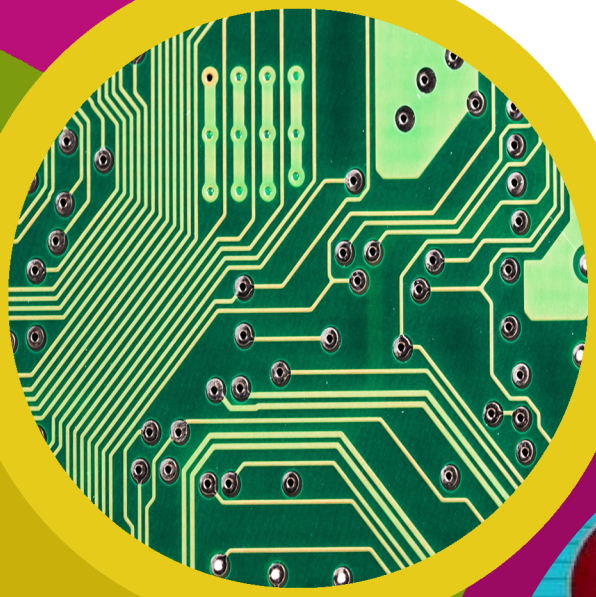
technocamps

Using Scratch across the CfW



UNDEB EWROPEAIDD EUROPEAN UNION
Llywodraeth Cymru Welsh Government
Cronfa Gymdeithasol Ewrop European Social Fund

Prifysgol Abertawe Swansea University
CARDIFF UNIVERSITY PRIFYSGOL CAERDYDD
PRIFYSGOL BANGOR UNIVERSITY
Cardiff Metropolitan University | Prifysgol Metropolitan Caerdydd
i.t.wales
PRIFYSGOL ABERYSTWYTH UNIVERSITY
PRIFYSGOL glyndŵr Wrecsam | Wrexham glyndŵr UNIVERSITY
University of South Wales Prifysgol De Cymru

Overview

Coding can be implemented across all the Areas of Learning and Experience, reinforcing learning in the classroom and improving digital literacy in the process.

In today's world digital literacy is an essential skill for learners to develop. The technological requirements for jobs are ever increasing, and a strong start in digital skills will prepare learners and give them an advantage.

Online Resources

Digital Resources:

https://tc1.me/educonf22resources

Youtube Tutorials:

https://tc1.me/progacrosscurriculum

More Ideas to Program

Health and Wellbeing
- Food Pyramid
- Pong

Mathematics and Numeracy
- Drawing Shapes
- Estimating Pi

Science and Technology
- States of Matter
- Water Cycle

Languages, Literacy and Communication
- Translating Quiz
- Pronouns Quiz

Expressive Arts
- Algorithmic Art
- Matching Art Styles

Humanities
- Interactive Timeline
- Migration Simulation

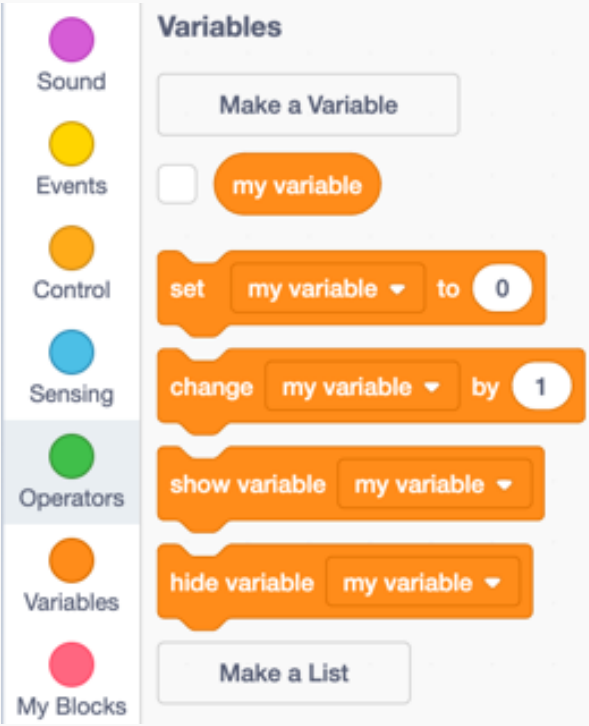
Extensions

Extensions can be added into Scratch to give us additional blocks that help us accomplish specific tasks.

One of these extensions makes use of Google Translate to translate text between languages.

We can add this extension by clicking in the ***bottom left corner*** of Scratch and searching through the Extensions.

Variables and Lists



We will have to create both a variable and a list for this program. These can be added under the variables tab.

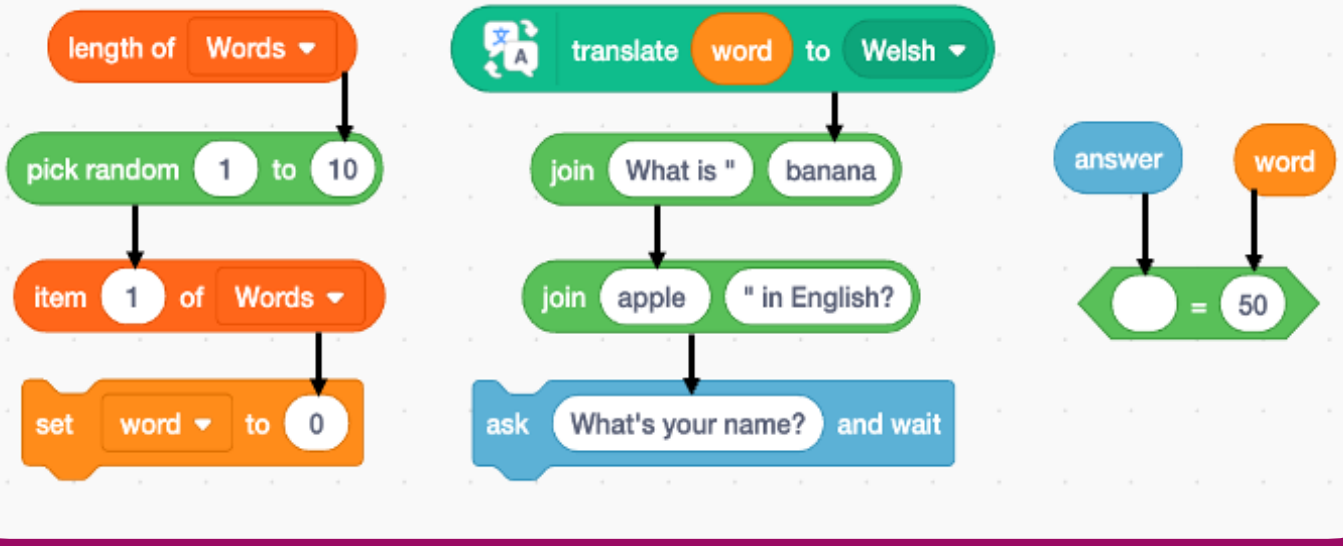
Make a variable called **word**, this will hold the word that is currently displayed on-screen.

Make a list called **words**, this will hold all the words that will appear to be translated. Words can be added to the list on the game screen, and then hidden from view in the variables tab.

