Professional Learning – Coding Series

SCIENCE NORTH SCIENCE NORD

Land Acknowledgement

Anishinaabe Territory

Robinson-Huron Treaty

Located on the traditional lands of
Atikameksheng Anishnawbek

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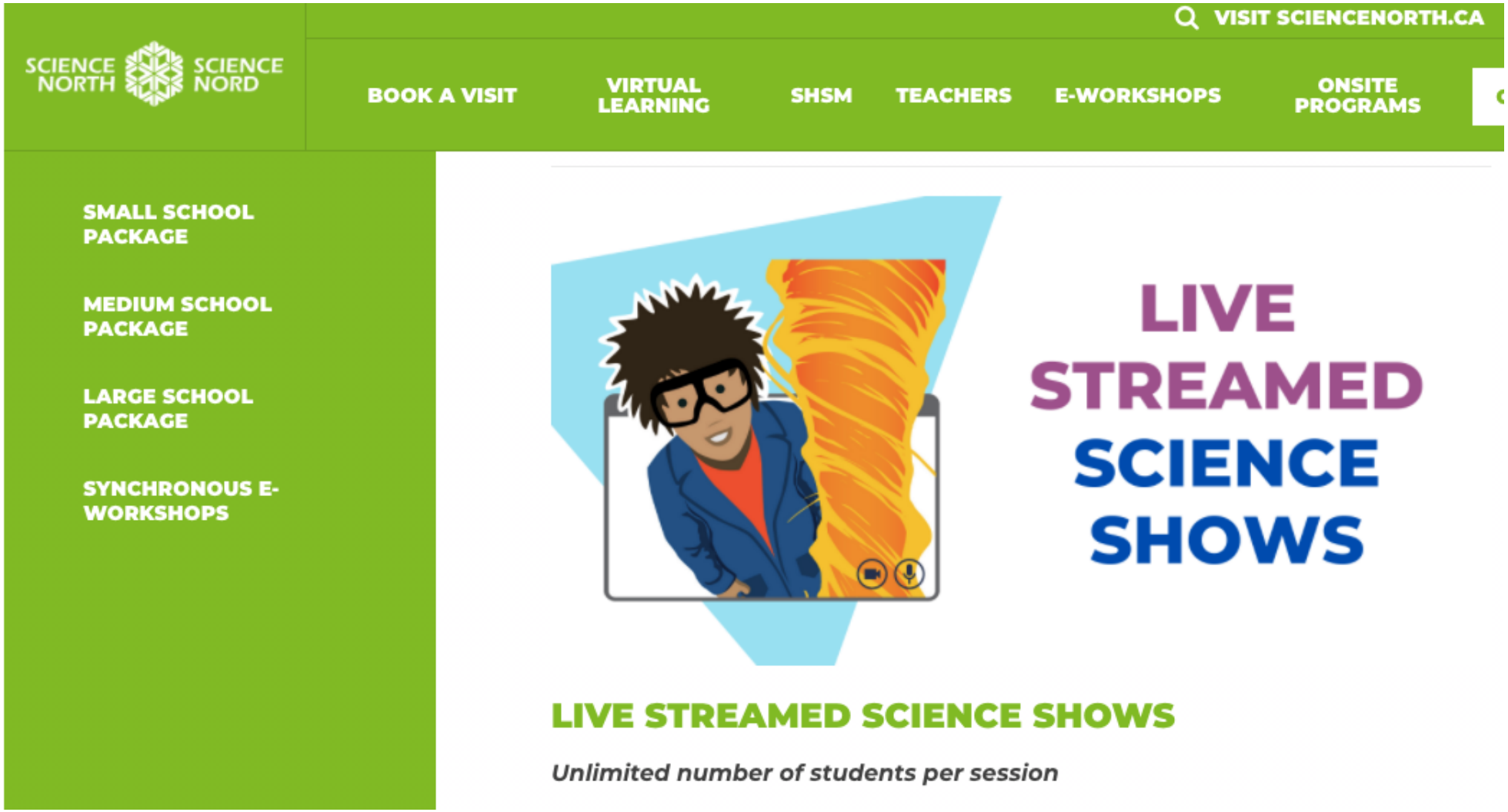
schools.sciencenorth.ca/virtual-learning-packages



SCIENCE NORTH SCIENCE NORD

VISIT SCIENCENORTH.CA FRANÇAIS

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

JUST FOR TEACHERS

TEACHERS

- TEACHERS WORKSHOPS
- EDUCATOR RESOURCES
- SCIENCE AT HOME
- TEACHERS ACCESS PASS
- SUBSCRIBE TO SCIENCE-ATIONAL NEWS!

