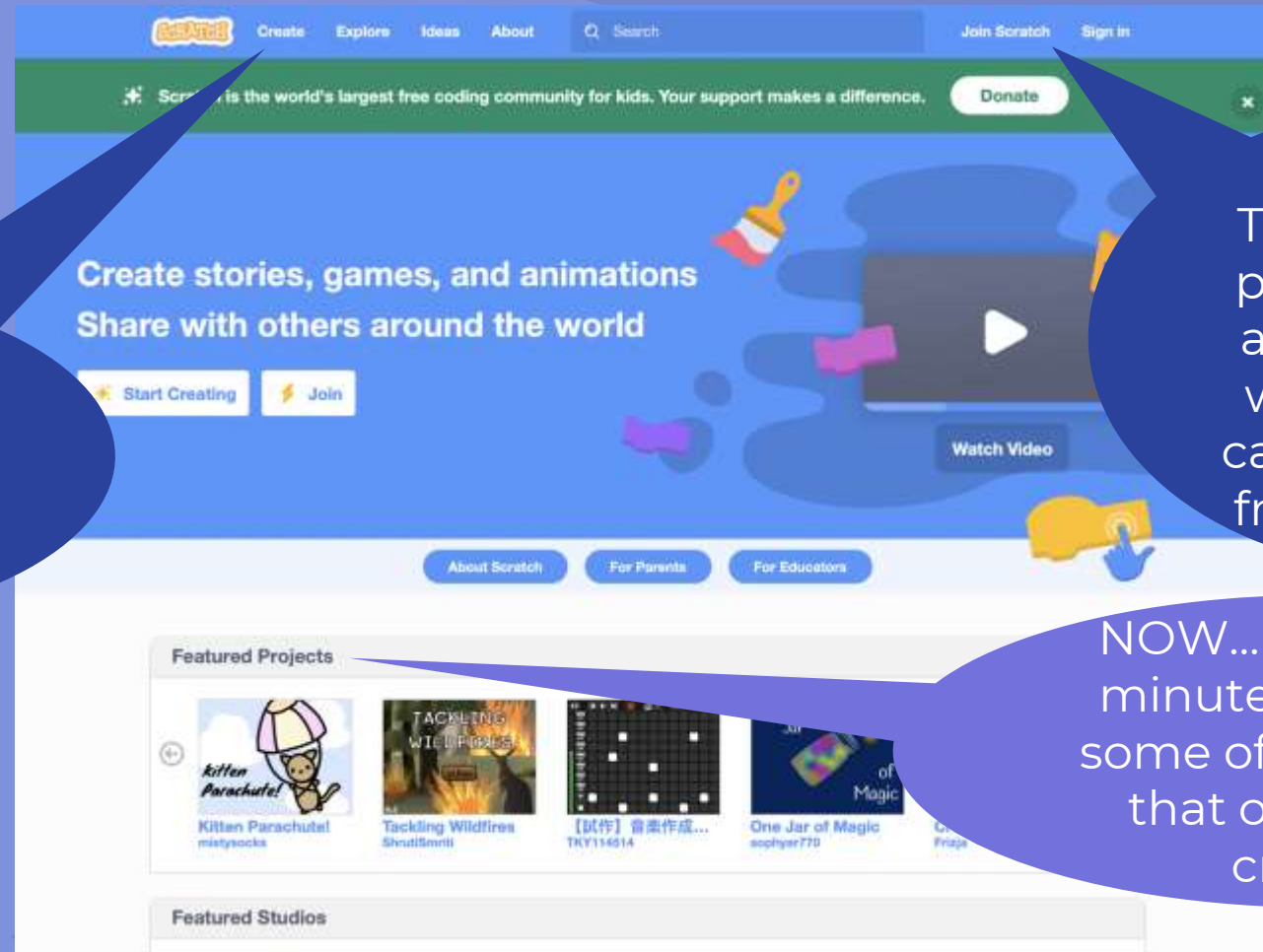


Task

Your task for this lesson is to understand the basics of scratch, to grasp the basics of the programming language

