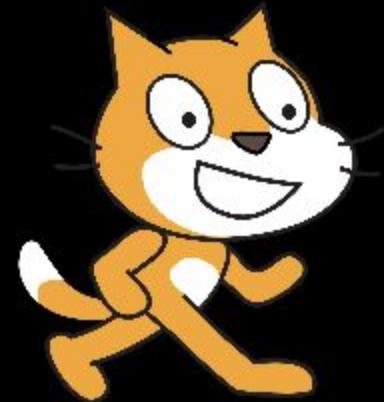


This is CS50

2/3

of CS50 students have never taken CS before



MARIO  
000700

0x01

WORLD  
1-1

TIME  
287



uggcf://lbhgh.or/bUt5FWLEUN0

**Ballot**

Alice

**Ballot**

Alice

**Ballot**

Bob

**Ballot**

Bob

**Ballot**

Charlie



# Big Board speller

Rank	Name	Time	Load	Check	Size	Unload	Memory	Heap	Stack
1	Elijah Tai <span>Staff</span>	5.435 s	0.449 s	4.986 s	0.000 s	0.000 s	11.8 kB	4.6 kB	7.2 kB
2	Matthew Shabet <span>Staff</span>	5.438 s	0.478 s	4.959 s	0.000 s	0.000 s	11.8 kB	4.6 kB	7.2 kB
3	Sasha Lioutikova	5.720 s	0.685 s	5.036 s	0.000 s	0.000 s	7.9 kB	4.6 kB	3.2 kB
4	Thomas Ballatore <span>Staff</span>	5.858 s	0.934 s	4.924 s	0.000 s	0.000 s	7.9 kB	4.6 kB	3.2 kB
5	Peter Phan	5.877 s	0.640 s	5.228 s	0.000 s	0.009 s	8.0 MB	8.0 MB	2.9 kB
6	Katherine Engelman	5.944 s	0.777 s	5.157 s	0.000 s	0.009 s	8.0 MB	8.0 MB	3.0 kB
7	Ashley Zhuang	5.947 s	0.581 s	5.145 s	0.000 s	0.220 s	8.0 MB	8.0 MB	1.1 kB
8	Sayak Maity	5.986 s	0.554 s	5.428 s	0.000 s	0.004 s	2.3 MB	2.3 MB	2.9 kB
9	Jack Boettcher	6.022 s	0.794 s	5.183 s	0.000 s	0.045 s	9.2 MB	9.2 MB	2.9 kB
10	Rohil Badkundri	6.023 s	0.716 s	5.091 s	0.000 s	0.216 s	8.0 MB	8.0 MB	3.0 kB





what ultimately matters in this course is not so much where you end up relative to your classmates but where you end up relative to yourself when you began

CS 50

Brian Kernighan

bwk@das

110-D Pierce Hall

Mon 2-3, Tue 10-11

Review Session Sci Ctr A, Friday

READ: Roberts, ch 1&2

Comer, ch 1, 18, 19

Functions - instructions that do the work.

/usr/include/stdio.h ← library is here  
wc stdio.h = word count

Arguments - info that's passed from one function to another, to have something done by / performed on it.

Functions - instructions that do the work.

/usr/include/stdio.h & library is here  
wc stdio.h = word count

Arguments - Info that's passed from one function to another, to have something done by / performed on it.

Functions - instructions that do the work.

/usr/include/stdio.h ← library is here

wc stdio.h = word count

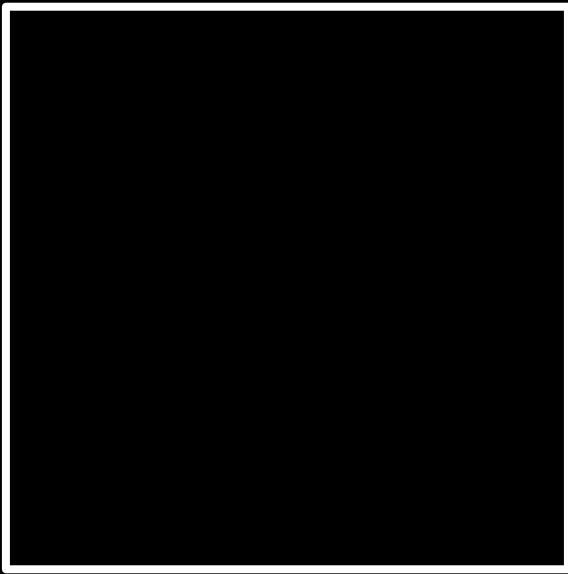
Arguments - Info that's passed from one function to another, to have something done by / performed on it.

Functions - instructions that do the work.

/usr/include/stdio.h ← library is here  
wc stdio.h = word count

Arguments - Info that's passed from one function to another, to have something done by / performed on it.

input →



→ output

A

65

01000001



72

73

33

H

72

I

73

!

33

11111011000000010

128514



Algorithm - precise sequence of steps  
for getting something done.

Imp't: Precision!  
Correctness!

Programming: Process of taking an algorithm  
and putting it into a language  
a computer can process.

Fortran - Designed to make working  
1960s w/ physics, mechanics problems easy.

A compiler translates the high-level  
language into low-level assembly language

1970s - System-programming languages.  
People could write OSes - moved  
away from assembly language.