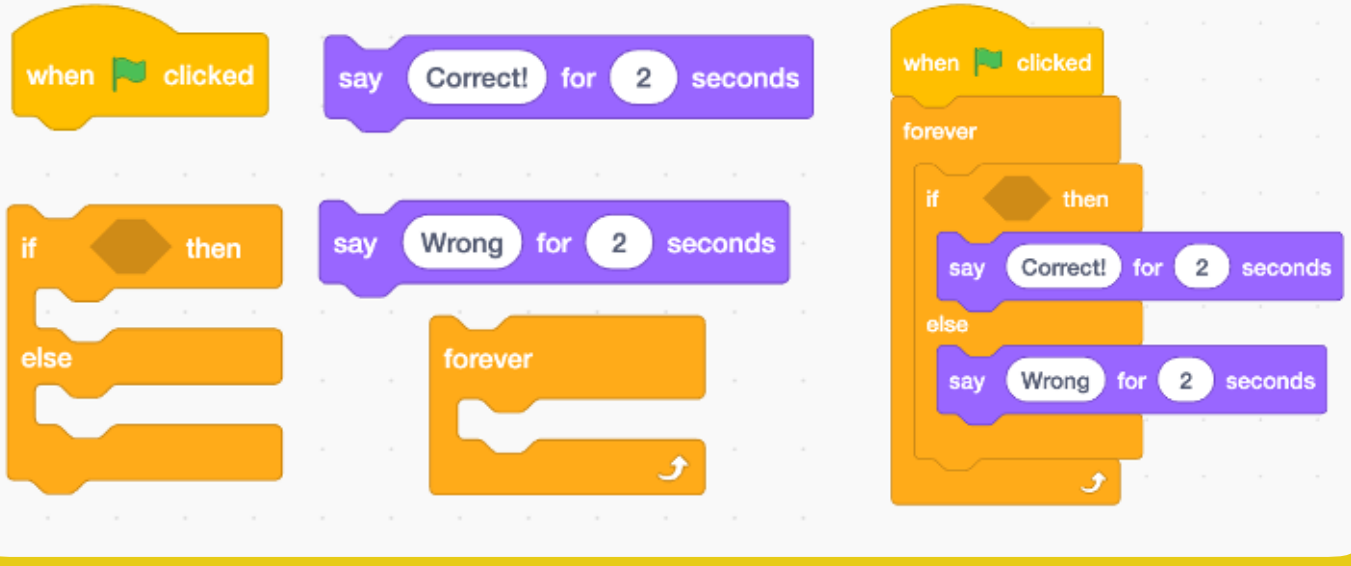
Translating Game

Translator Blocks

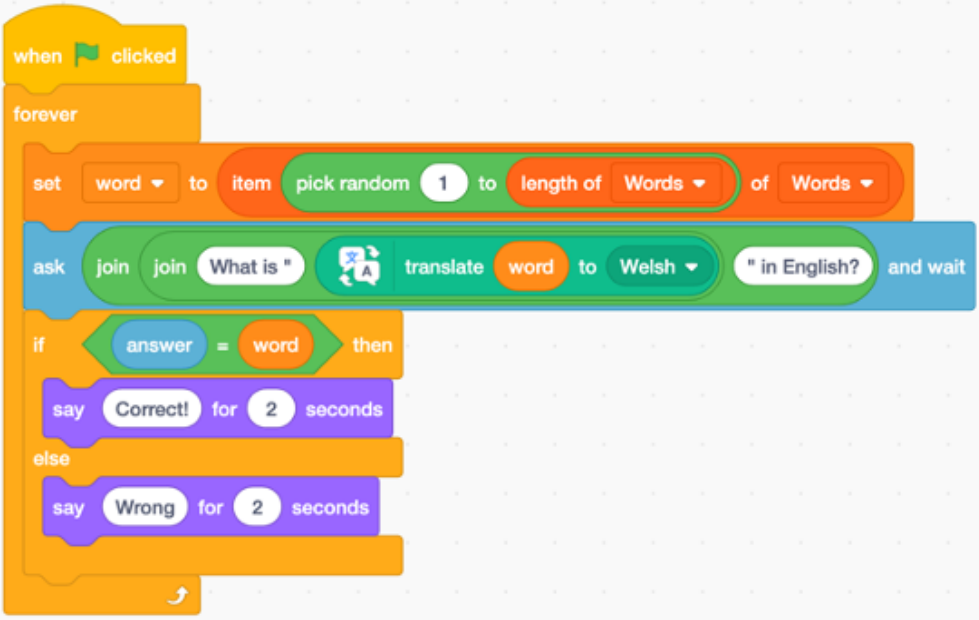
Assembling Translator



If Statement

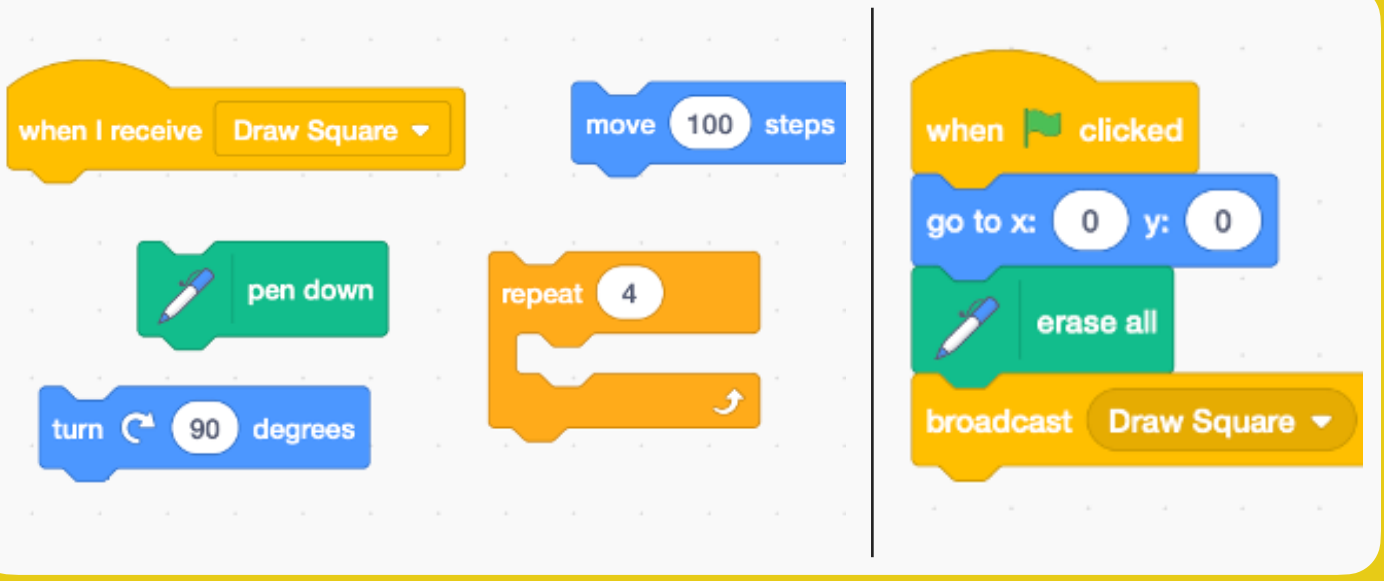


Full Code

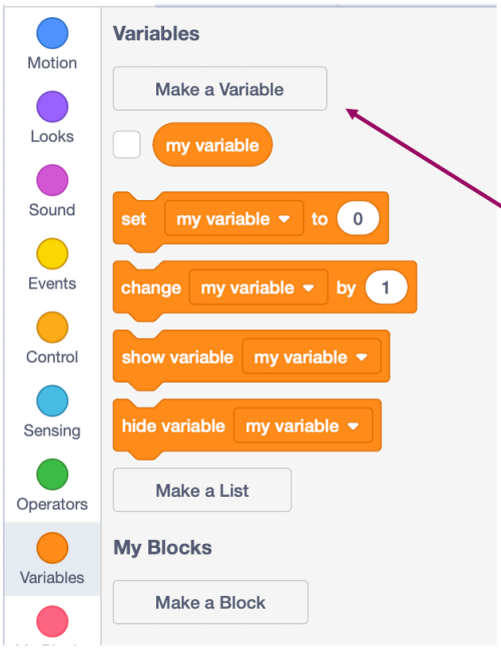


Pen Shapes

Drawing a Square

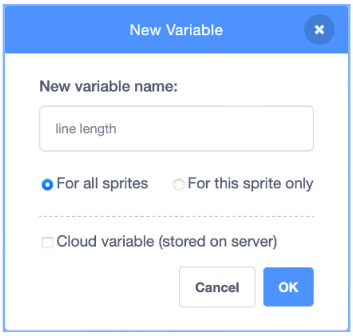


Variable Patterns

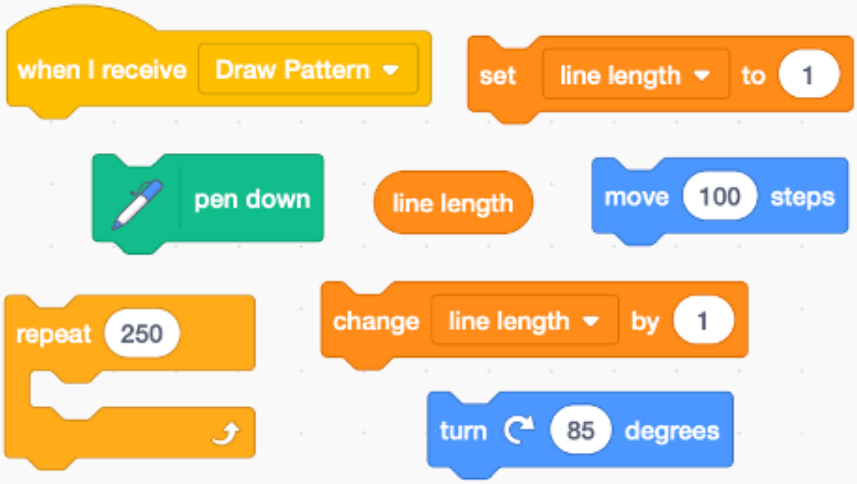


Using a variable with a value that changes as we loop, we can make some unique patterns.

Create a variable named "line length".



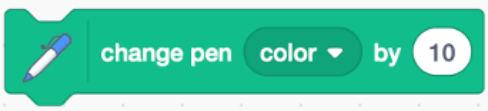
Variable Patterns



Variable Patterns

By editing the values inside the loop, (particularly the angle) you will see different patterns emerge.

You can also use the change colour block to add some more colour to the patterns.



Water Cycle

Background

Begin by making a background that includes land, sea, mountains and a river.

These are the key components that we're going to need to create an animation of the water cycle.

The positional values in the code below will depend on the drawing.

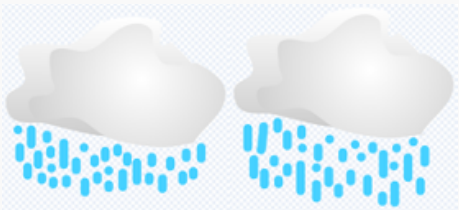
Costumes

We're going to need 5 costumes to switch between in this animation.