Exploring the Scratch Website

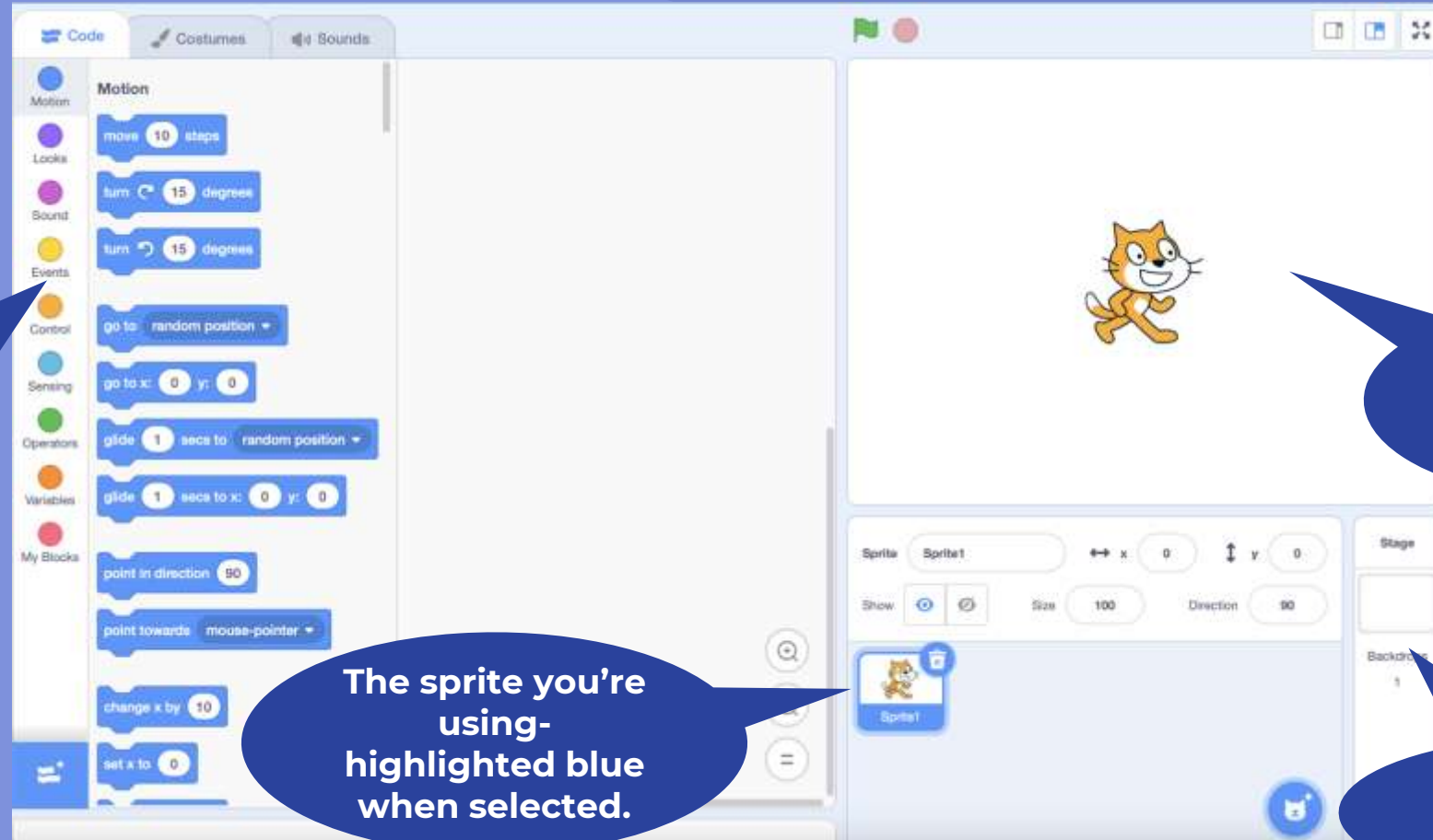


Sign in and use Scratch "online". No downloads are needed.

Join Scratch- Then, save your projects to your account on the website so you can access them from anywhere.

NOW... you have 10 minutes to explore some of the projects that others have created

The Scratch Project editor



Instructions
(categorised
and
colour
coded)
that you
drag and
drop.

The actual
project.

The sprite you're
using-
highlighted blue
when selected.

The backdrop
you're using.

What does a Scratch program contain?

A Scratch program:

- ✓ Contains sprites.
- ✓ That perform scripts.
- ✓ On a stage.

Sprites- are much like the actors and will perform instructions



When you create a program the default sprite will be this cat

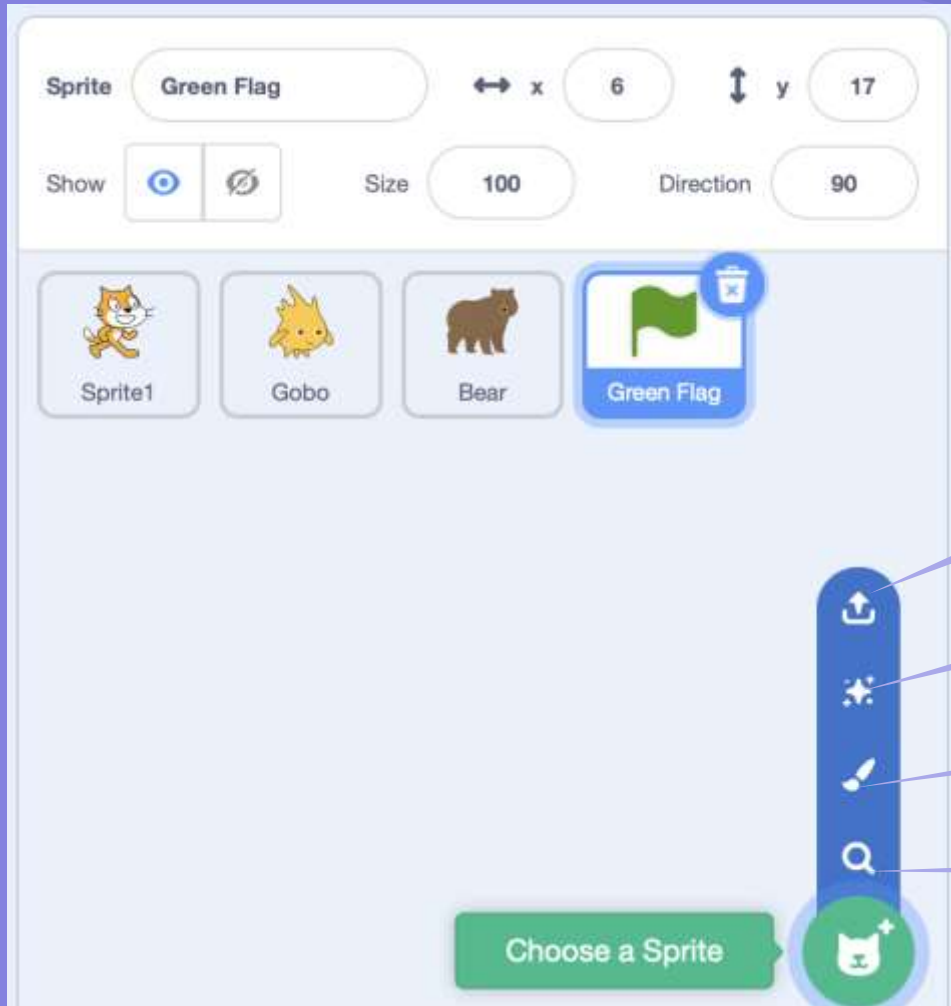
Scripts- are what the sprites will read to know what to do