1980s - Object-oriented languages,  
Made it easier for people to code -  
harder to make mistakes - still not impossible,  
of course!

High level - takes care of more details,  
puts more control in programmers' hands.

Algorithm - Precise sequence of steps  
for getting something done.

Imp't : Precision!  
Correctness!

Programming: Process of taking an algorithm  
and putting it into a language  
a computer can process.

Algorithm - Precise sequence of steps  
for getting something done.

Imp't : Precision!  
Correctness!

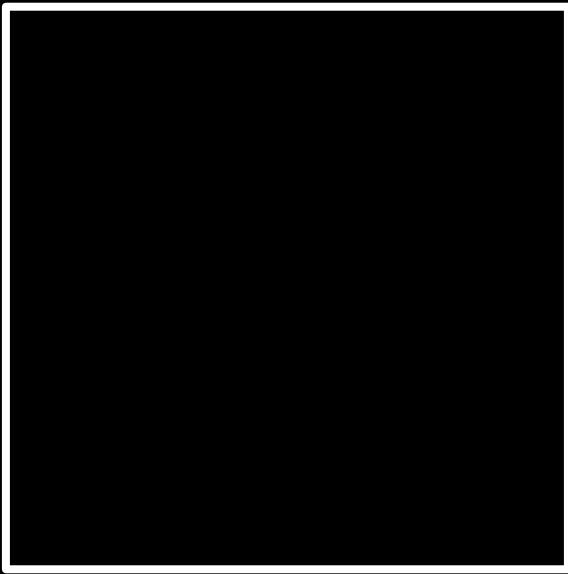
Programming: Process of taking an algorithm  
and putting it into a language  
a computer can process.

Algorithm - Precise sequence of steps  
for getting something done.

Imp't : Precision!  
Correctness!

Programming: Process of taking an algorithm  
and putting it into a language  
a computer can process.

input →



→ output

algorithms

Algorithm - Precise sequence of steps  
for getting something done.

Imp't : Precision!  
Correctness!

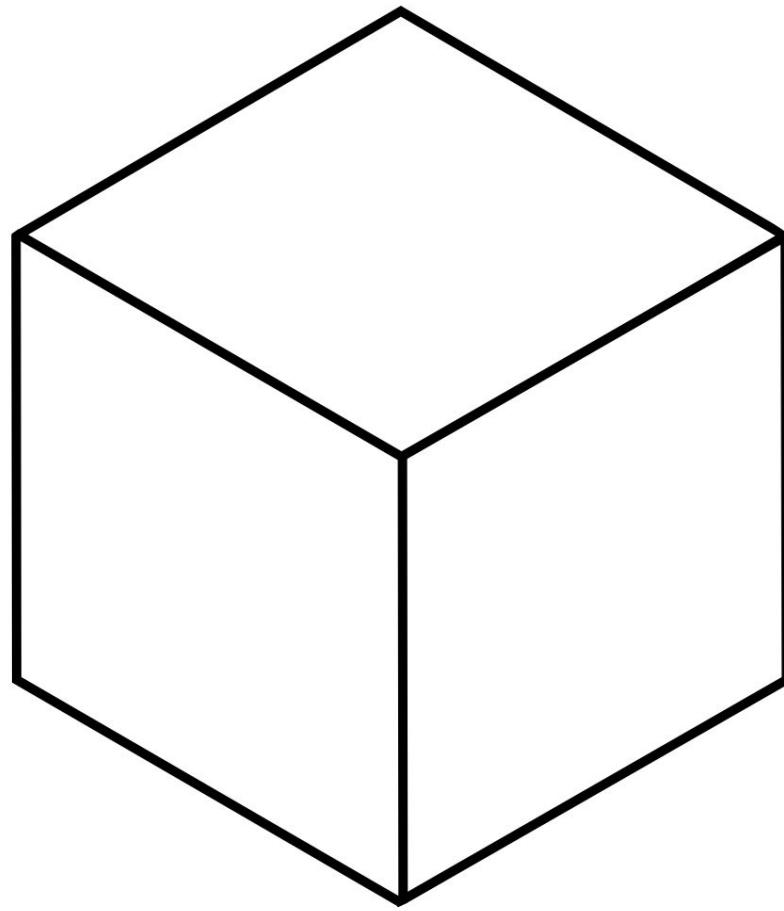
Programming: Process of taking an algorithm  
and putting it into a language  
a computer can process.

Algorithm - Precise sequence of steps  
for getting something done.