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

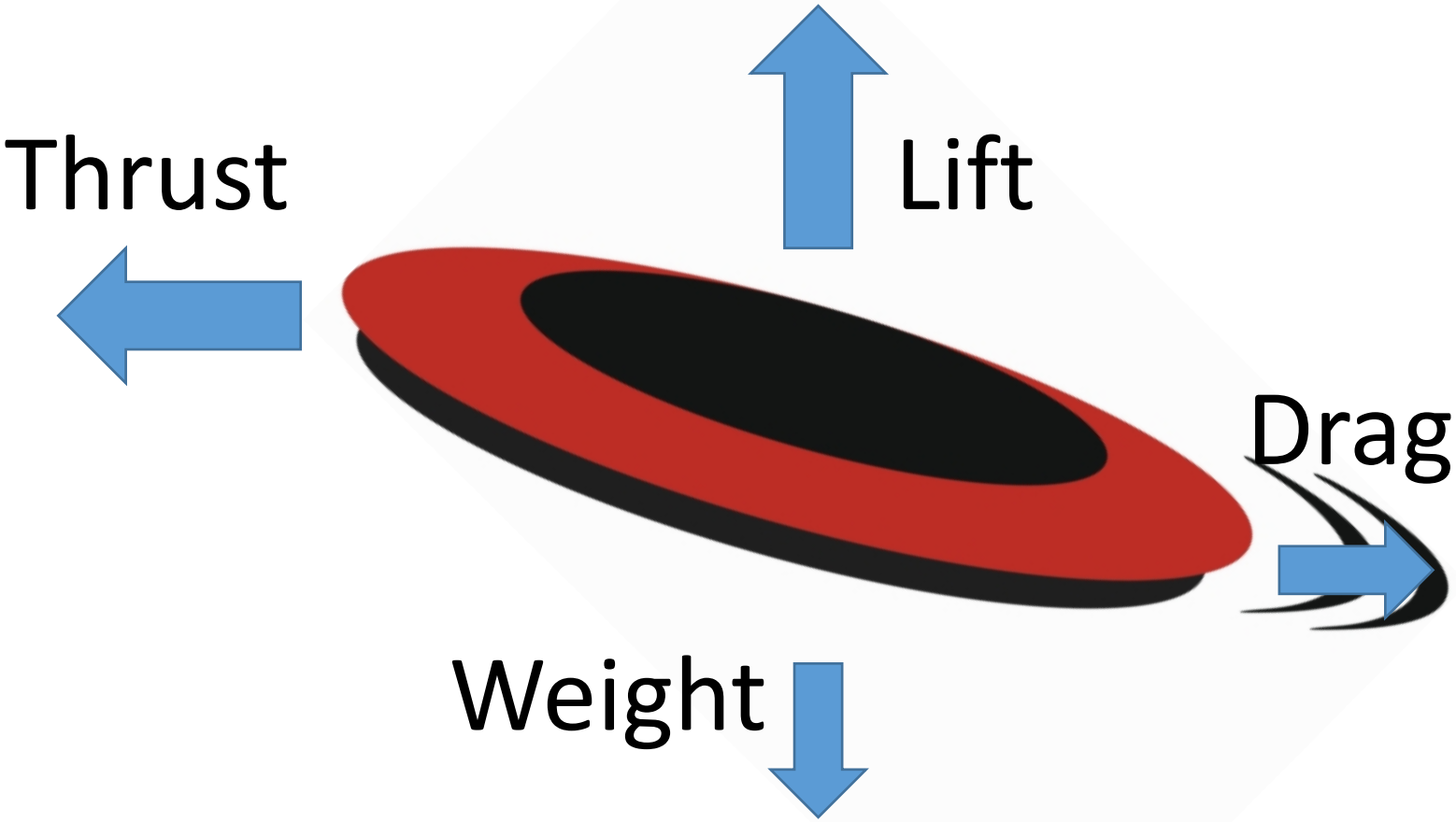
Specific Expectations

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

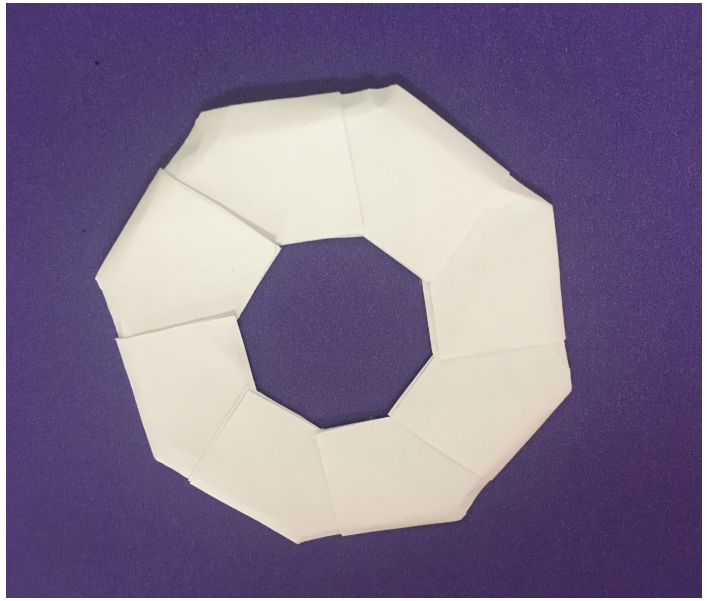
3.4 describe, in qualitative terms, the relationships between the forces of lift, weight, thrust and drag that are required for flight

