



# CoderDojo Athenry



Code and notes by Martha Fahy, 2016

# 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](mailto:coderdojoathenry@gmail.com)

white.txt - Notepad

File Edit Format View Help

Once upon a time, a long time ago....  
we started our first scratch lesson with all our new friends.  
My friends from school were there.  
I went with my Dad ...  
he was very busy and mad

orange.txt - Notepad

File Edit Format View Help

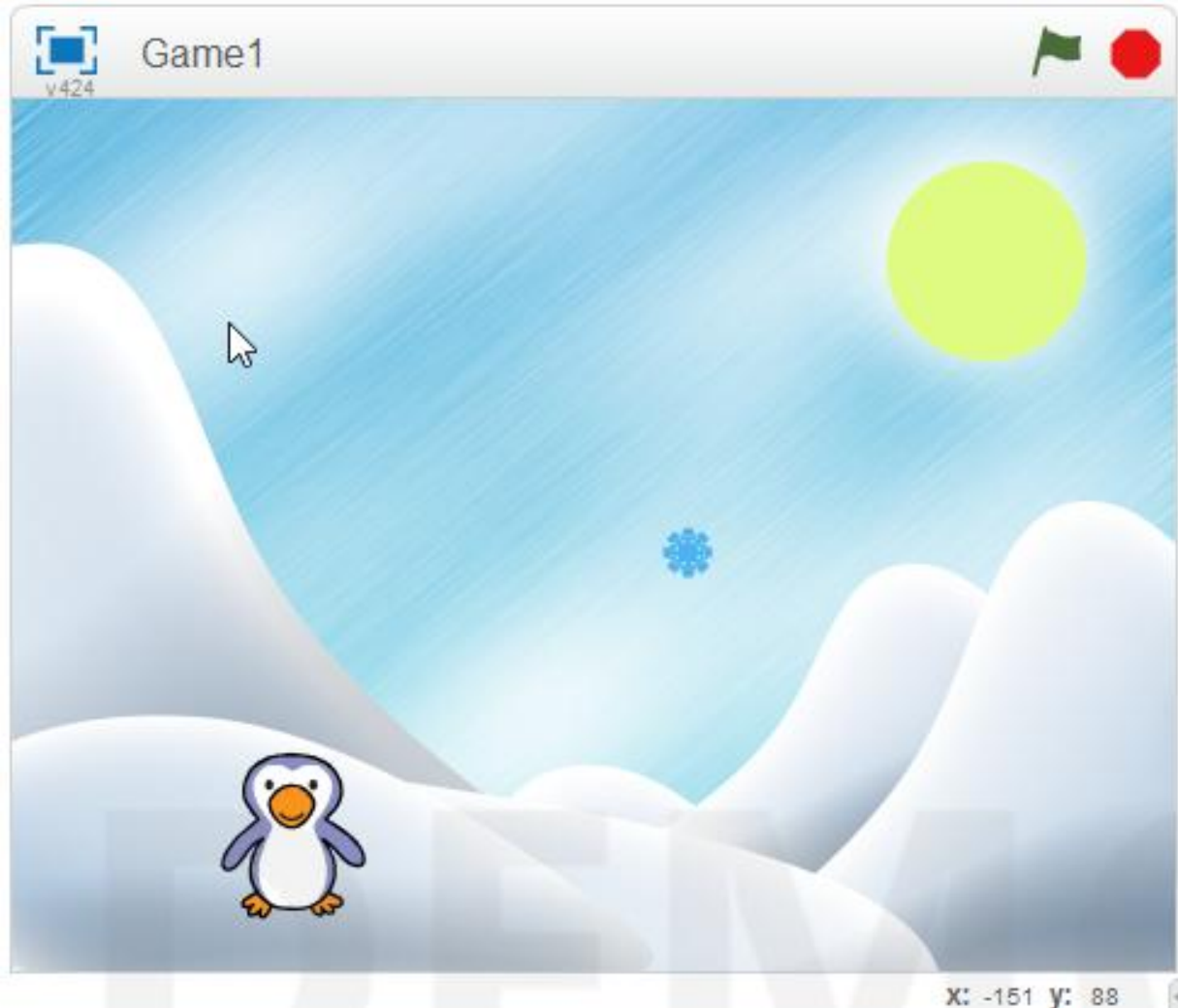
Once upon a time, a long time ago..  
there was a little boy called Joey.  
He lived in Athenry with his little sister, mum and dad.  
On Saturday he headed off to Coderdojos and then he learned about computers and coding...

green.txt - Notepad

File Edit Format View Help

Once upon a time, a long time ago,  
there was a little girl called Little Red Riding Hood....  
and she loved Minecraft. She built a wolf in minecraft - it was a scary wolf.  
It came to life, and ate her big #/#\*#\*/\*!~# end!!!

