# CoderDojo Athenry



**Code and notes by Martha Fahy, 2017**

# CoderDojo Athenry

# "Above all, be cool"


**Every week:**

✓ Sign in at the door

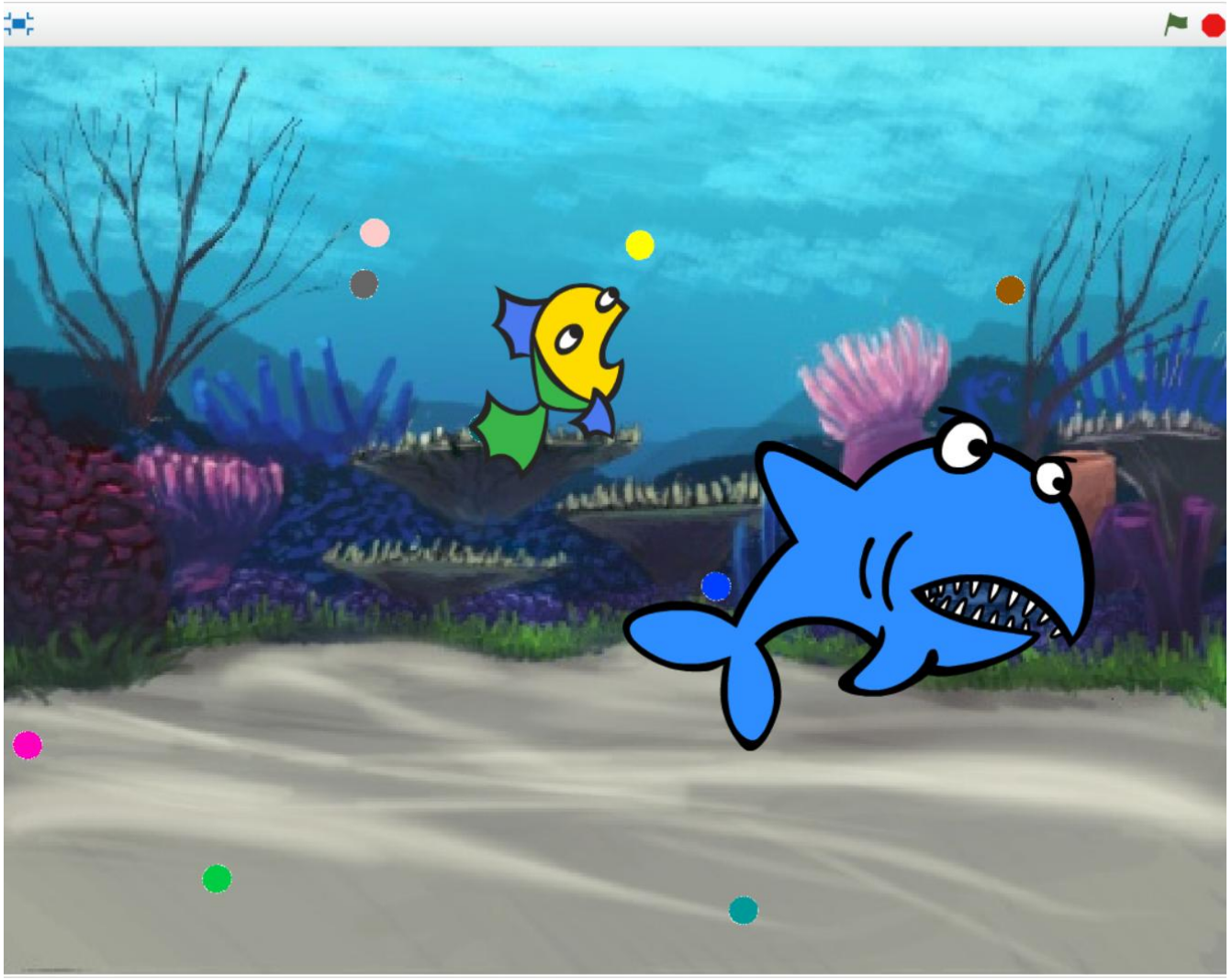
**If you are new:**

✓ 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

