Note for instructor

- This is the third lesson of the three-lesson workshop. The third lesson will move onto more advanced concepts such as sensing, broadcasting, layers, and variables. In the third lesson, we are going to create a Halloween-themed game.

Intro to SCRATCH

Lesson 3
Sensing &
Broadcasting

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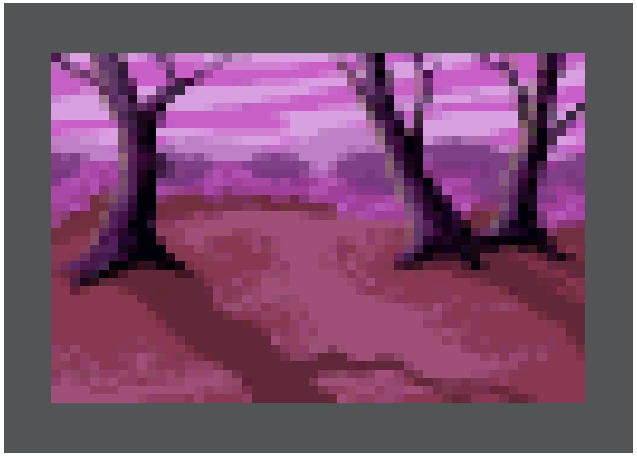
Class Objectives

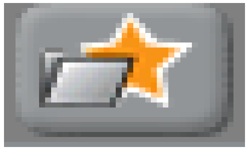
- Have Fun!
- Use variable to store values
- Use broadcast to communicate among sprites
- Create your own sprite
- Learn more on sensing blocks
- Incorporate sound effects
- Understand layer concept

Preparation -Background

- Click on Stage button
- Switch to backgrounds tab and import background woods
- Import > Nature > Wood

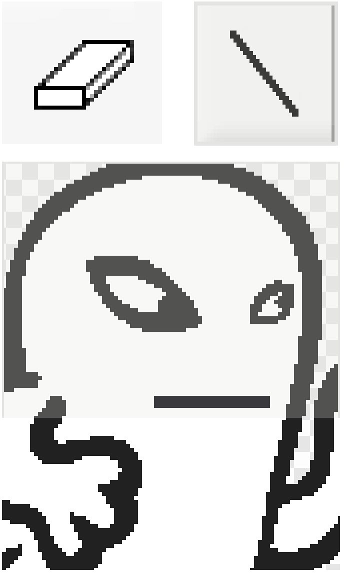


Preparations – Add sprite

- Click  to import ghost2-b
    - fantasy > ghost2-b
    - Name the sprite “hungry ghost”
- Click on **Costumes to edit the sprite**
- Click C**opy to add new costume**
- Name the costumes “Open” and “Closed” respectively

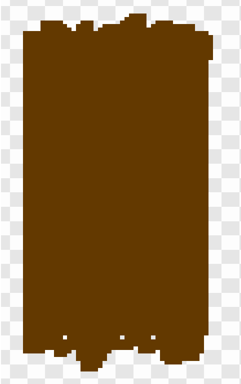
Preparation -Edit sprite

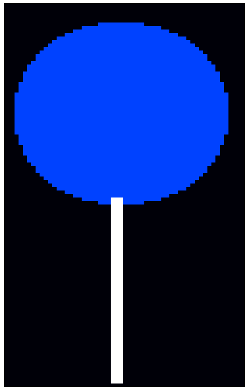
- Make the ghost “Close” its mouth
- Click **Edit on the “Closed” costum**
- Use **Eraser to erase its mouth**
- Use **Line tool to draw a line**
- Click OK to complete editing



Preparation – Create Sprite

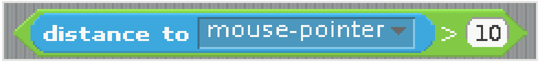
- Use Paint Editor to draw candies
- Click on
- Use **Paintbrush, Line tool, rectangle/ellipse tool to draw**
- Repeat previous steps