# 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;

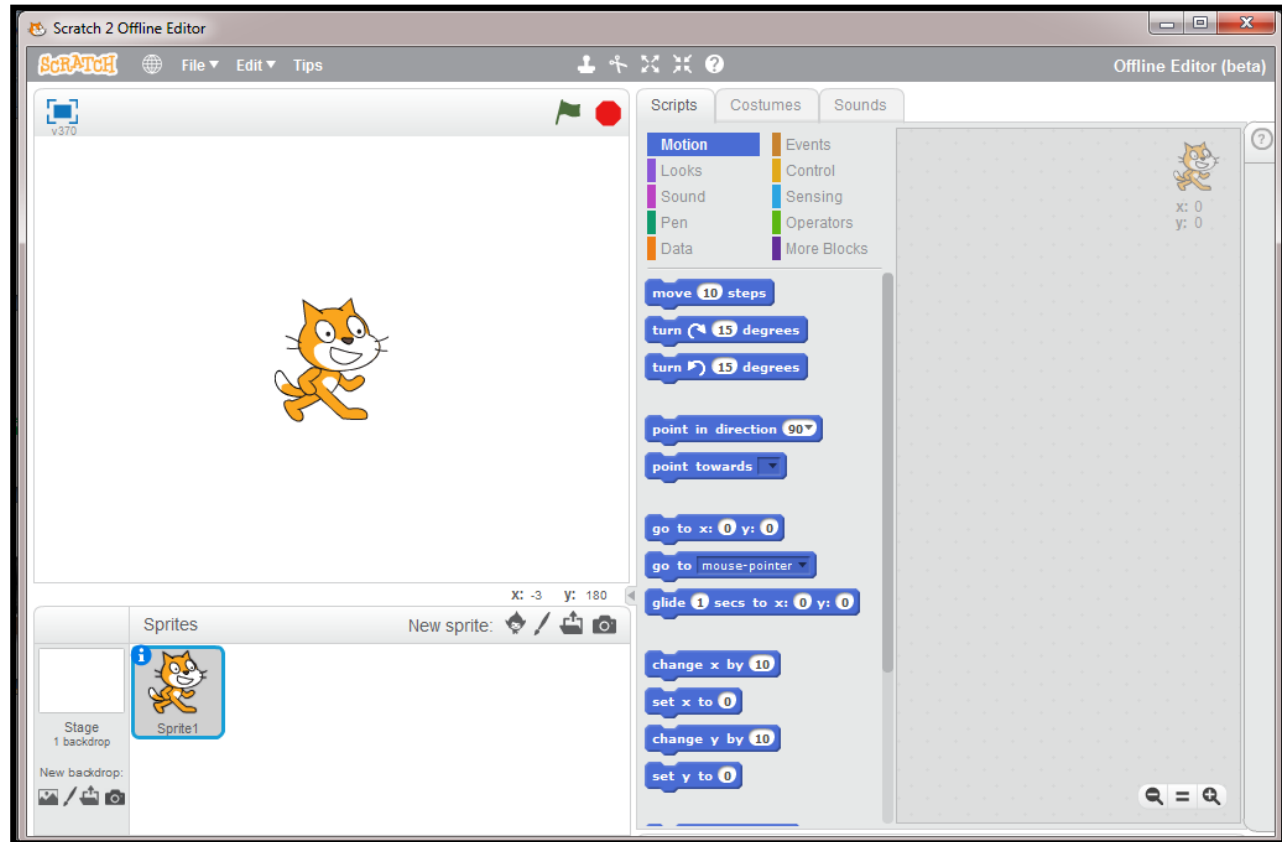
    JOptionPane.showMessageDialog(null, "Total wages are " + total);
}
```

**Some Java Code**

# Scratch

<http://scratch.mit.edu>

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



# Scratch's Interface

The image shows the Scratch interface with several key components highlighted in green text:

- Stage:** The central workspace where the sprite is placed. It contains the Scratch cat sprite.