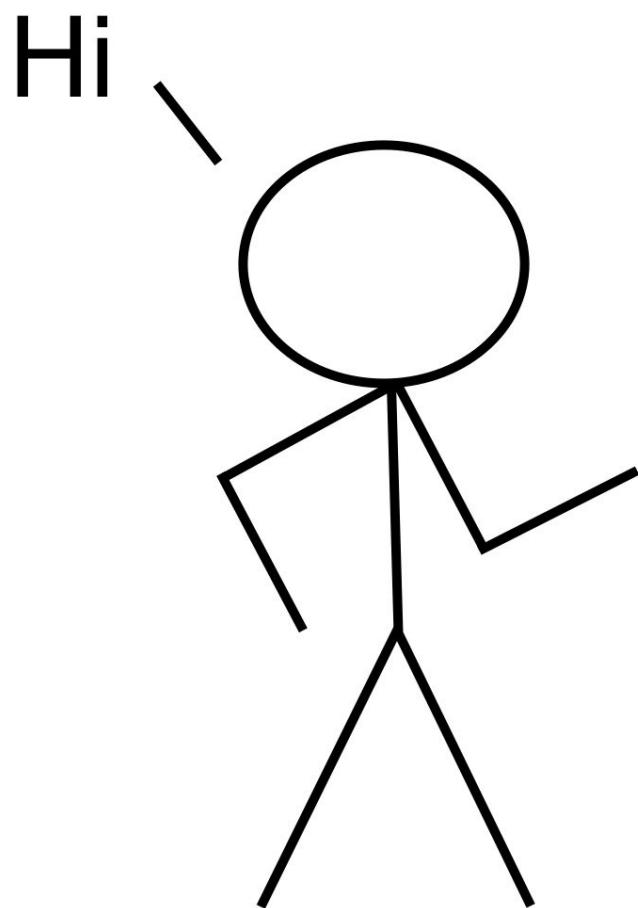
Imp't : Precision!  
Correctness!

Programming: Process of taking an algorithm  
and putting it into a language  
a computer can process.









input → algorithms → output

information

1. 123456
2. 123456789
3. qwerty
4. password
5. 111111
6. 12345678
7. abc123
8. 1234567
9. password1
10. 12345

information

New Tab

Search Google or type a URL

Incognito

You've gone incognito

Now you can browse privately, and other people who use this device won't see your activity. However, downloads and bookmarks will be saved. [Learn more](#)

Chrome won't save the following information:

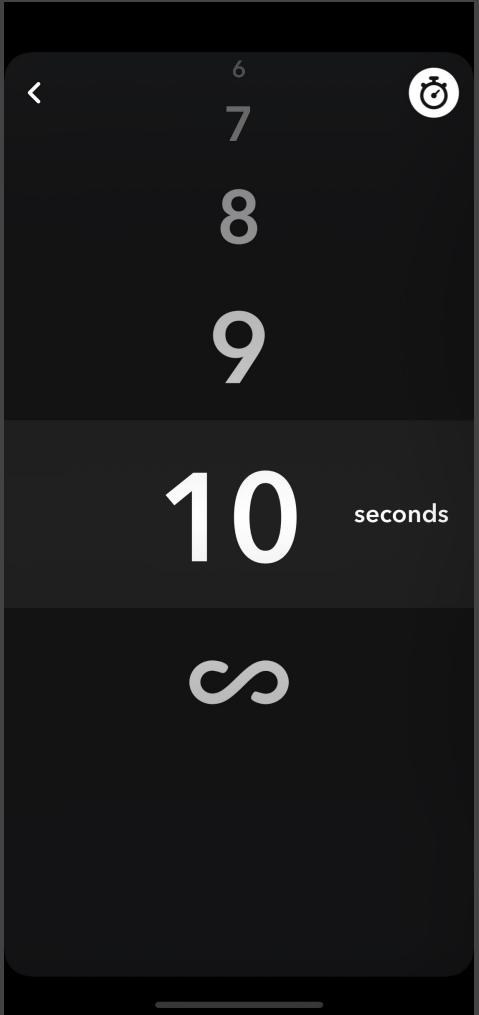
- Your browsing history
- Cookies and site data
- Information entered in forms

Your activity might still be visible to:

- Websites you visit
- Your employer or school
- Your internet service provider



information

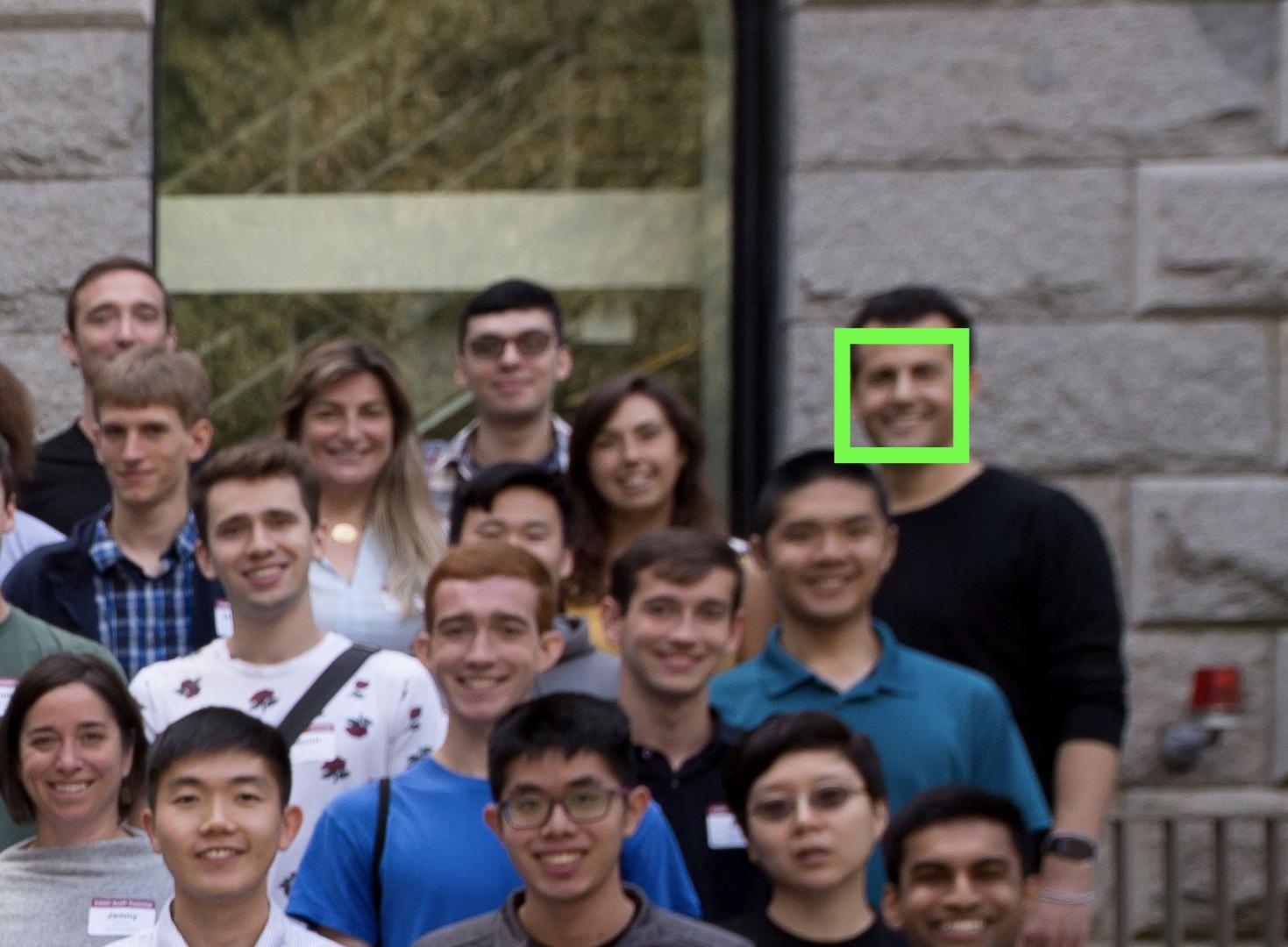


```
DELETE FROM snaps WHERE id = ?;
```

```
UPDATE snaps SET deleted = true WHERE id = ?;
```

information





Jenny

information

X

cs50.harvard.edu wants to



Know your location

Block

Allow

# Tracks

# web programming

with HTML, CSS, and JavaScript  
(plus Python and SQL)



C\$50 Finance: Portfolio

Search Google or type a URL

Incognito

C\$50 Finance

Quote Buy Sell History Log Out

Symbol	Name	Shares	Price	TOTAL
NFLX	Netflix, Inc.	1	\$287.52	\$287.52
CASH				\$9,712.48
				<b>\$10,000.00</b>

Data provided for free by IEX. View [IEX's Terms of Use](#).

# mobile app development

for iOS with Swift  
for Android with Java



9:13

[Pokédex](#)

## Charizard



Charizard

#006

Fire

Flying

Charizard flies around the sky in search of powerful opponents. It breathes fire of such great heat that it melts anything. However, it never turns its fiery breath on any opponent weaker than itself.



9:47

## Pokedex



Charizard

#006

Fire

Flying

Charizard flies around the sky in search of powerful opponents. It breathes fire of such great heat that it melts anything. However, it never turns its fiery breath on any opponent weaker than itself.