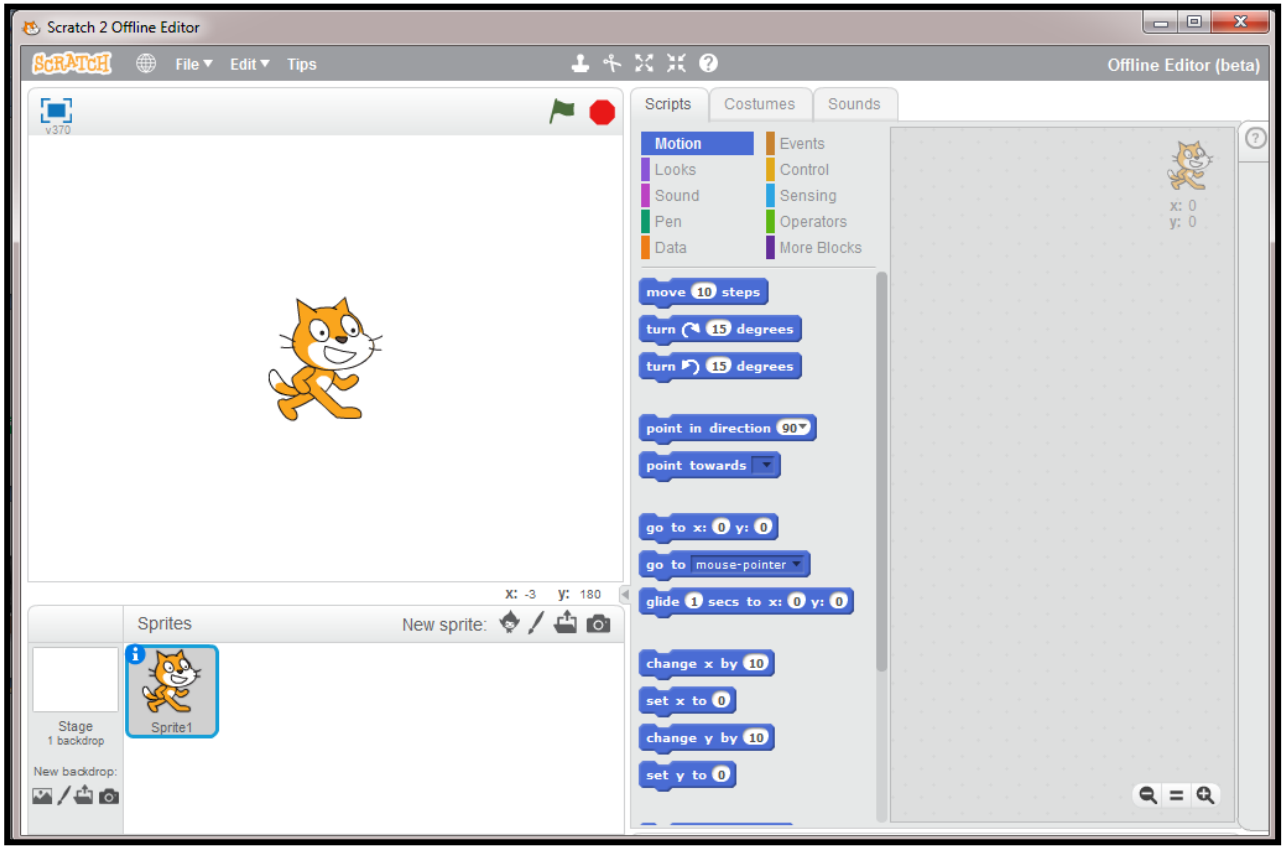
## Decisions

- Do something IF something else is true

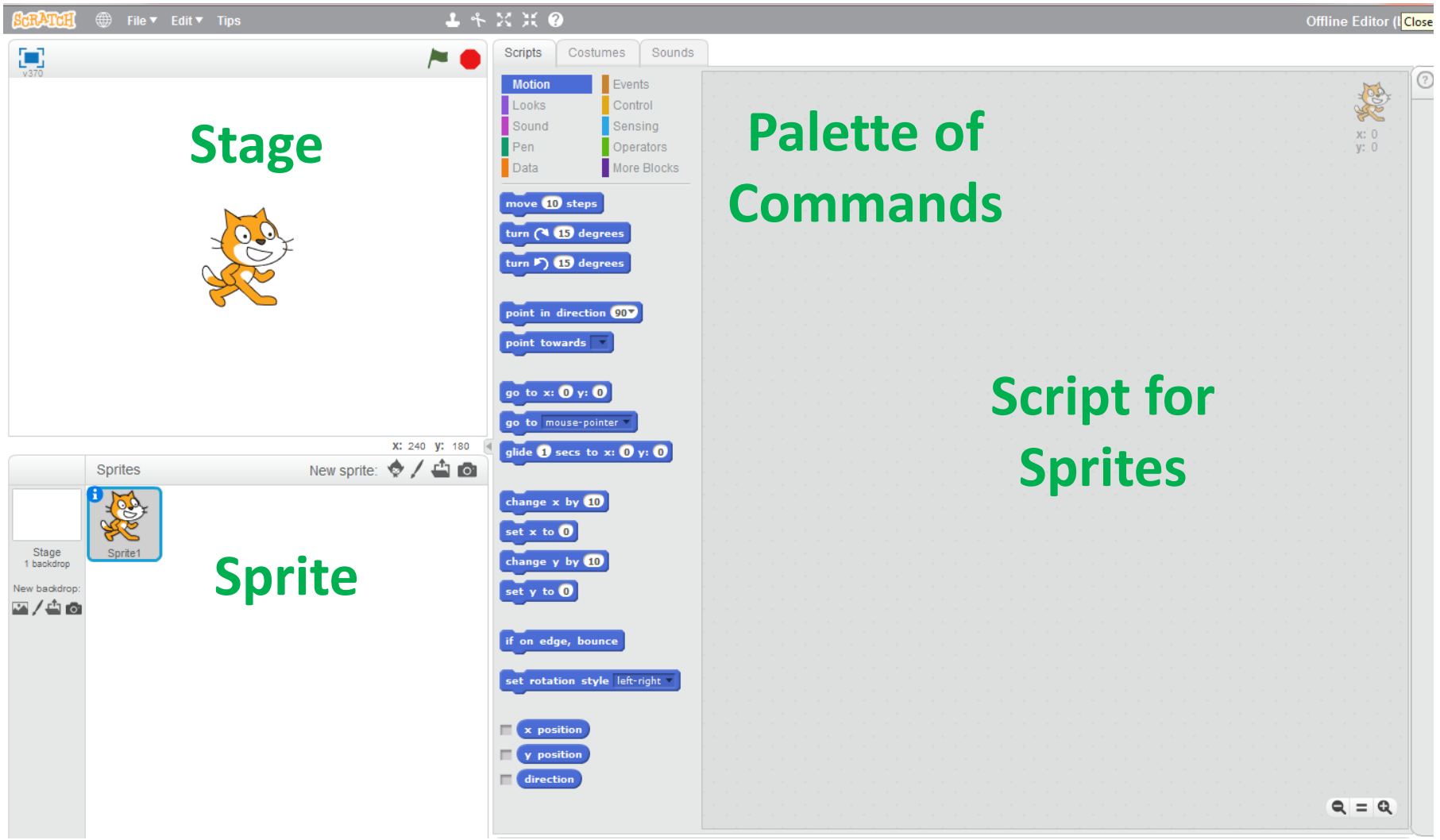
# Scratch

http://scratch.mit.edu

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



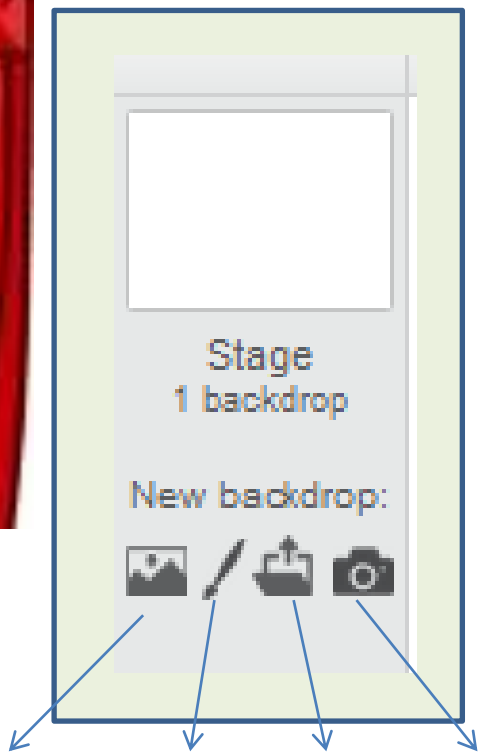