Water Vapour - to demonstrate evaporation

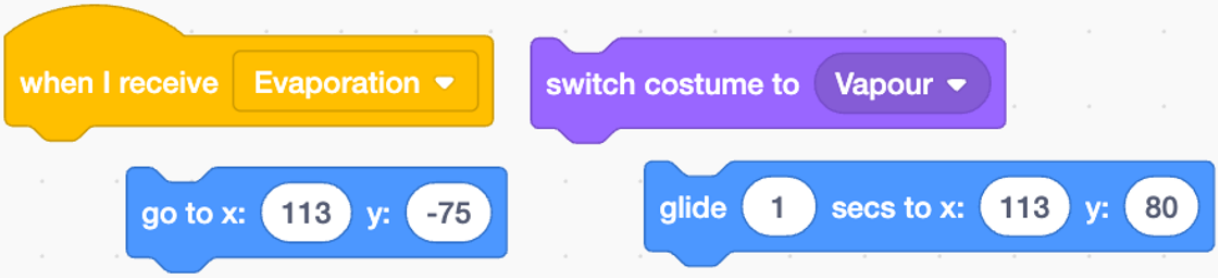
Clouds

2x Rainclouds - to animate the rainfall

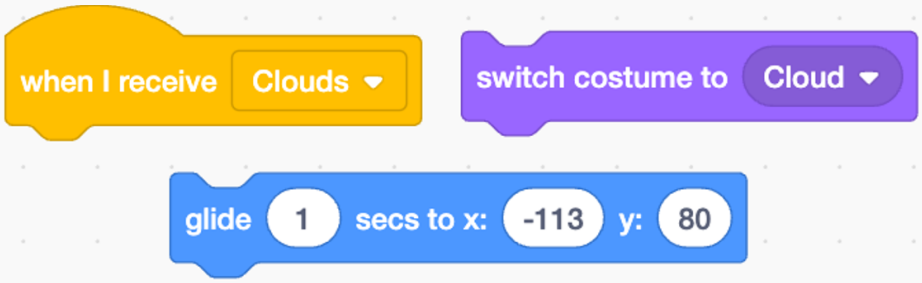


River Flow - to show the rain water returning to the sea.