Stage- can have different backdrops and is where the user will perform



Creating sprites



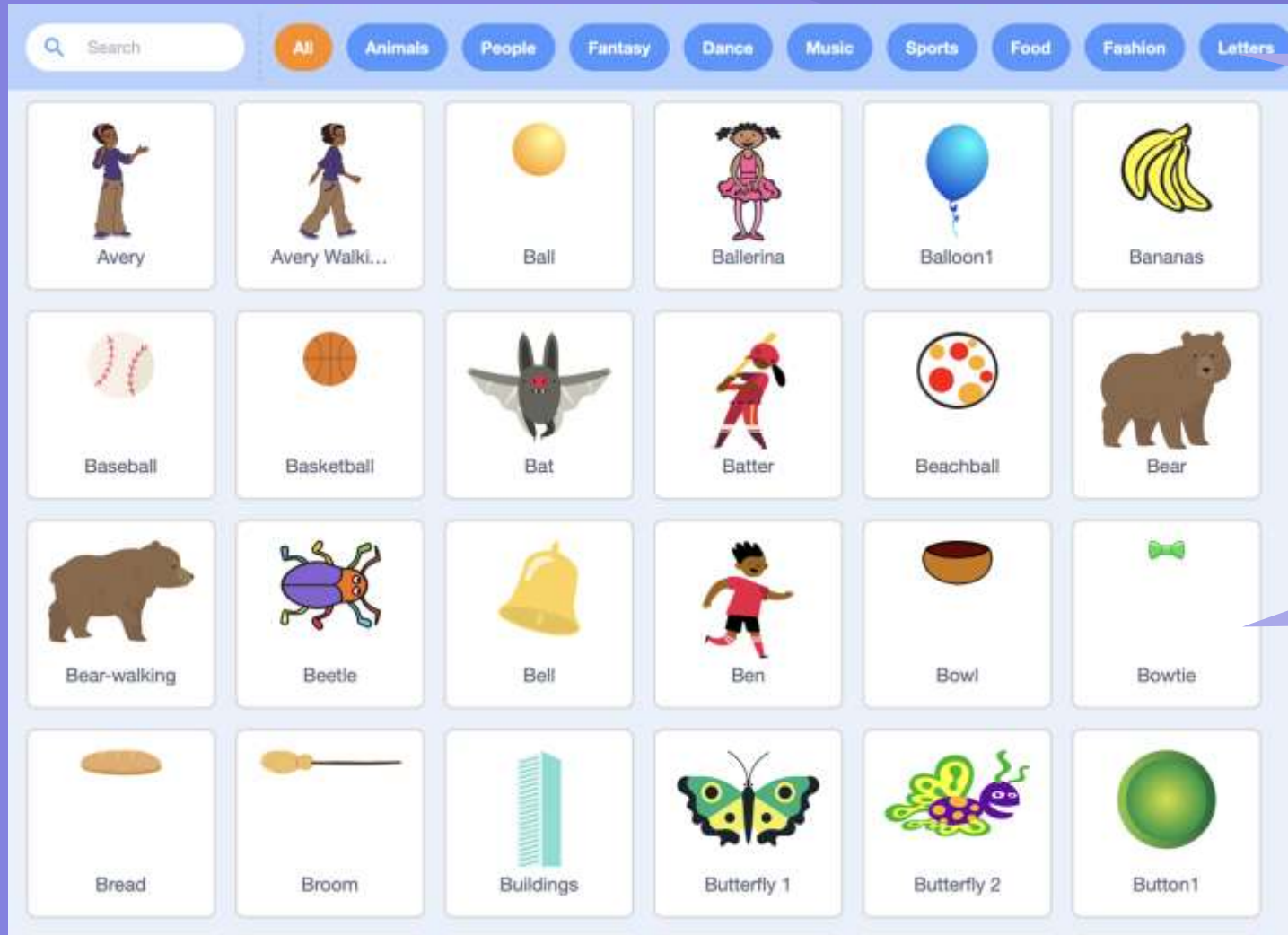
You can upload a new sprite from a file on your computer.

You can randomly select a sprite.

You can draw your own sprite.

You can choose from a library of sprites.

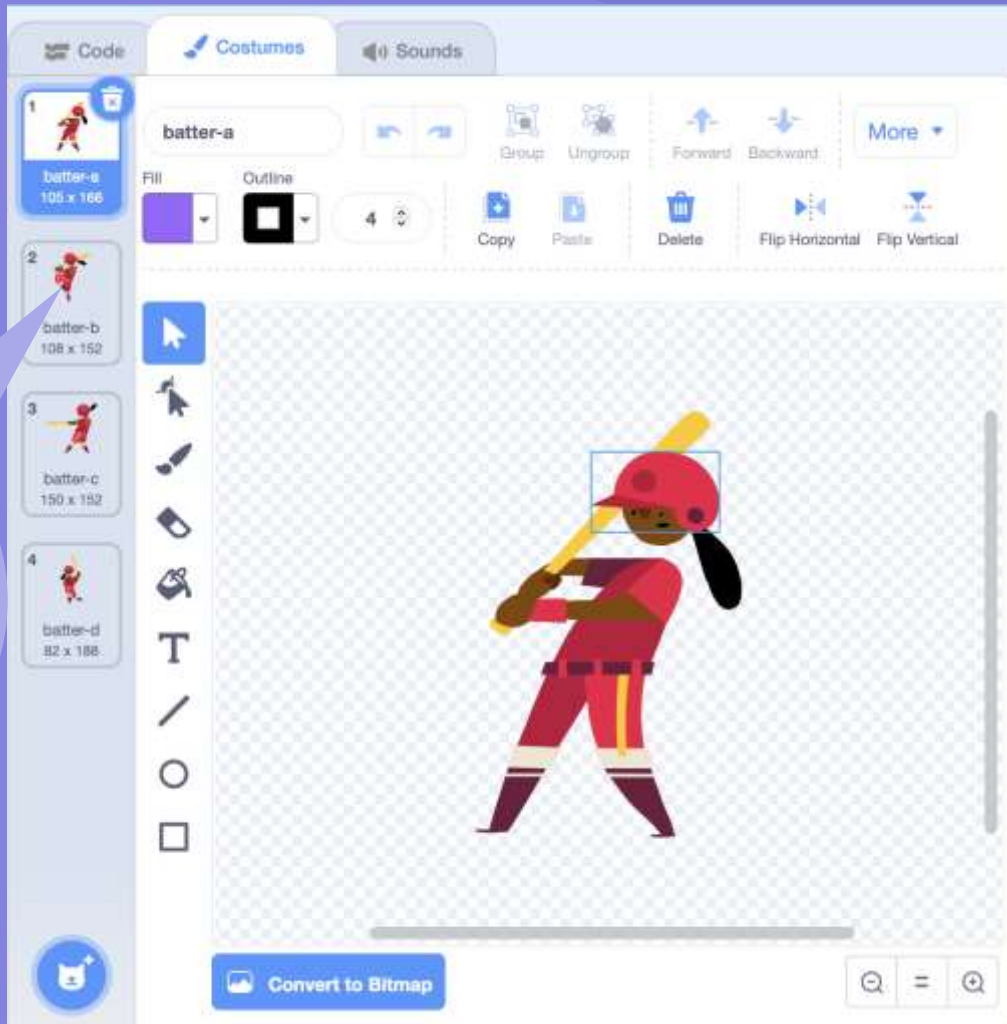
The sprite library



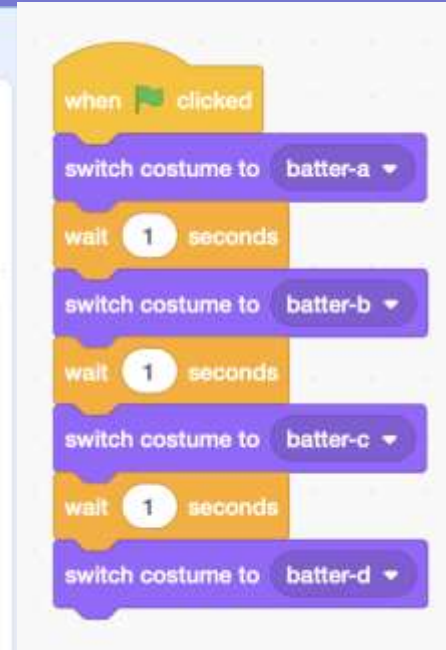
The categories are displayed at the top of the library

Explore the possibilities in the scratch library

Sprite costumes

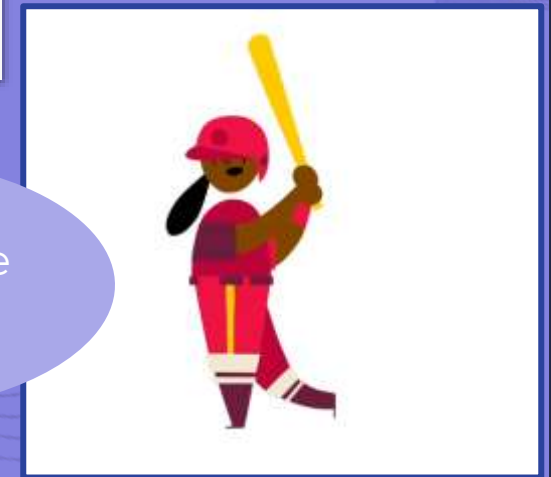


Many sprites have different "costumes" or pose.