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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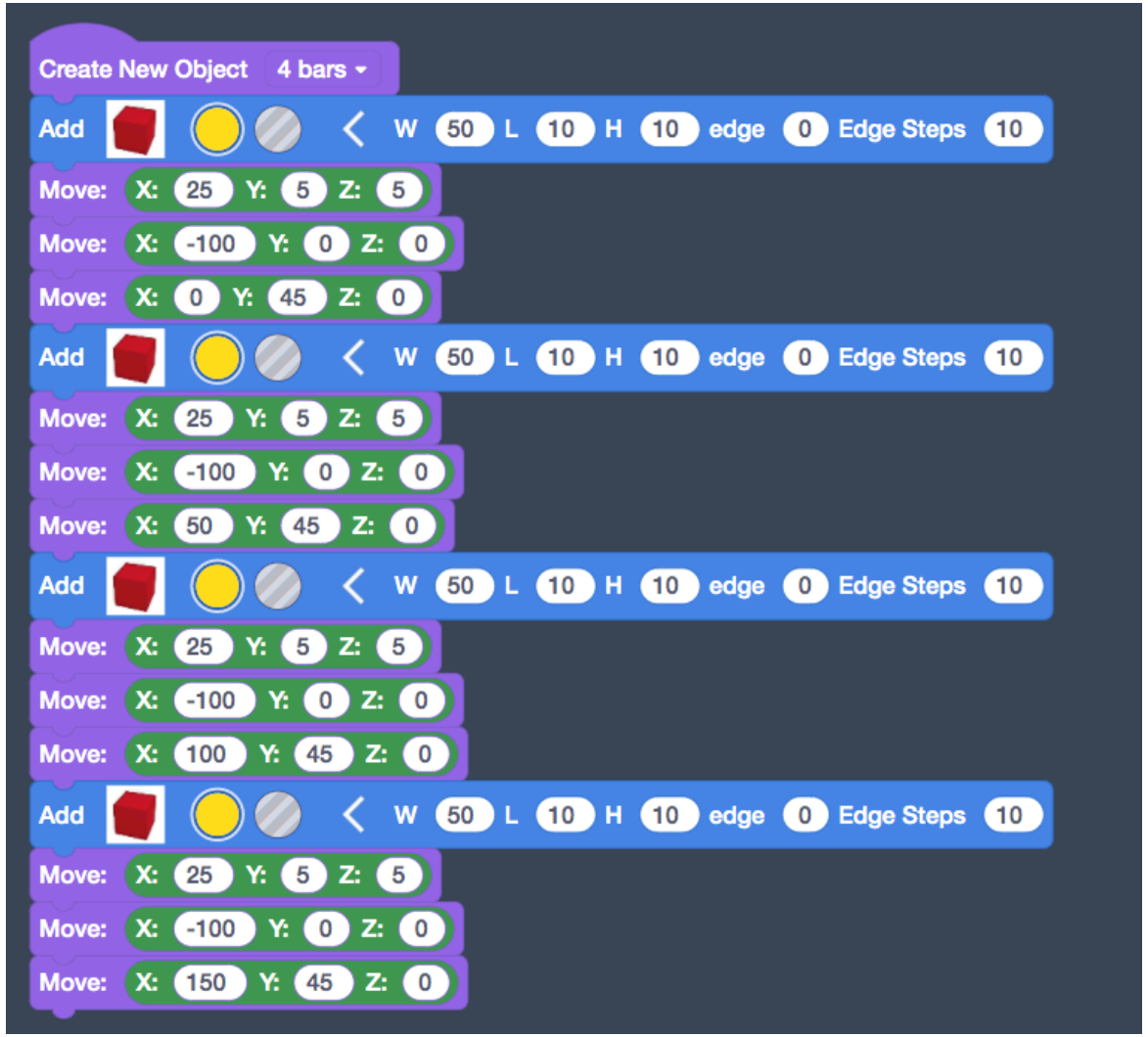
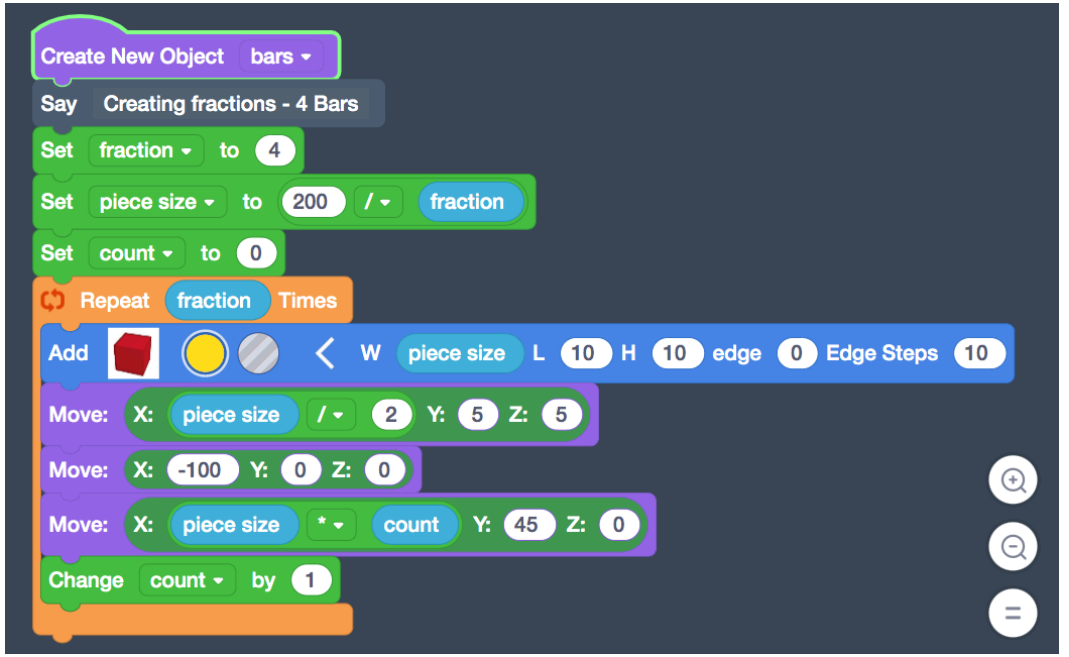
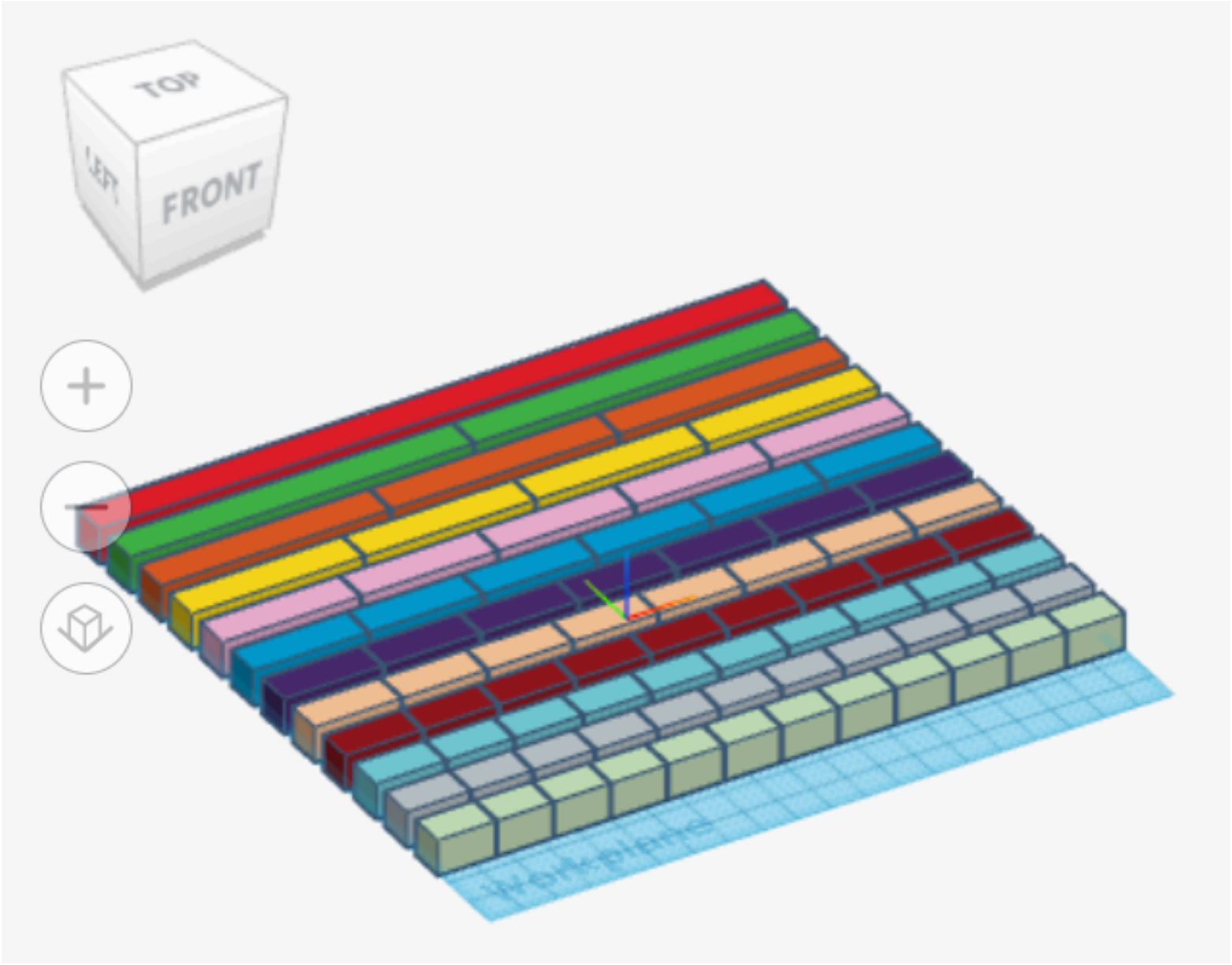