9:08



Save

Fiftygram

Choose Photo



Sepia

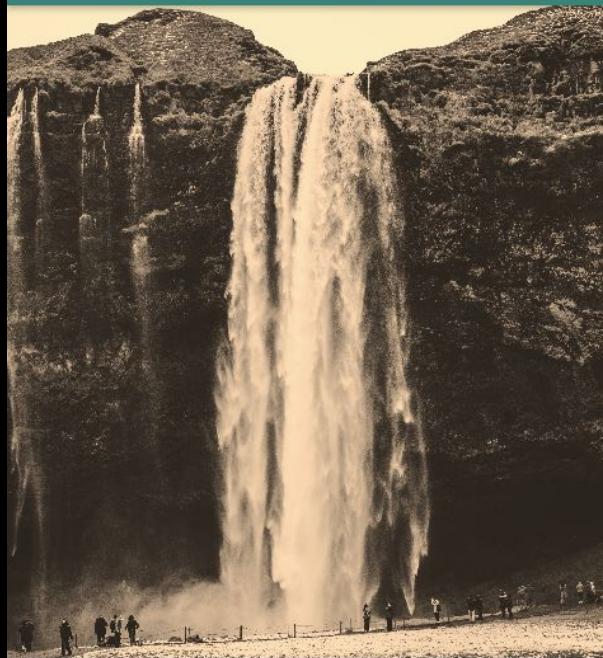
Noir

Vintage



9:52

# Fiftygram



CHOOSE PHOTO

SEPIA

9:09



Notes



Grocery list >

Class schedule >



## Notes

Grocery list

Class schedule



# game development

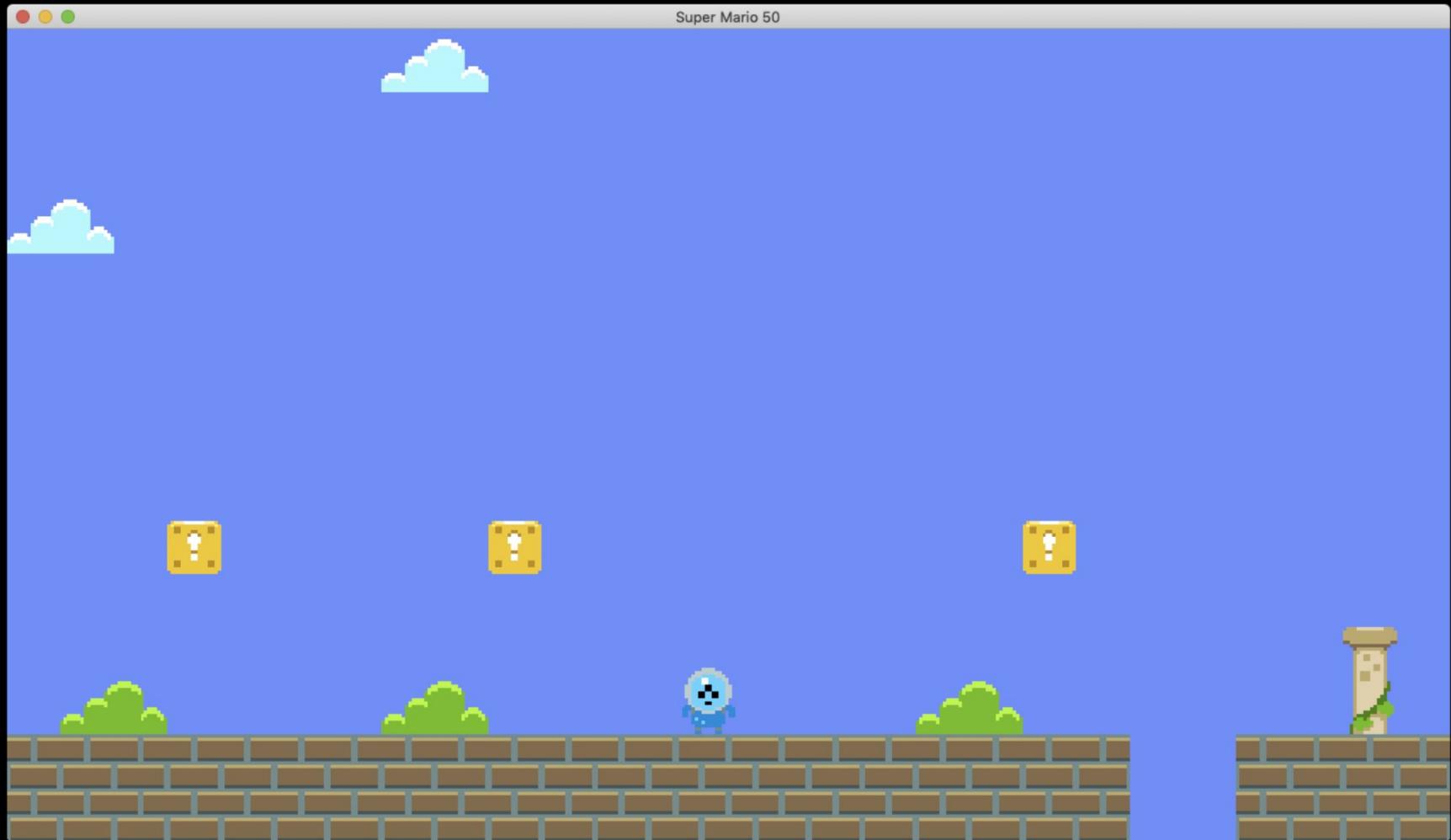
with Lua





FPS: 60

Welcome to Pong!  
Press Enter to begin!



Super Mario 50

# Final Project

# Python

[python.org](https://www.python.org)

# Visual Studio Code

[code.visualstudio.com](https://code.visualstudio.com)

# Xcode

[developer.apple.com/xcode](https://developer.apple.com/xcode)

# Android Studio

[developer.android.com/studio](https://developer.android.com/studio)