You can switch between these costumes.

These can be used to create "animation" effects.



Colour coding of scripts

Scripts - the *instructions* that control the sprites.
There are different *types* of instructions, each colour coded.

The screenshot displays the Scratch code editor interface, highlighting the 'Code' tab and the 'Scripts' category on the left sidebar. The main workspace shows several script blocks organized into columns, each color-coded to represent a different type of instruction:

- Motion (Blue):** Includes blocks like 'move 10 steps', 'turn 15 degrees', 'go to random position', 'go to x: 28 y: -1', 'glide 1 secs to random position', 'glide 1 secs to x: 28 y: -1', 'point in direction 90', 'point towards mouse-pointer', 'change x by 10', 'set x to 28', 'change y by 10', 'set y to -1', and 'if on edge, bounce'.
- Looks (Purple):** Includes blocks like 'say Hello! for 2 seconds', 'say Hello!', 'think Hmmm... for 2 seconds', 'think Hmmm...', 'switch costume to battle-3', 'next costume', 'switch backdrop to backdrop1', 'next backdrop', 'change size by 15', 'set size to 100%', 'change color effect by 25', 'set color effect to 0', 'clear graphic effects', 'show', and 'hide'.
- Sound (Pink):** Includes blocks like 'play sound pop until done', 'start sound pop', 'stop all sounds', 'change pitch effect by 10', 'set pitch effect to 100', 'clear sound effects', 'change volume by 10', 'set volume to 100%', and a 'volume' slider.
- Events (Yellow):** Includes blocks like 'when green flag clicked', 'when space key pressed', 'when this sprite clicked', 'when backdrop switches to backdrop1', 'when budas + 10', 'when I receive message1', 'broadcast message1', 'broadcast message1 and wait', and 'when I start as a clone'.
- Control (Orange):** Includes blocks like 'wait 1 seconds', 'repeat 10', 'forever loop', 'if then else', 'if then else if', 'wait until', 'repeat until', 'loop until', 'when I start as a clone', and 'create clone of myself'.
- Sensing (Light Blue):** Includes blocks like 'touching mouse-pointer', 'touching color', 'color is touching', 'distance to mouse-pointer', 'ask What's your name? and wait', 'answer', 'key space pressed?', 'mouse down?', 'mouse x', 'mouse y', 'set drag mode draggable', 'loudness', 'time', 'read time', 'backdrop # of Stage', 'current year', and 'days since 2000'.
- Operators (Green):** Includes blocks like 'pick random 1 to 10', '+ 50', '+ 50', '+ 50', 'and', 'or', 'not', 'join apple banana', 'letter 1 of apple', 'length of apple', 'apple contains a', 'mod', 'mod', and 'size of'.
- Variables (Light Orange):** Includes blocks like 'Make a Variable', 'my variable', 'set my variable to 0', 'change my variable by 1', 'show variable my variable', 'hide variable my variable', 'Make a List', and 'Make a Block'.

Commonly used scripts

The image displays a collection of common Scratch script blocks arranged in two columns. The left column features event triggers: 'when space key pressed' and 'when green flag clicked'. The right column includes loops ('forever' and 'repeat 10'), a conditional ('if then else'), and actions ('say Hello! for 2 seconds'). A separate section on the right shows a 'set variable to 50' block, an 'ask What's your name? and wait' block, and an 'answer' variable block. Callout boxes provide detailed explanations for several of these blocks.

when space key pressed

when green flag clicked

forever

repeat 10

if then else

ask What's your name? and wait

answer

say Hello! for 2 seconds

set variable to 50

These two common controls will wait until either the program is run, by pressing the green flag or by waiting until the space is clicked.

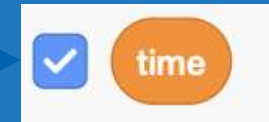
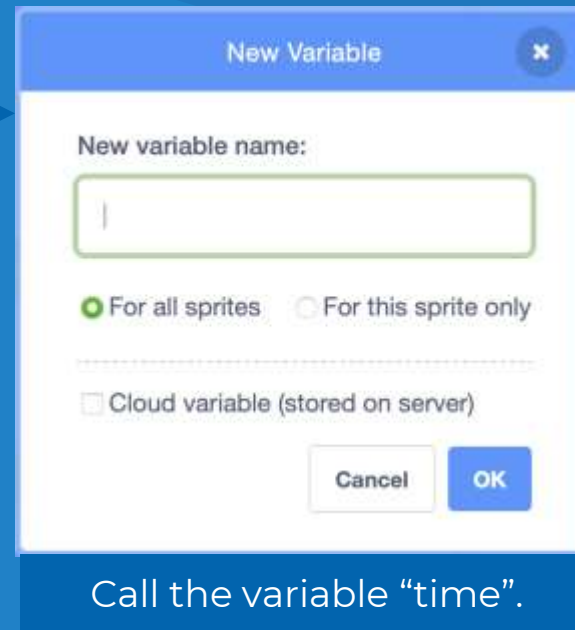
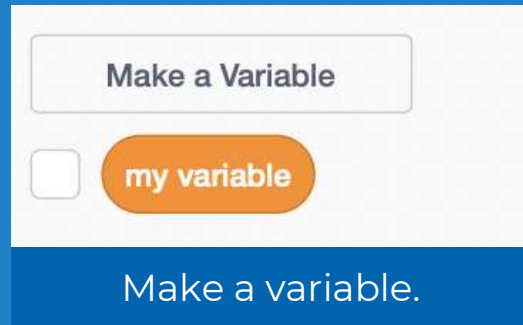
Depending on the operator (green diamond), depends on which block of code will be run.

These loops will repeat whatever code is inside of them a certain number of times before moving on.

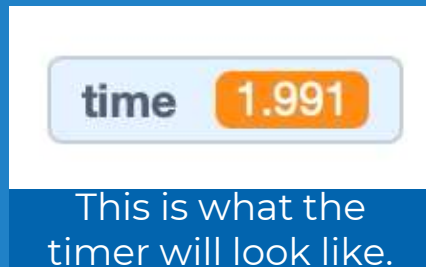
These question and answer blocks in the sensing category will store the answer to each question in this temporary answer variable (which can later be stored permanently in a separate variable)

The speech will make the sprite look like it is talking.