Create New Object 4 bars
Add W 50 L 10 H 10 edge 0 Edge Steps 10
Move: X: 25 Y: 5 Z: 5
Move: X: -100 Y: 0 Z: 0
Move: X: 0 Y: 45 Z: 0
Add W 50 L 10 H 10 edge 0 Edge Steps 10
Move: X: 25 Y: 5 Z: 5
Move: X: -100 Y: 0 Z: 0
Move: X: 50 Y: 45 Z: 0
Add W 50 L 10 H 10 edge 0 Edge Steps 10
Move: X: 25 Y: 5 Z: 5
Move: X: -100 Y: 0 Z: 0
Move: X: 100 Y: 45 Z: 0
Add W 50 L 10 H 10 edge 0 Edge Steps 10
Move: X: 25 Y: 5 Z: 5
Move: X: -100 Y: 0 Z: 0
Move: X: 150 Y: 45 Z: 0


Create New Object bars
Say Creating fractions - 4 Bars
Set fraction to 4
Set piece size to 200 / fraction
Set count to 0
Repeat fraction Times
Add W piece size L 10 H 10 edge 0 Edge Steps 10
Move: X: piece size / 2 Y: 5 Z: 5
Move: X: -100 Y: 0 Z: 0
Move: X: piece size * count Y: 45 Z: 0
Change count by 1


