

Professional Learning – Coding Series



Land Acknowledgement


Anishinaabe Territory

Robinson-Huron Treaty

**Located on the traditional lands of
Atikameksheng Anishnawbek**



schools.sciencenorth.ca/virtual-learning-packages

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BOOK A VISIT VIRTUAL LEARNING SHSM TEACHERS E-WORKSHOPS ONSITE PROGRAMS

SMALL SCHOOL PACKAGE

MEDIUM SCHOOL PACKAGE

LARGE SCHOOL PACKAGE

SYNCHRONOUS E-WORKSHOPS



LIVE
STREAMED
SCIENCE
SHOWS

LIVE STREAMED SCIENCE SHOWS

Unlimited number of students per session

JUST FOR TEACHERS

TEACHERS

TEACHERS WORKSHOPS

EDUCATOR RESOURCES

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TEACHERS ACCESS PASS

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TEACHERS WORKSHOPS

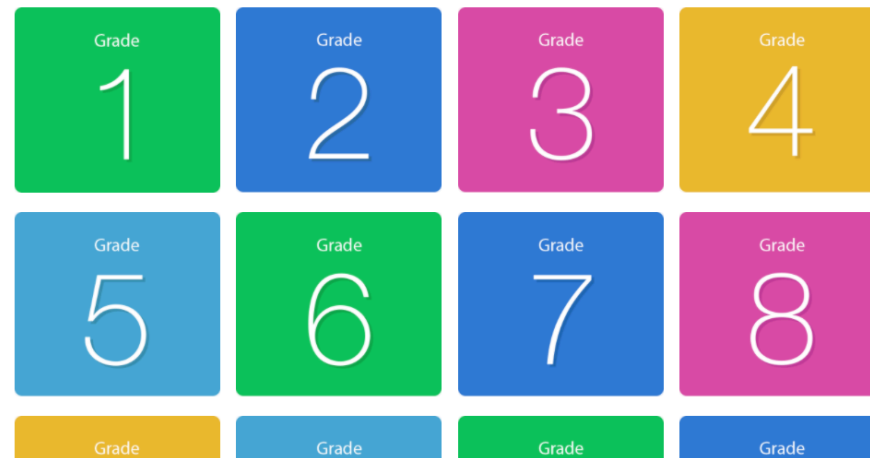


Science North has developed a series of dynamic teacher workshops that will bring the Ontario Science and Technology Curriculum to life. Each workshop is designed to give teachers the confidence and resources they need to investigate and explore the scientific concepts involved. These workshops involve teachers in fun, hands-on activities that are easily reproduced for the classroom at little or no cost.

COVID UPDATE

schools.sciencenorth.ca/just-teachers

education.sciencenorth.ca



Workshop Goals

Science North is dedicated to getting **students excited** and **thinking about science**. We aim to provide teachers with **innovative, hands-on activities** and **creative learning tools** that make learning more meaningful and fun.

Motivate students:

- *Connect to their interests.*
- *Highlight relevance of material.*
- *Use real-world examples.*
- *Choose challenging activities.*
- *Boost confidence.*

Promote active learning:

- *Use a group or individual activity.*
- *Challenge them to solve a problem.*

Flight and Fractions – Gr 5/6

Part 1 – March 1, 2021

- Unplugged Activity
 - Lesson Plan
 - Slides
 - Paper Instructions Handout
- Coding Fractions
 - Lesson Plan
 - Slides
 - Fractions Coding Guide
 - Computers with web access (TinkerCAD)

Part 2 – March 2, 2021

- Coding Flight
 - Lesson Plan
 - Slides
 - Flight Coding Guide
 - Computers with web access (Scratch)

Curriculum Connections

Math

Algebra: Coding

C3. solve problems and create computational representations of mathematical situations using coding concepts and skill

Specific Expectations

C3.1 solve problems and create computational representations of mathematical situations by writing and executing code

C3.2 read and alter code and describe how changes to the code affect the outcomes

Number: Number Sense

B1. Demonstrate an understanding of numbers and make connections to the way numbers are used in everyday life

Specific Expectations

C1.3 represent equivalent fractions from halves to twelfths using appropriate tools

C1.4 compare and order fractions from halves to twelves in various contexts

Science

Flight

•Flight occurs when the characteristics of structures take advantage of certain properties of air

Overall Expectations

•Investigate ways in which flying devices make use of properties of air

•Explain ways in which properties of air can be applied to the principals of flight and flying devices

