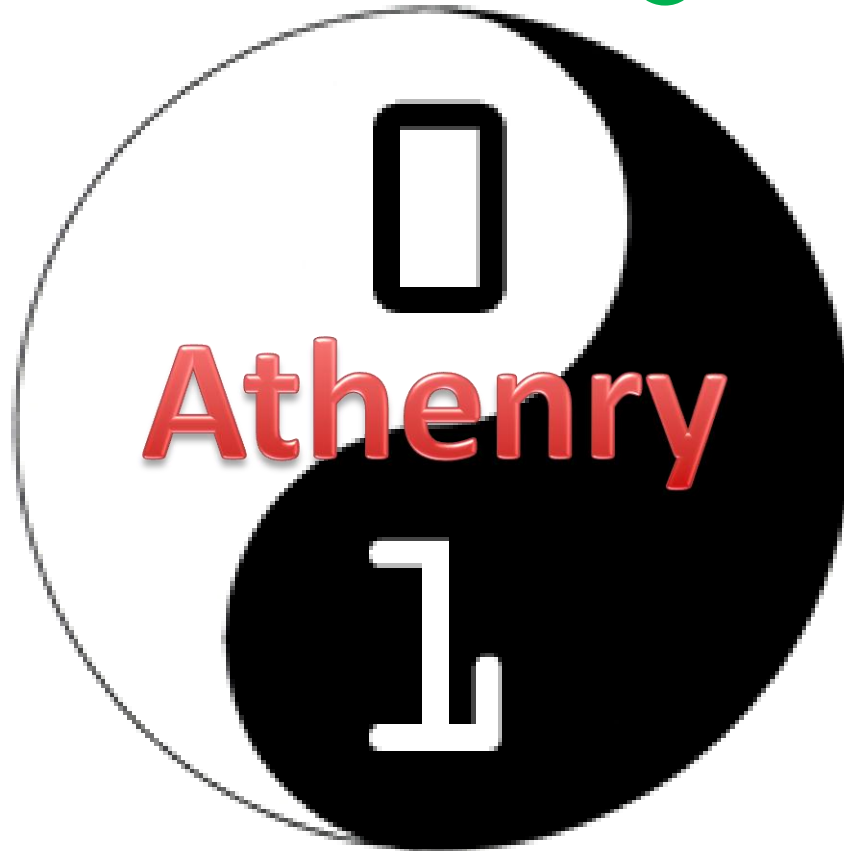


CoderDojo Athenry

SCRATCH Beginners



Code and notes by Martha Fahy, 2015

CoderDojo Athenry

"Above all, be cool"



Every week:

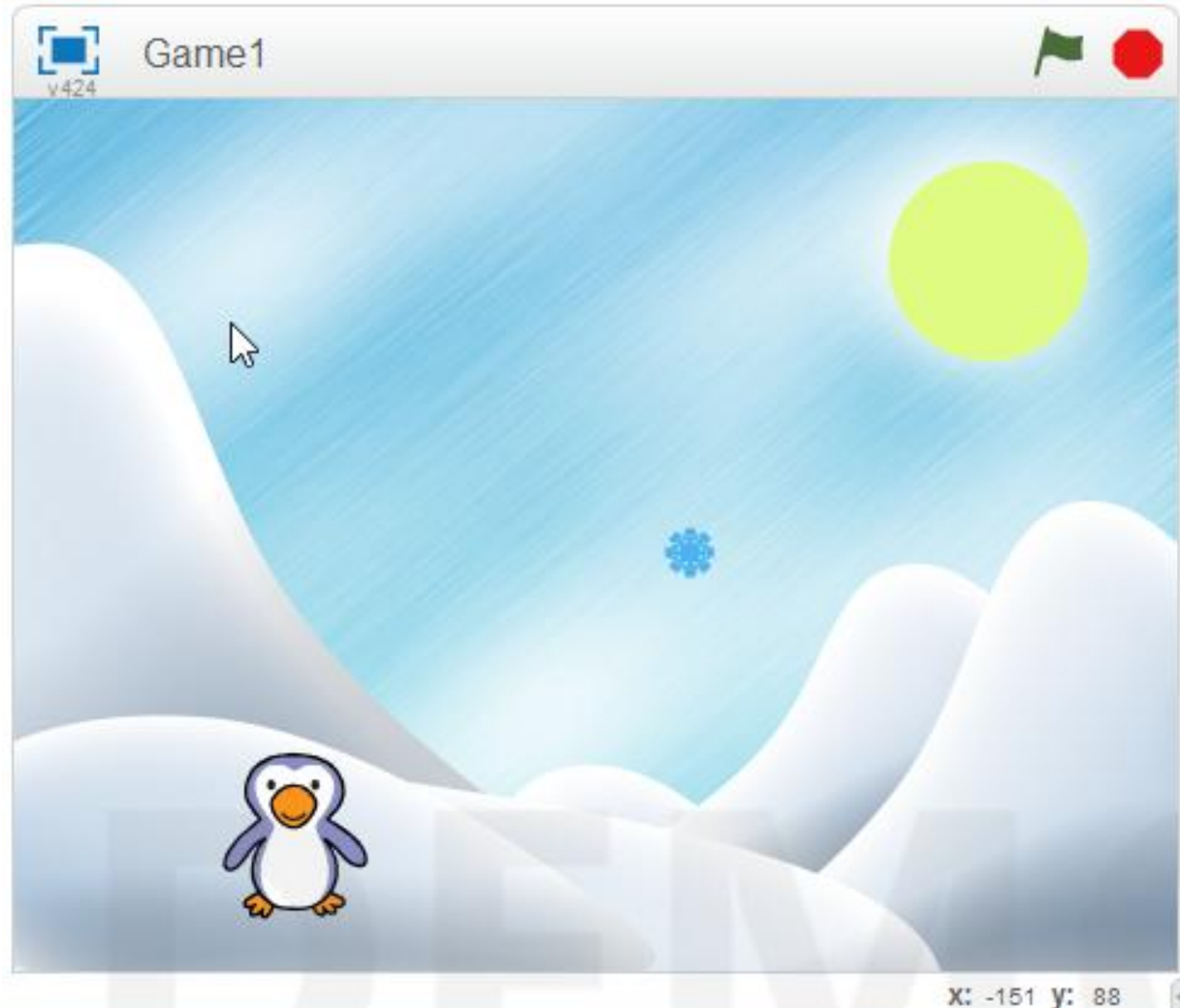
- ✓ Sign in at the door

If you are new:

- ✓ Fill in Registration Form
- ✓ Ask a Mentor how to get started

**Make sure you are on the Athenry
Parents/Kids Google Group:** email
coderdojoathenry@gmail.com

Today's Ninja Challenge: Write Your **First** Computer Game!