TOP
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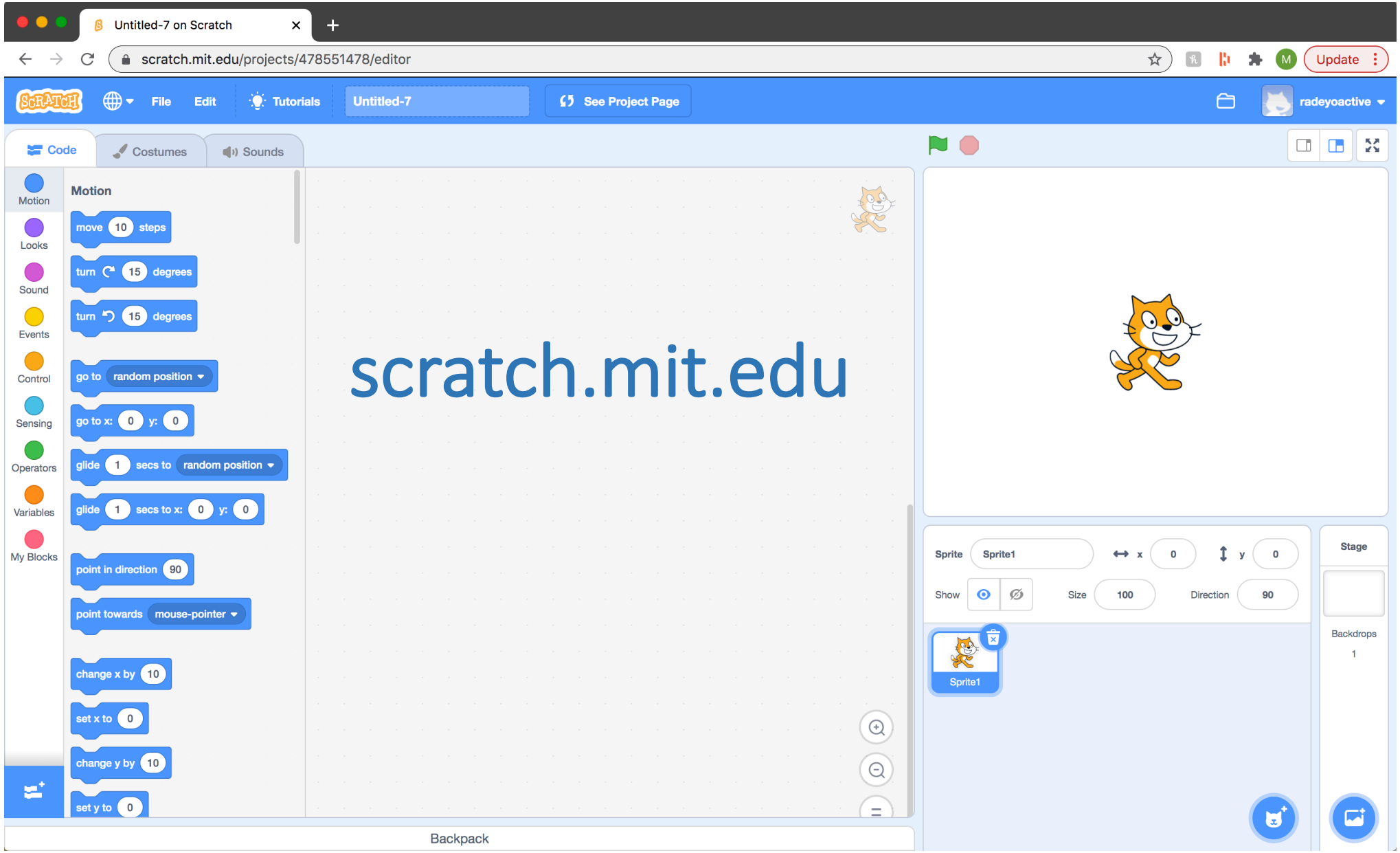
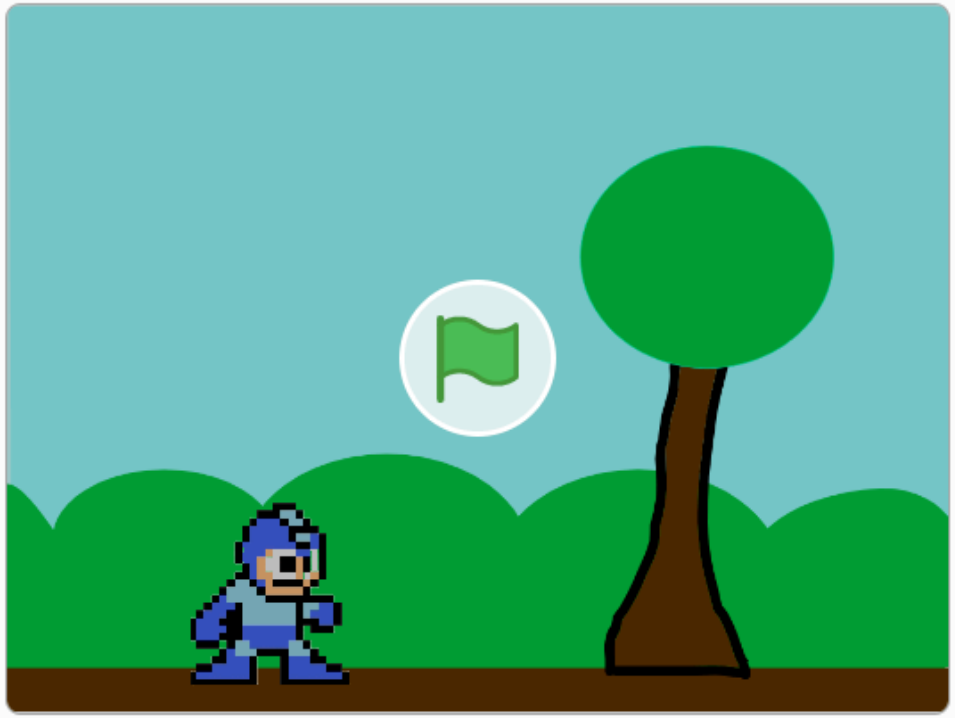