Specific Expectations

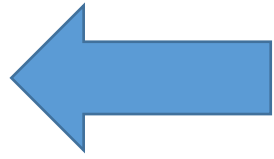
2.4 use technological problem-solving skills to design, build and test a flying device

3.3 identify and describe the four forces of flight, lift, weight, drag, and thrust

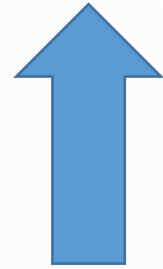
3.4 describe, in qualitative terms, the relationships between the forces of lift, weight, thrust and drag that are required for flight

3.5 describe ways in which the four forces of flight can be altered

Thrust



Lift



Drag

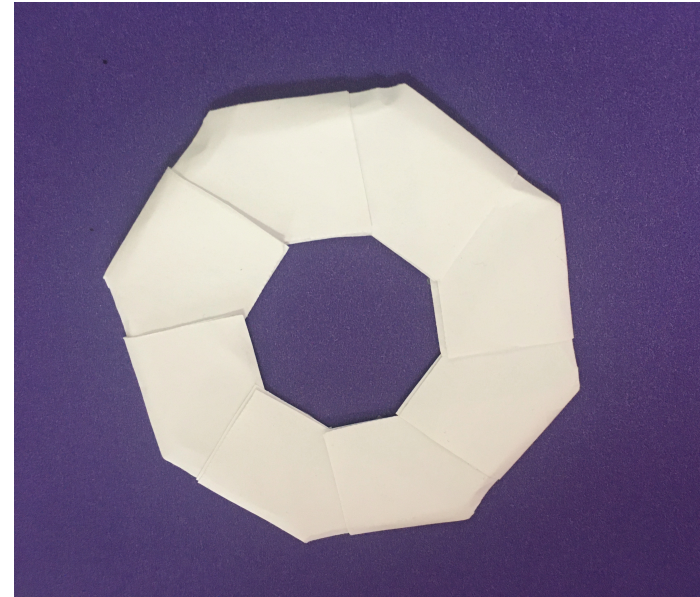


Weight



Using paper to experiment with flight

- Demonstrate lift by changing air pressure
 - With 1 paper strip
 - With 2 paper strips
- Build a flying disc using paper squares



Paper Activity

- Cut a sheet of paper into strips 2cm x 15cm
- Cut a sheet of paper into squares 5cm x 5cm
- Hang onto your strips and squares