Today's Big Ideas

What is
Coding?

Who Writes
Code?

What is
Scratch?

How Can We
Write Code?



Programming Languages

- Tell computer how to perform tasks
- C, C++, Java, Visual Basic, Python, JavaScript, PHP, HTML5

```
public static void calcWages()  
{  
    double rate, hrs, wage, over, total;  
  
    rate = askForNumber("Enter Hourly Rate:");  
    hrs = askForNumber("Enter Hours Worked:");  
  
    if (hrs <= 40) {  
        wage = rate * hrs;  
        over = 0;  
    }  
    else {  
        wage = rate * 40;  
        over = (hrs - 40) * 1.5 * rate;  
    }  
    total = wage + over;  
  
    JOptionPane.showMessageDialog(null, "Total wages are " + total);  
}
```

Some Java Code

Programming Languages

Input, Output & Store Data

- E.g. text, numbers

Operate on Data

- E.g. add numbers, change text

Loops

- Repeat commands several times

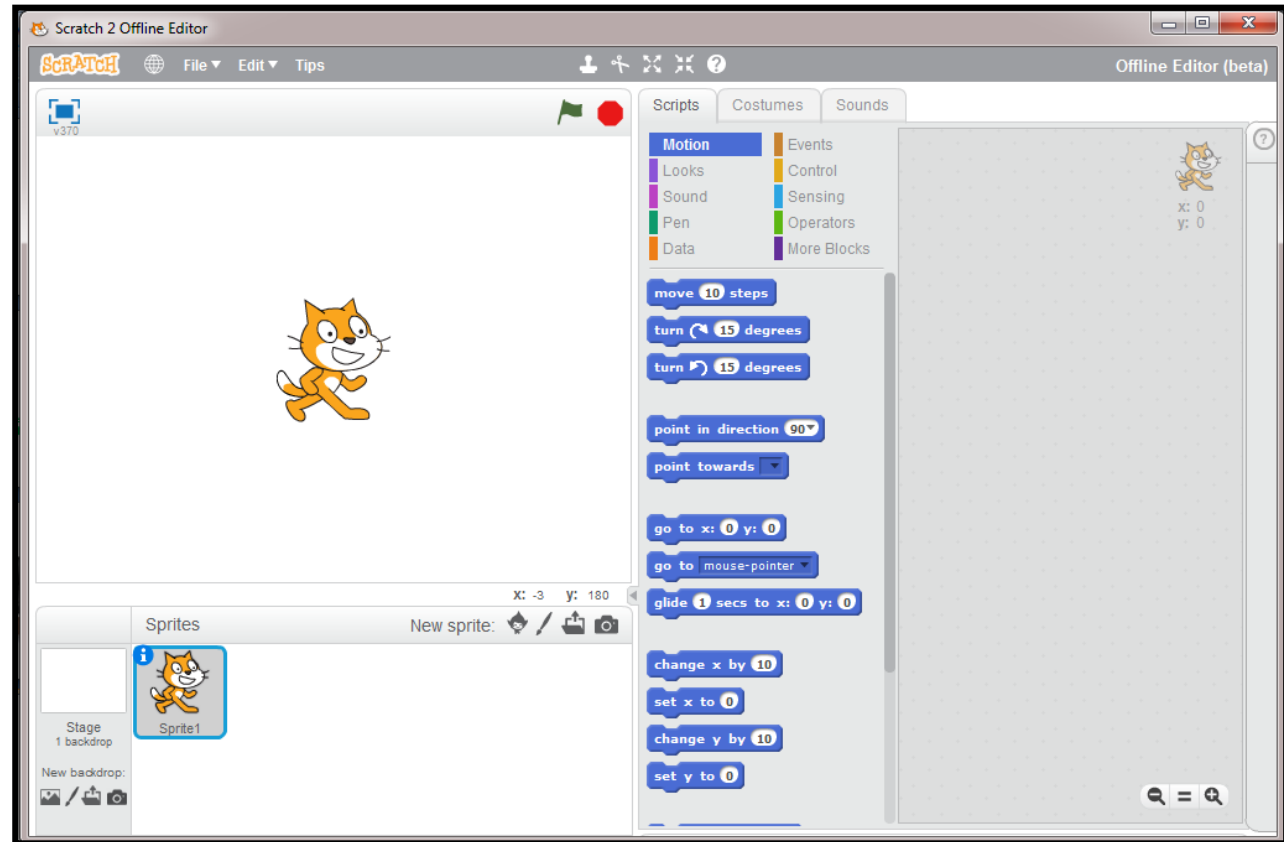
Decisions

- Do something IF something else is true

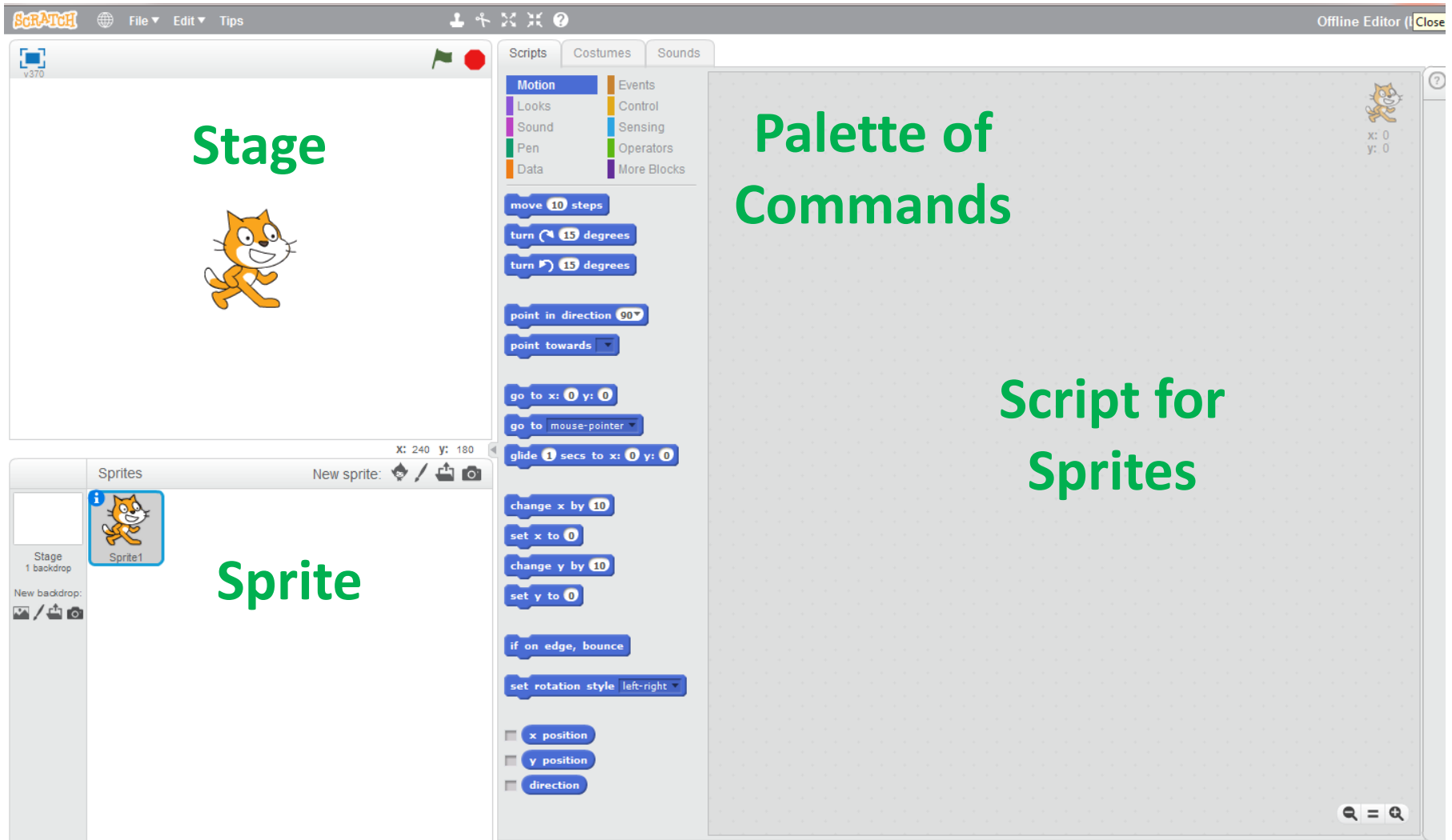
Scratch

<http://scratch.mit.edu>

- Free & Open Source
- Windows, Linux, Mac
- Palette of Commands
- Games & Animation
- Encourages Sharing



Scratch's Interface



The Stage

Full Screen



Starts/Stop



Stage
1 backdrop

New backdrop:



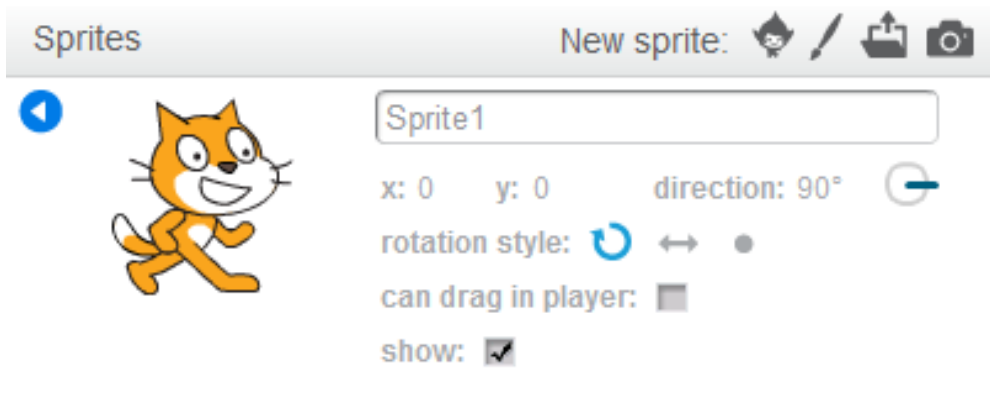
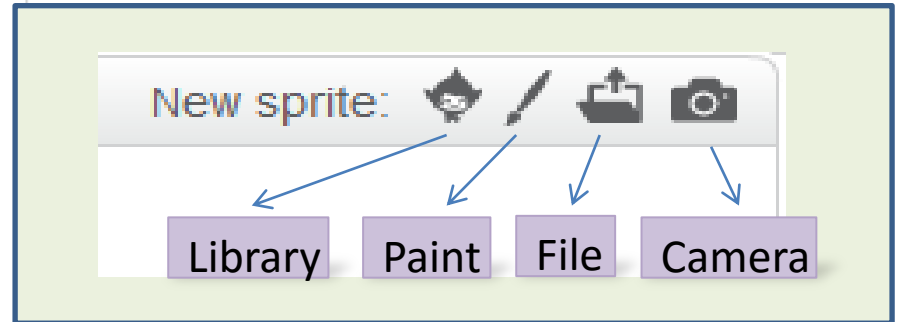
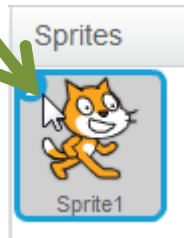
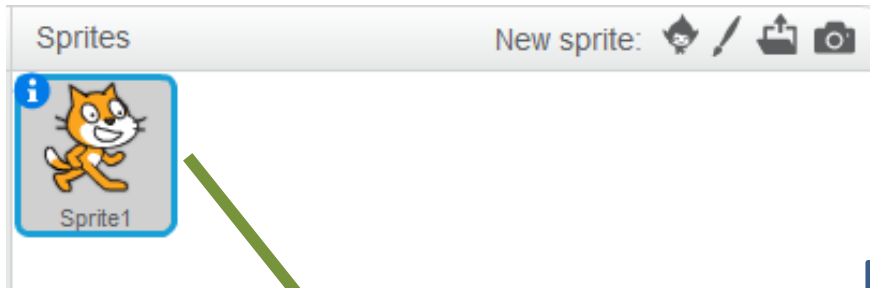
Library