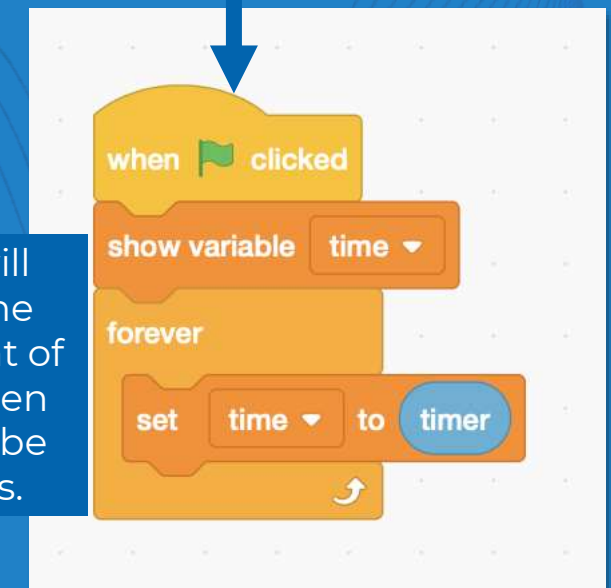
Making a timer variable



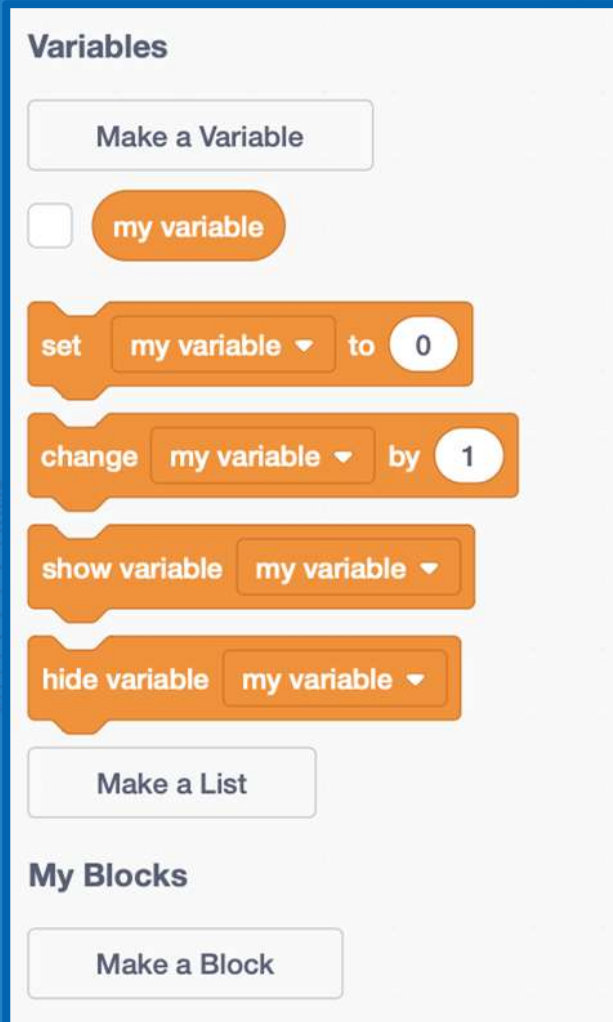
When the blue tick is shown, the variable will be displayed on the screen.



This block of code will constantly update the timer with the amount of time the code has been running for- this can be very useful in games.



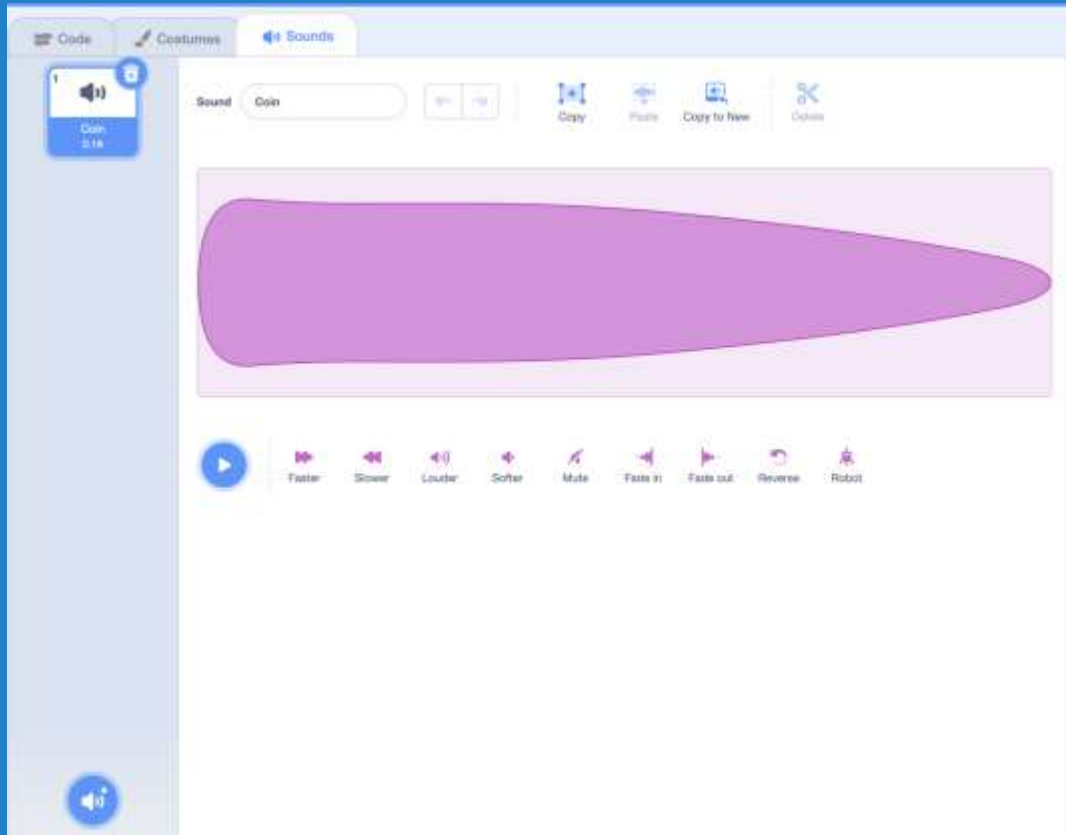
So... What is a variable?



A variable is a named location in memory that can be changed during the running of the program. They can be found in the orange section of scripts and have many different functions that come with them:

- Set the variable's value
- Change the value of the variable (either increase or decrease by a certain amount)
- Show variable (lets the contents of the variable be seen on screen by the user)
- Hide variable (discloses the information stored in the variable from the user)

Adding sound to sprites



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



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...