Flying disc examples

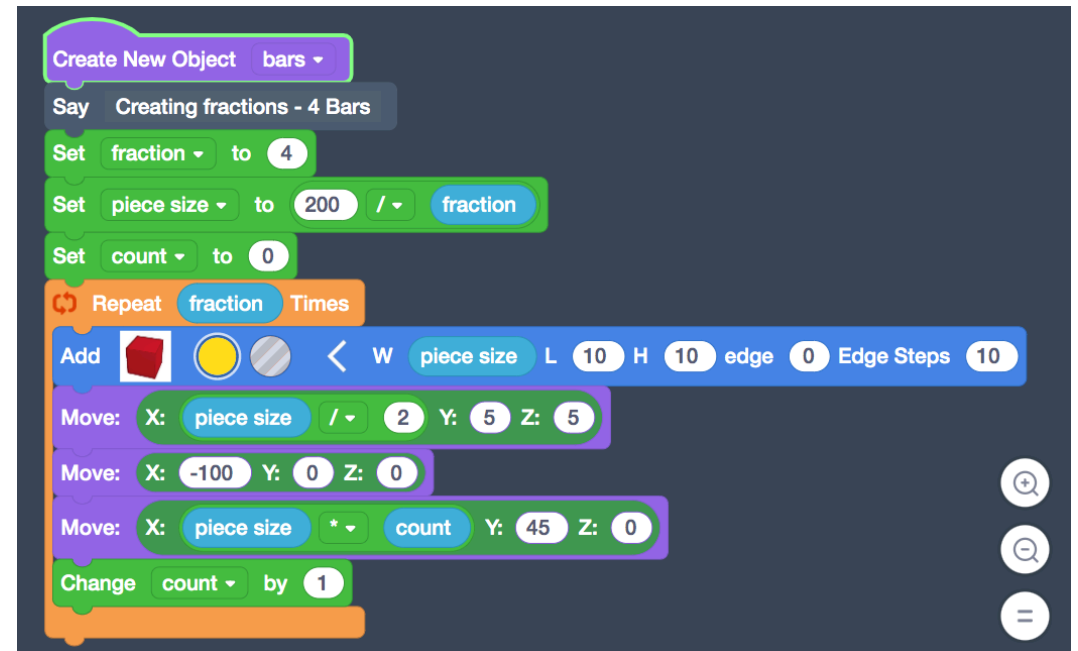
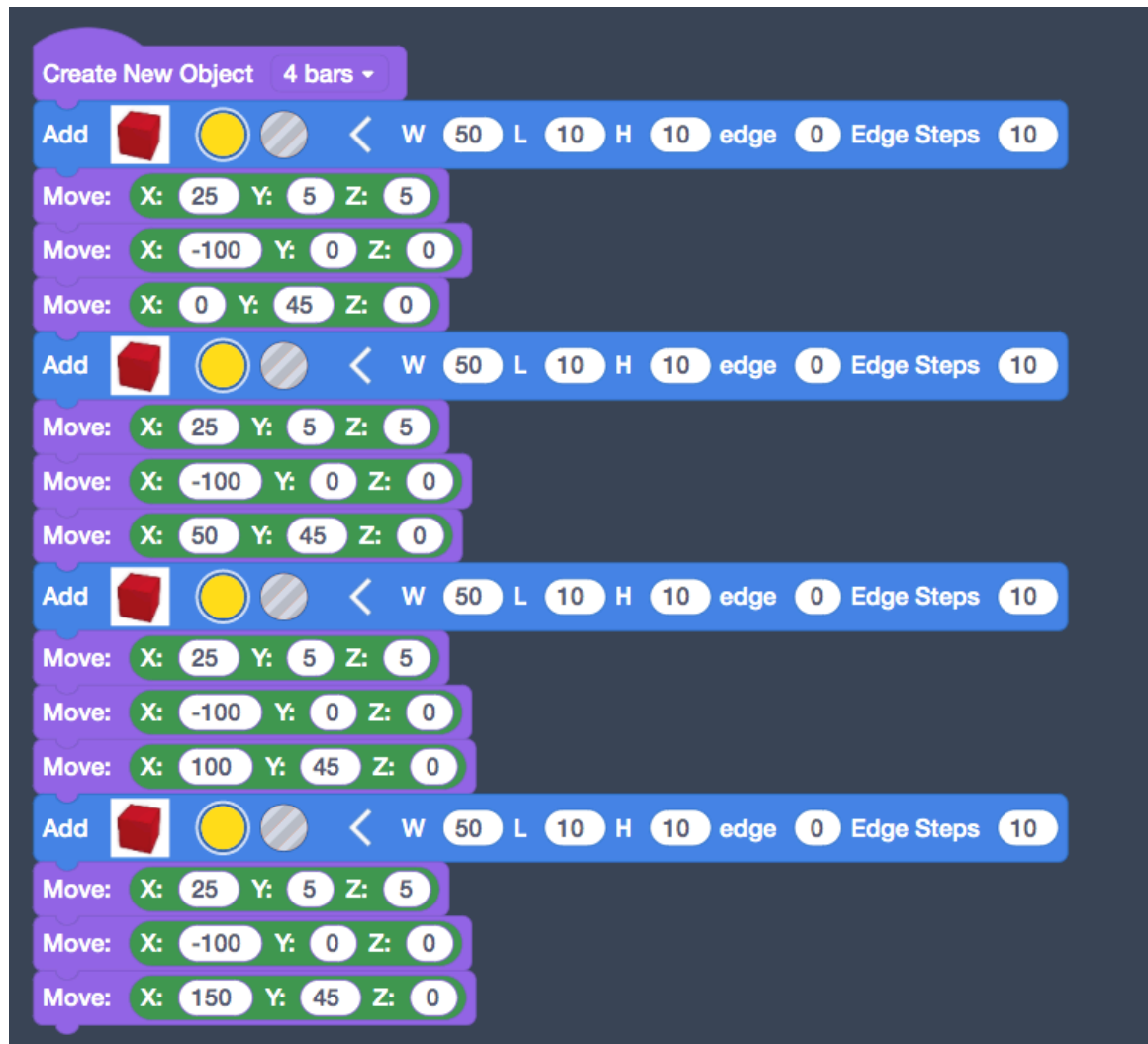
- Ultimate (frisbee)
- Disc golf
- Disc rings (aerobie)
- Chakram
 - <https://www.rom.on.ca/en/blog/weapon-wednesday-chakram-from-india>