# Scratch's Interface



# The Stage

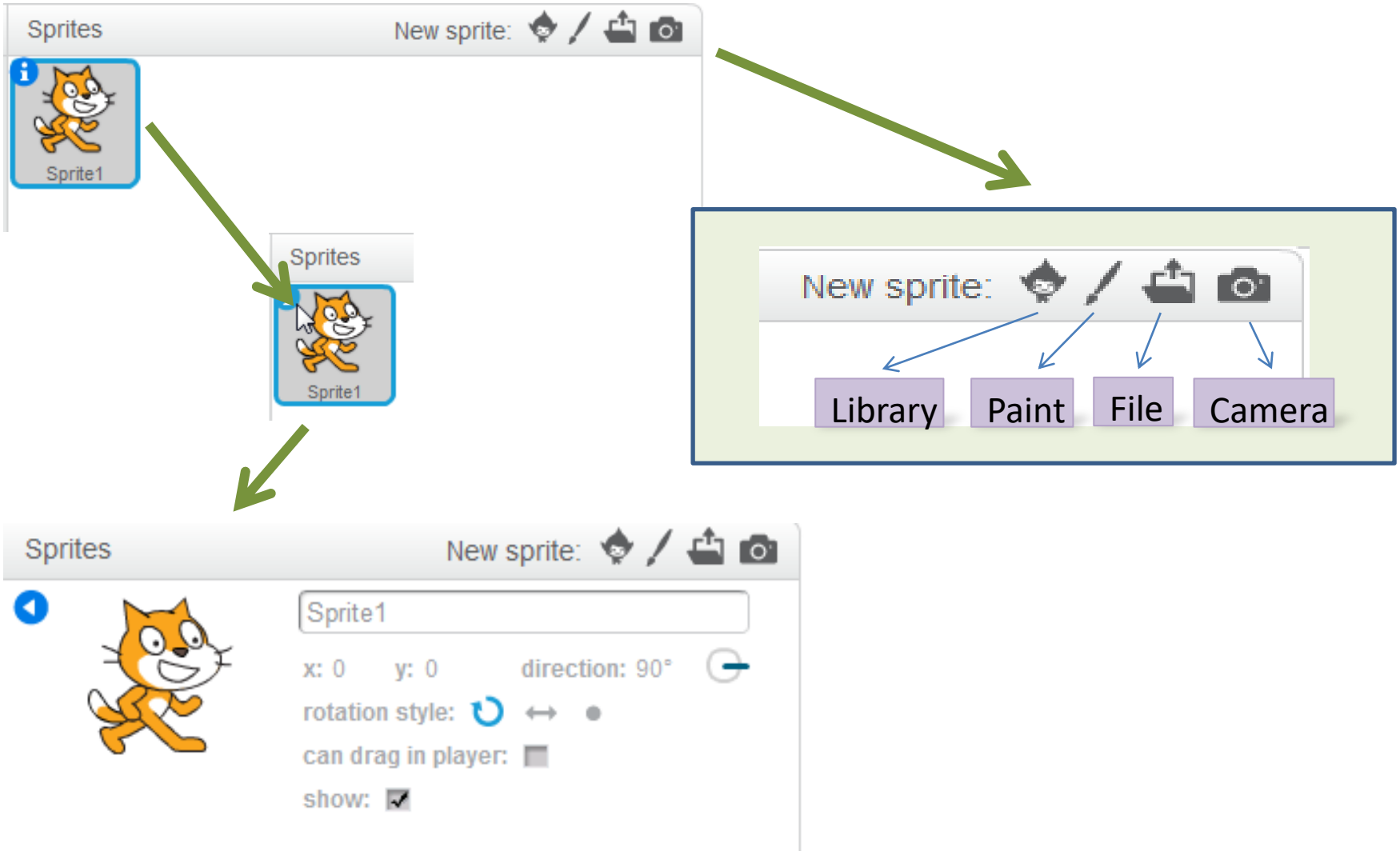
Full Screen

Starts/Stop



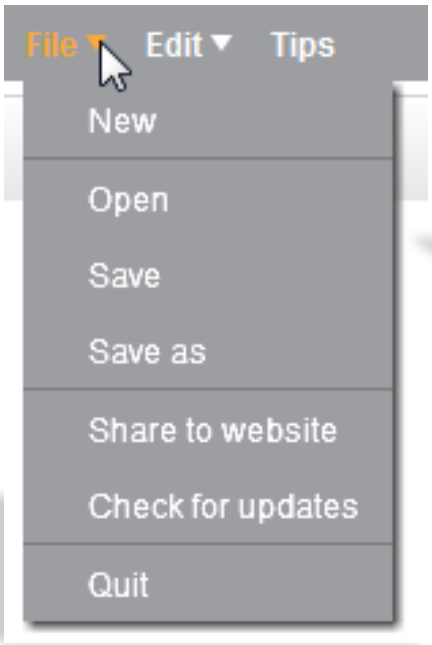

Library | Paint | File | Camera

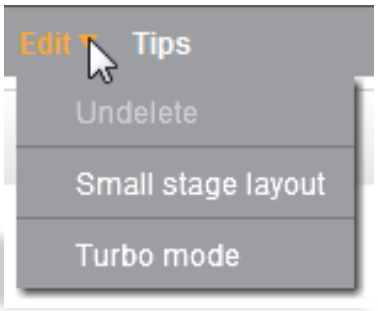
# The Sprites
## (your characters)