Sprite - Evaporation



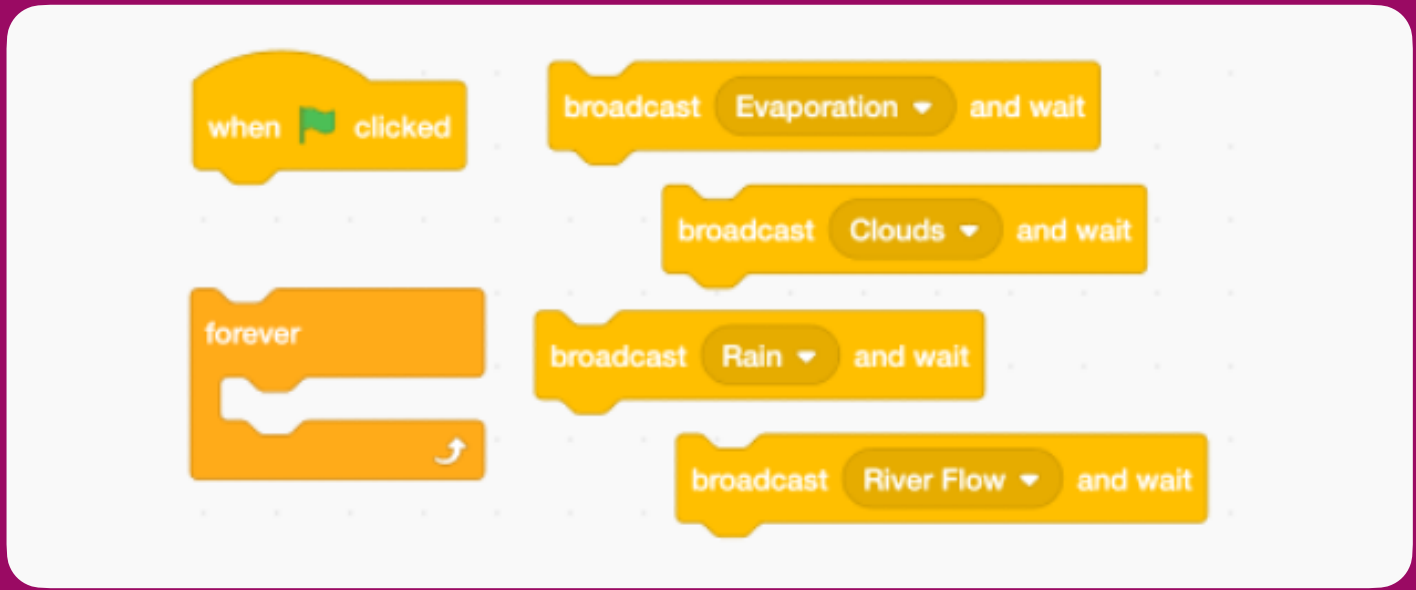
Sprite - Clouds



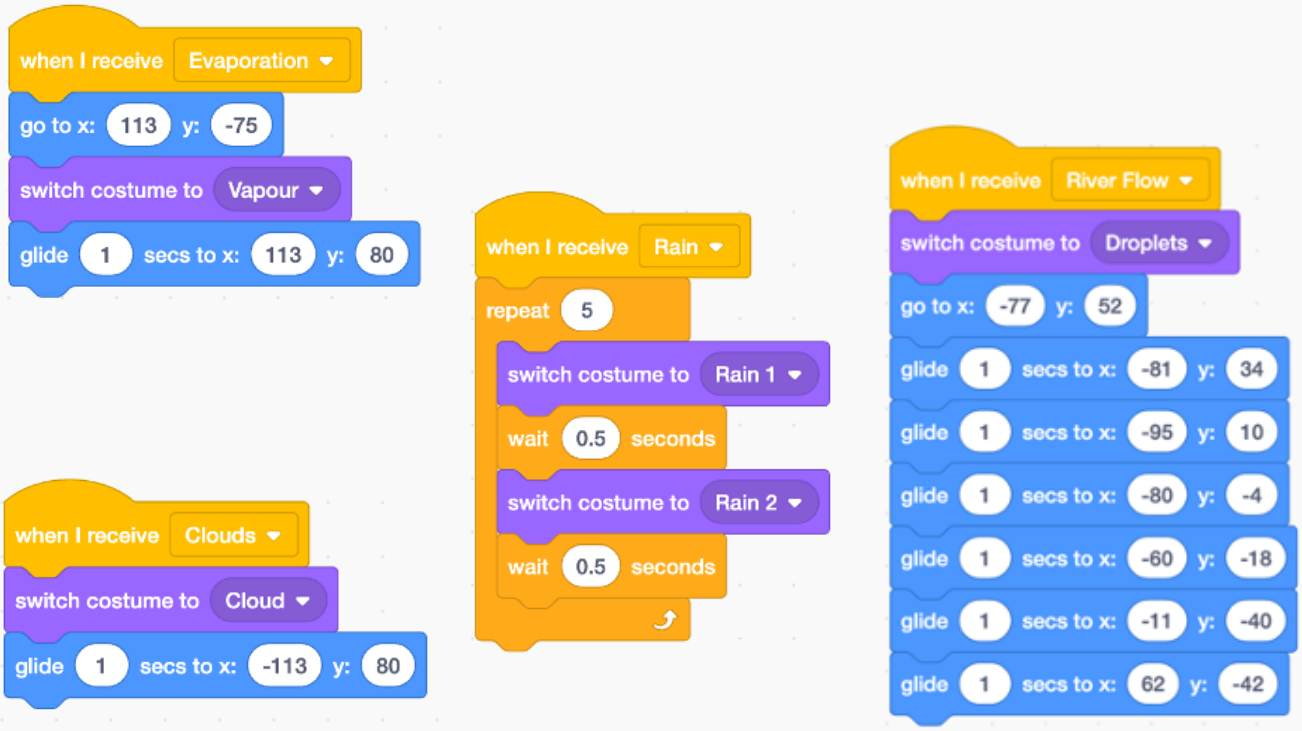
Sprite - Rain

Sprite - River Flow

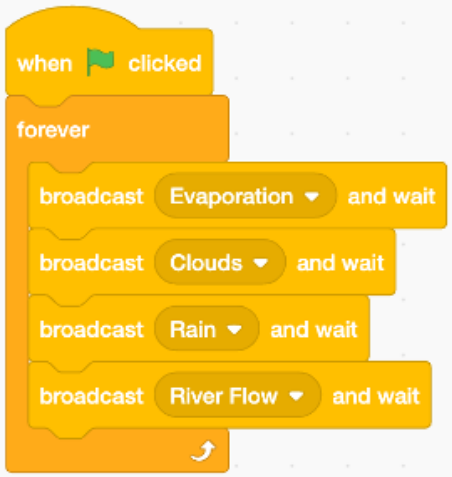
Background - Animating



Sprite - Full Code



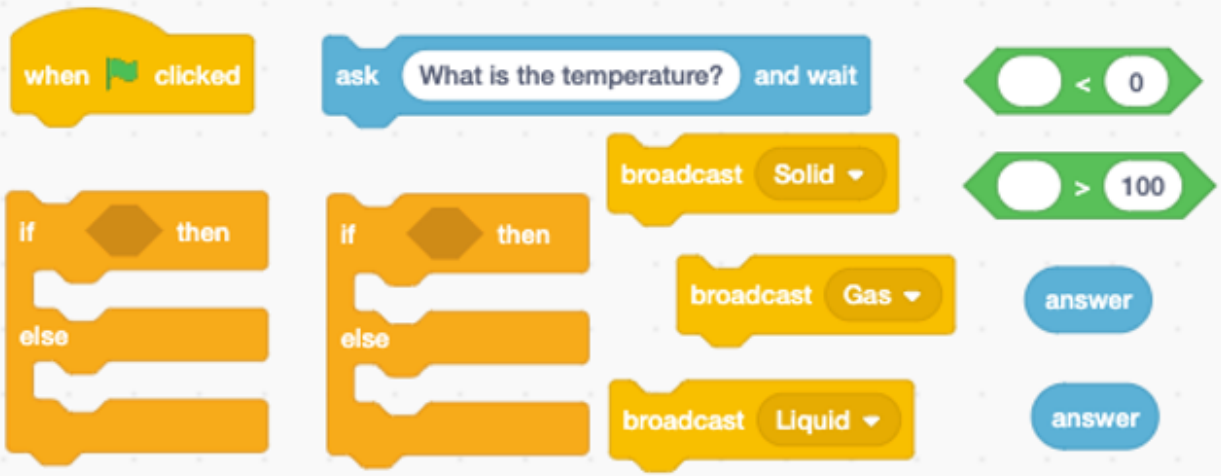
Background - Full Code



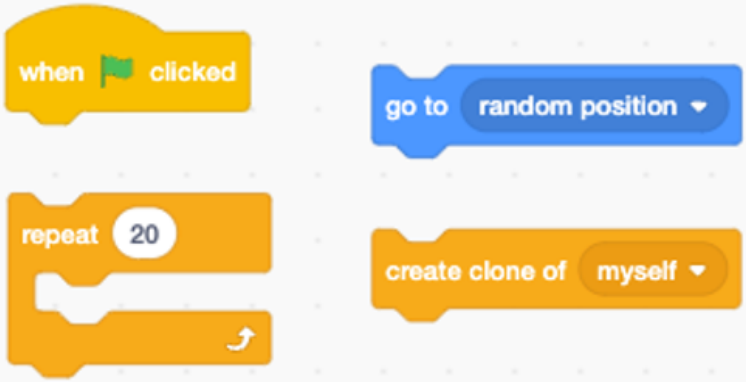
Sprites

Create a simple circular sprite to represent an atom. If you prefer this could be a molecule instead.
We will only require 1 sprite as it will be cloned.