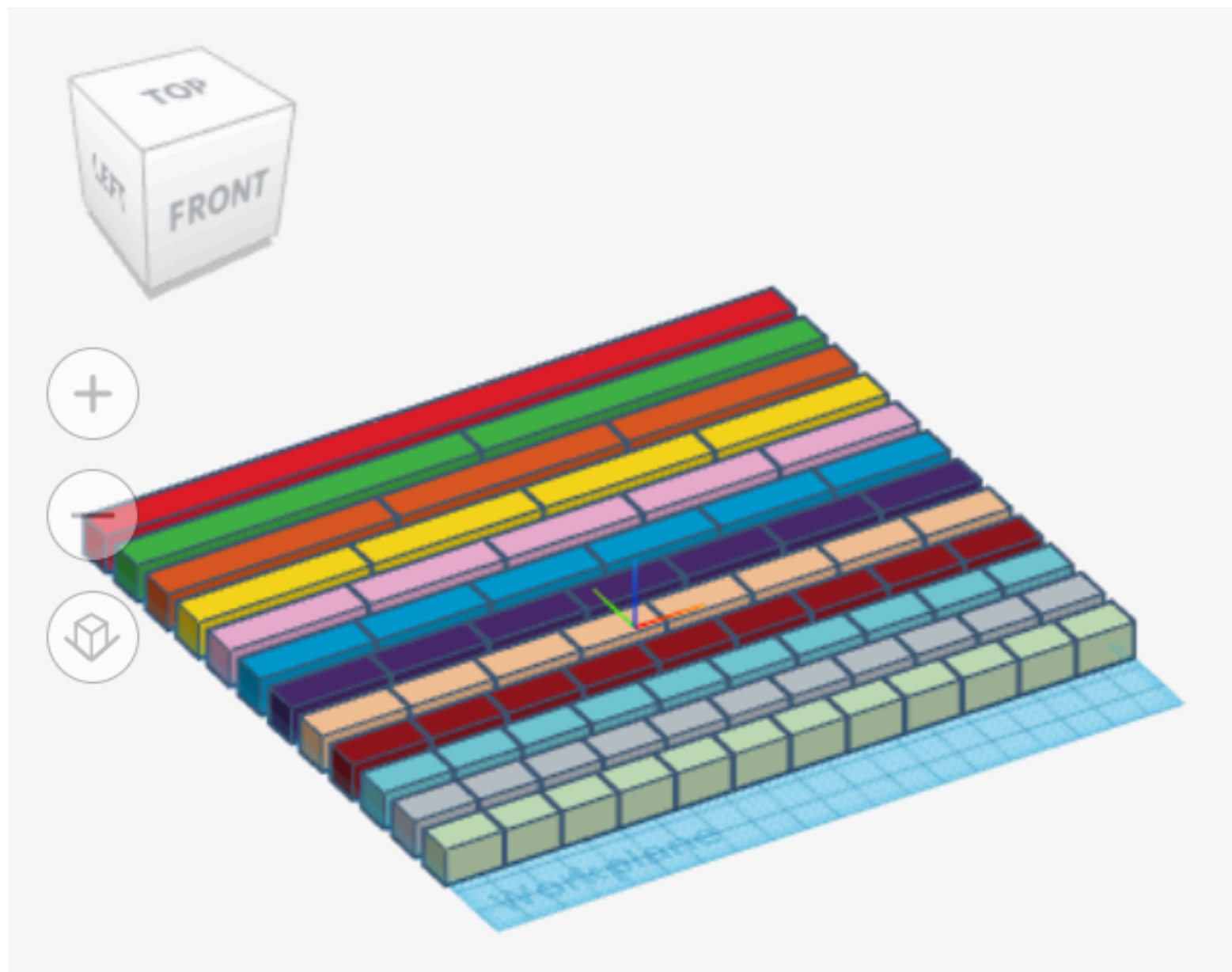


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Scratch editor interface showing a project titled "Untitled-7 on Scratch". The URL is scratch.mit.edu/projects/478551478/editor. The interface includes a top navigation bar with "File", "Edit", "Tutorials", and "See Project Page" buttons. The left sidebar contains a "Code" tab and a "Motion" category selected. The main workspace displays the text "scratch.mit.edu" and a Scratch cat sprite. The right sidebar shows the "Sprite" panel with "Sprite1" selected, and the "Stage" panel with "Backdrops" listed. The bottom status bar indicates "Backpack".