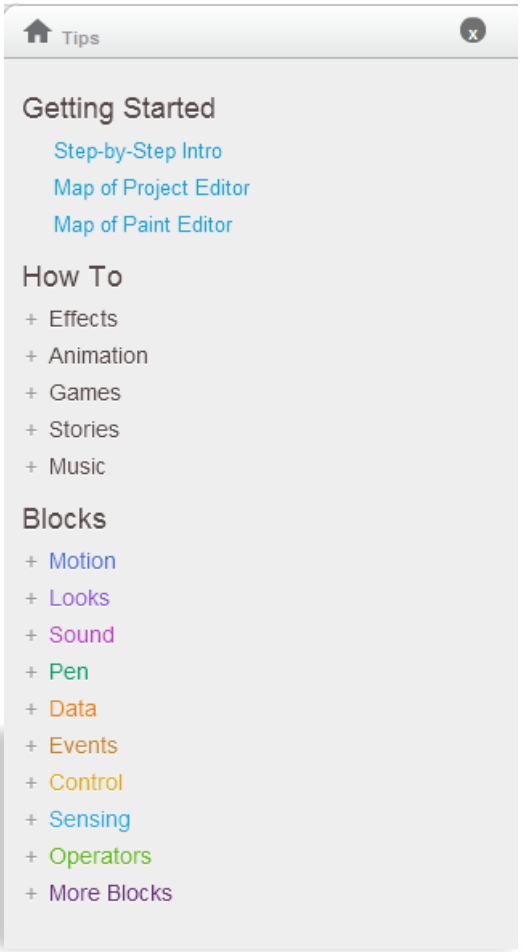
# Main Menu


SCRATCH
File
Edit
Tips

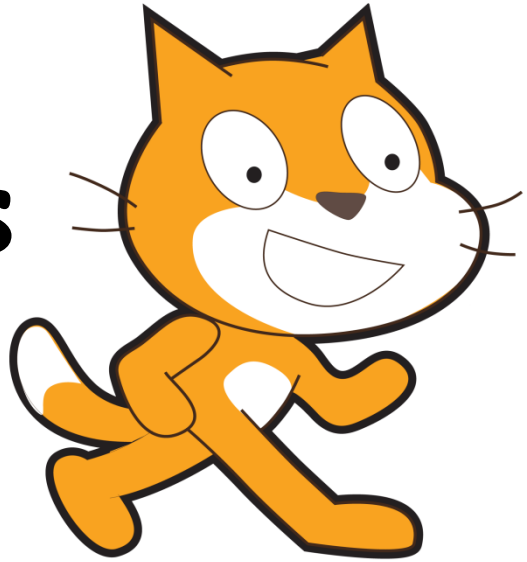

File
Edit
Tips
New
Open
Save
Save as
Share to website
Check for updates
Quit

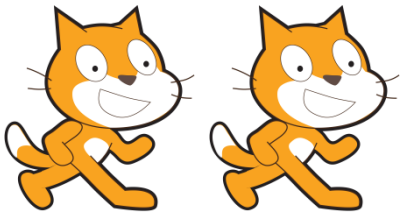

Edit
Tips
Undelete
Small stage layout
Turbo mode


Tips

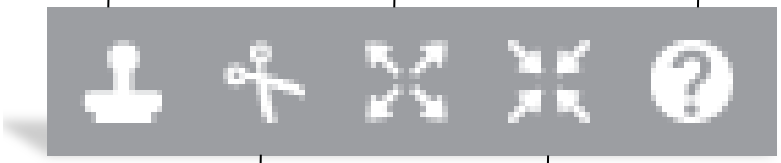

Tips
Getting Started
Step-by-Step Intro
Map of Project Editor
Map of Paint Editor
How To
+ Effects
+ Animation
+ Games
+ Stories
+ Music
Blocks
+ Motion
+ Looks
+ Sound
+ Pen
+ Data
+ Events
+ Control
+ Sensing
+ Operators
+ More Blocks