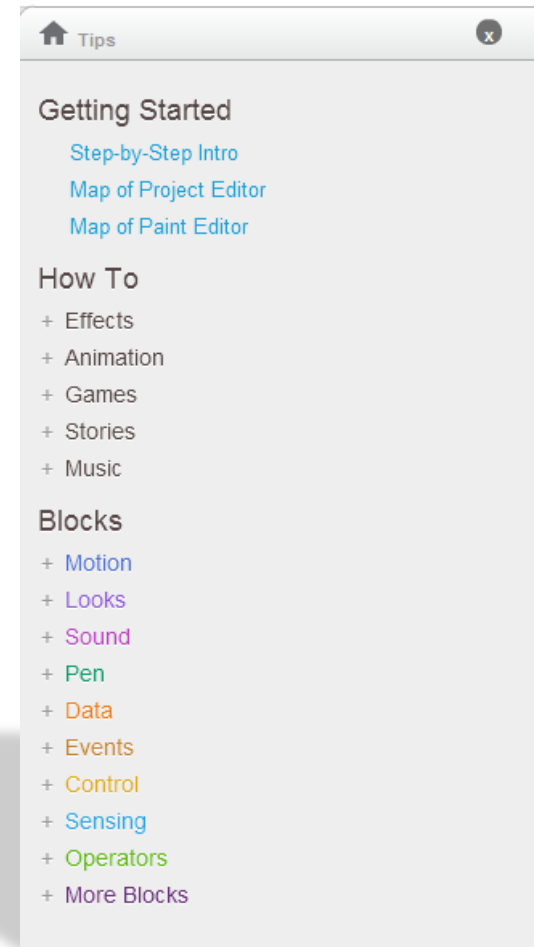
Paint

File

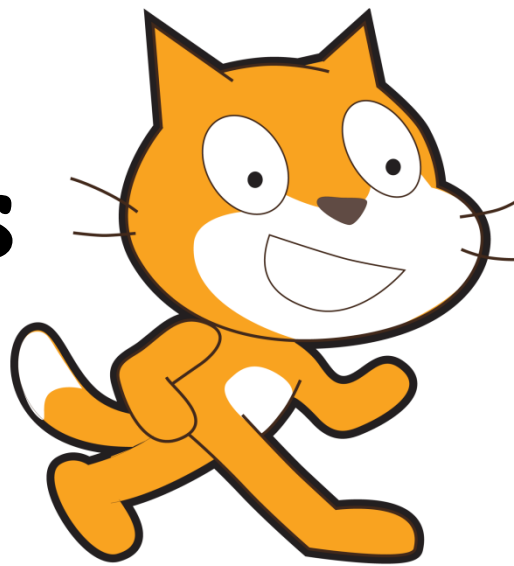
Camera

The Sprites (your characters)





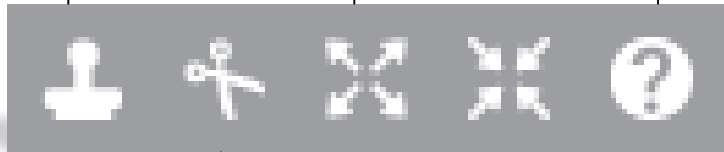
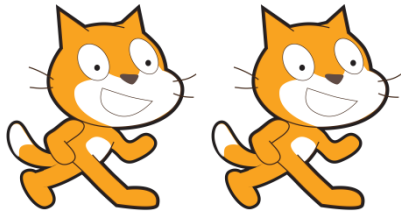
Cursor Tools



Duplicate

Grow

Tips

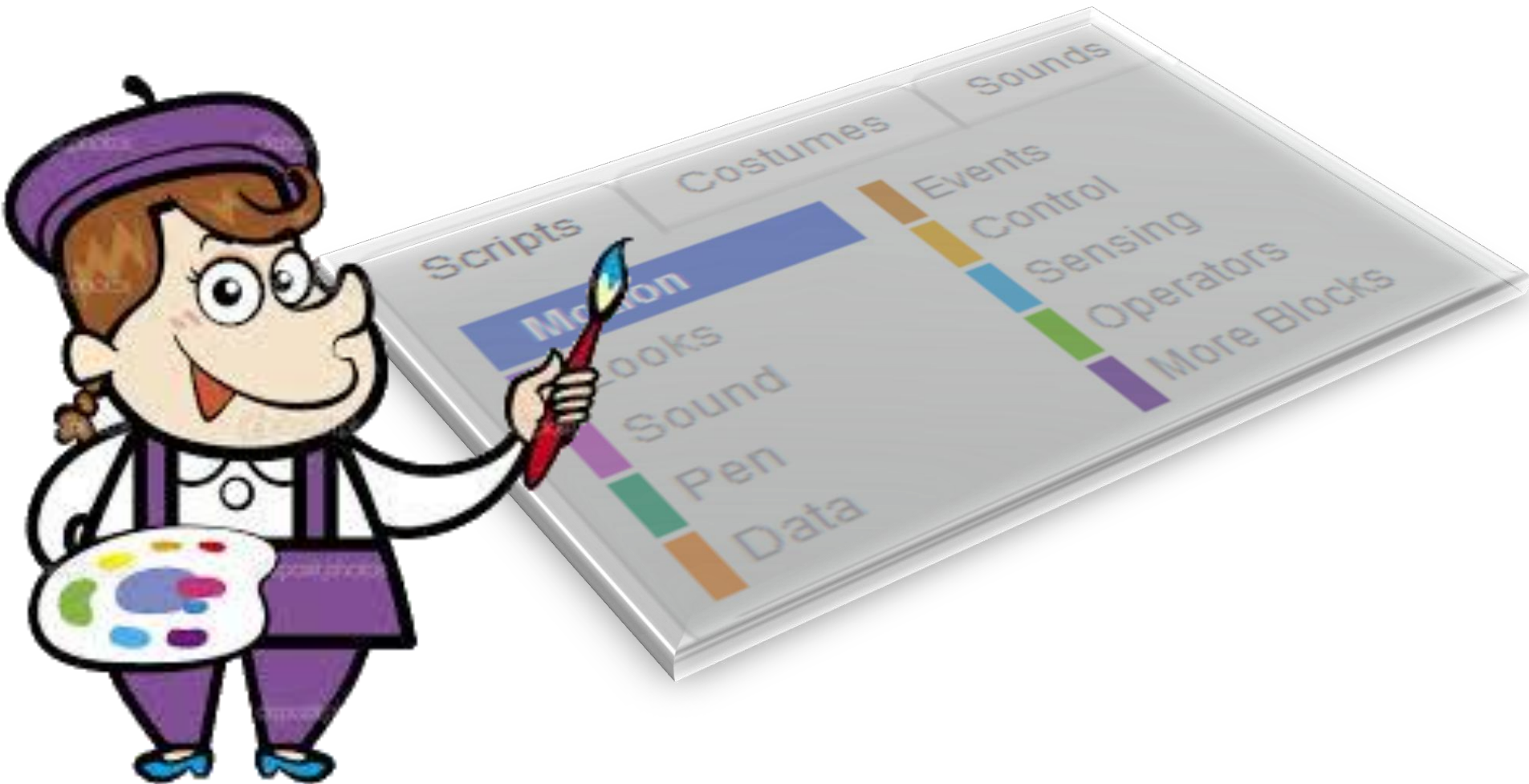


Delete

Shrink



Palette of Commands



Motion



```
move 10 steps
turn ⤴ 15 degrees
turn ⤵ 15 degrees

point in direction 90
point towards ▾

go to x: 21 y: -62
go to mouse-pointer ▾
glide 1 secs to x: 21 y: -62

change x by 10
set x to 0
change y by 10
set y to 0

if on edge, bounce

set rotation style left-right ▾

☐ x position
☐ y position
☐ direction
```