Scratch Editor Interface Components:

- Top Bar:** "Scratch" logo, "File", "Edit", "Tutorials", "Untitled-7", "See Project Page", "radeyoactive" user profile, and an "Update" button.
- Left Sidebar (Code Tab):**
 - 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.
- Main Workspace:** A grid with the text "scratch.mit.edu" and a Scratch cat sprite.
- Right Sidebar:**
 - Sprite Panel:** "Sprite1" selected, showing "x: 0", "y: 0", "Size: 100", and "Direction: 90".
 - Stage Panel:** "Backdrops" section with "1" backdrop.
- Bottom Bar:** "Backpack" label.



MegamanTest

by ScienceNorthTW



Remix

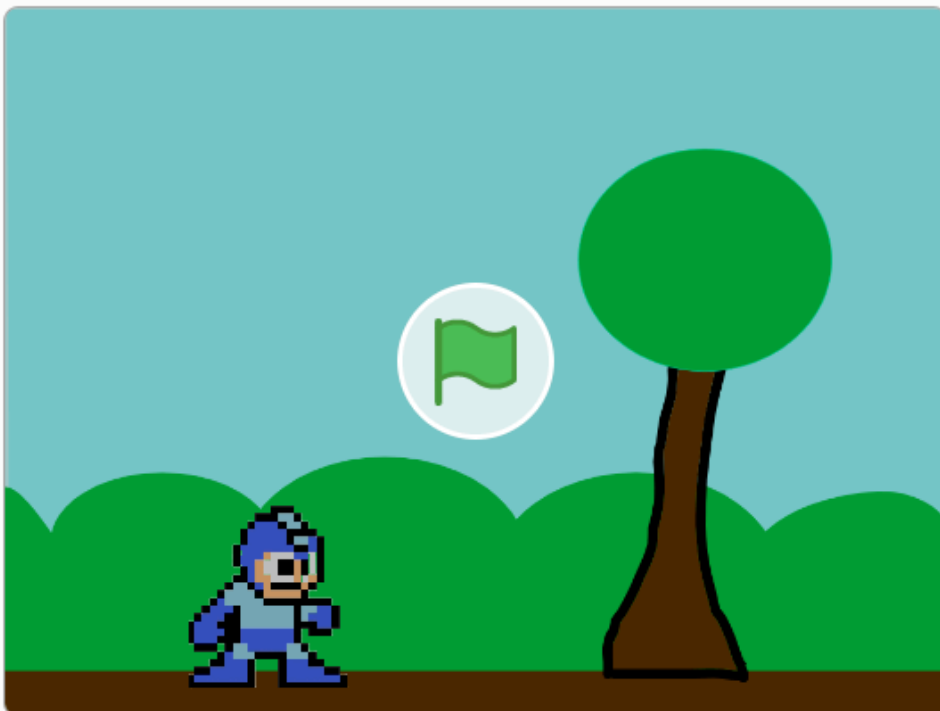


See inside



Instructions

Notes and Credits



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© Jan 26, 2021

Report

+ Add to Studio

Copy Link

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<https://scratch.mit.edu/projects/494730499/>



Flight Game - Quick Start

[See inside](#)



Score 484

LIFT

DRAG

THRUST

WEIGHT

Instructions

Use the F key to toggle the Flight Forces Grid on/off.

Pipes will move through the stage at random heights.

To make this a playable game, we'll need to add a sprite.