# Cursor Tools





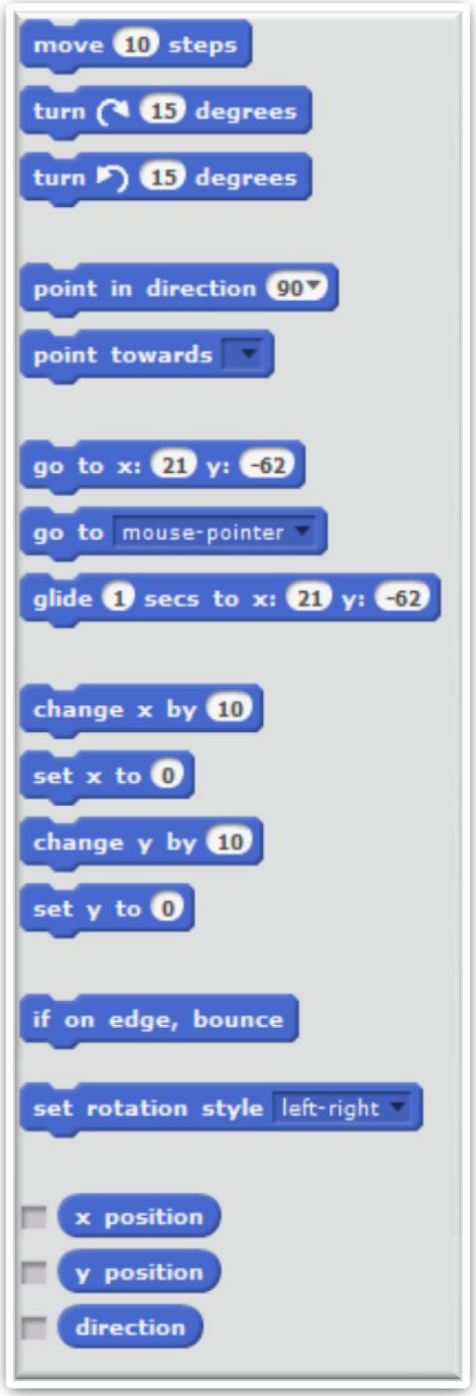
Duplicate Grow Tips



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

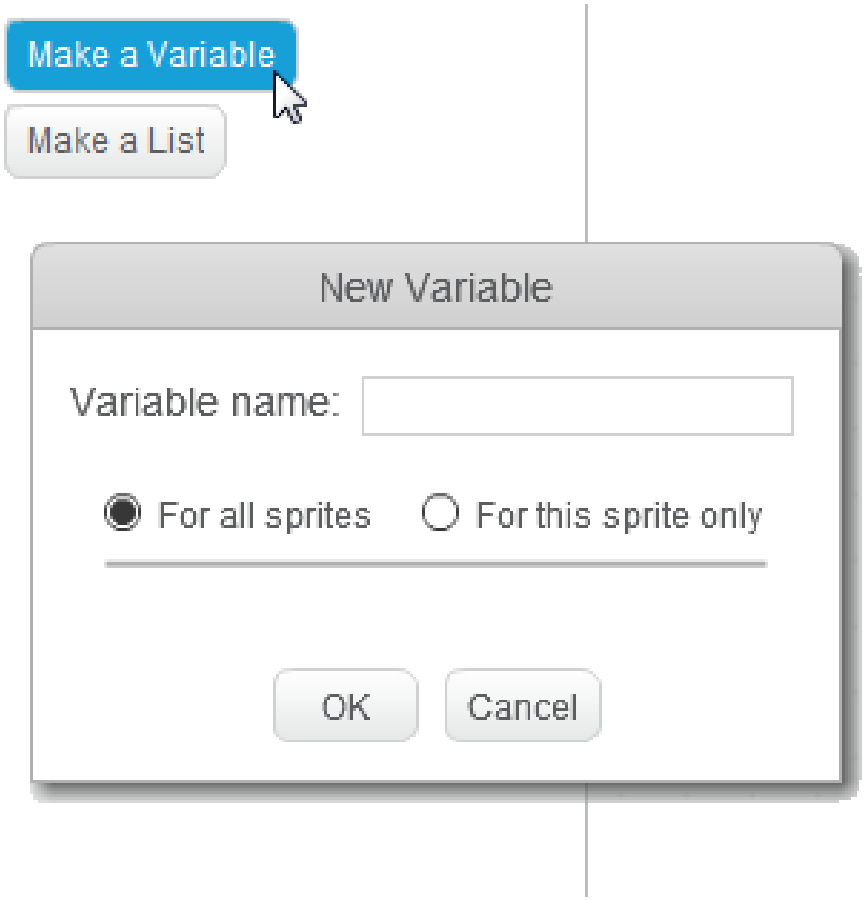
set pen shade to 50

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
OK
Cancel

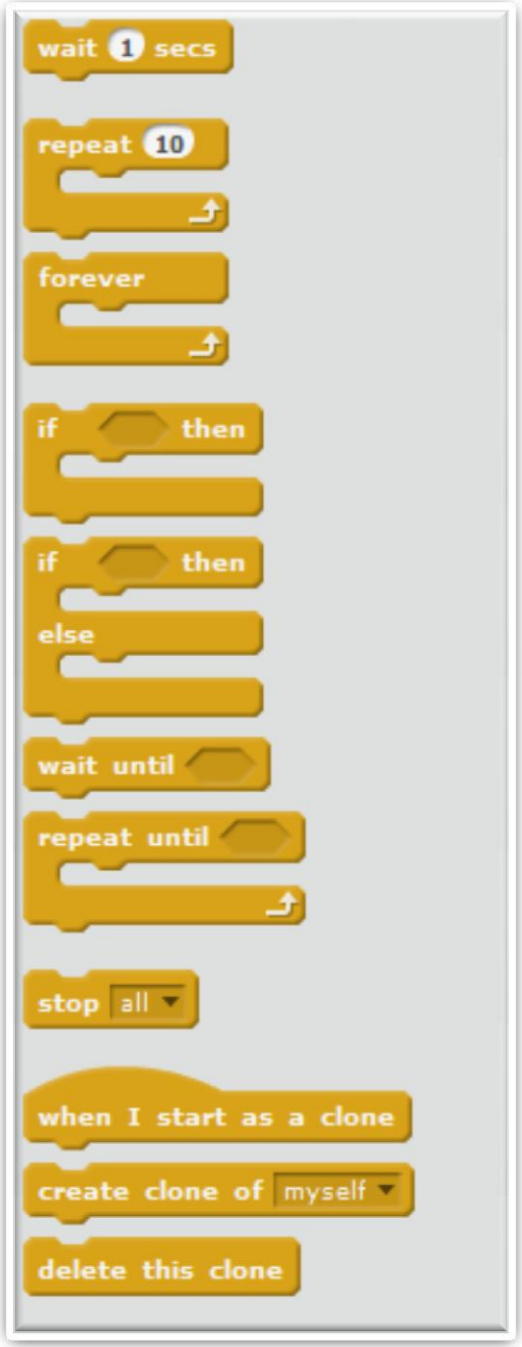
# Event


EVENTS


when clicked
when space key pressed
when this sprite clicked
when backdrop switches to back
when loudness > 10
when I receive message1
broadcast message1
broadcast message1 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