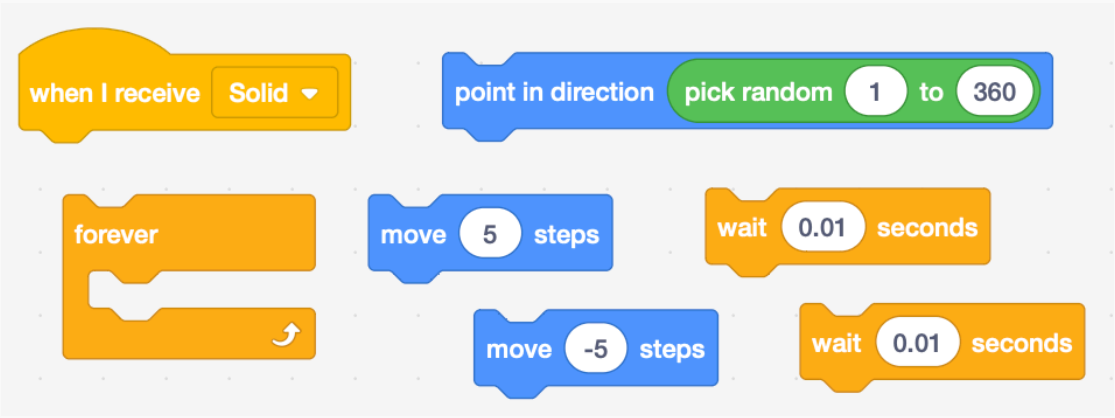
Background



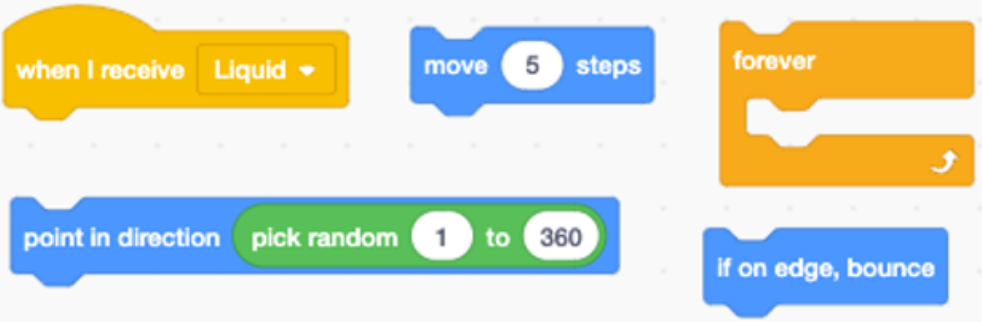
Sprite - Clones



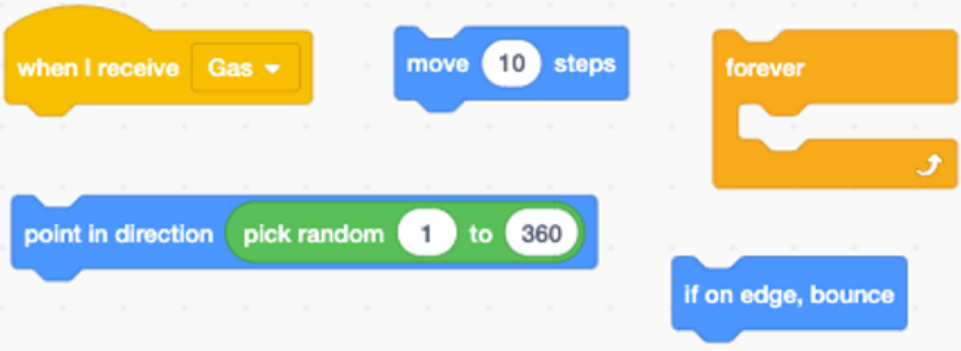
Sprite - Solid



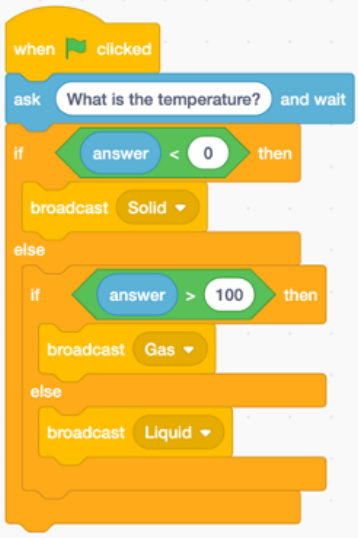
Sprite - Liquid



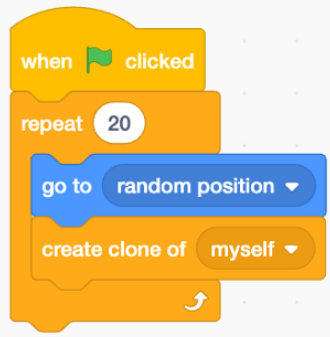
Sprite - Gas

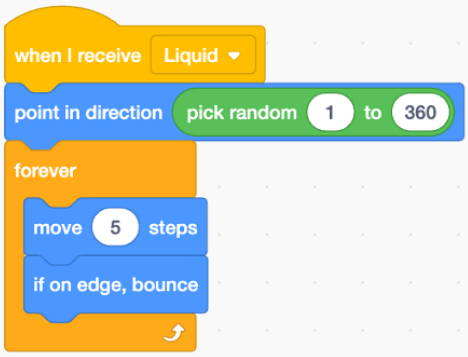


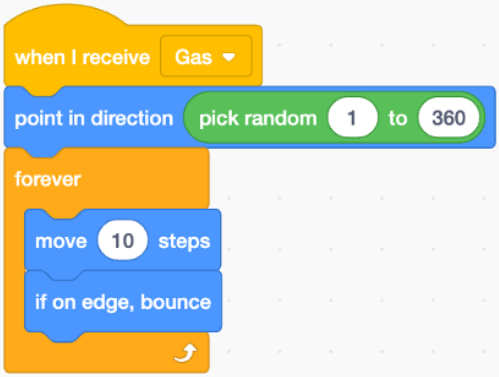
Background - Full Code



Sprite - Full Code





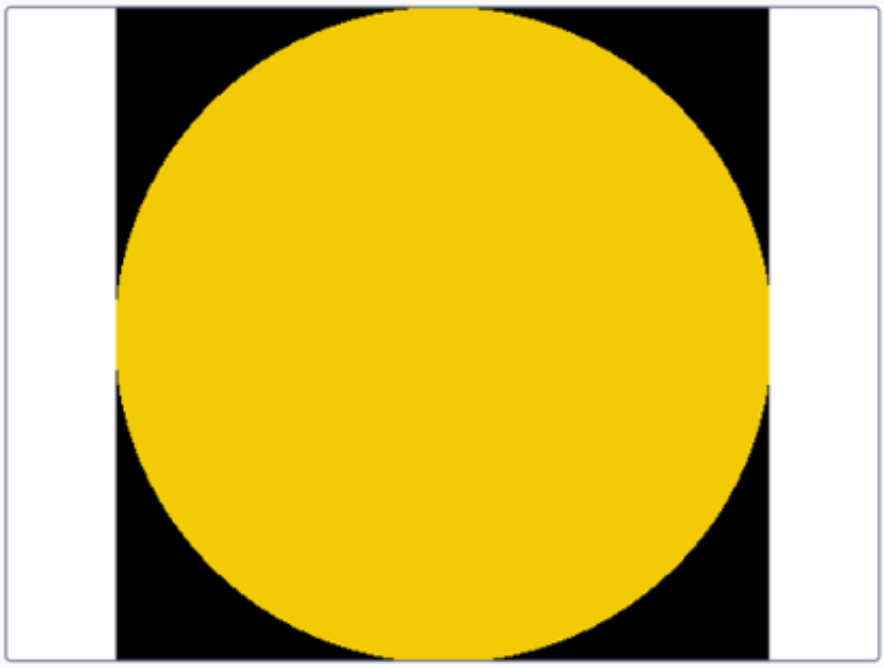


Background

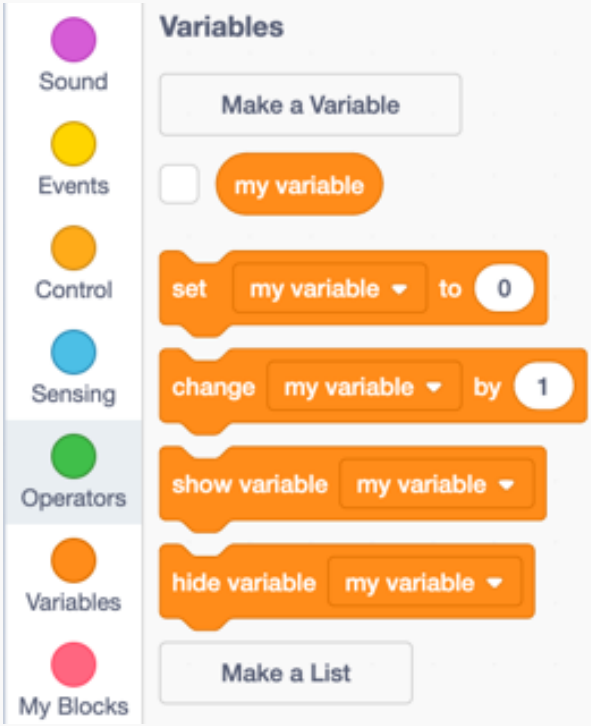
Begin by making a background consisting of a square with a circle of equal diameter inside.

Make them different colours as this is how we will calculate the ratio of areas and pi.

The colours you choose will be used throughout the code.



Variables



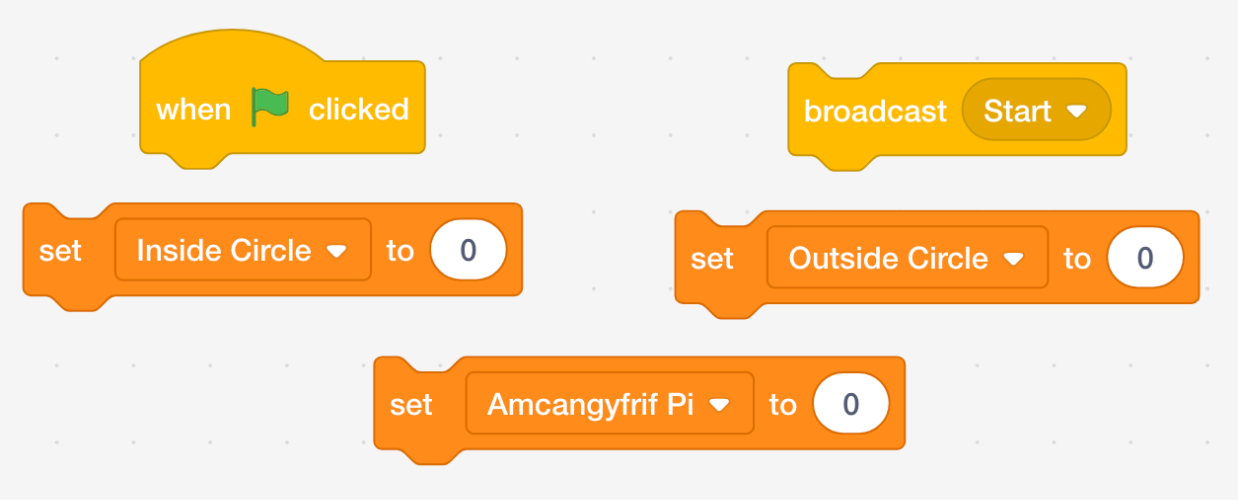
We will have to create three variables to allow us to calculate pi in this program.

Inside Circle - will count the number of times the sprite lands inside the circle.

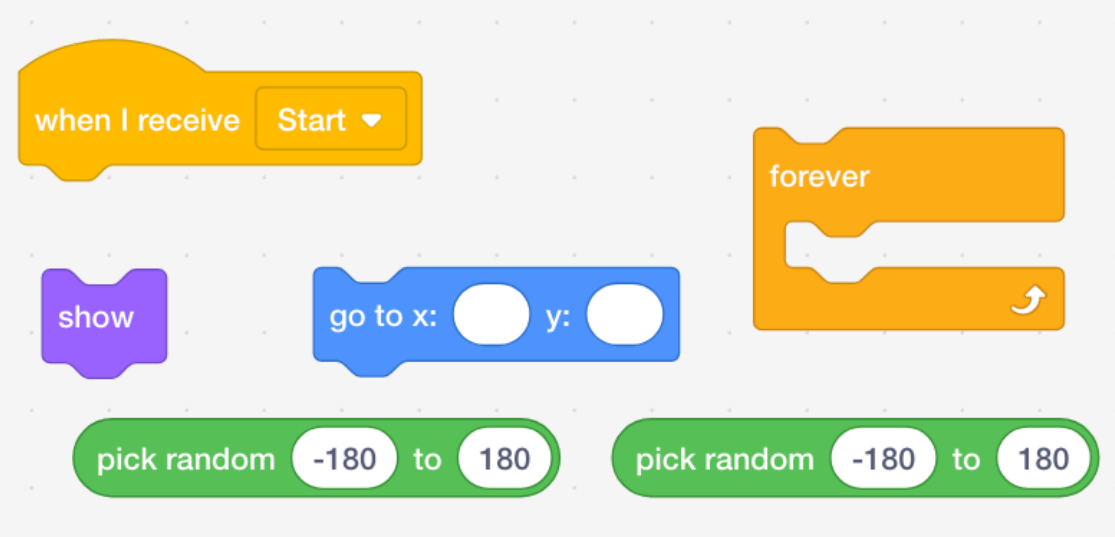
Outside Circle - will count the number of times the sprite lands inside the square.

Pi Estimation - will be the ratio of times inside and outside the circle, which is equal to pi.