Notes and Credits

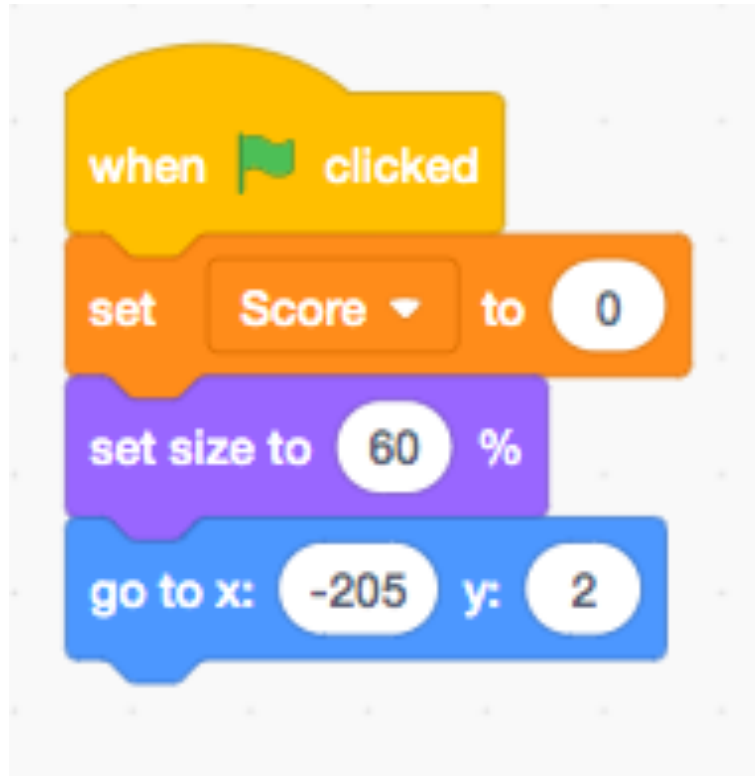
How did you make this project? Did you use ideas, scripts or artwork from other people? Thank them here.

 0  0  0  1

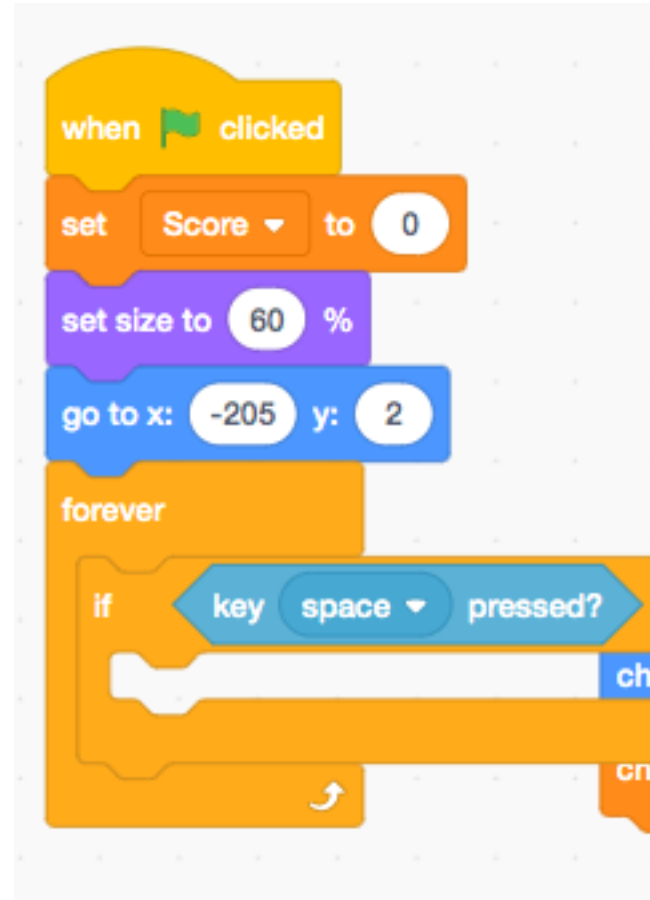
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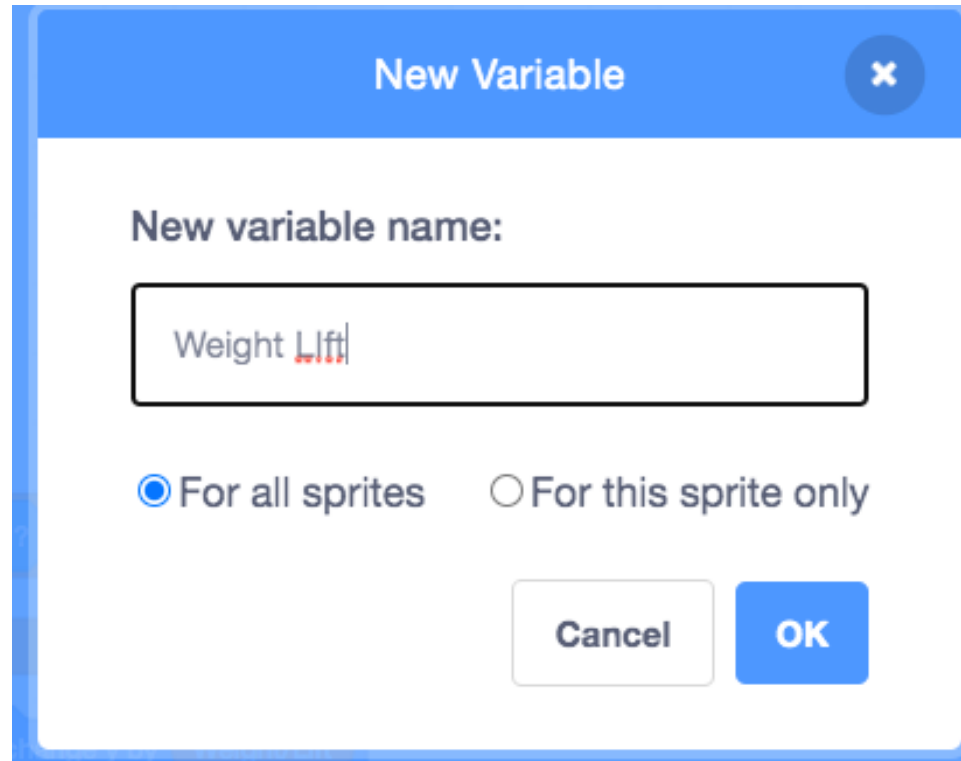
Coding a bird sprite - Set initial conditions