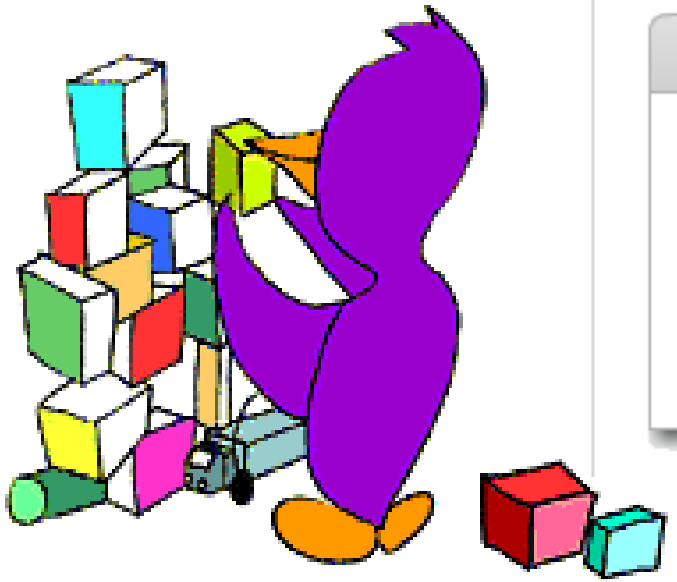
days since 2000

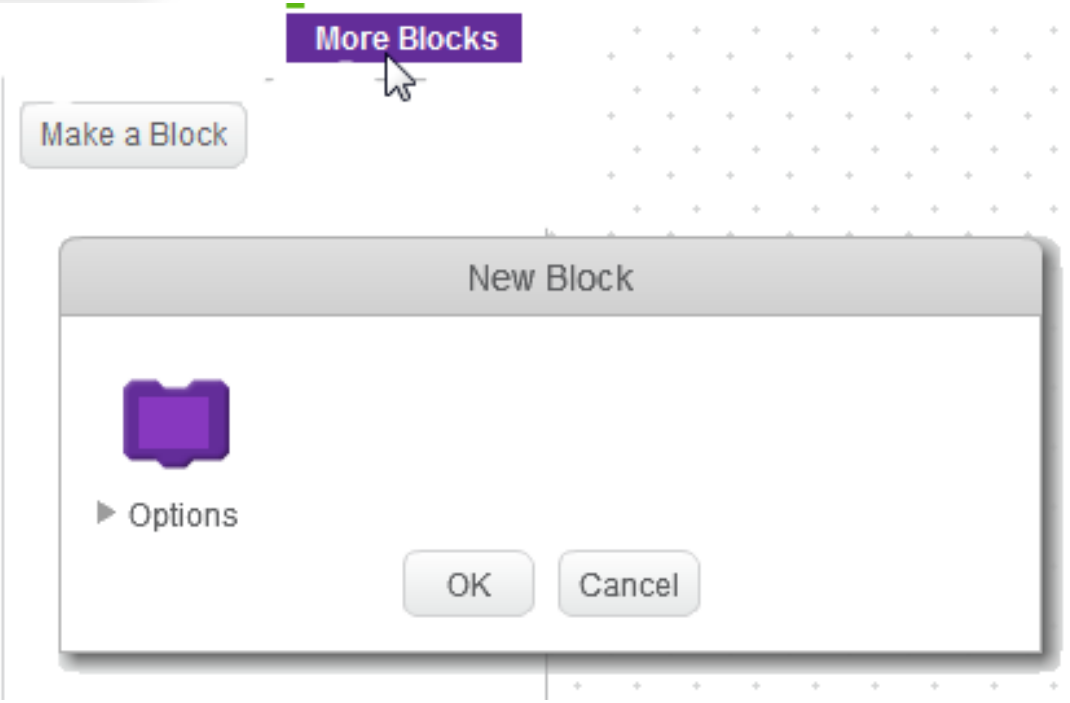
username

# 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

Change the Stage:
Choose a background

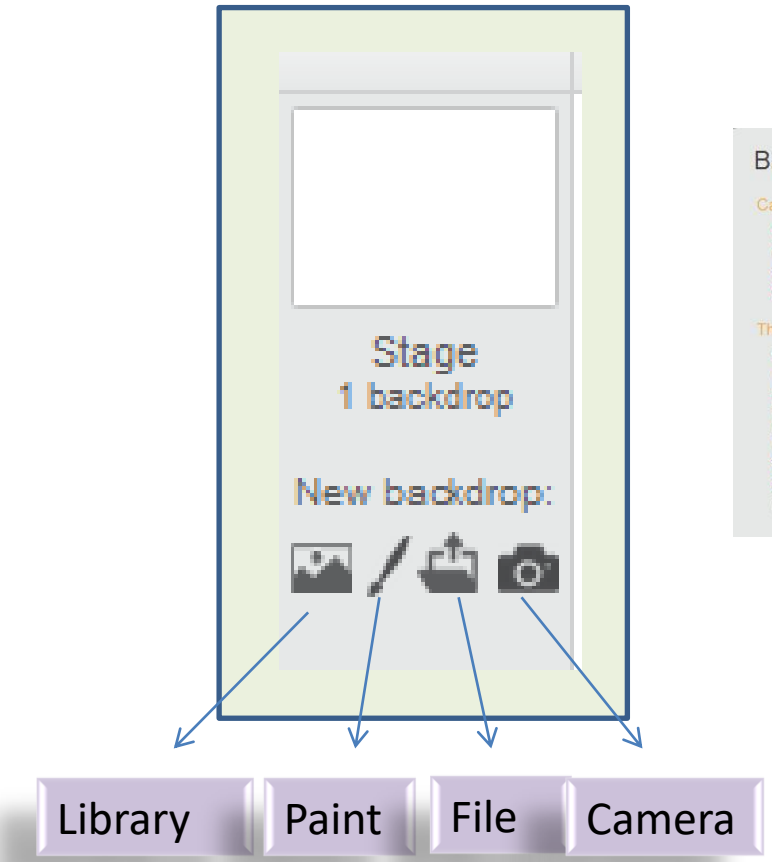
Create **Fish**: what will he look like?