MegamanTest

by ScienceNorthTW

Remix | See inside



Instructions

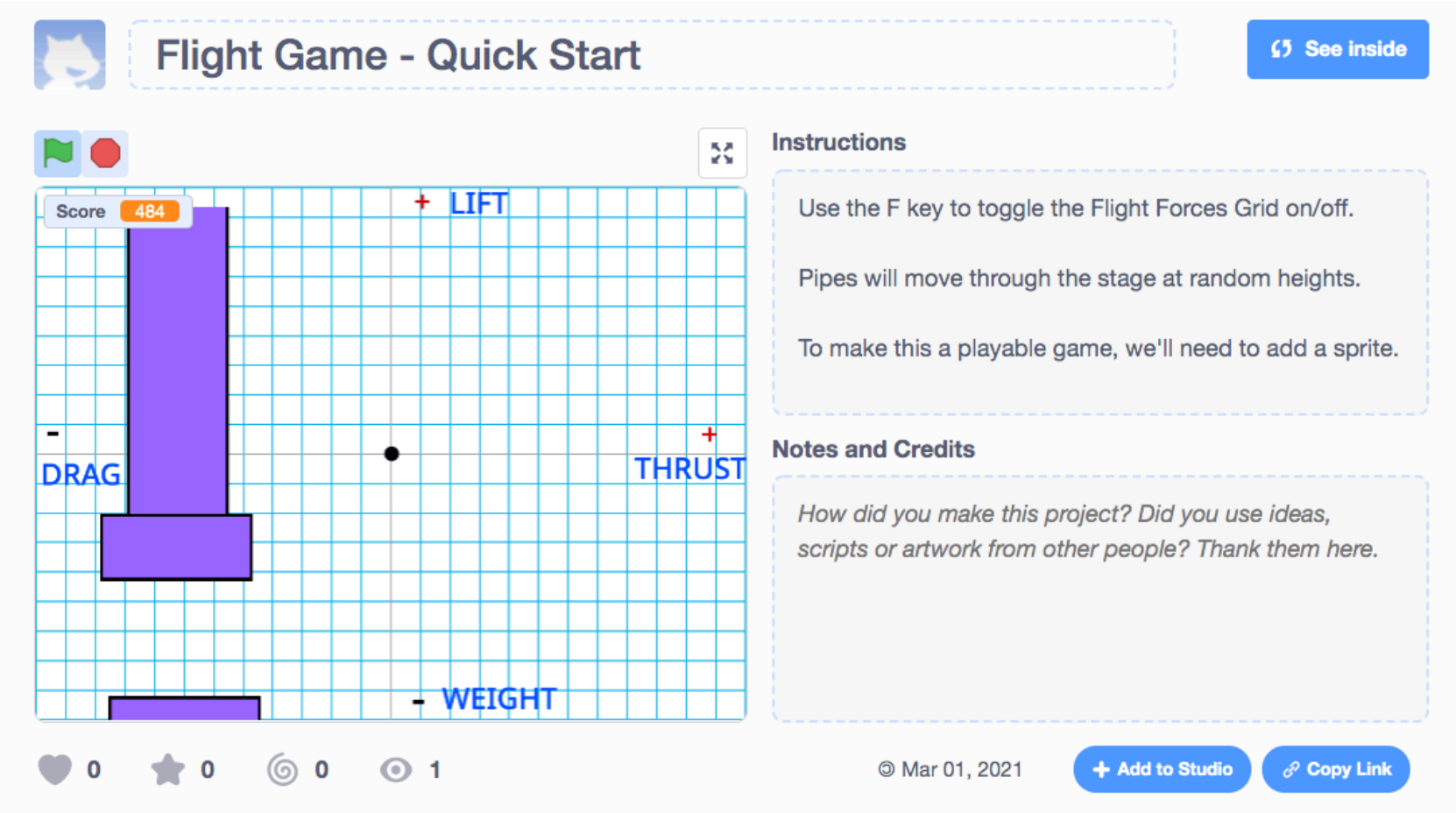
Notes and Credits

0 | 0 | 0 | 8

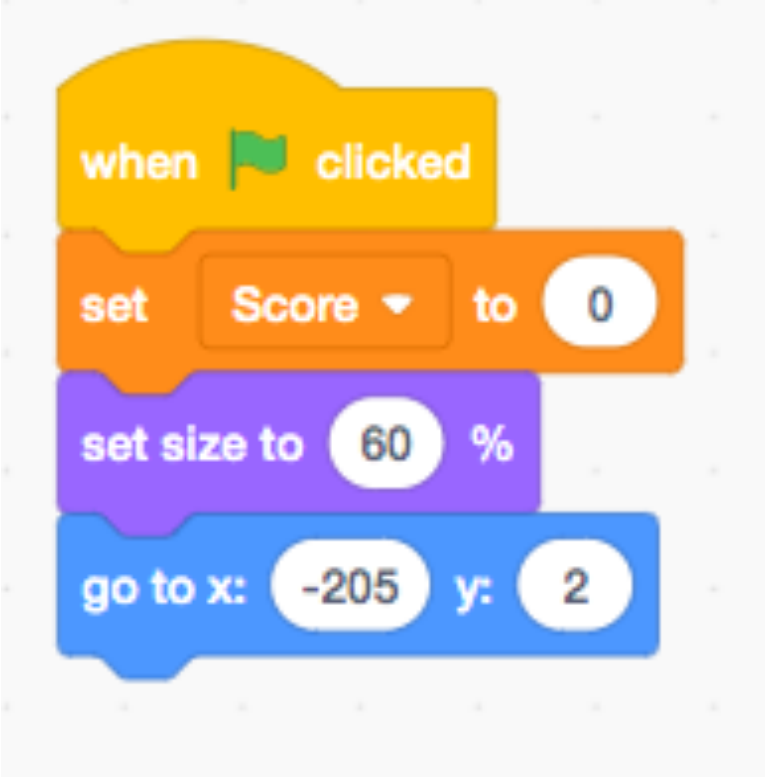
Jan 26, 2021

Report | Add to Studio | Copy Link

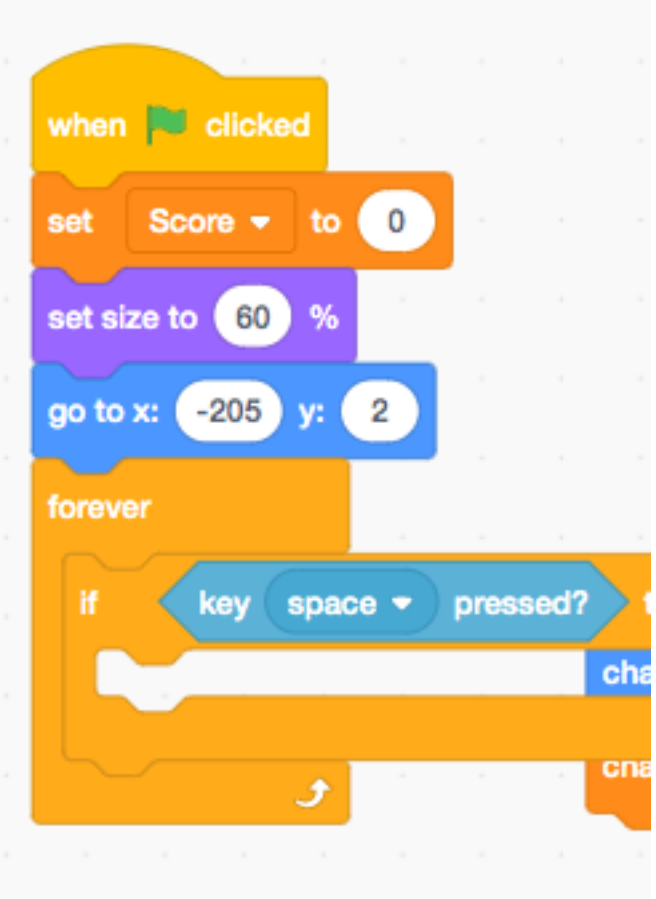
https://scratch.mit.edu/projects/494730499/