Looks



say Hello! for 2 secs

say Hello!

think Hmm... for 2 secs

think Hmm...

show

hide

switch costume to costume2

next costume

switch backdrop to backdrop1

change color effect by 25

set color effect to 0

clear graphic effects

change size by 10

set size to 100 %

go to front

go back 1 layers

☐ costume #

☐ backdrop name

☐ size

Sound



play sound meow ▾

play sound meow ▾ until done

stop all sounds

play drum 1 ▾ for 0.25 beats

rest for 0.25 beats

play note 60 ▾ for 0.5 beats

set instrument to 1 ▾

change volume by -10

set volume to 100 %

☐ volume

change tempo by 20

set tempo to 60 bpm

☐ tempo

Pen



clear

stamp

pen down

pen up

set pen color to 

change pen color by 10

set pen color to 0

change pen shade by 10

set pen shade to 50

change pen size by 1

set pen size to 1

Data

Make a Variable

Make a List

$$2x+1=7$$

New Variable

Variable name:

☒ For all sprites ☐ For this sprite only

OK

Cancel

Event



when  clicked

when key pressed

when this sprite clicked

when backdrop switches to

when >

when I receive

broadcast

broadcast and wait

Control

Do that
10 times



wait 1 secs

repeat 10

forever

if then

if then

else

wait until

repeat until

stop all

when I start as a clone

create clone of myself

delete this clone

Sensing



touching ☐ ?

touching color ☐ ?

color ☐ is touching ☐ ?

distance to ☐

ask What's your name? and wait

☐ answer

key space pressed?

mouse down?

mouse x

mouse y

☐ loudness

☐ video motion on this sprite

turn video on

set video transparency to 50 %

☐ timer

reset timer

x position of Sprite1

☐ current minute

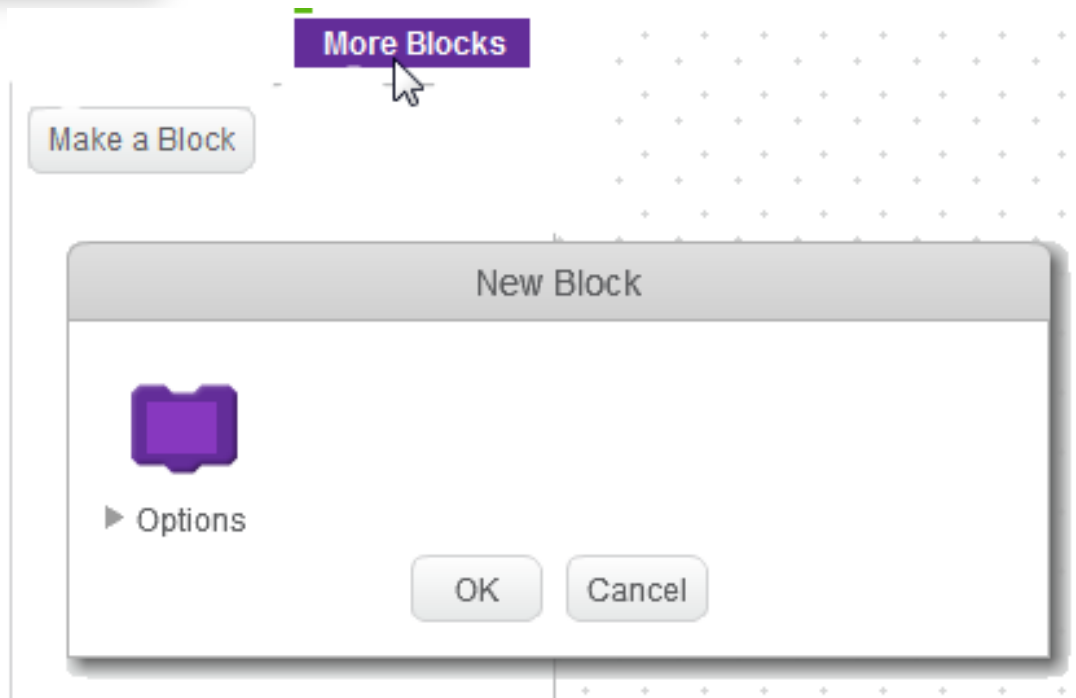
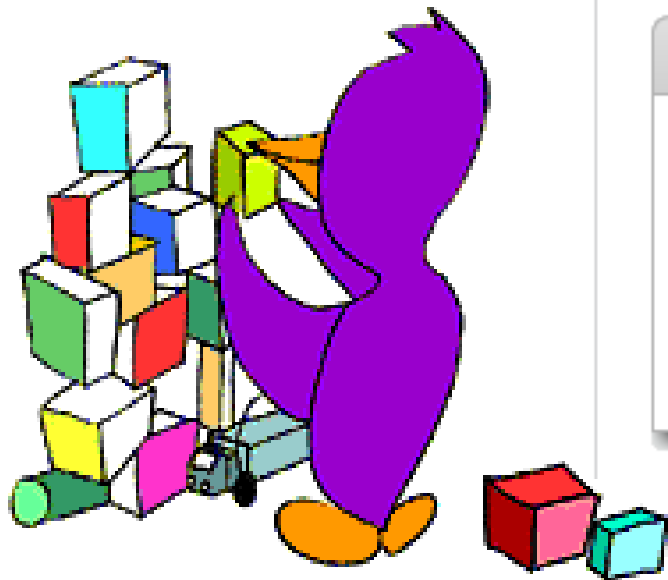
days since 2000

username

Operator



More Blocks



How to Get Started

Plan the Design

- Think first!
- Start simple: add more later

Create First Character

- Design it: appearance & behaviours
- Write script (Code) to control its behaviours

Test It

- Any bugs? (Not working as expected)
- Debug and Improve

Extend It


- More Characters, More Behaviours, More Testing!