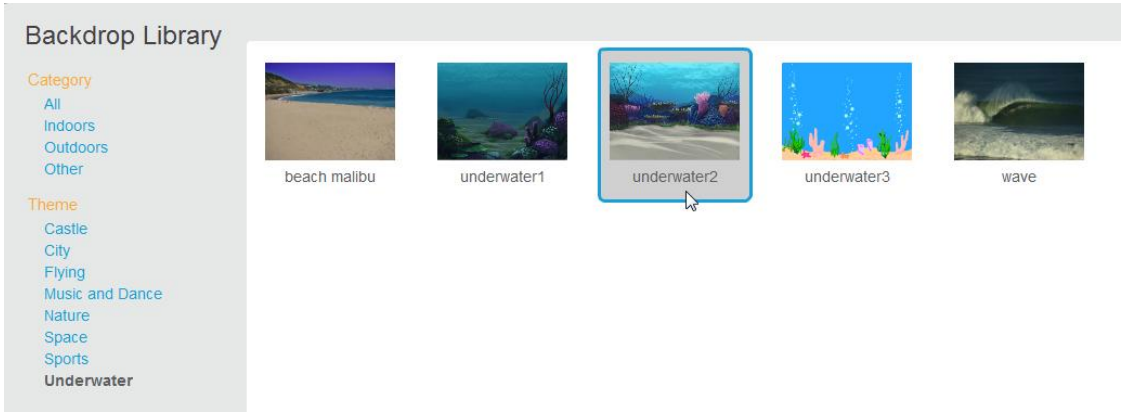
Code to control him

Create **Fish Food**

Code to make it move randomly

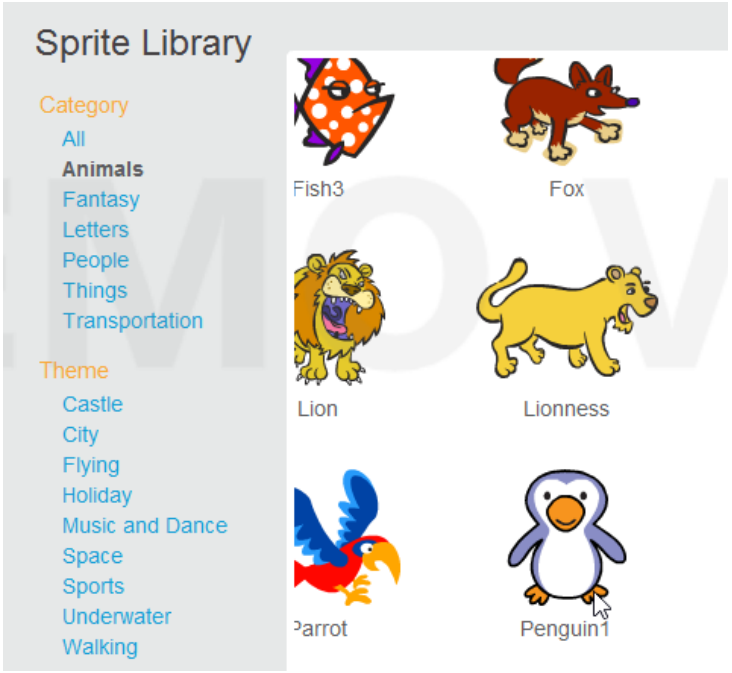
# Change the Background



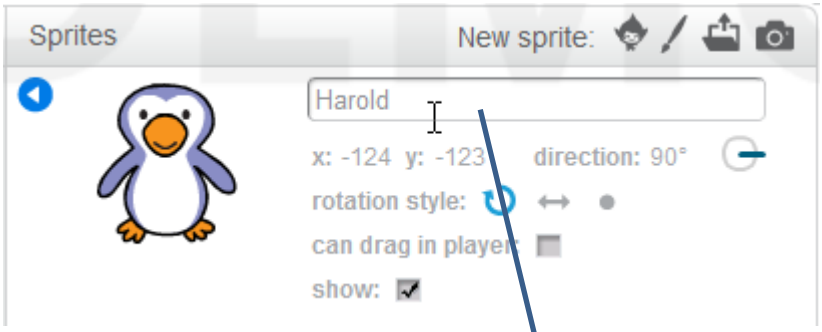



# Create a Sprite


**New Sprite:**
Select from existing designs

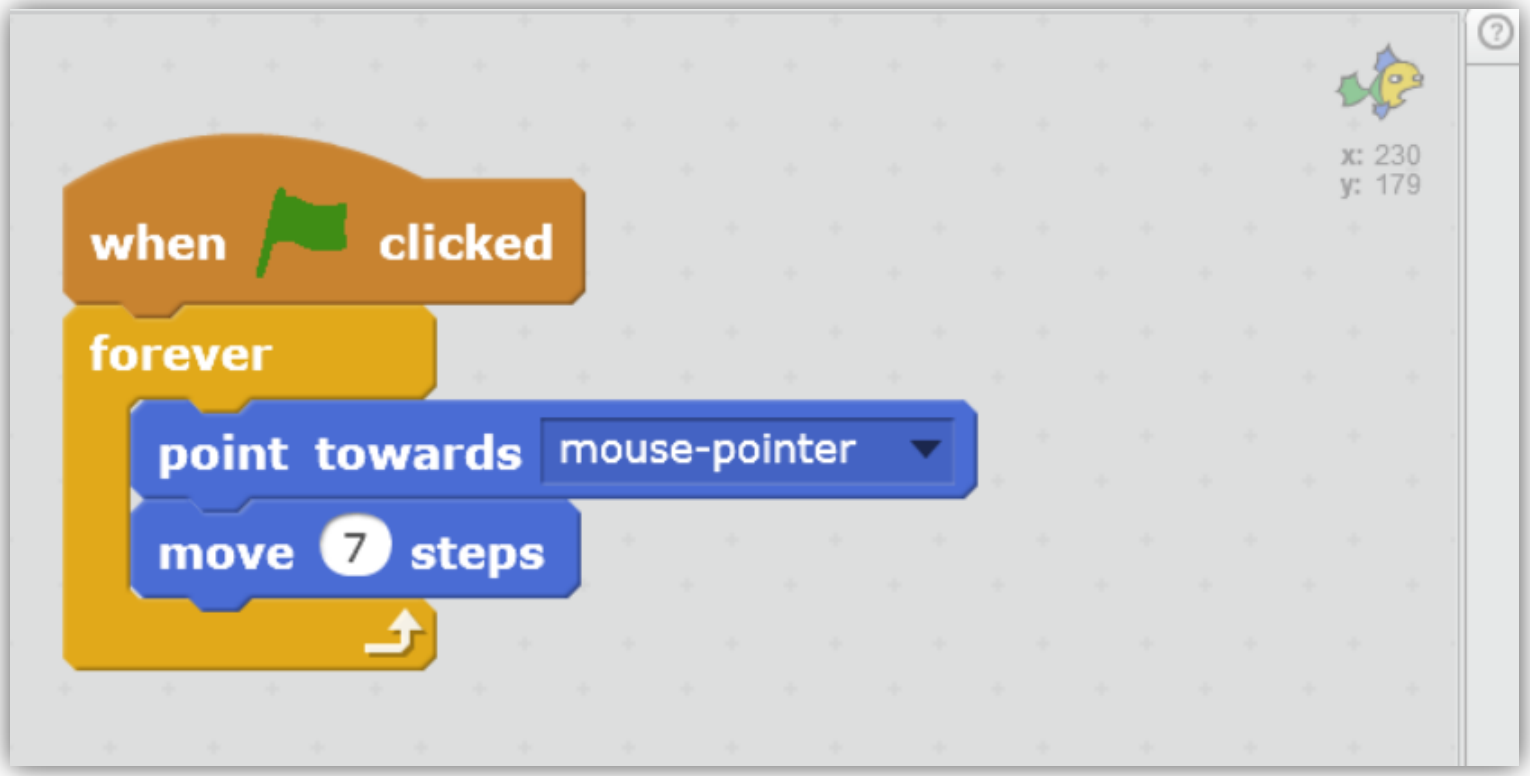



**Tip:**
Default size is big relative to stage: this shrinks it

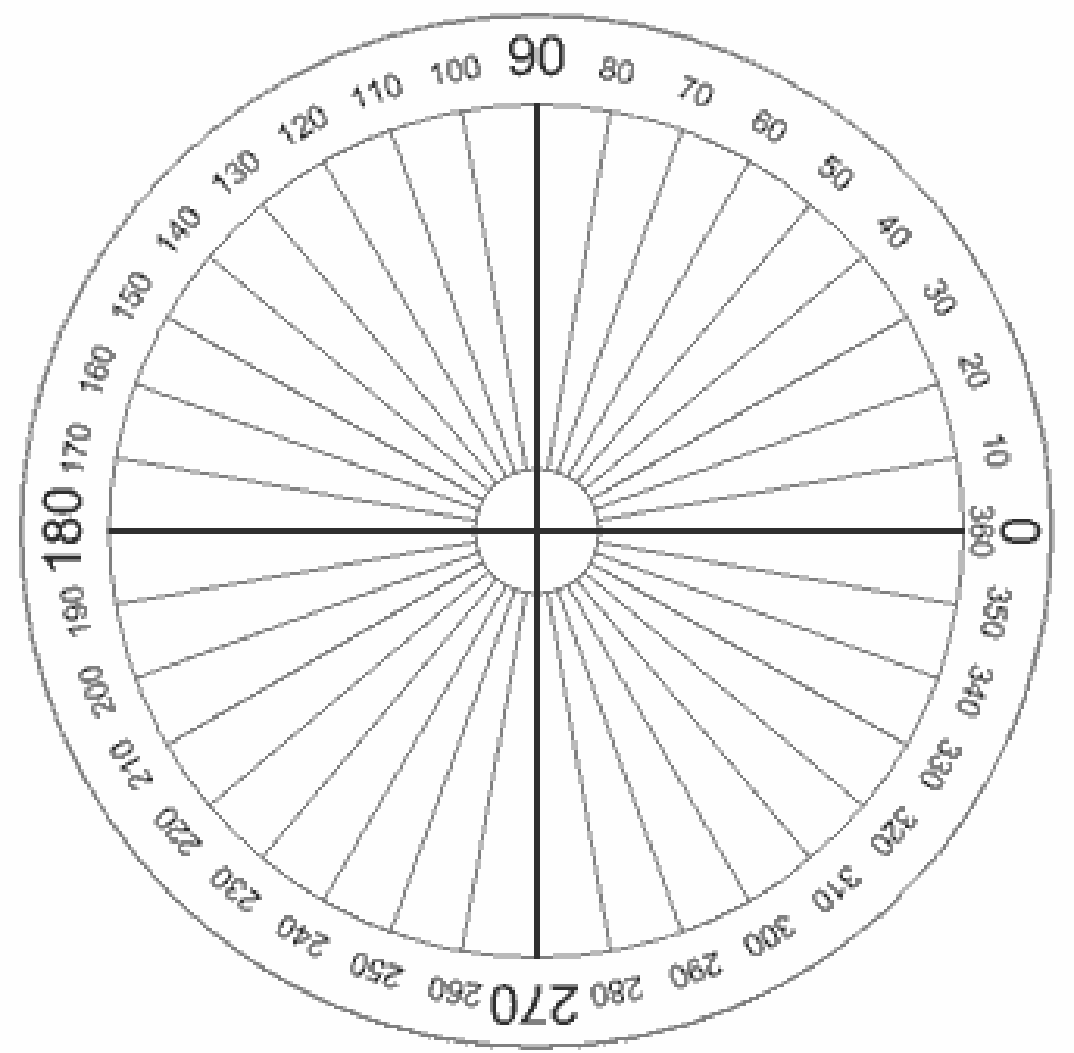