Set up a Forever Loop



Create a variable (For this sprite only)



The image shows a 'New Variable' dialog box from the Scratch software. It has a blue header bar with the title 'New Variable' and a close button (an 'x' in a circle). Below the header, the text 'New variable name:' is followed by a text input field containing 'Weight Lift'. Underneath the input field, there are two radio button options: 'For all sprites' (which is selected) and 'For this sprite only'. At the bottom of the dialog, there are two buttons: 'Cancel' and 'OK'.

New Variable

New variable name:

Weight Lift

☒ For all sprites ☐ For this sprite only

Cancel OK

Set LIFT



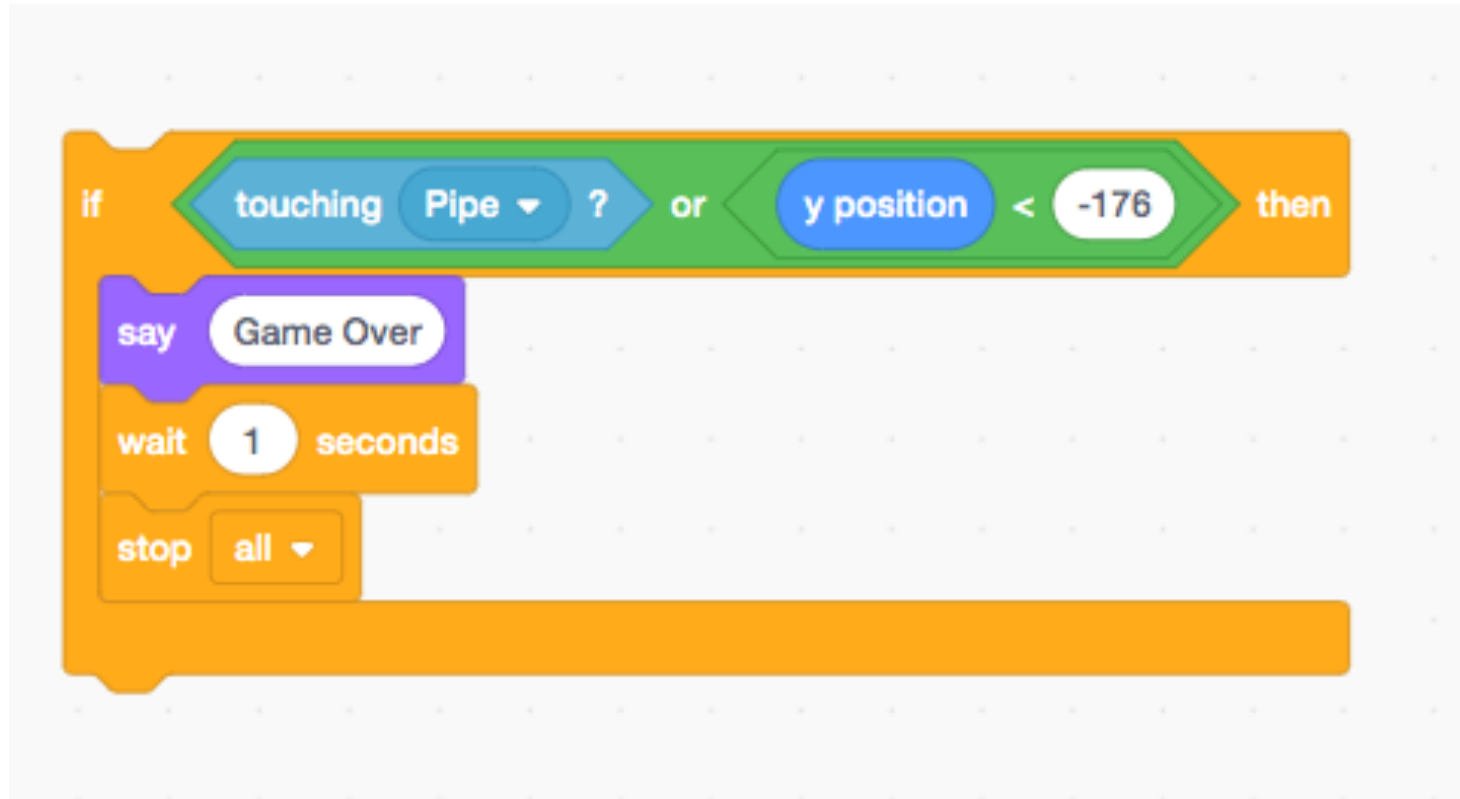
Change y by



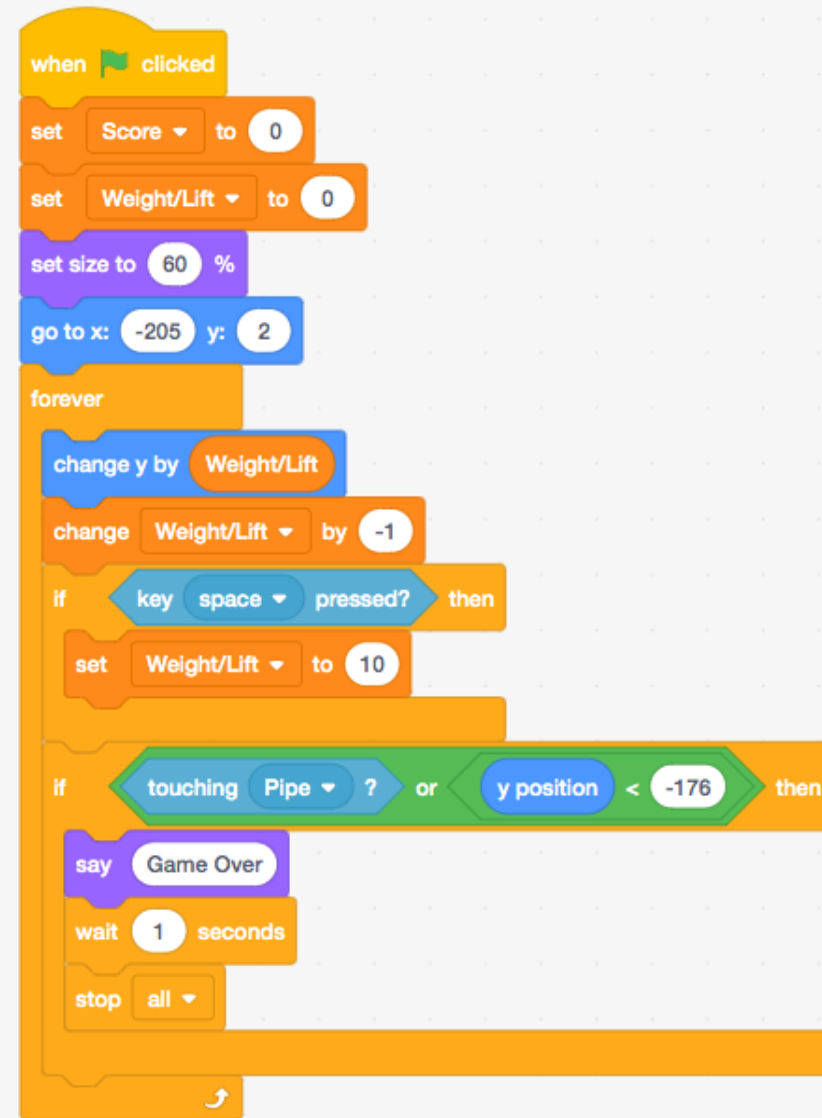
Add WEIGHT



Set If/Then Lose Condition



Add lose condition to Forever Loop



Thank You!!



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