- Sprite:** The bottom-left panel where the sprite is managed. It shows the Scratch cat sprite and its name "Sprite1".
- Palette of Commands:** The right-hand panel containing various command blocks for the sprite, such as "move 10 steps", "turn 15 degrees", "point in direction 90", "go to x: 0 y: 0", "glide 1 secs to x: 0 y: 0", "change x by 10", "set x to 0", "change y by 10", "set y to 0", "if on edge, bounce", and "set rotation style left-right".
- Script for Sprites:** A large grey area on the right side of the interface, intended for writing scripts for the sprite.

The interface also includes a top menu bar with "Scratch", "File", "Edit", and "Tips", and a status bar at the bottom right showing "Offline Editor" and "Close".



# The Stage

Full Screen



v370



Starts/Stop



Stage  
1 backdrop

New backdrop:



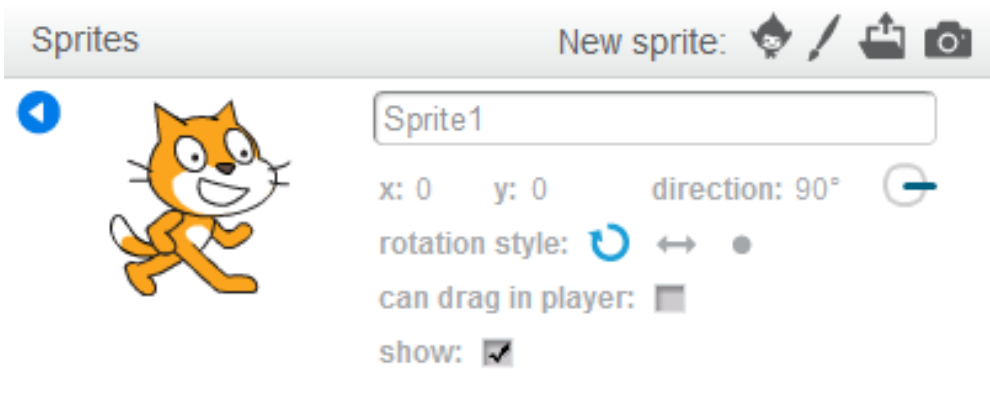
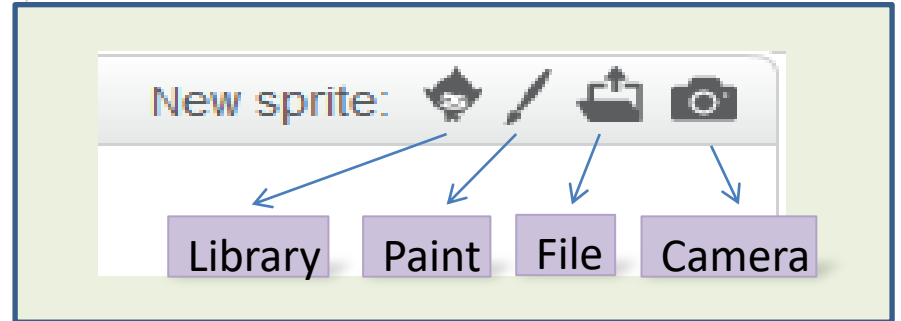
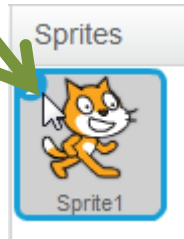
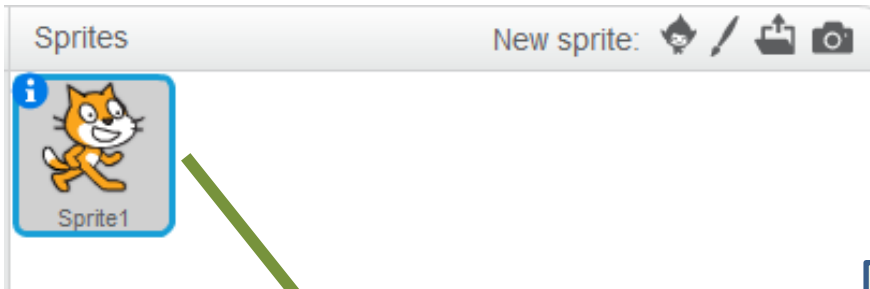
Library

Paint

File

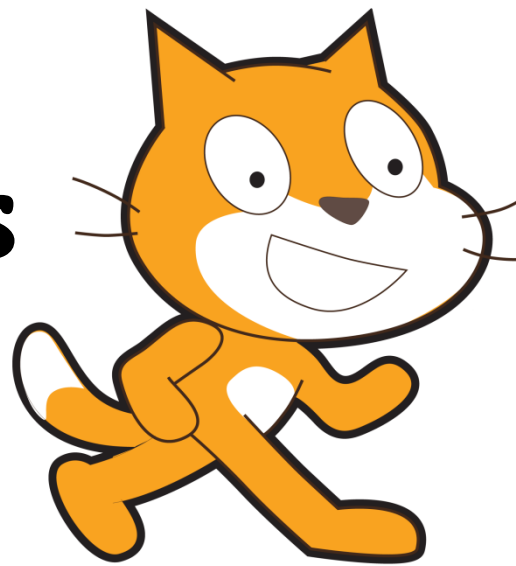