Drum Boing



Drum Boing



Drum Boing

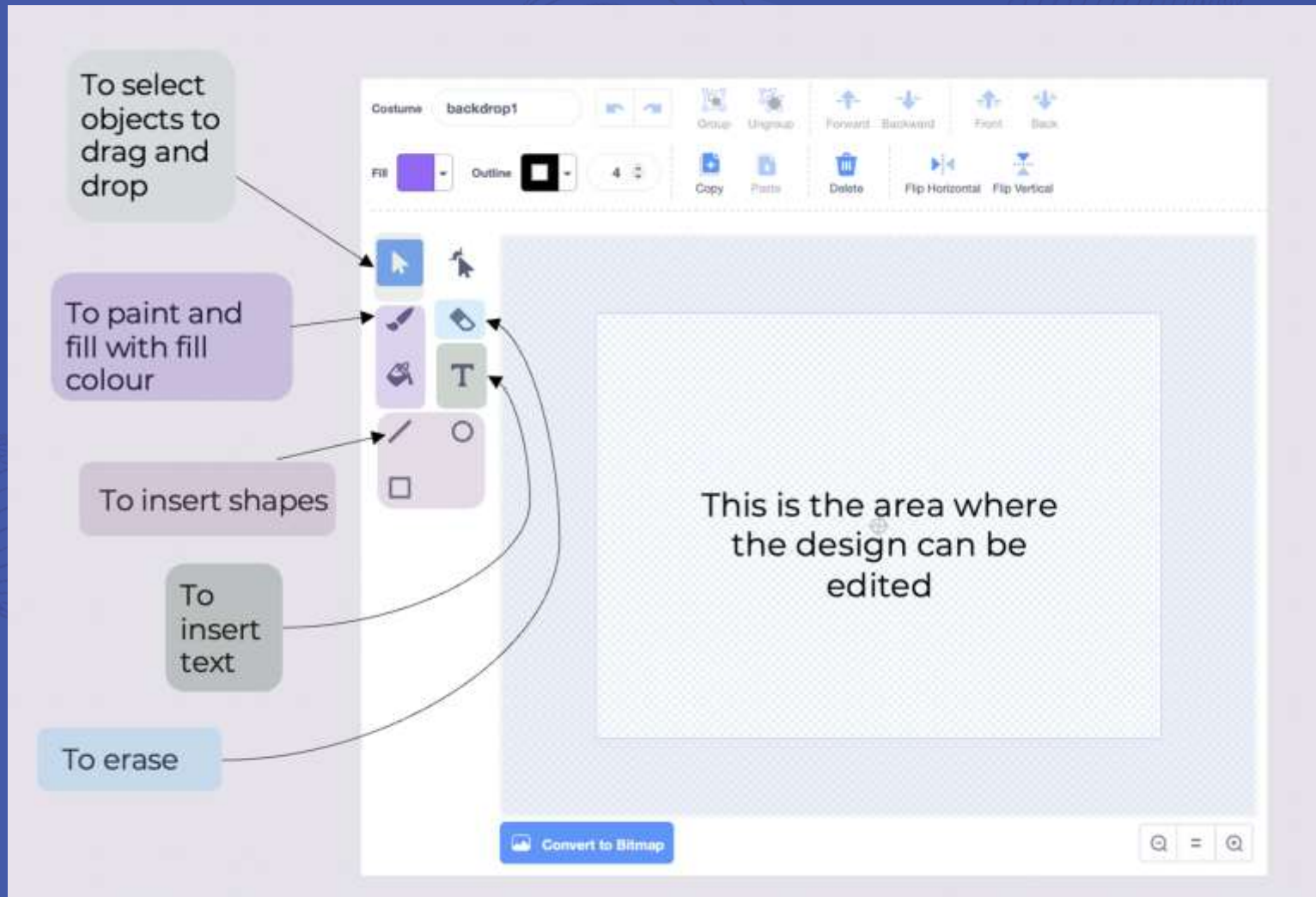


Drum Boing

See if you can add a sound
to your timer that you have
created



Designing a backdrop

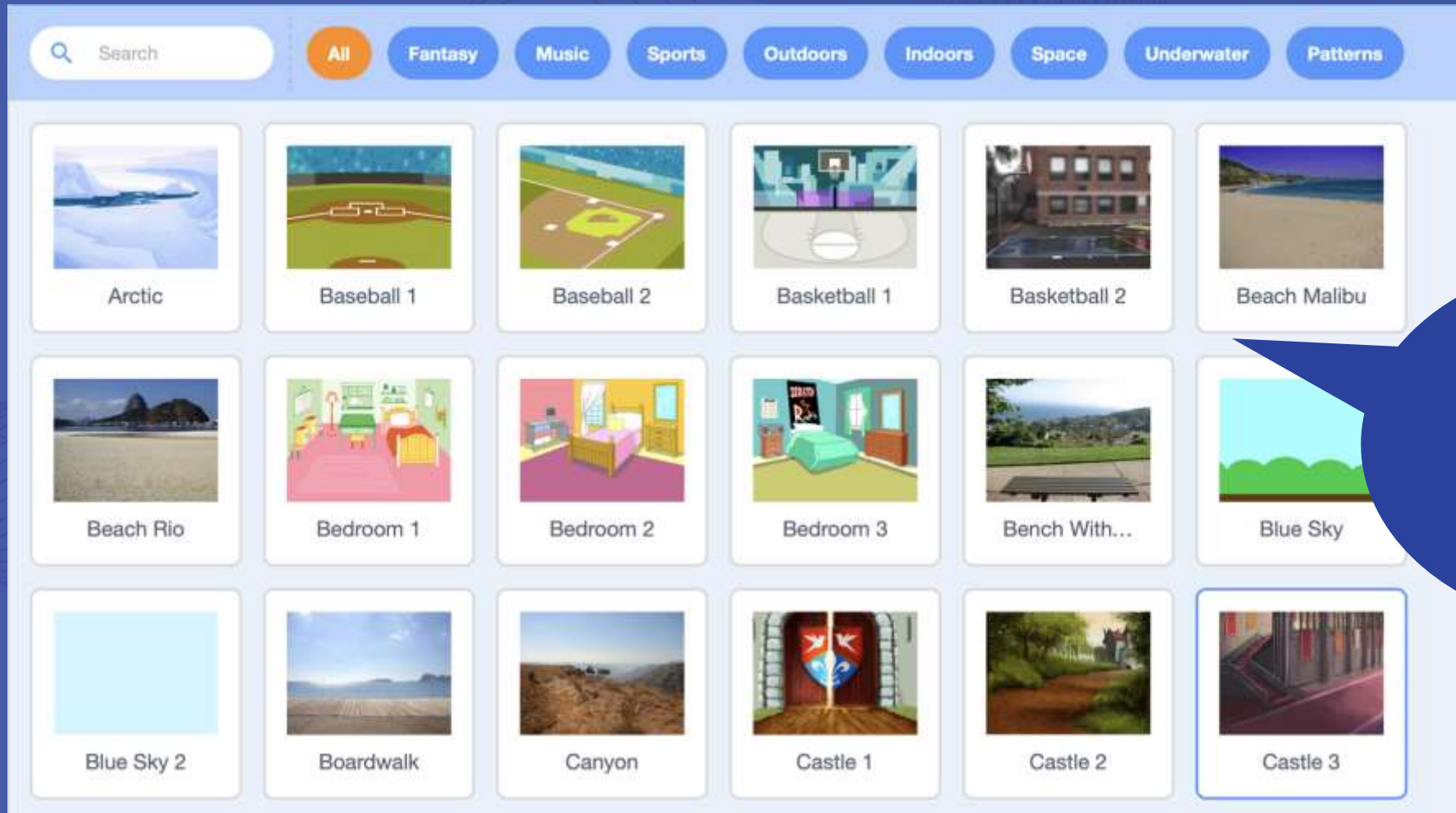