How to Make Progress


Our Creative Coding Rule:
There's More Than One Way to Do It!



Try things out and iterate
Save copies: go back if it doesn't work



Talk to others, share ideas, learn from
their ideas, improve on their ideas!



Examine other people's code on the
Scratch website & upload your code

Steps To Make Our Game

Create **Penguin**: what will he look like?
Code to control him with arrow keys



Change the Stage:
Choose a background



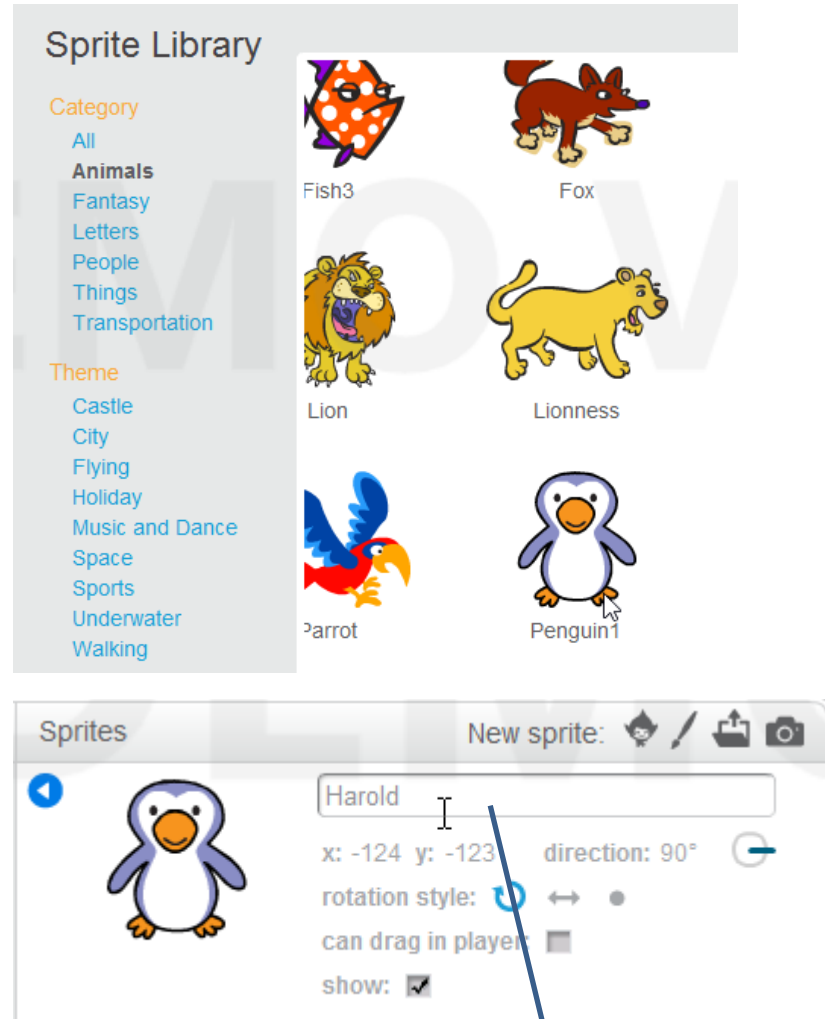
Create **Snowflake**
Code to make him move randomly

Create a Sprite



New Sprite:
Select from
existing designs

Tip:
Default size is big
relative to stage:
this shrinks it

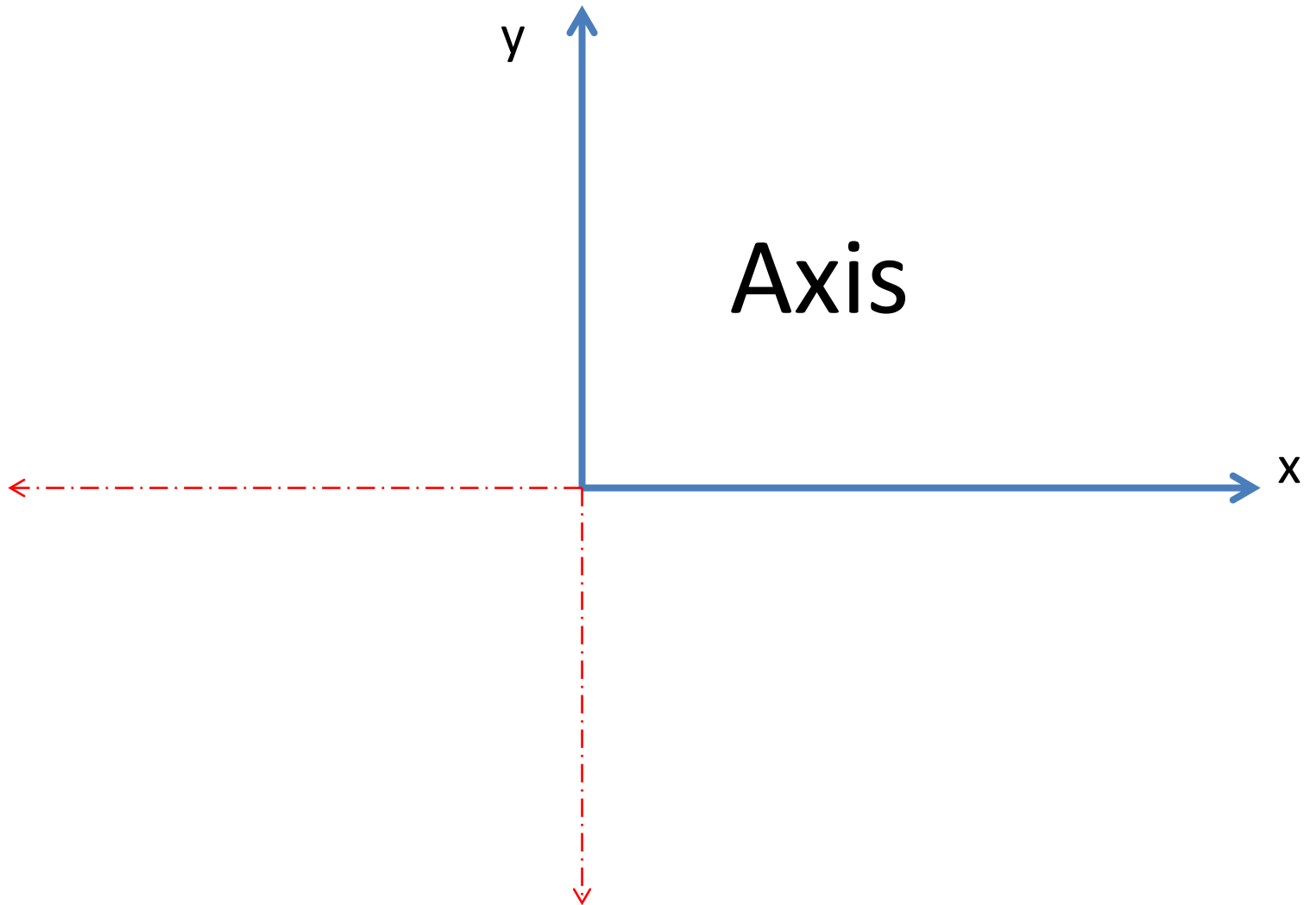


Name him:

Make it Move Under Your Control



Make it Move Under **Your Control**

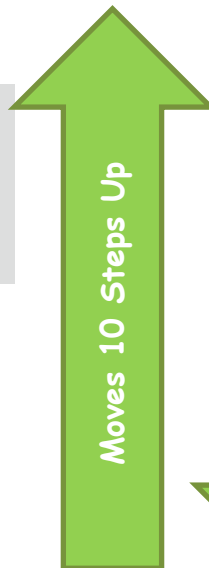


Make it Move Under Your Control

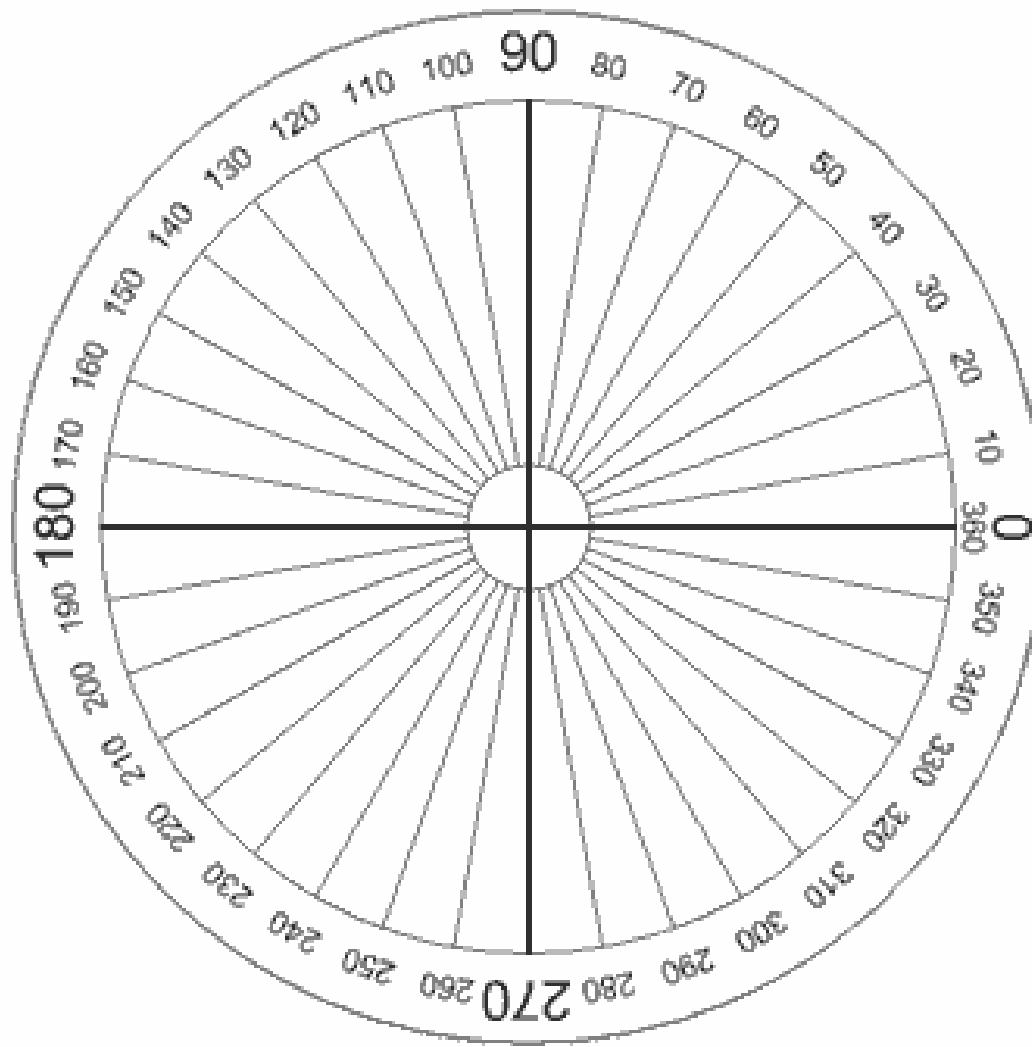


Moves 10 Steps to the Right

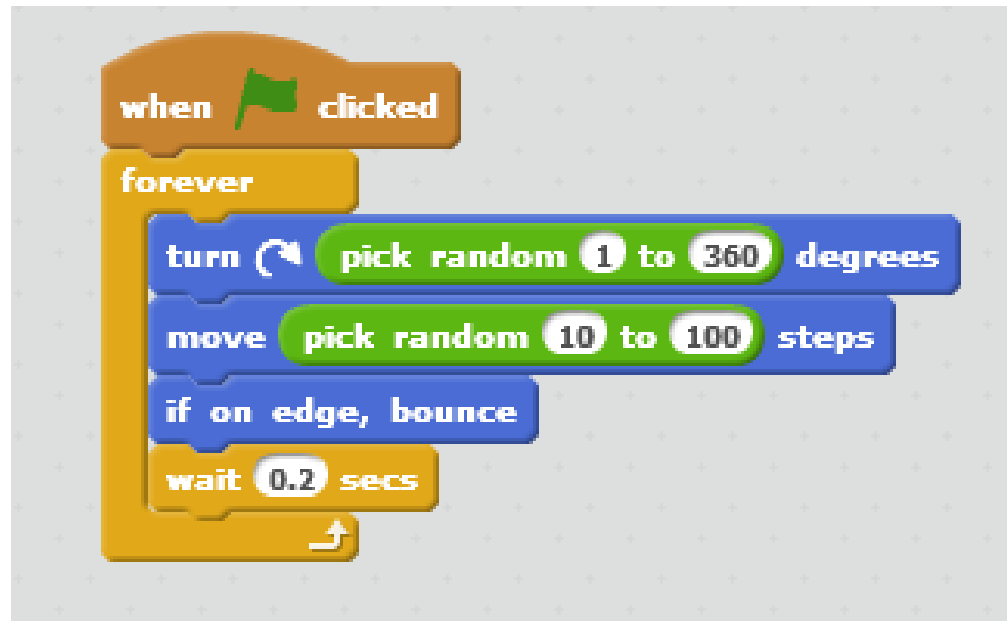
Make it Move Under Your Control



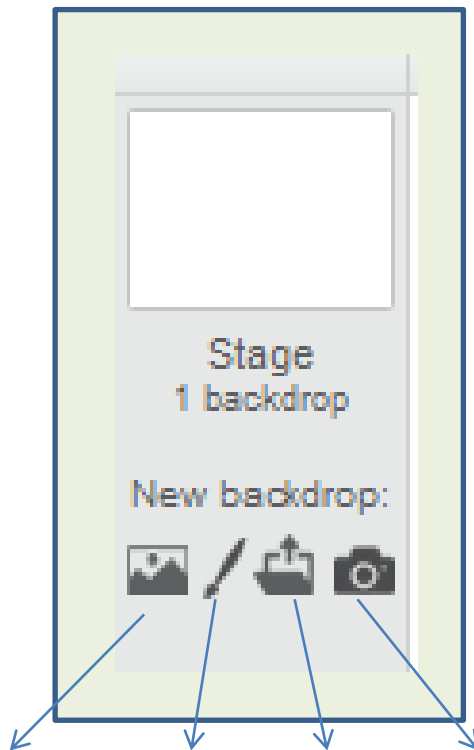
Degrees - Full Circle



Create Another Sprite that Moves at Random



Change the Background



Library Paint File Camera

Backdrop Library

Category

All
Indoors
Outdoors
Other

Theme

Castle
City
Flying
Holiday
Music and Dance