Camera

# The Sprites (your characters)





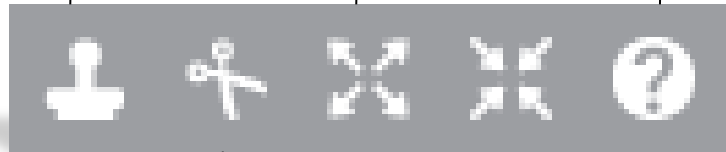
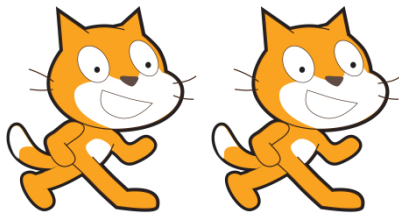
# Cursor Tools



Duplicate

Grow

Tips

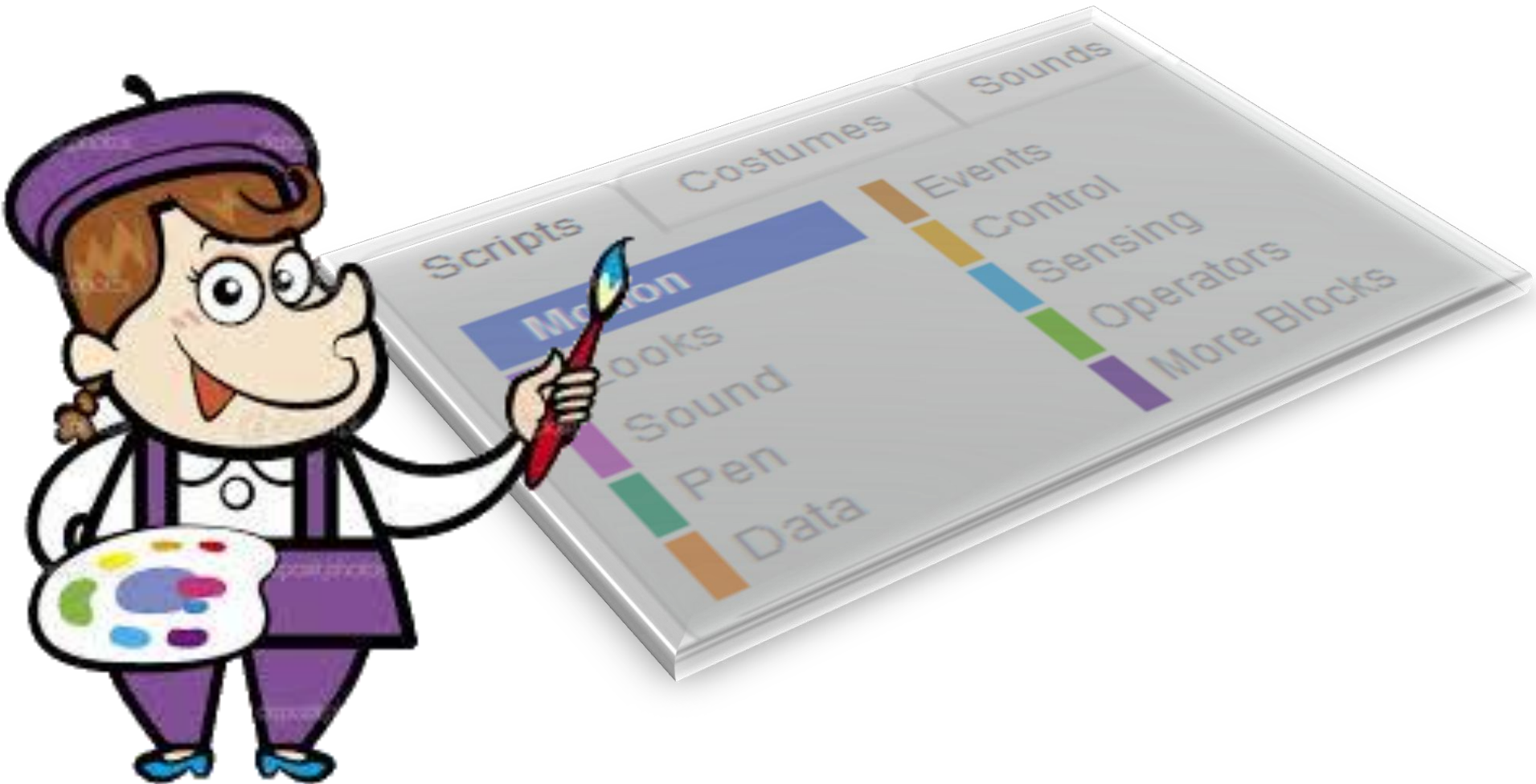


Delete

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

$$2x + 1 = 7$$

Make a Variable

Make a List

New Variable

Variable name:

For all sprites     For this sprite only

---

# 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



+

-

\*

/

pick random 1 to 10

<

=

>

and

or

not

join hello world