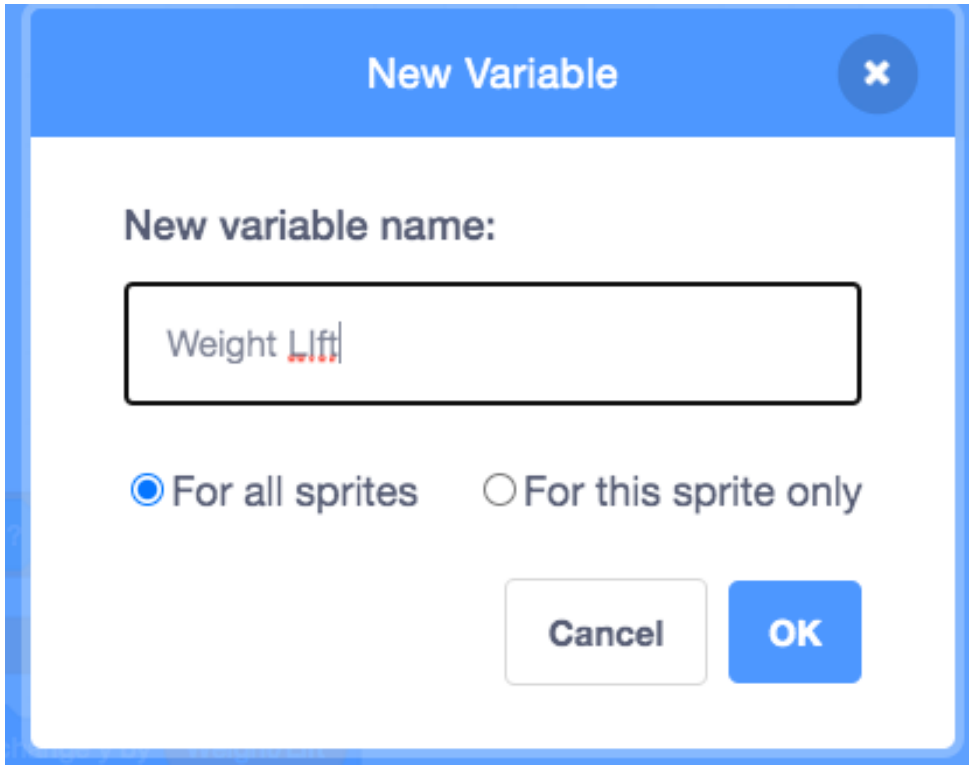
Coding a bird sprite - Set initial conditions



Set up a Forever Loop



Create a variable (For this sprite only)



Set LIFT


when clicked
set Score to 0
set Weight/Lift to 0
set size to 60 %
go to x: -205 y: 2
forever
if key space pressed? then
set Weight/Lift to 10