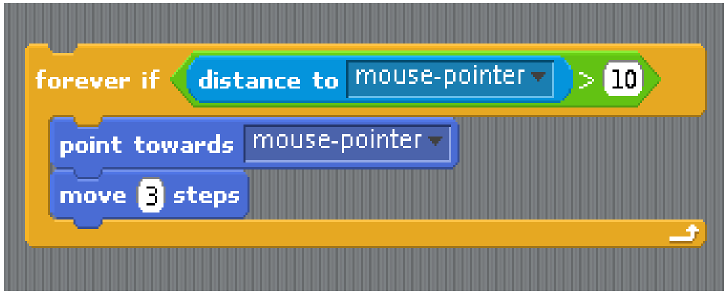
Movement of the ghost

- Use this condition to activate the movement



```
distance to mouse-pointer > 10
```

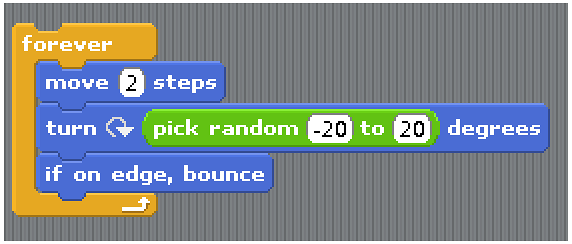
- Use point towards mouse-pointer and move 3 steps to move the ghost towards the mouse pointer



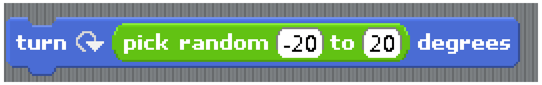
```
forever if distance to mouse-pointer > 10
  point towards mouse-pointer
  move 3 steps
```

Movement of the candy

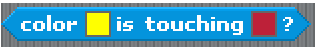
- Use the following script to move the candy randomly



```
forever
    move 2 steps
    turn ↻ pick random -20 to 20 degrees
    if on edge, bounce
```

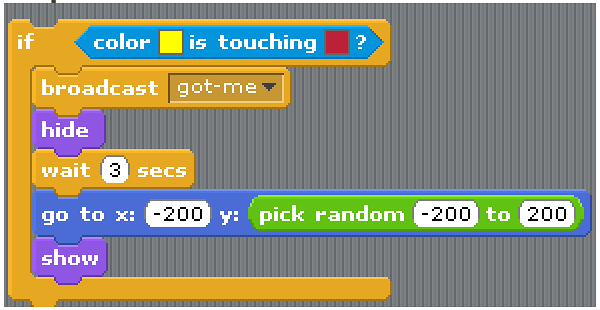
-  `turn ↻ pick random -20 to 20 degrees` simulate the floating motion

Sensing and Broadcasting

- Use  color 🟨 is touching 🟥 ? to detects collision between ghost and candy
- Use the broadcast got-me and when receive got-me to build a “communication path” between sprites

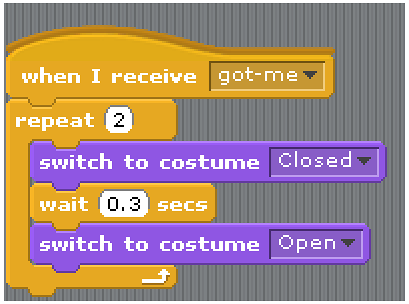
Sensing and Broadcasting

- Add the following script to forever block of the candy sprite



```
if color 🟨 is touching 🟥 ?
    broadcast got-me
    hide
    wait 3 secs
    go to x: -200 y: pick random -200 to 200
    show
```

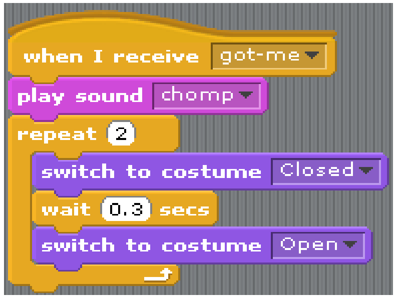
- Add the following script to the ghost sprite



```
when I receive got-me
repeat 2
    switch to costume Closed
    wait 0.3 secs
    switch to costume Open
```

Sound effects

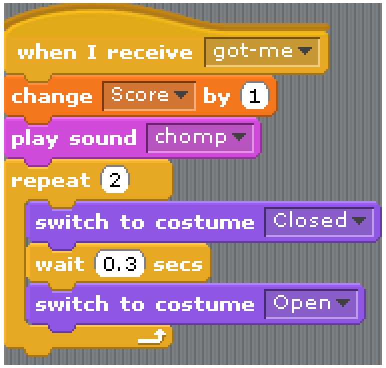
- Click to import follow-mouse fish
  - Animals > follow-mouse f…
- Click on the **Sounds tab**
  - Drag the “chomp” sound to the ghost sprite
- Delete the fish sprite
- Add play sound chomp to the ghost sprite



```
when I receive got-me
play sound chomp
repeat 2
    switch to costume Closed
    wait 0.3 secs
    switch to costume Open
```