**Name him:**

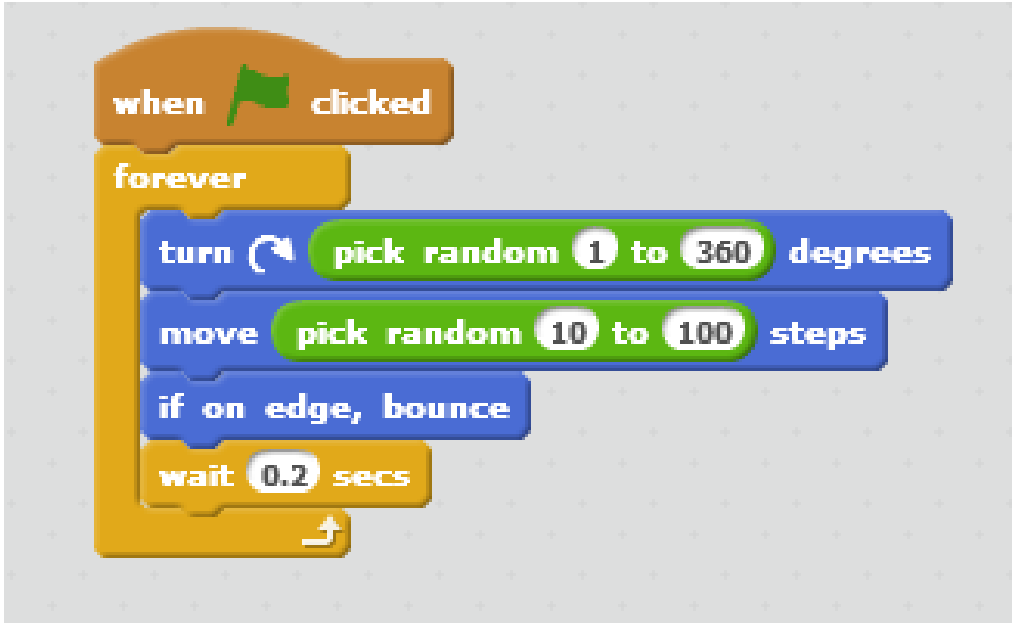
# Make it Move Under Your Control



# Degrees – Full Circle



# Create Another Sprite that Moves at Random

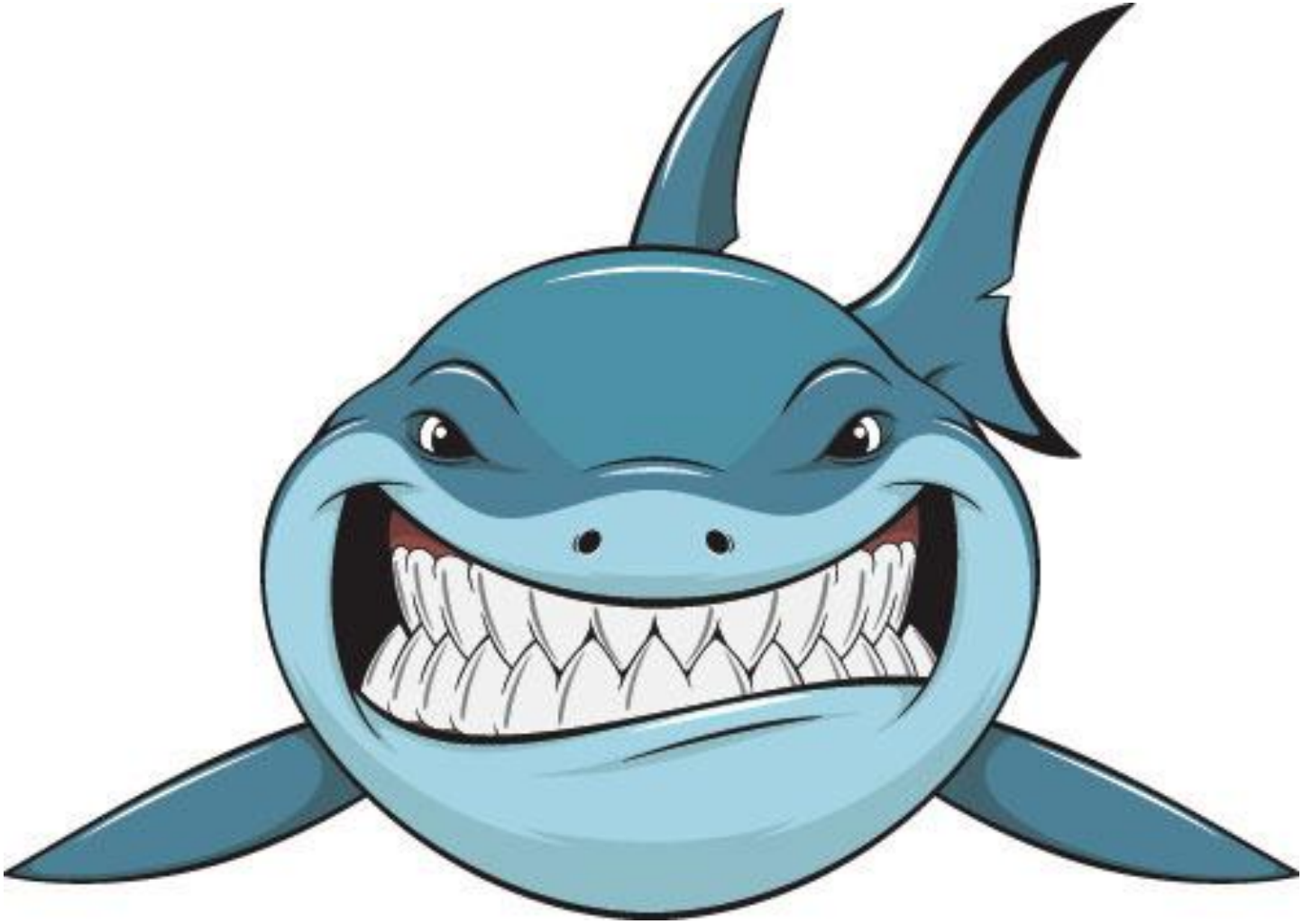


# What happens when your Fish eats the Fish Food

# What happens when your Fish eats the Fish Food

Important

# Who might eat the Fish?



# Keep In Touch!

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