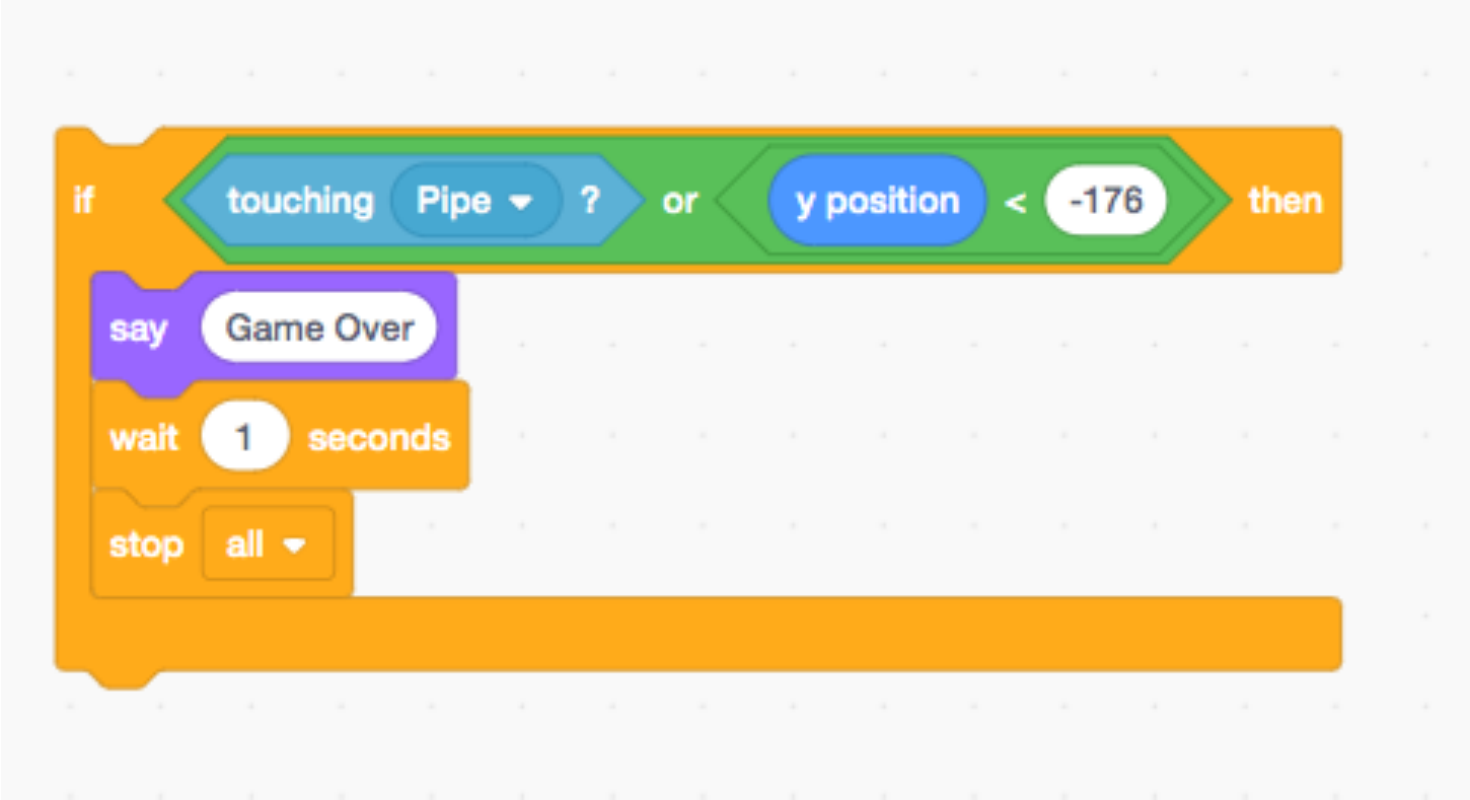
Change y by


when clicked
set Score to 0
set Weight/Lift to 0
set size to 60 %
go to x: -205 y: 2
forever
change y by Weight/Lift
if key space pressed? then
set Weight/Lift to 10

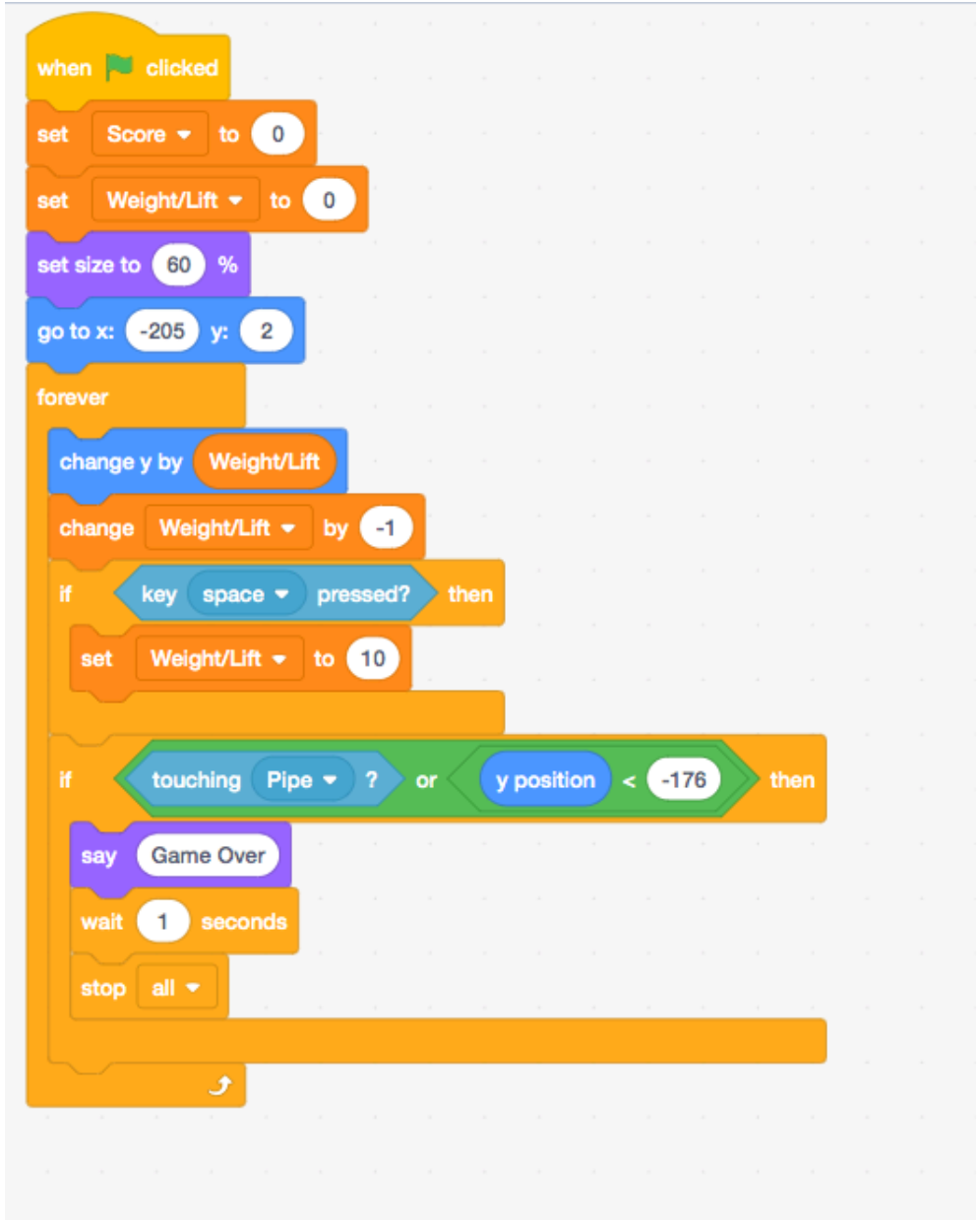
Add WEIGHT


when clicked
set Score to 0
set Weight/Lift to 0
set size to 60 %
go to x: -205 y: 2
forever
change y by Weight/Lift
change Weight/Lift by -1
if key space pressed? then
set Weight/Lift to 10

Set If/Then Lose Condition



Add lose condition to Forever Loop



Thank You!!

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