This icon allows you to import your own background or pictures that you want to use on your background, after saving them to your computer



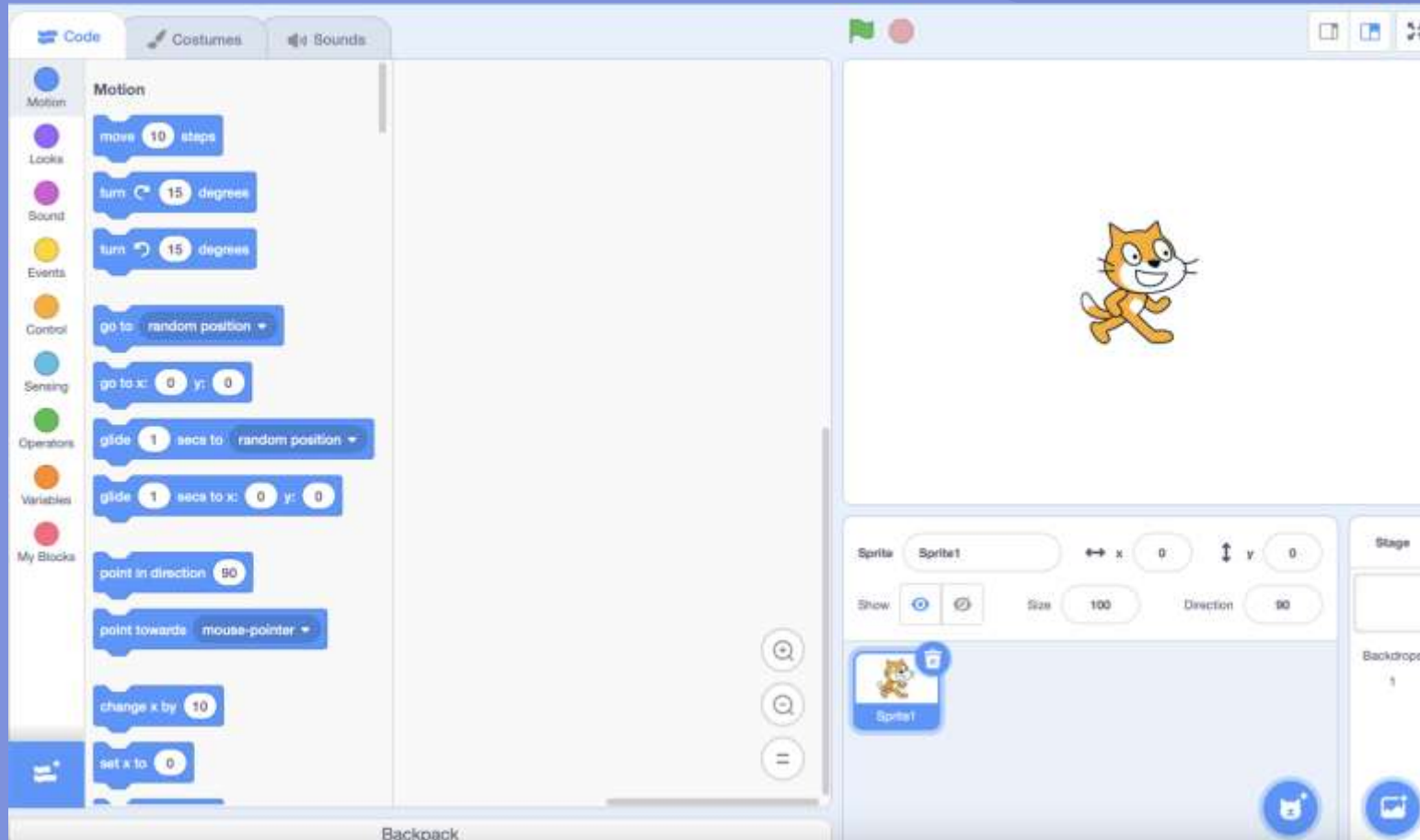
Sprites move on a stage and this can have different Backdrops (scenery). Backdrops are "static" - they do NOT move.