letter 1 of world

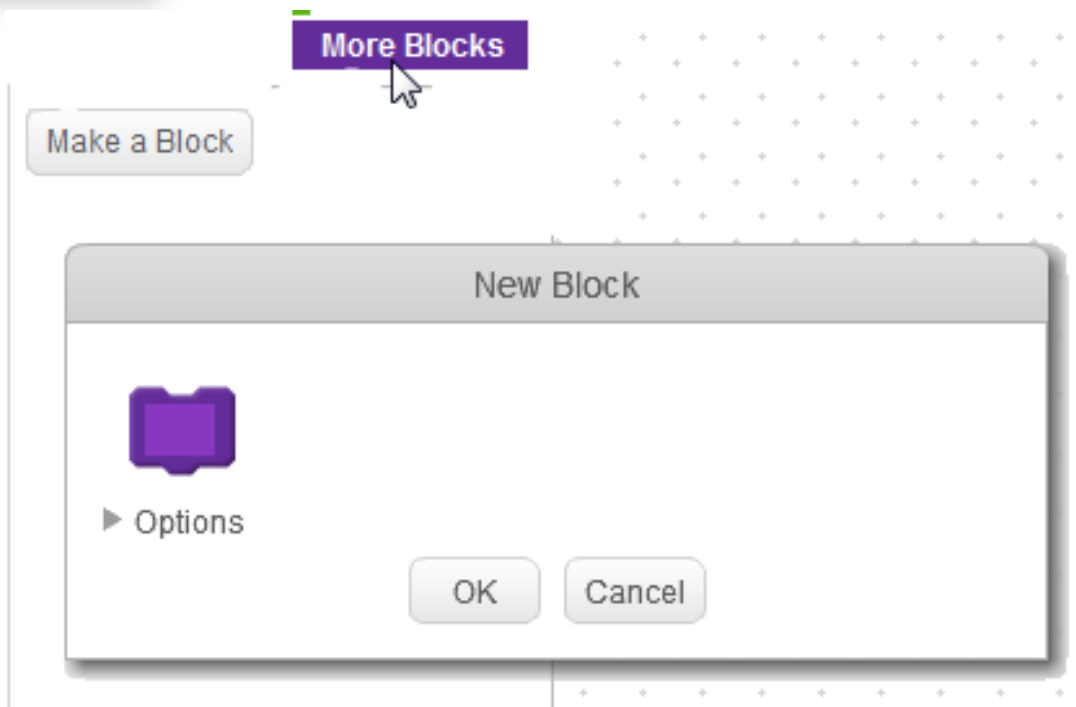
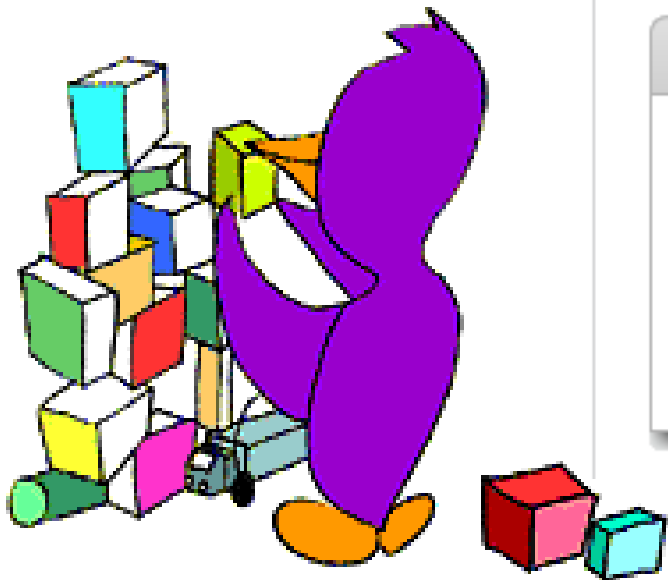
length of world

mod

round

sqrt of 9

# 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 **"your first sprite"**: what will he look like?

Code to control him with arrow keys



Change the Stage:  
Choose a background



Create **"a sprite to fall"**

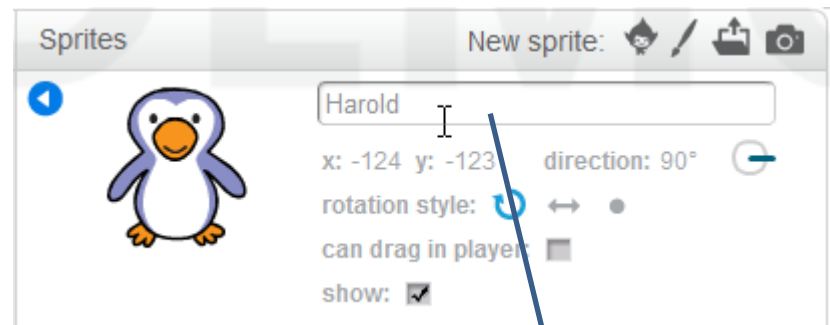
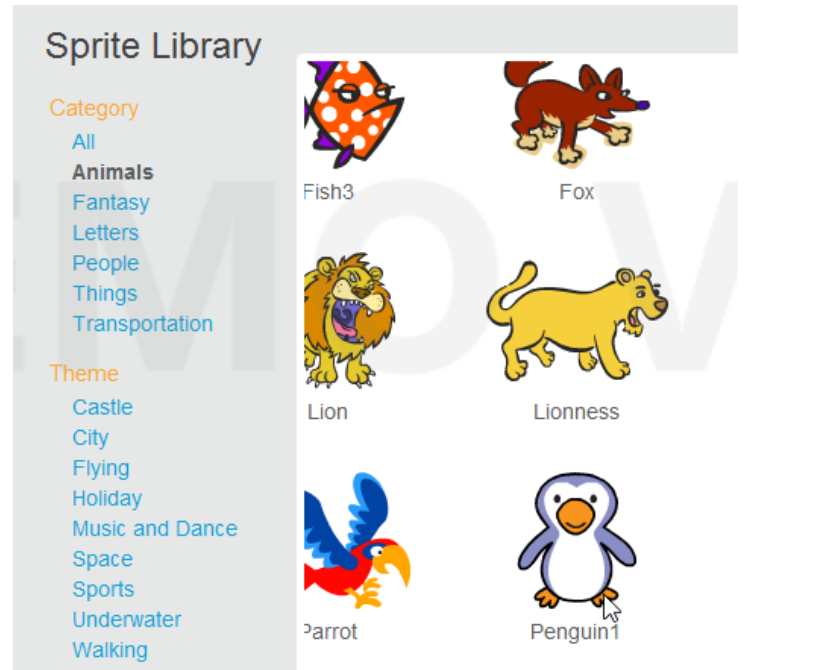
Code to make him move randomly

# Create a Sprite



**New Sprite:**  
Select from  
