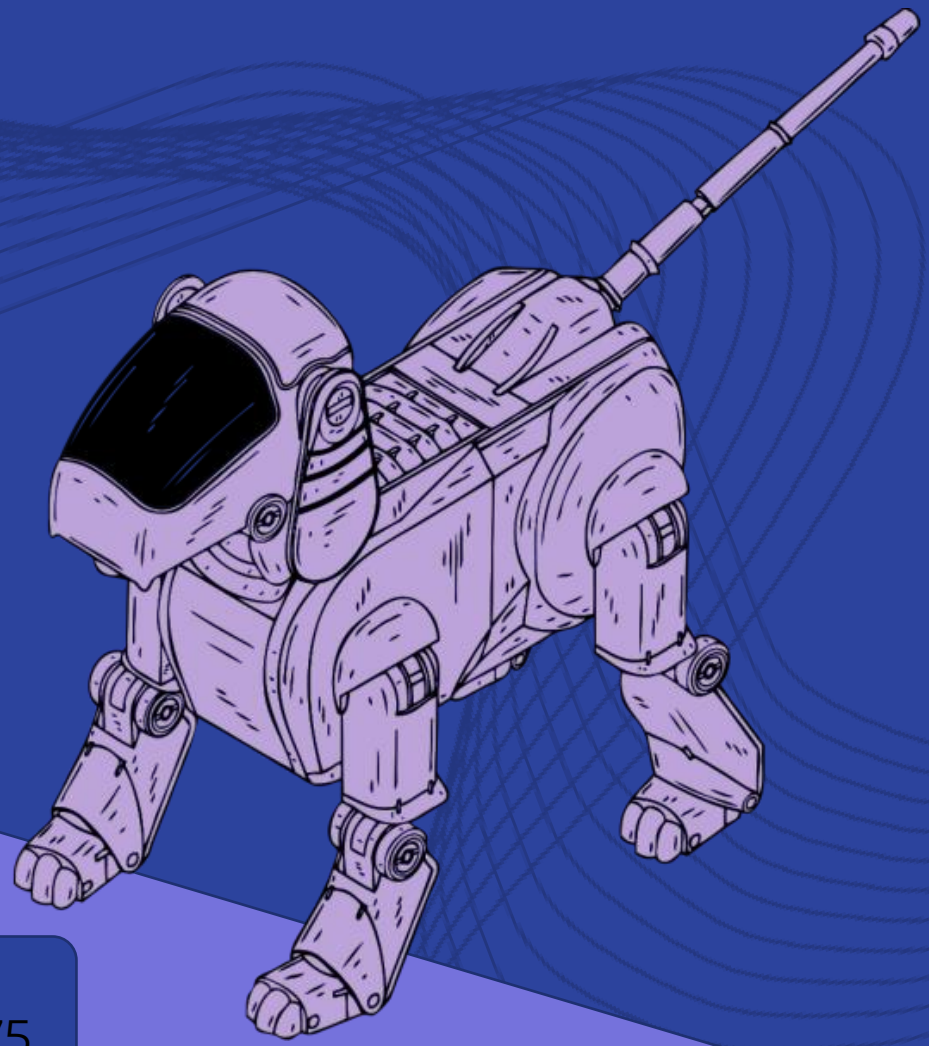
Recycling reduces the need to grow, harvest or extract new raw materials from the Earth, lessening the harmful disruption and damage being done to the natural world.

Saving money

Lambeth council in London pointed out that "it is 6 times cheaper to dispose of recycled waste than general refuse." The more you recycle, and the less you put in the bin, the more money is saved.

Congratulations!

You have created a recycling game in scratch!



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