Choosing a backdrop



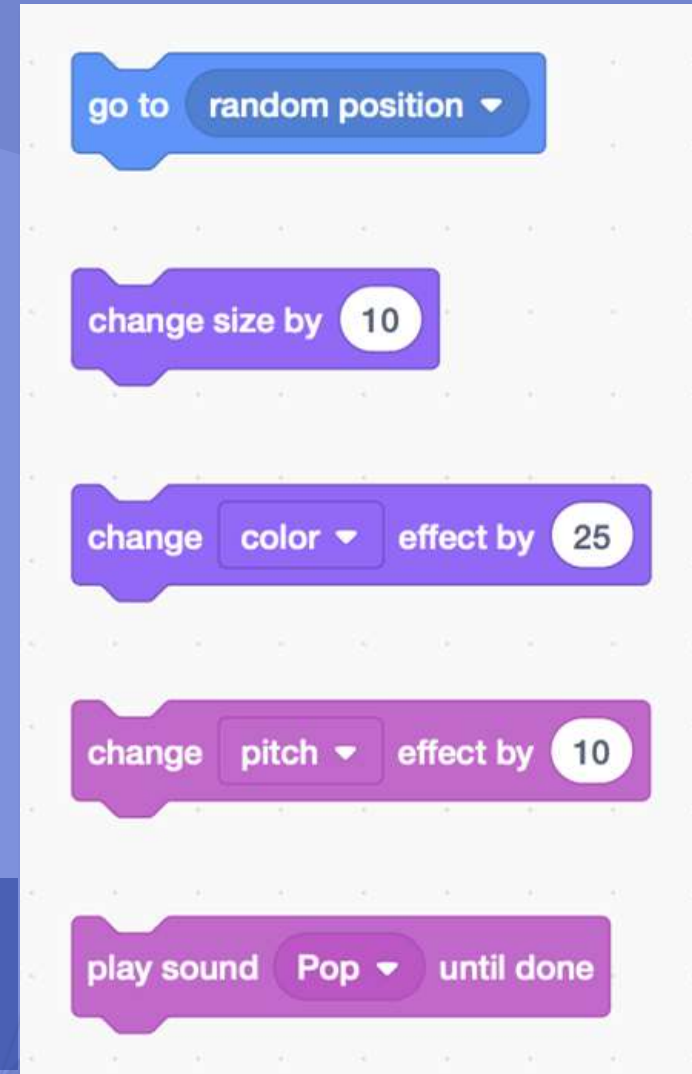
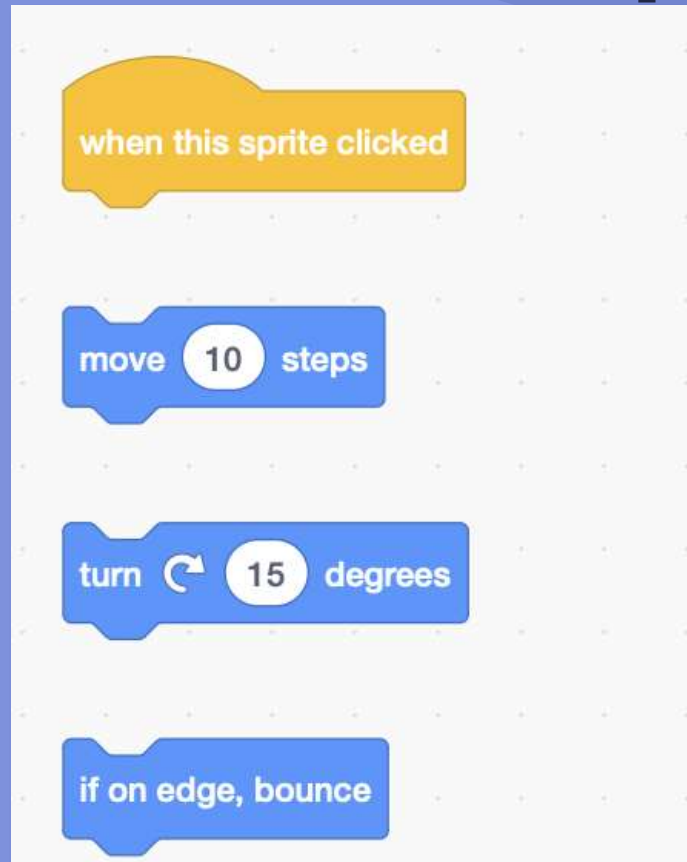
There are also many built-in options to choose from, much like with sprites

Your task...



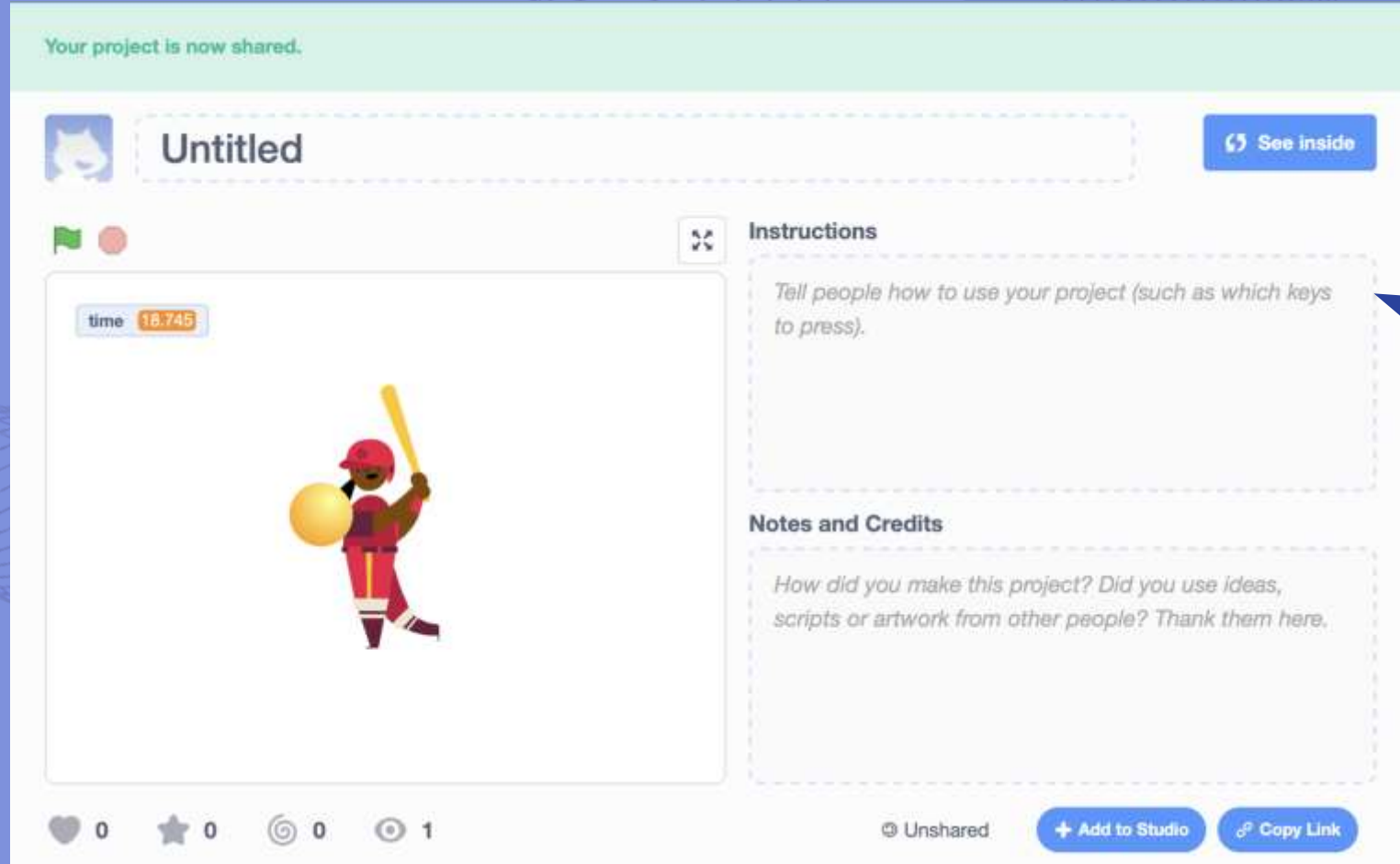
Using what you have just learned, spend the next 15 minutes or so, experimenting and getting the cat sprite to do some cool things.

Some code to experiment with...



Try adding some of these into your code if you haven't discovered them already.

Saving your code



Make sure to save your code (and call it something other than “untitled”: you can share your projects with other scratchers.