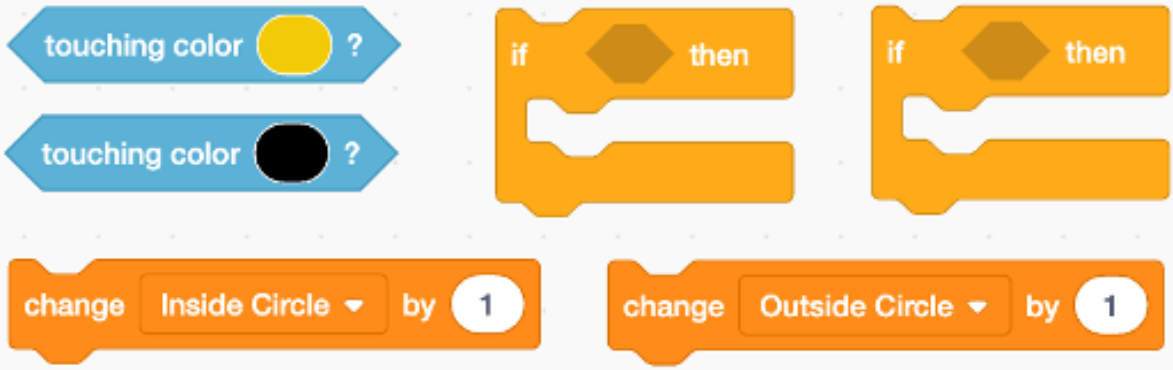
Background - Starting Conditions



Sprite - Random Movement

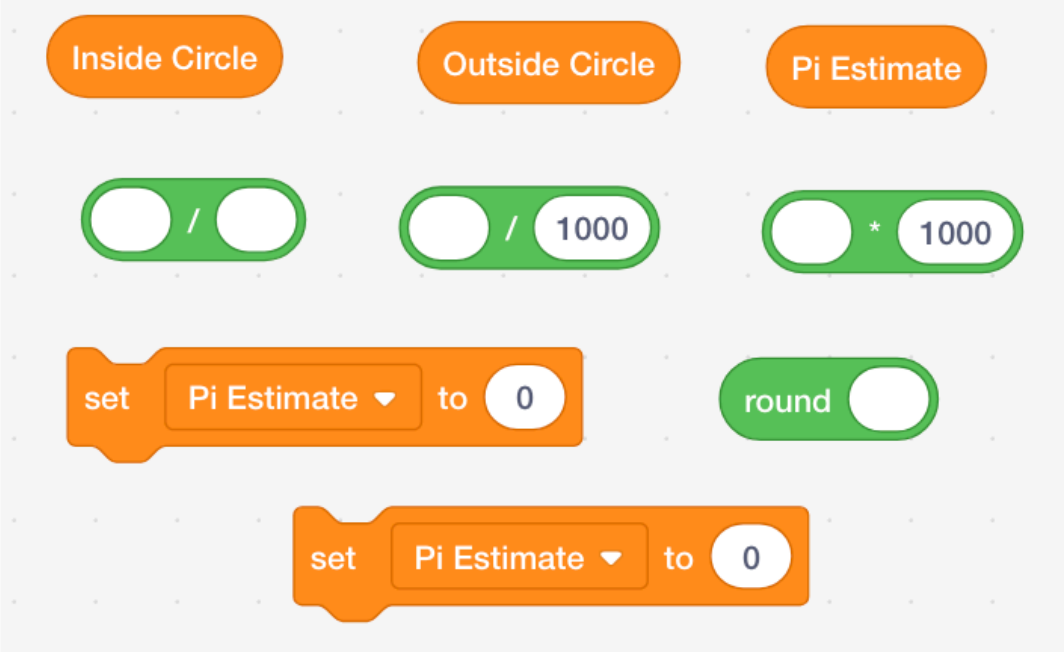


Sprite - Inside or Outside?

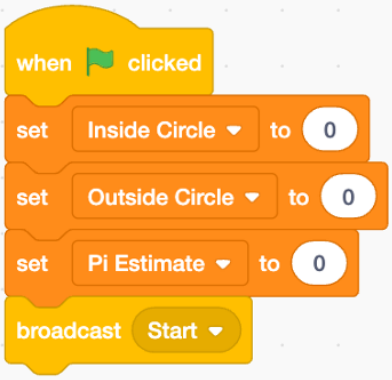


Use the colour chooser to select the colours from your background.

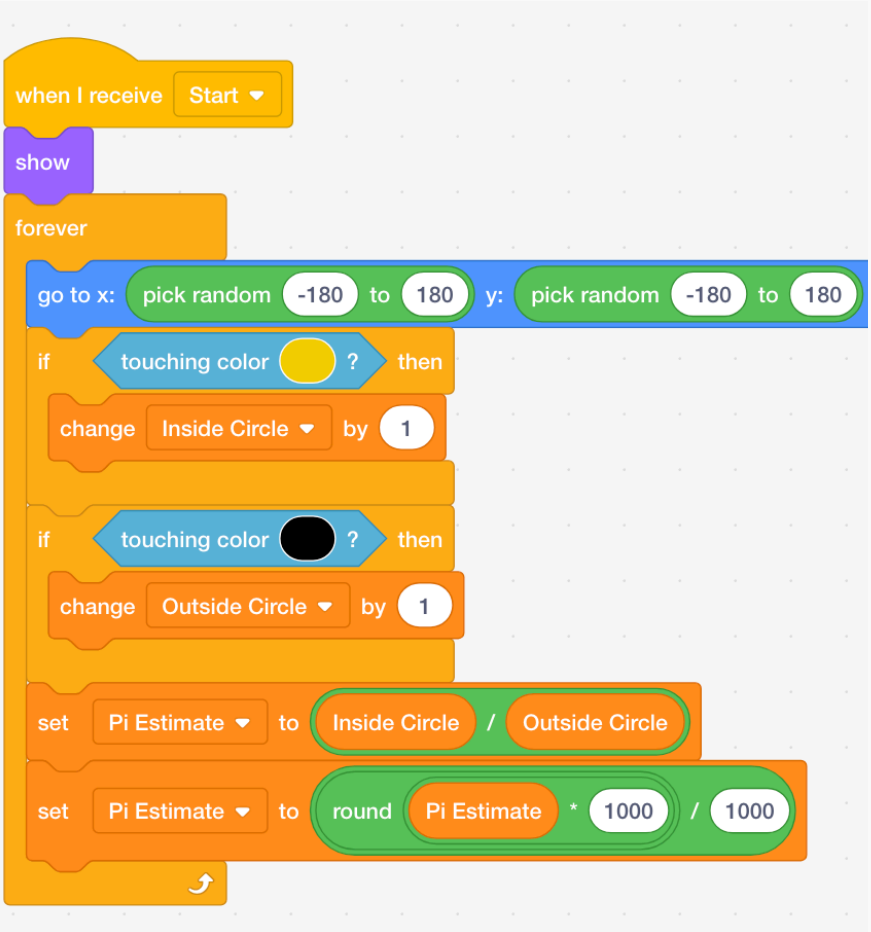
Sprite - Calculating the Ratio



Background - Full Code



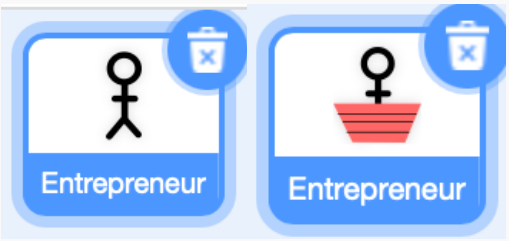
Sprite - Full Code



Background

Begin by making a background that looks like a map for your people to migrate across.

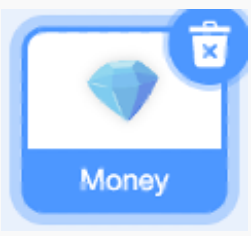
Costumes



We're going to need 3 different sprites for this simulation.

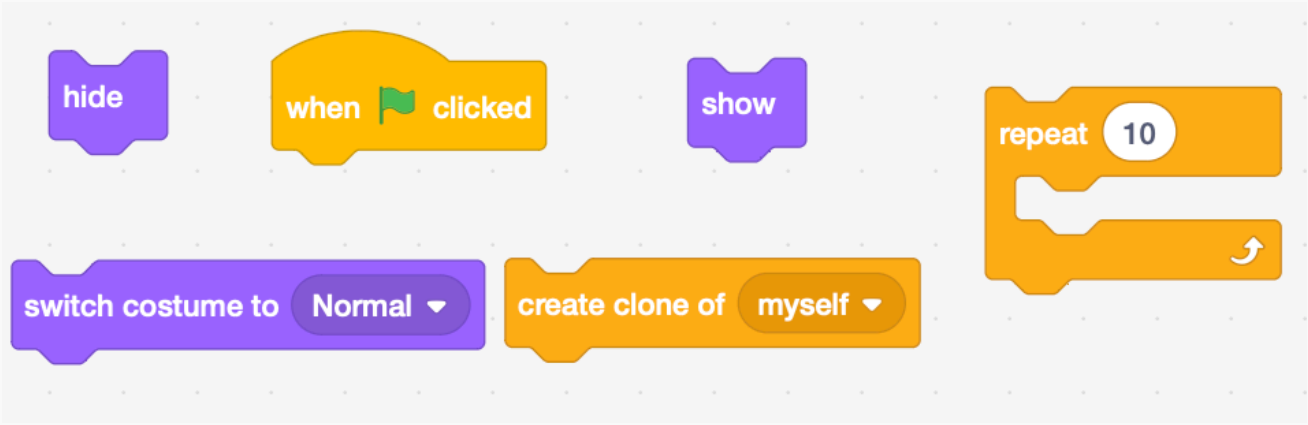
Entrepreneur - These will be our people migrating across the map, they will need a separate boat costume!

War - Our entrepreneurs will want to avoid any wars.

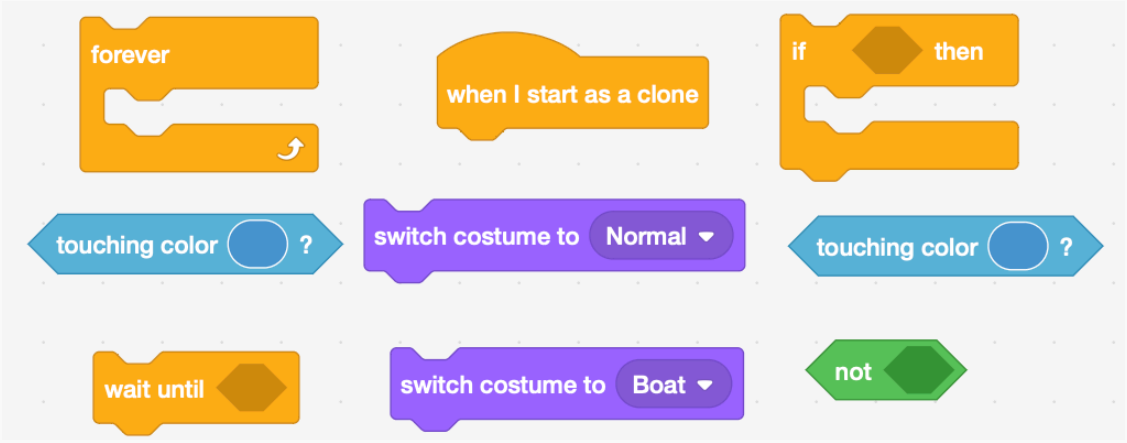


Money - Our entrepreneurs will be seeking out wealthy cities.