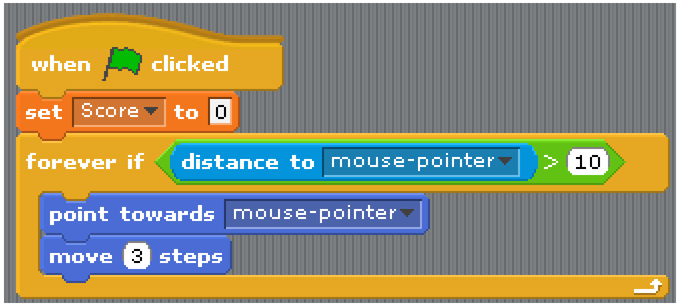
Scoring

- Use a variable to store the number of candies ate by the ghost
- Click on the variable blocks
  - Make a variable
  - Name it "Score"



```
when I receive got-me
change Score by 1
play sound chomp
repeat 2
    switch to costume Closed
    wait 0.3 secs
    switch to costume Open
```

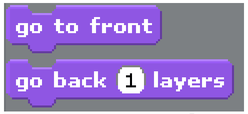
- Add change Score by 1 and set Score to 0 to the ghost sprite



```
when ⚑ clicked
set Score to 0
forever if distance to mouse-pointer > 10
    point towards mouse-pointer
    move 3 steps
```

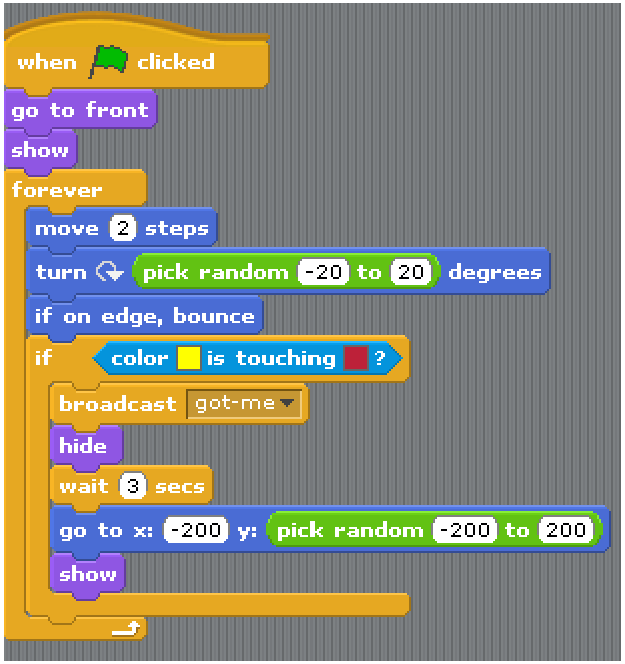
Layers

Move sprite back or forth a layer so that it can be hidden behind other sprites



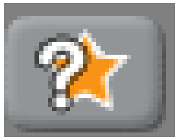
```
go to front
go back (1) layers
```

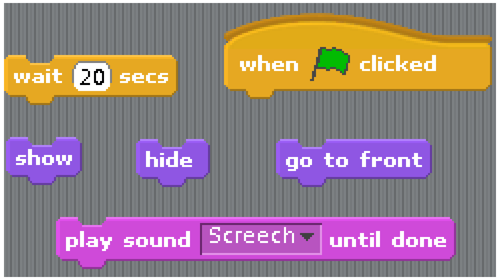
- Add **go to front** to the candy Sprite



```
when 🏴 clicked
go to front
show
forever
  move (2) steps
  turn ↻ (pick random (-20) to (20)) degrees
  if on edge, bounce
  if <color [🟨] is touching [🟥]?>
    broadcast [got-me ▼]
    hide
    wait (3) secs
    go to x: (-200) y: (pick random (-200) to (200))
    show
```

Challenge

- Import a random sprite by clicking 
- Use the following blocks to produce the surprise script



```
wait 20 secs
when [flag] clicked
show
hide
go to front
play sound Screech until done
```