# CS50 Hackathon









my cat says  
hi to everyone

SIGGRAPH JUG

1. Stark Space
2. Bedrooms
3. Maxus = Neo
4. Max Gatos = Neo

5. Spaces  
First poster

6. Welcome

7. Welcome

8. Welcome

9. Welcome

10. Welcome

11. Welcome

12. Welcome

13. Welcome

14. Welcome

15. Welcome

16. Welcome

17. Welcome

18. Welcome

19. Welcome

20. Welcome



projects

random scribbles

Learning Lingo











# CS50 Fair





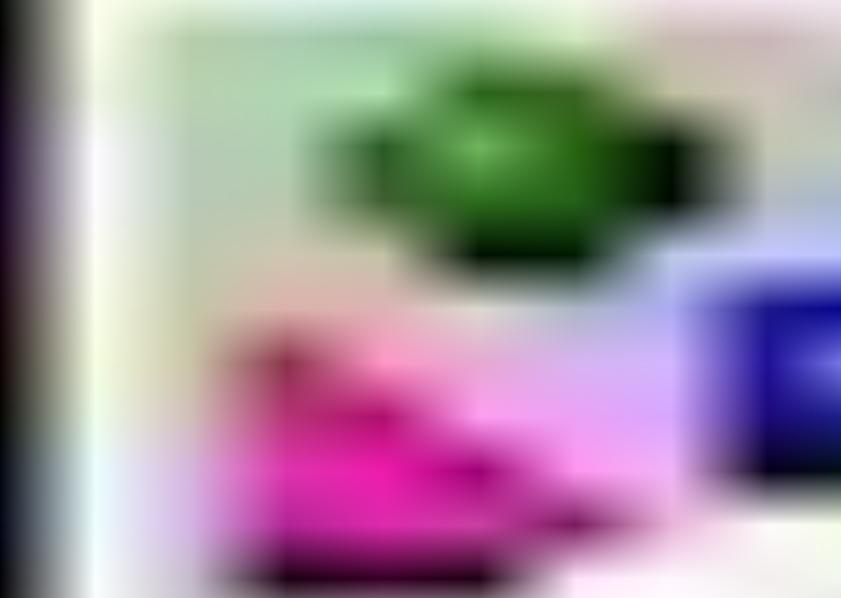


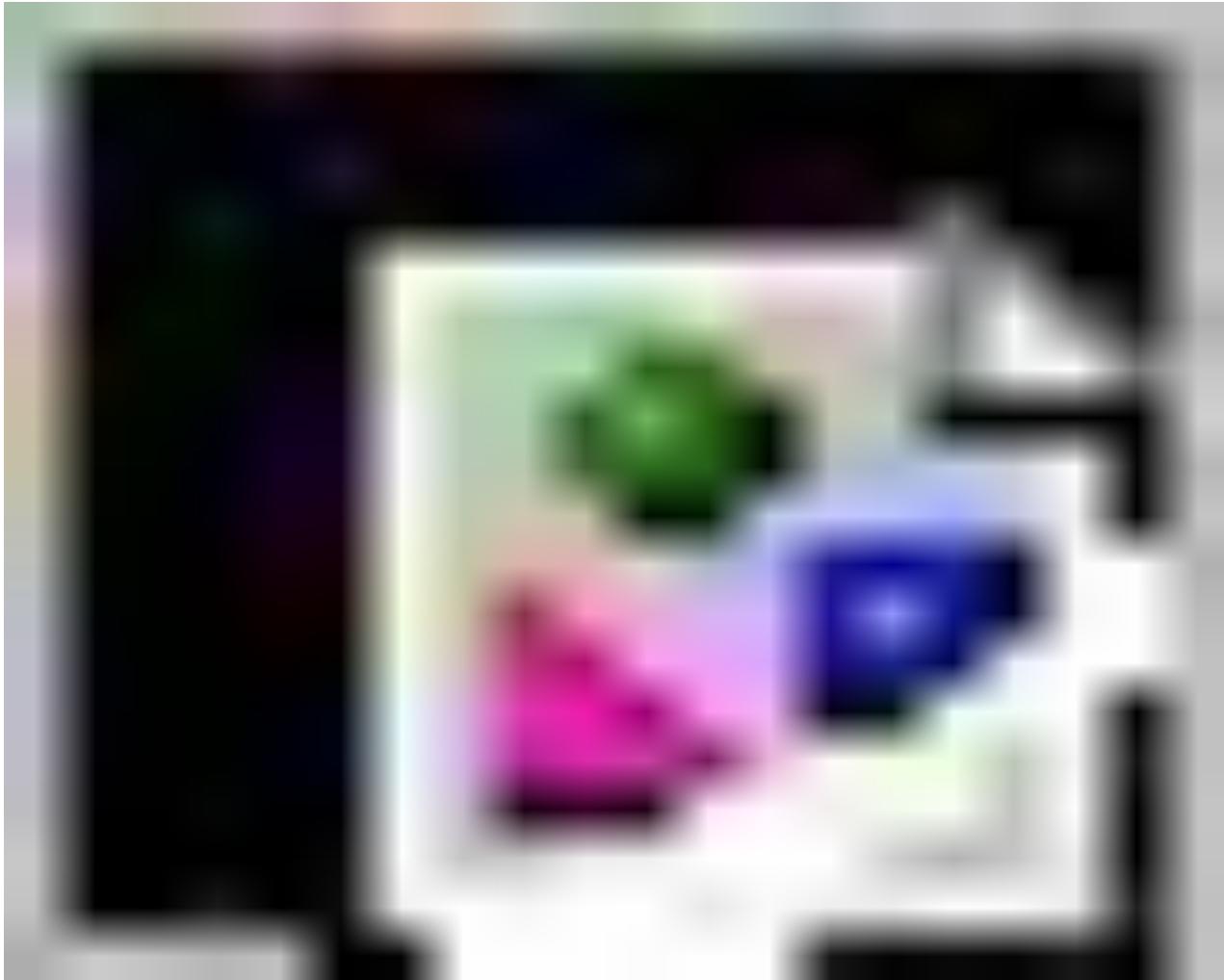