Entrepreneur - Cloning



Entrepreneur - Switching to Boat

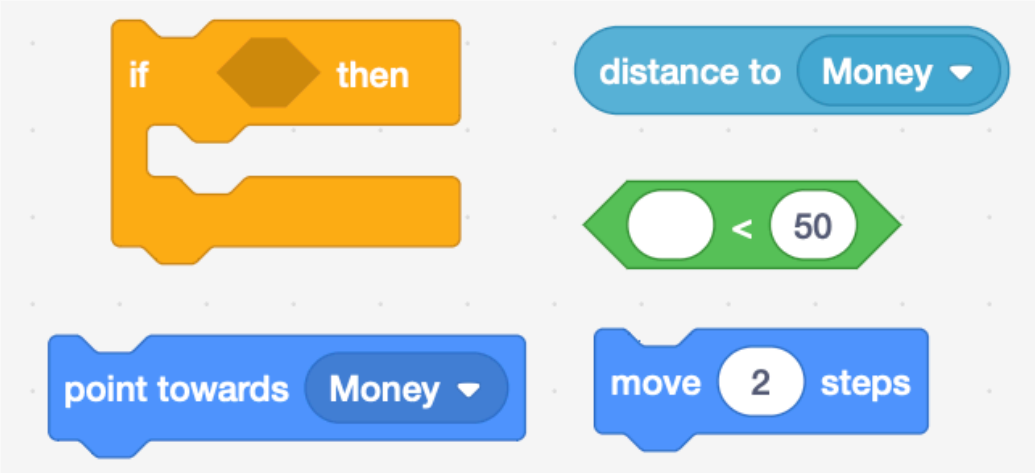


War

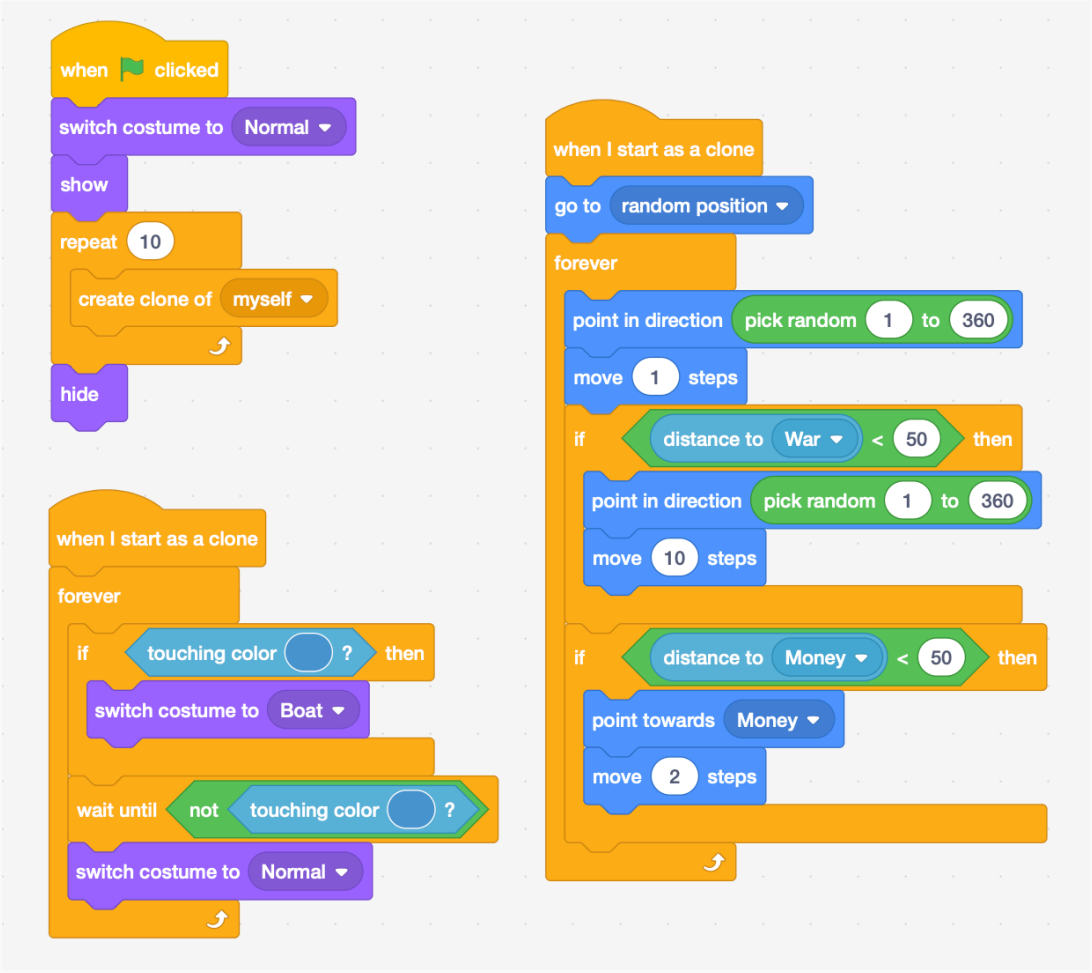
Entrepreneur - Movement Close to War

Money

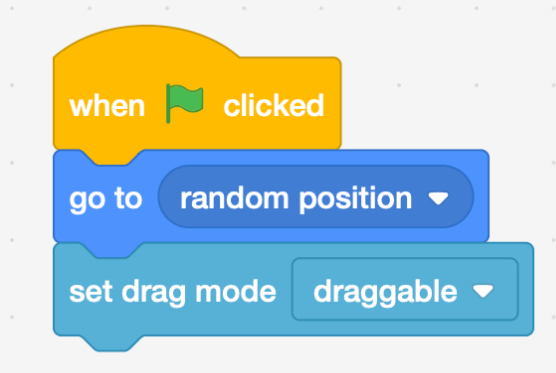
Entrepreneur - Move Toward Money



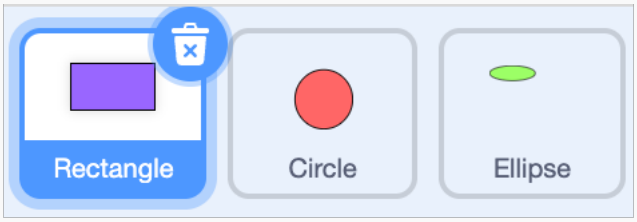
Entrepreneur - Full Code

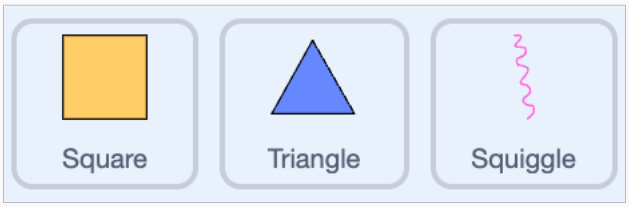


Money and War - Full Code



Sprites



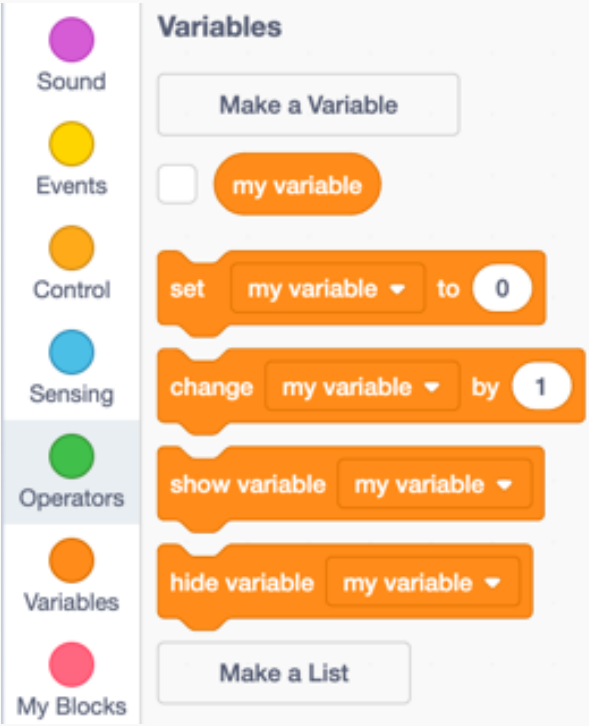


Create some sprites of various shapes.

The size and colour of these will be altered by the algorithm to add diversity, so only distinctly different shapes are needed.

The same code will be copied into each shape.