existing designs

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

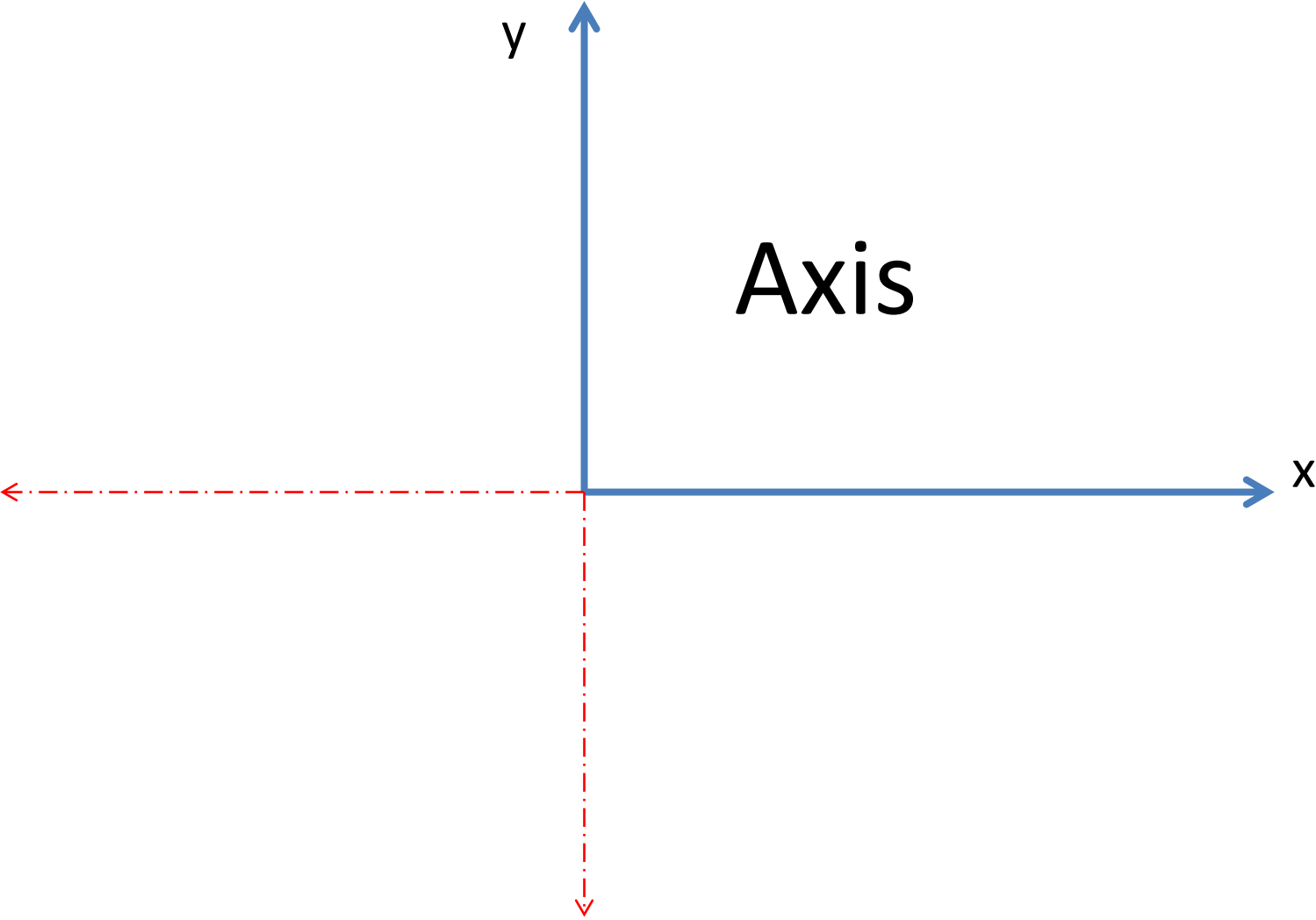


**Name him:**

# Make it Move Under Your Control



# Make it Move Under Your Control

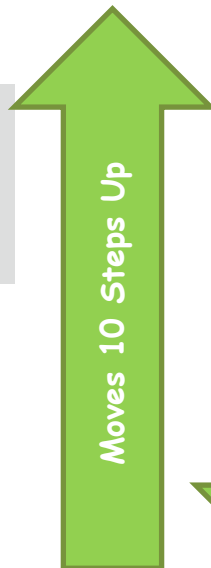


# Make it Move Under Your Control

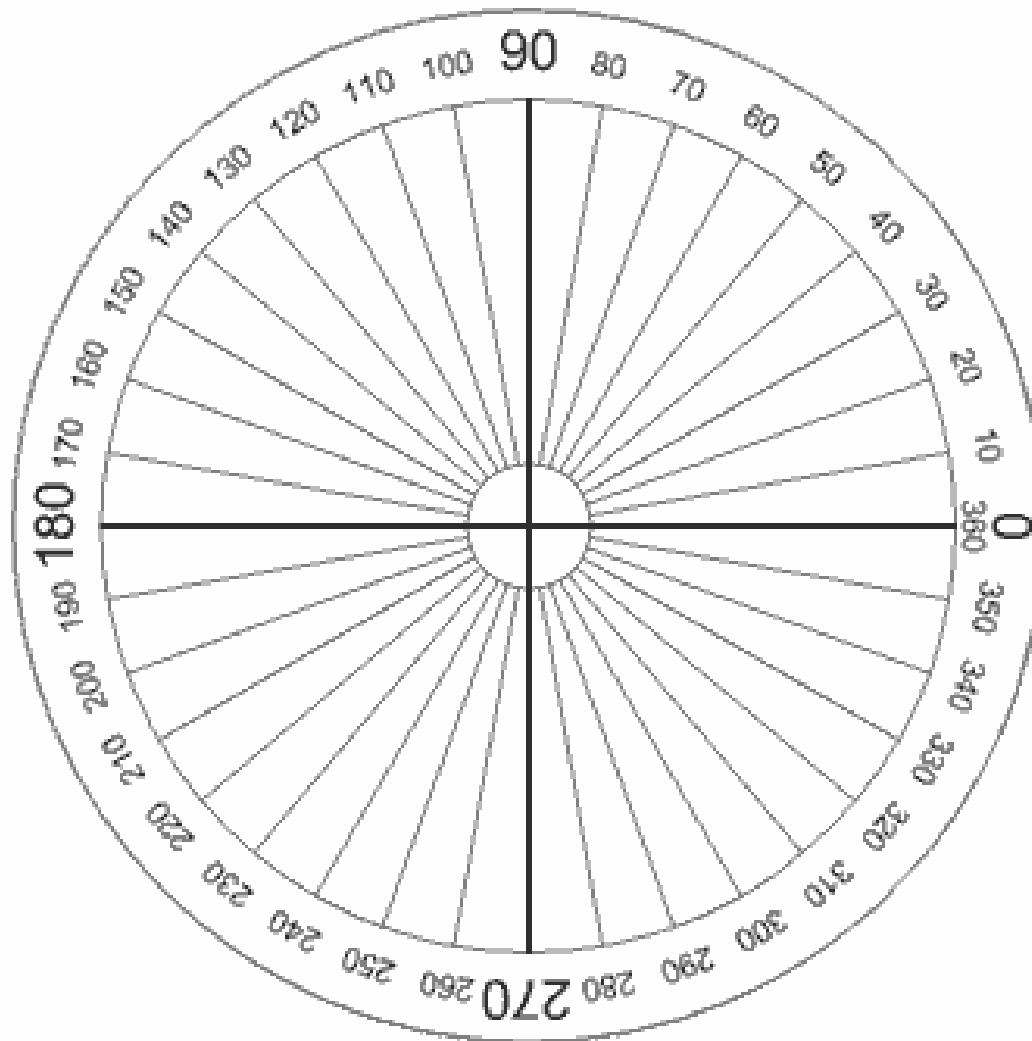


Moves 10 Steps to the Right

# Make it Move Under Your Control



# Degrees - Full Circle



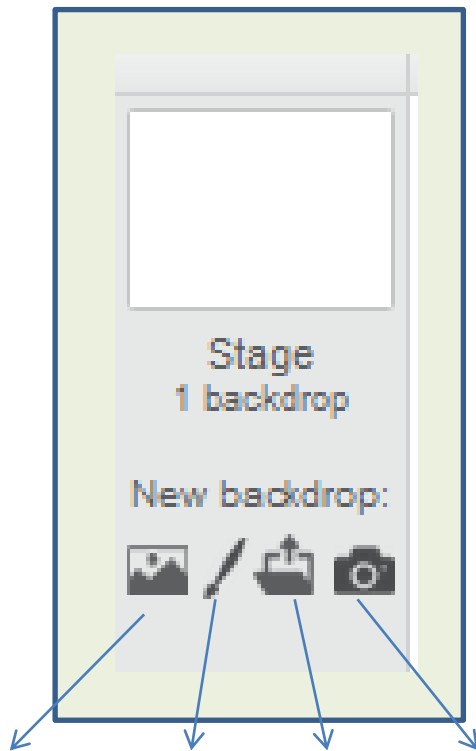


# Create Another Sprite that Moves at Random