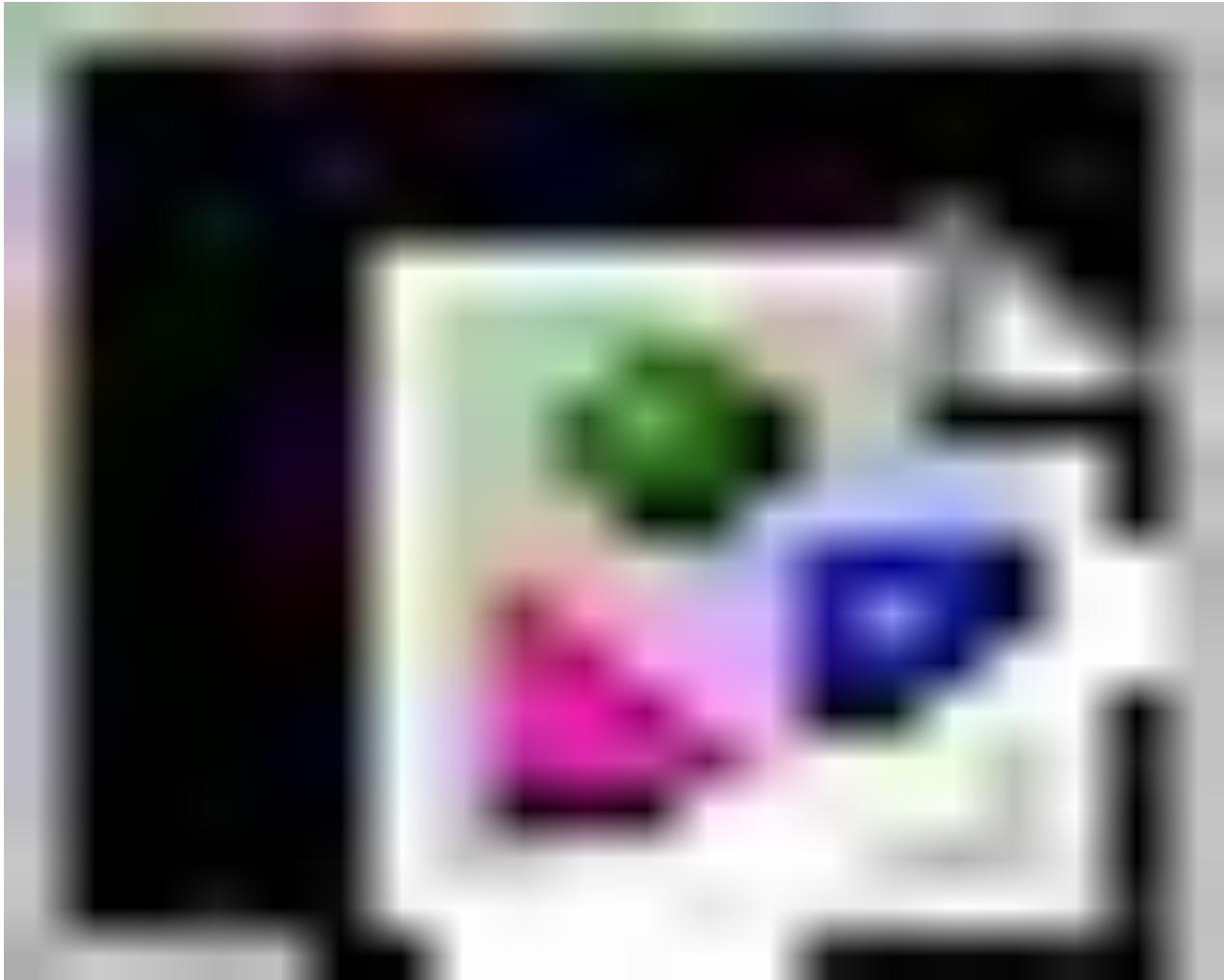
# Staff





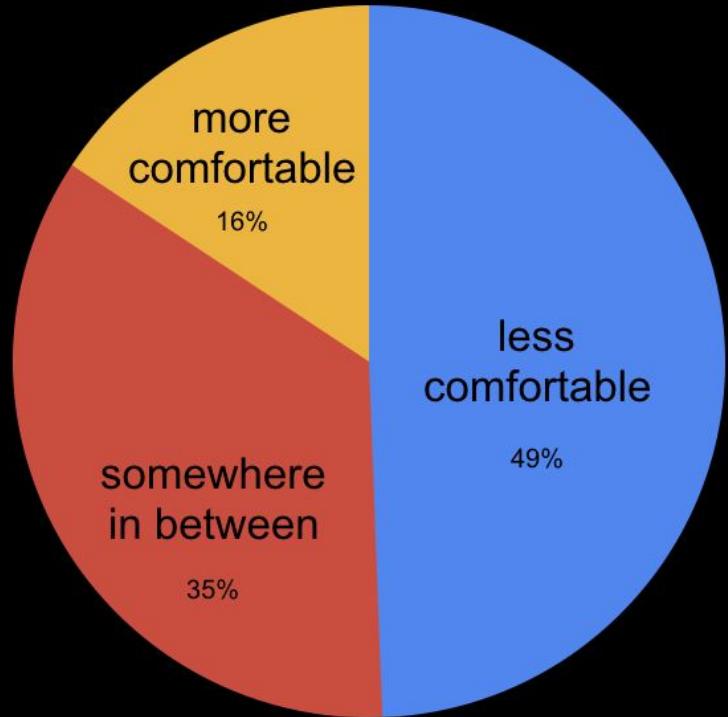


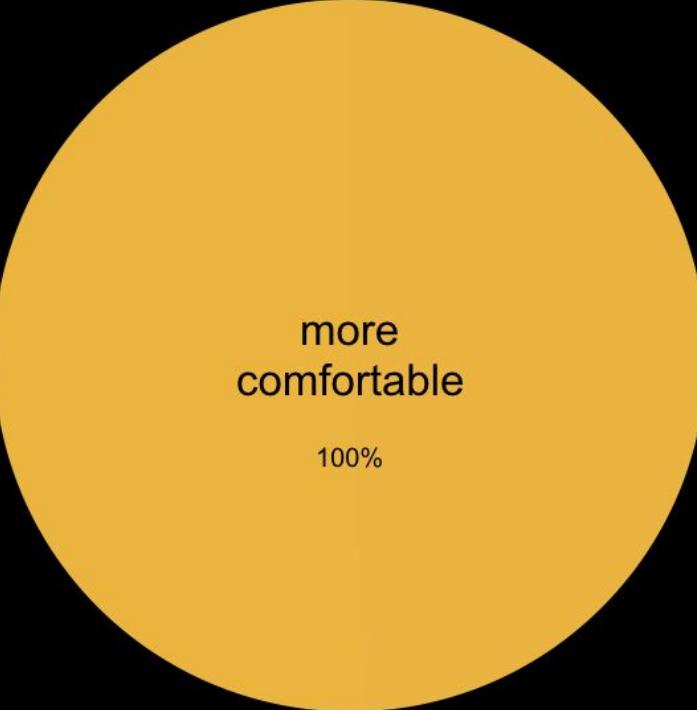




2/3

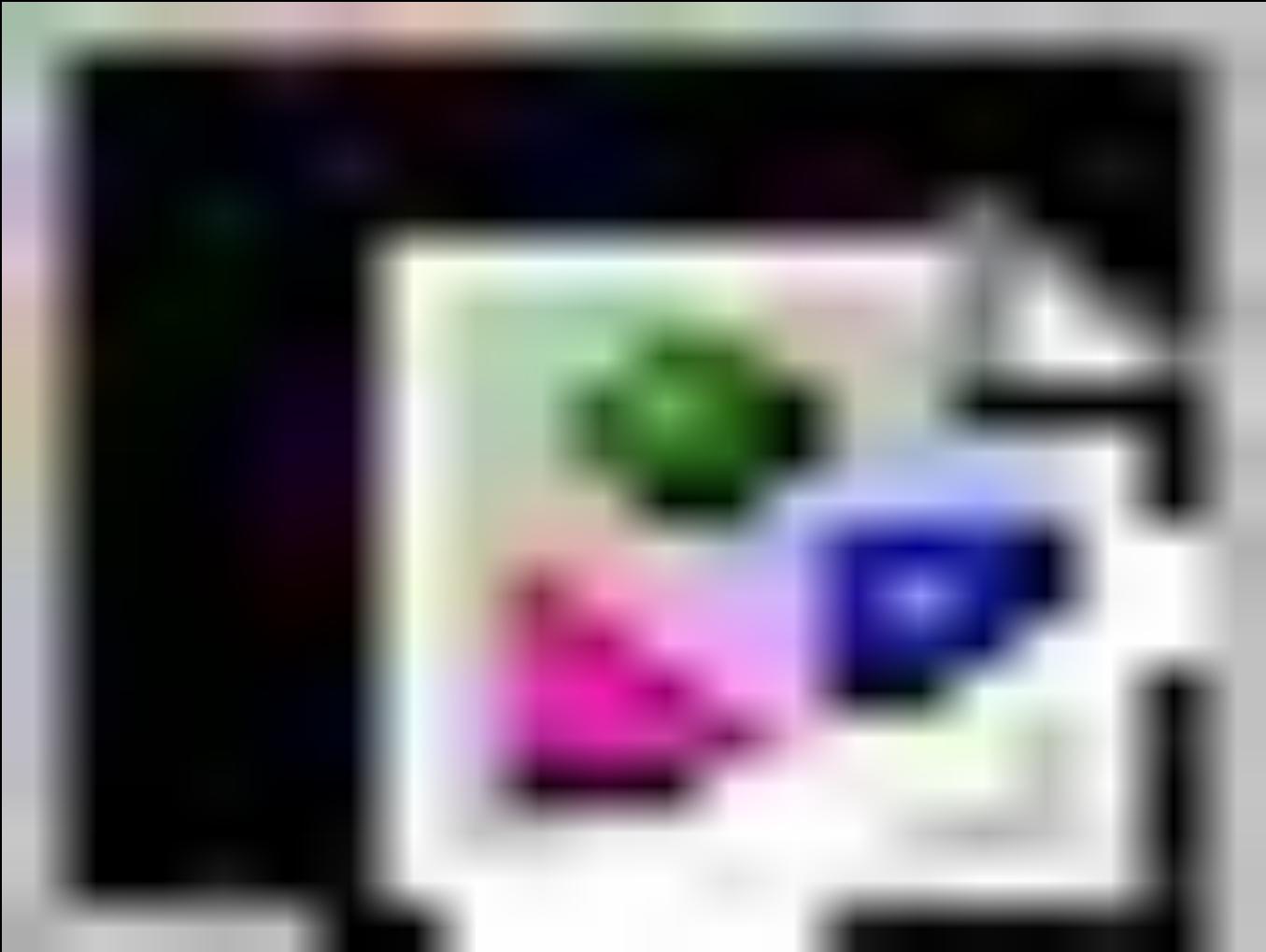
of CS50 students have never taken CS before





more  
comfortable

100%



This was CS50