Variables

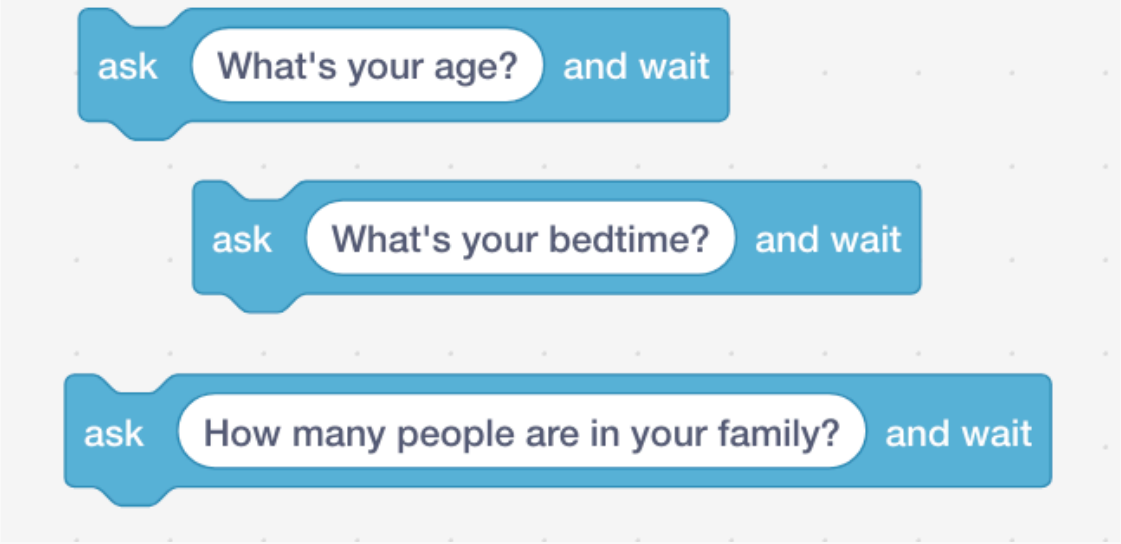


Make four new variables to begin. These will be a counter and user inputs to create the art, name them appropriately:

count, **answer 1**, **answer 2** and **answer 3**

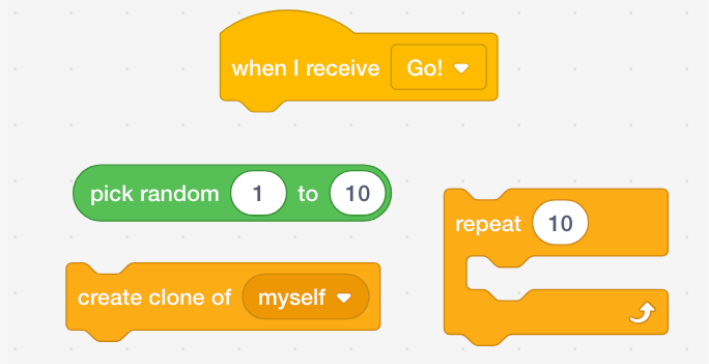
These could be Age, Bedtime and Family.

Questions - Stage

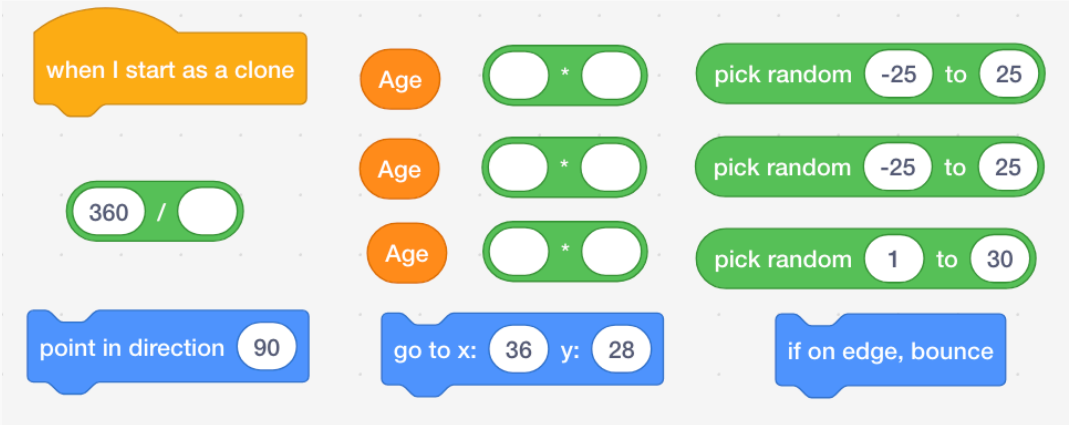


Answers - Stage

Starting Conditions - Sprite(s)



Position - Sprite(s)

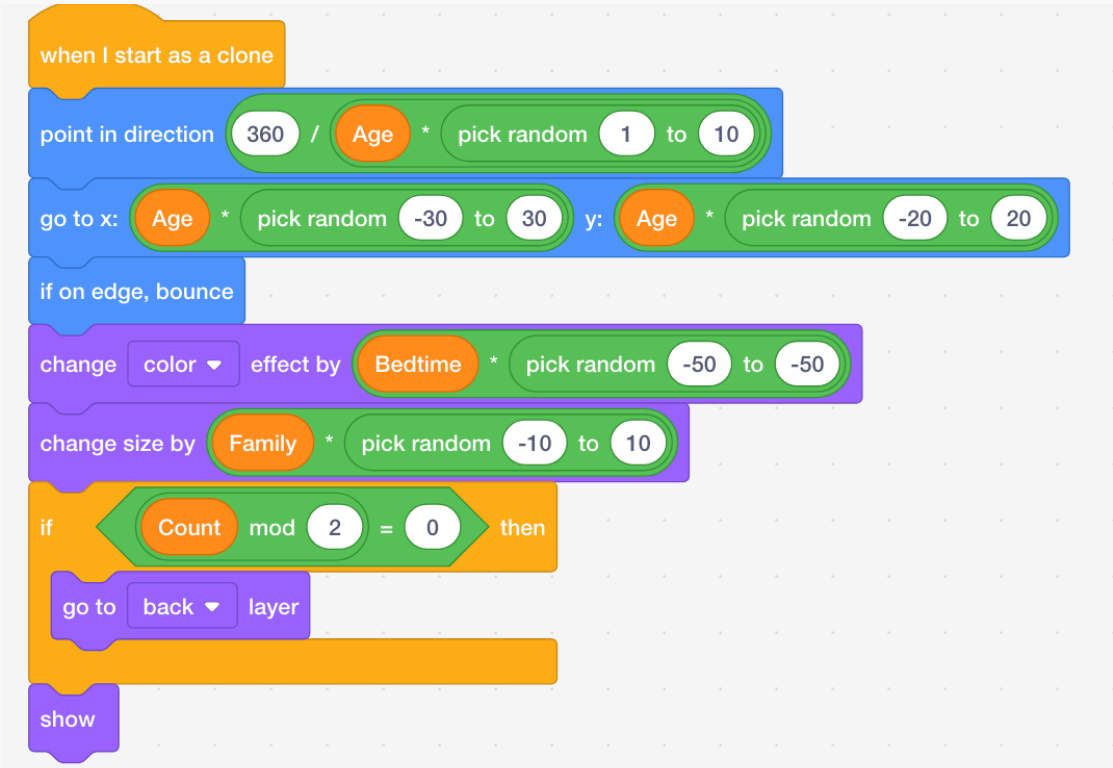


Colour and Size - Sprite(s)

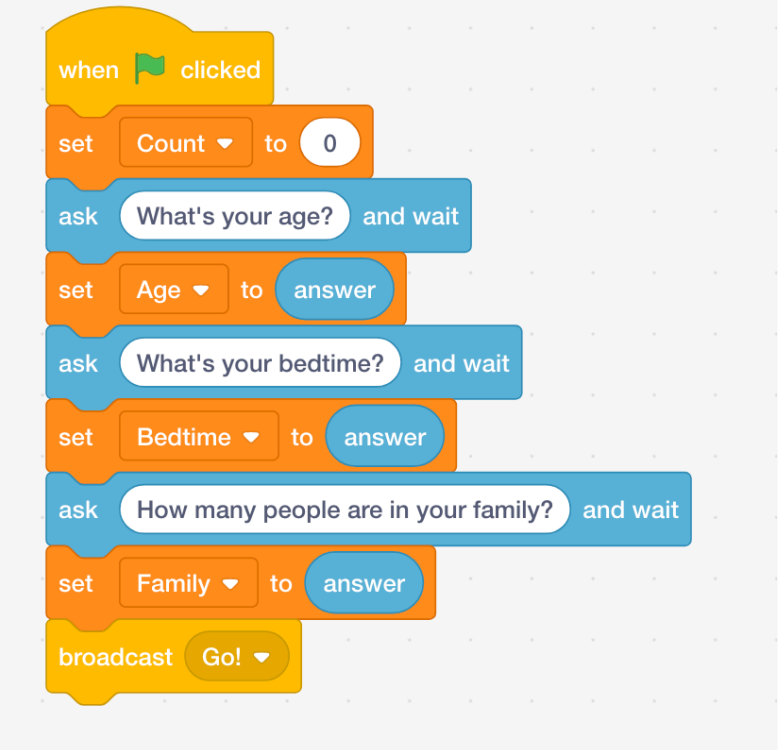
Layers - Sprite(s)

Sprite(s) - Full Code

Sprite(s) - Clones - Full Code



Stage - Questions - Full Code



technocamps

@Technocamps

Find us on Facebook