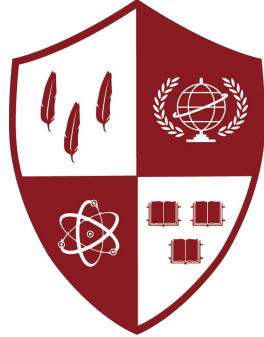
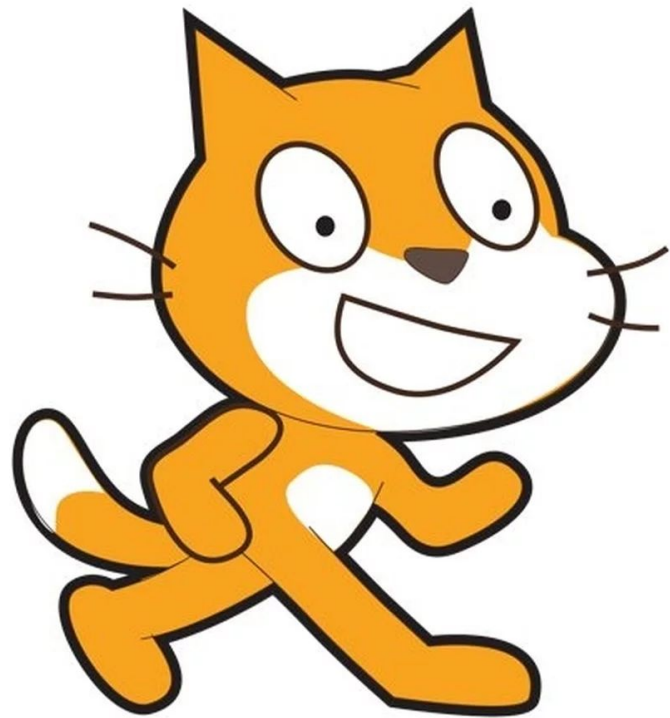


WCA

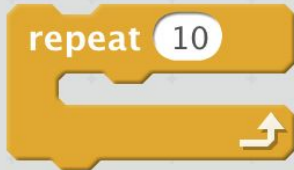
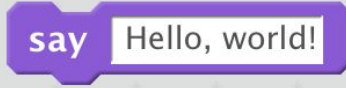


The Academies
at Harvard

Day 0:
Scratch and Game Development



Scratch



Python

```
print("Hello, world!")
```

```
if <condition>:  
    # thing to do  
else:  
    # another thing to do
```

```
x = 42
```

```
for i in range(10):  
    # stuff to do
```

scratch.mit.edu

Case Study: Hello, You

Covers:

- Starting the Program: "On Green Flag Clicked"
- Say Block
- Displaying Values
- User Input

Variables



42



Case Study 1: Adding Cat

Covers:

- Say Blocks
- Displaying Values
- Variables
- Math

Case Study 2: Poof

Covers:

- Events
- Sprites
- Costumes

Conditions







sun's
out
guns
out

Loops



Case Study 3: Click Me Counter

Covers:

- Say Blocks
- Displaying Values
- Display/Hide Sprites
- Conditions
- Variables
- Repeat Until Loops
- Events
- Backgrounds

The Game Loop



PRESS START

LEVEL-1



X13

X1
X0

B

A

-LIFE-



GAME OVER

Case Study 4: Jump

Covers:

- Forever Loops
- Movement
- Conditions
- User Input
- Game Loop
- Custom Blocks

Case Study 5: Move 1.0

Covers:

- Forever Loops
- Movement
- Conditions
- Math
- User Input
- Game Loop

Practice: Move

Functions

input →



→ **output**



WHAT'S
IN THE
BOX?!

Abstraction



Case Study 6: Bark!

Covers:

- Sounds
- Say
- Repeat Until Loops
- Custom Blocks (functions)

Practice: Guessing Game

Collision Detection



6:25



f KTVU

EMPLOYEES WALKING INTO GLASS WALLS AT APPLE'S NEW CUPERTINO CAMPUS

SANTA CRUZ

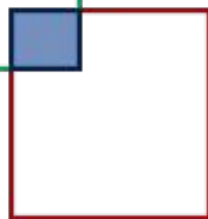
8AM ☁ 52° NOON ☁ 64° 5PM ☁ 68°



NO OVERLAP



ONE AXIS OVERLAP



TWO AXES: COLLISION

Case Study 7: Catch Me If You Can

Covers:

- Sounds
- Variables
- Repeat Until Loops
- Forever Loops
- Conditions
- Collision Detection

Practice: Goal

Scratch Showcase

Time to make your own game!