```
when clicked
  forever
    turn pick random 1 to 360 degrees
    move pick random 10 to 100 steps
    if on edge, bounce
    wait 0.2 secs
```

# Change the Background



















### 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

Library Paint File Camera

# At the End ...

Upload your project to the Scratch Website

Access it  
from home



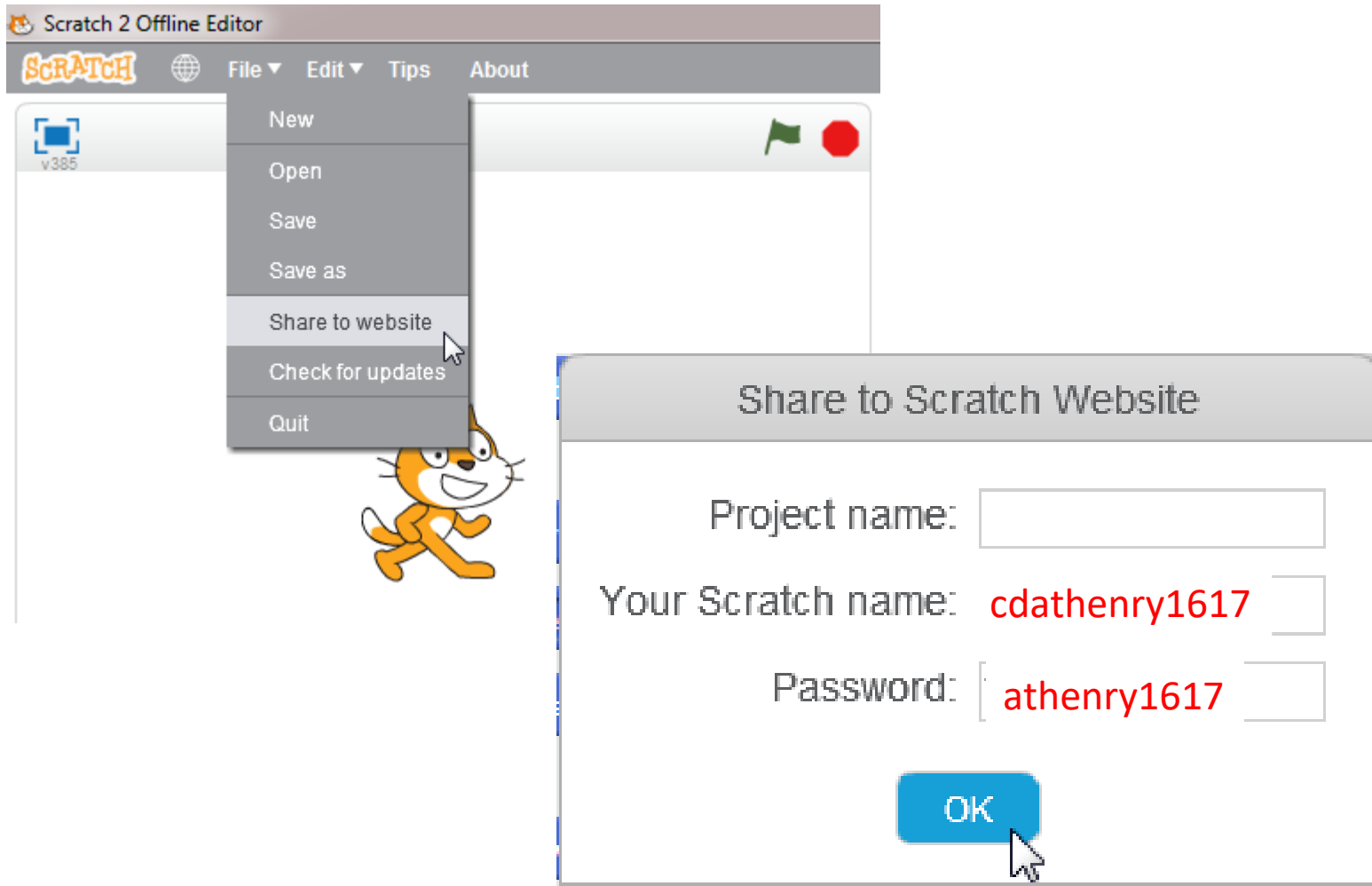
Improve it



Show your  
friends!



# Uploading to Scratch Website



# Keep In Touch!

[coderdojoathenry@gmail.com](mailto:coderdojoathenry@gmail.com)

[@coderdojoathenr](#)

[zen.coderdojo.com/dojo/53](http://zen.coderdojo.com/dojo/53)