Nature
Space
Sports
Underwater



atom playground



bench with view



berkeley mural



boardwalk



building at mit



castle5



city with water



city with water2



hay field



houses



metro1



night city with street



route66



school1



school2



slopes

At the End ...

Upload your project to the Scratch Website

Access it
from home



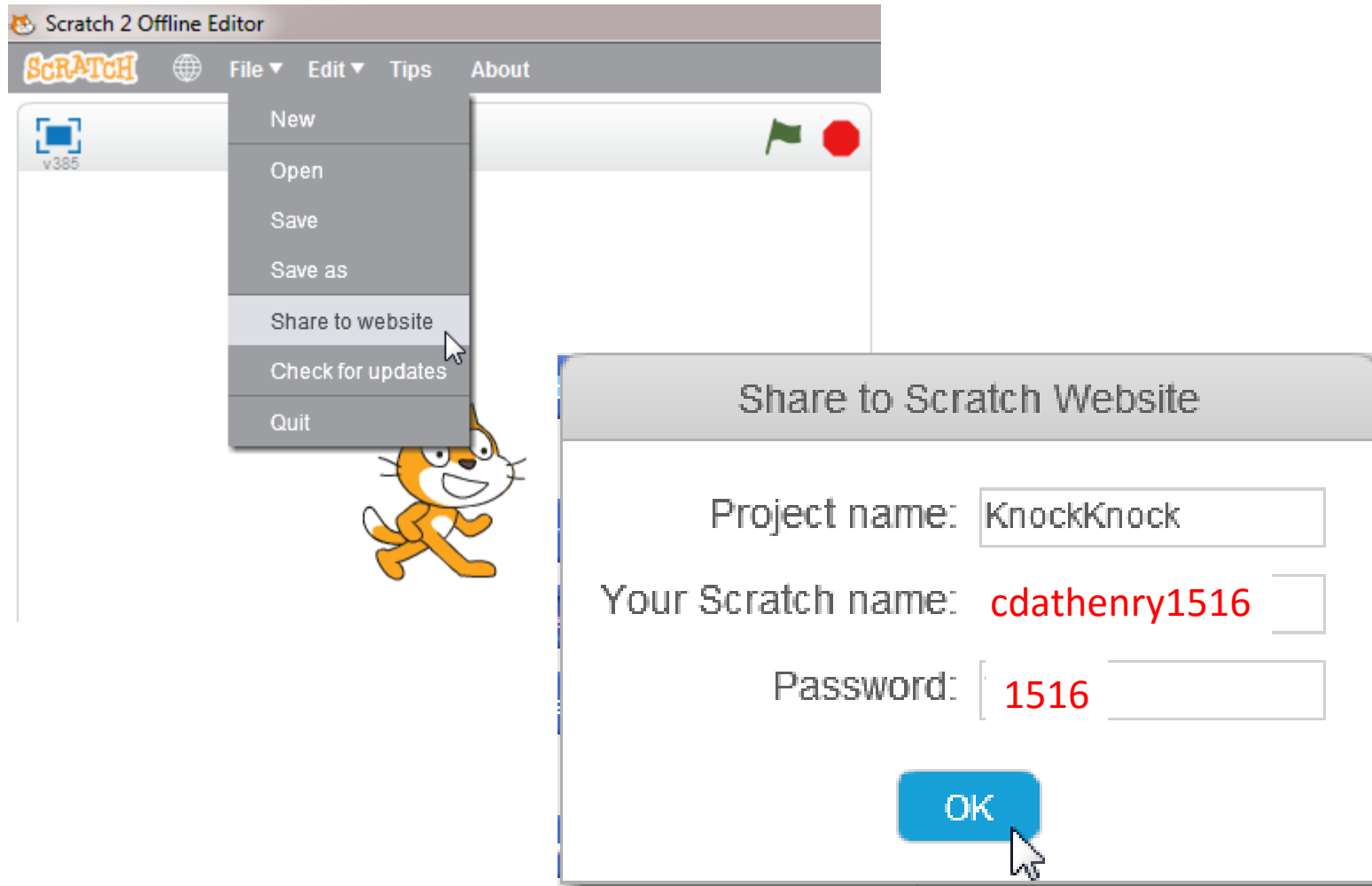
Improve it



Show your
friends!



Uploading to Scratch Website



Keep In Touch!

coderdojoathenry@gmail.com

[@coderdojoathenr](#)

zen.coderdojo.com/dojo/53

