

Scratch 2.0

<https://playground.raise.mit.edu>

SCRATCH

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Code Costumes Sounds

Motion

- move (10) steps
- turn (15) degrees
- turn (15) degrees
- go to [random position ▾]
- go to x: (0) y: (0)
- glide (1) secs to [random position ▾]
- glide (1) secs to x: (0) y: (0)
- point in direction (90)
- point towards mouse-pointer ▾
- change x by (10)
- set x to (0)
- change y by (10)
- set y to (0)
- if on edge, bounce

Sprite1

Show (circle) (square) Size (100) Direction (90)

Stage

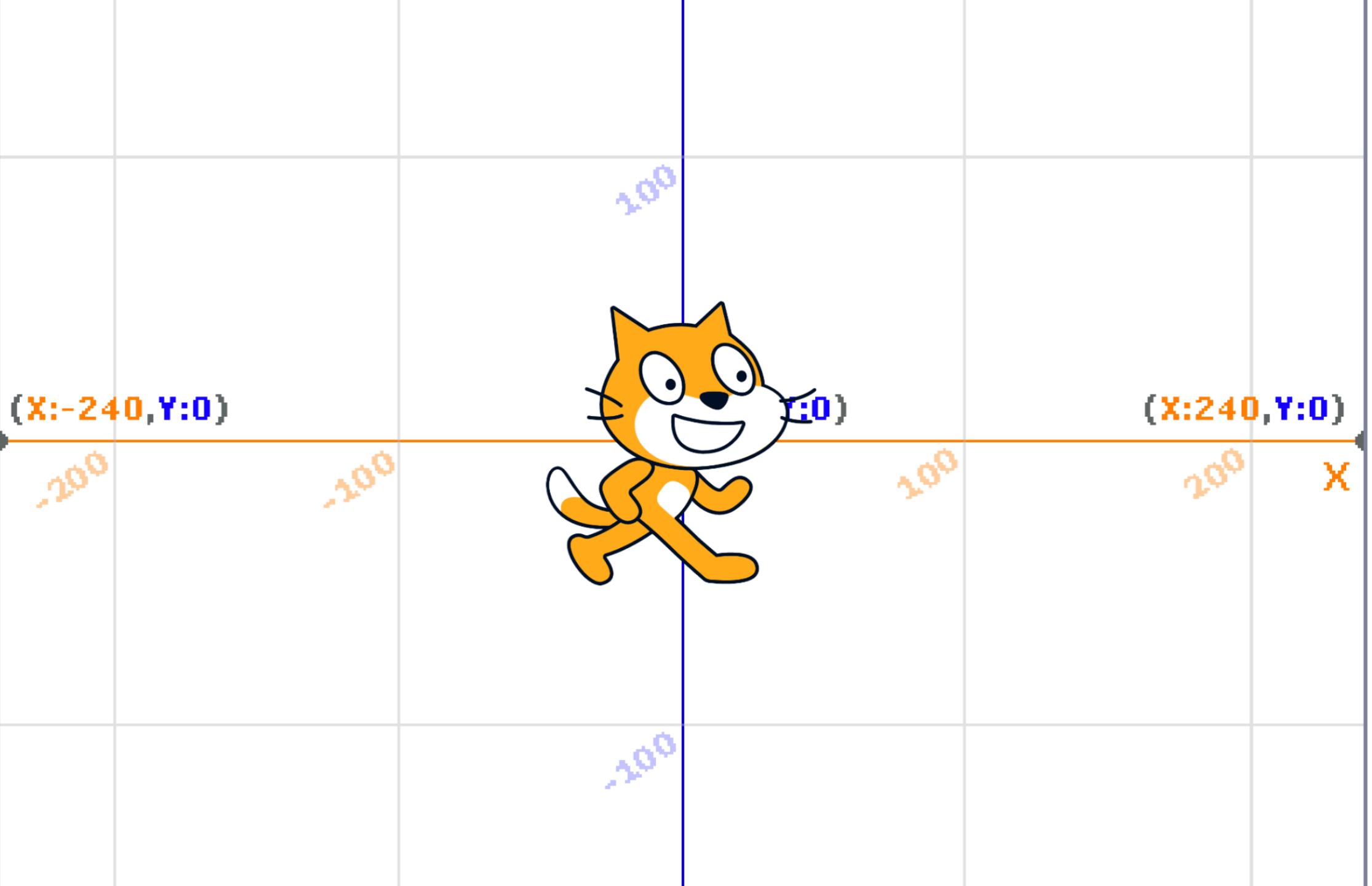
Backdrops 1

2

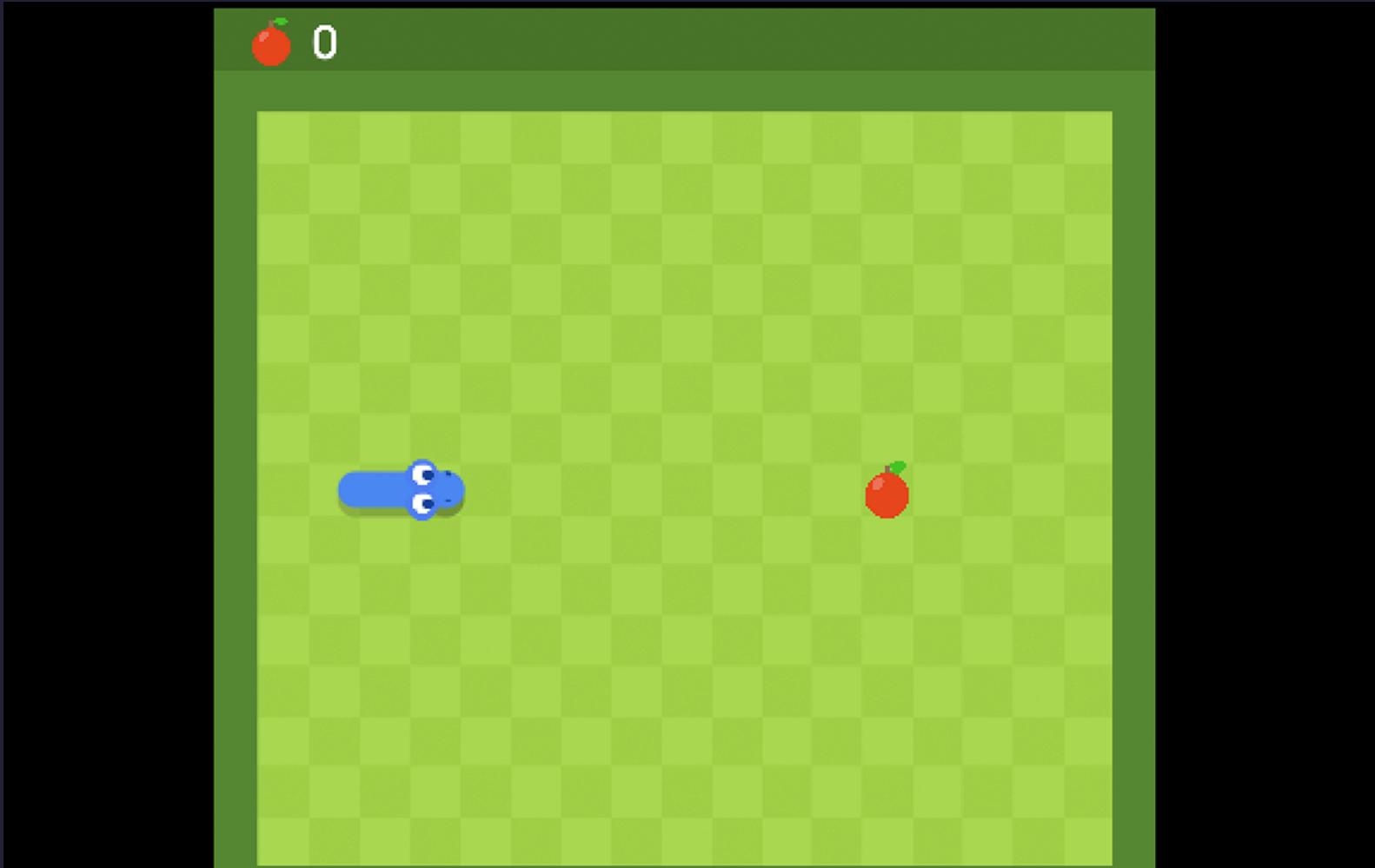
The Scratch interface shows a script being created for a cat sprite. The script consists of the following blocks:

- Control: go to [random position ▾]
- Motion: move (10) steps
- Motion: turn (15) degrees
- Motion: turn (15) degrees
- Motion: if on edge, bounce

The stage features a single orange cat sprite running from left to right. The backdrop is a plain white.

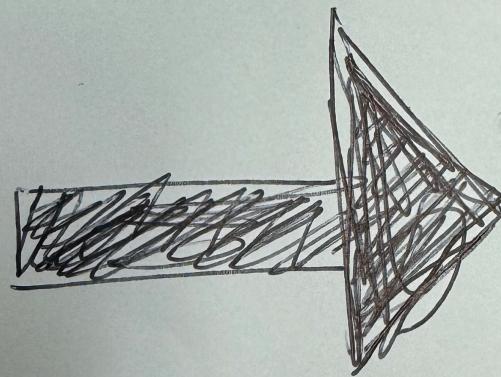
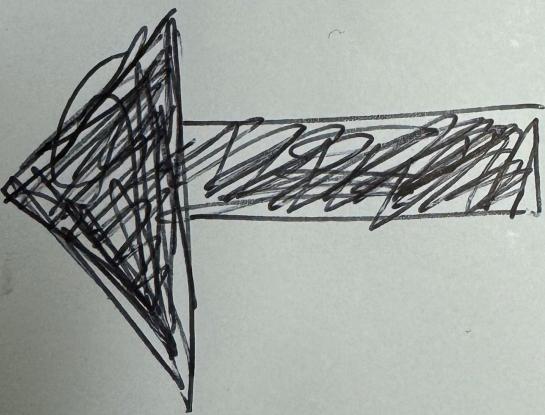


Snake game



Snake game using Scratch

- snake and apple
- apple appears at a random location
 - `motion > go to random position`
- make the snake to go up, down, left, right
 - `control > if`
 - `sensing > key pressed`
 - `motion > change x by , change y by`
- when the snake touches the apple, the snake says "yum"
 - `sensing > touching`
 - `looks > say`



Control the snake using webcams

scoping

- control the snake by showing arrow images to the webcam
- multiclass image classifier to classify the arrow images into four directions

experimentation

- data: images of arrows pointing up, down, left, right
- model: Convolutional Neural Network (CNN)
- train and test the model using **Teachable Machine**

deployment

- export the model and use it in Scratch

Teachable Machine

Collect images

Train the model

Test the model

Export the model

<https://teachablemachine.withgoogle.com>

import the model to Scratch

- Add extension on the left bottom corner
- Select Teachable Machine
- use model block
- Paste the model URL from Teachable Machine
- turn video on block
- replace key pressed blocks with prediction is blocks

Control the snake using webcams

Team up (3-4 people; one laptop with webcam)

Build your own image classifier using Teachable Machine.

- You can use **any** images. Be creative!

Import your model in the snake game