

# Lecture 0

# WHY CS

DAVID MALAN – MARGO SELZTER – PETER BOL

DISCOVER CONNECTIONS BETWEEN CS AND  
PHILOSOPHY  
GOVERNMENT  
MEDICINE  
SOCIAL JUSTICE  
ASTRONOMY  
AND MORE

WEDNESDAY SEPTEMBER 6  
7PM FONG AUDITORIUM  
**\*INSOMNIA COOKIES\***



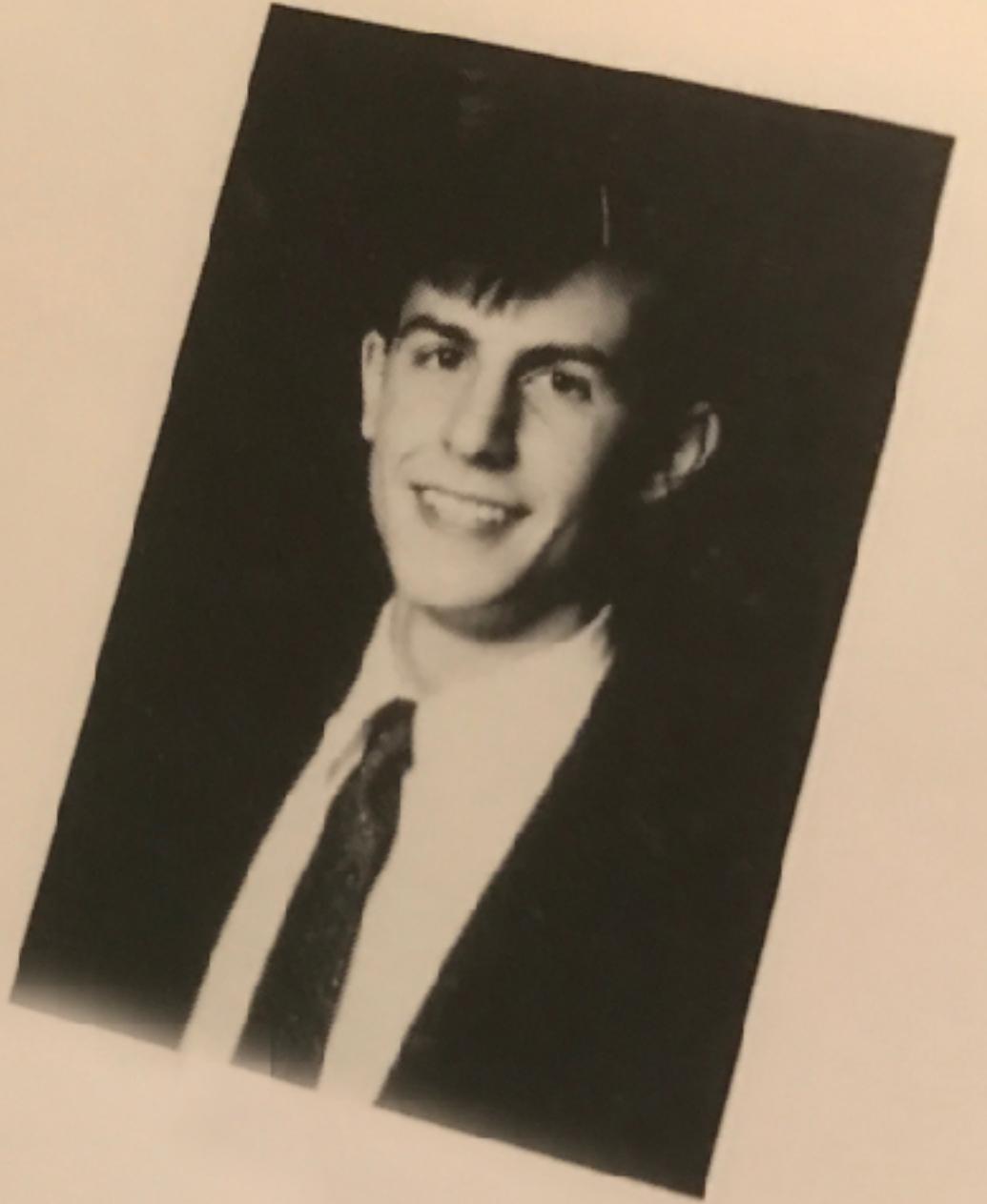
CS50

H

Y

**68%**

of CS50 students  
have never taken CS before



Less Comfortable  
56%

Somewhere in Between  
31%

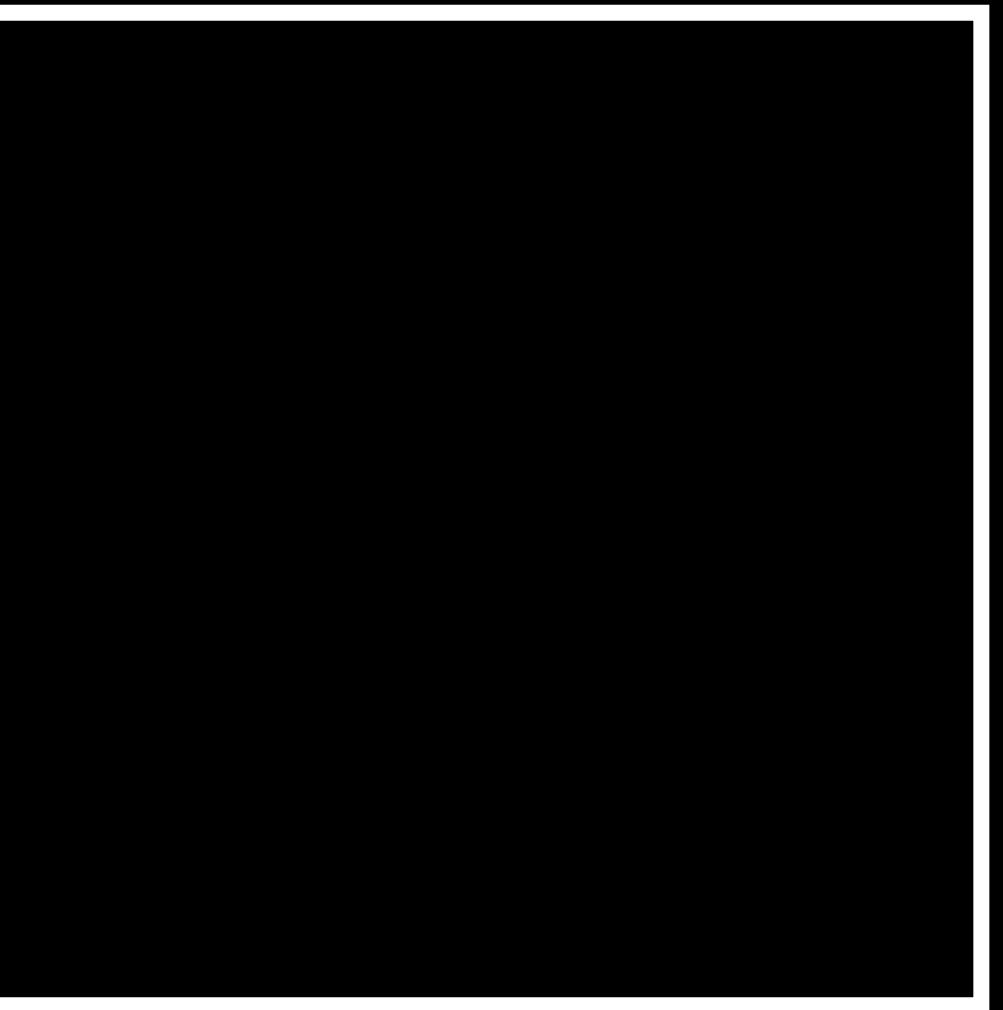
More Comfortable  
13%

project5050.org

what ultimately matters in this course is not so much where you end up relative to your classmates but where you, in **Week 11**, end up relative to yourself in **Week 0**

problem solving

inputs →



→ outputs

1 2 3

100

10

1

1 2 3

100

10

1

1 2 3

$100 \times 1$

100

10

1

1 2 3

$100 \times 1 + 10 \times 2$

100

10

1

1 2 3

$100 \times 1 + 10 \times 2 + 1 \times 3$

100

10

1

1 2 3

100

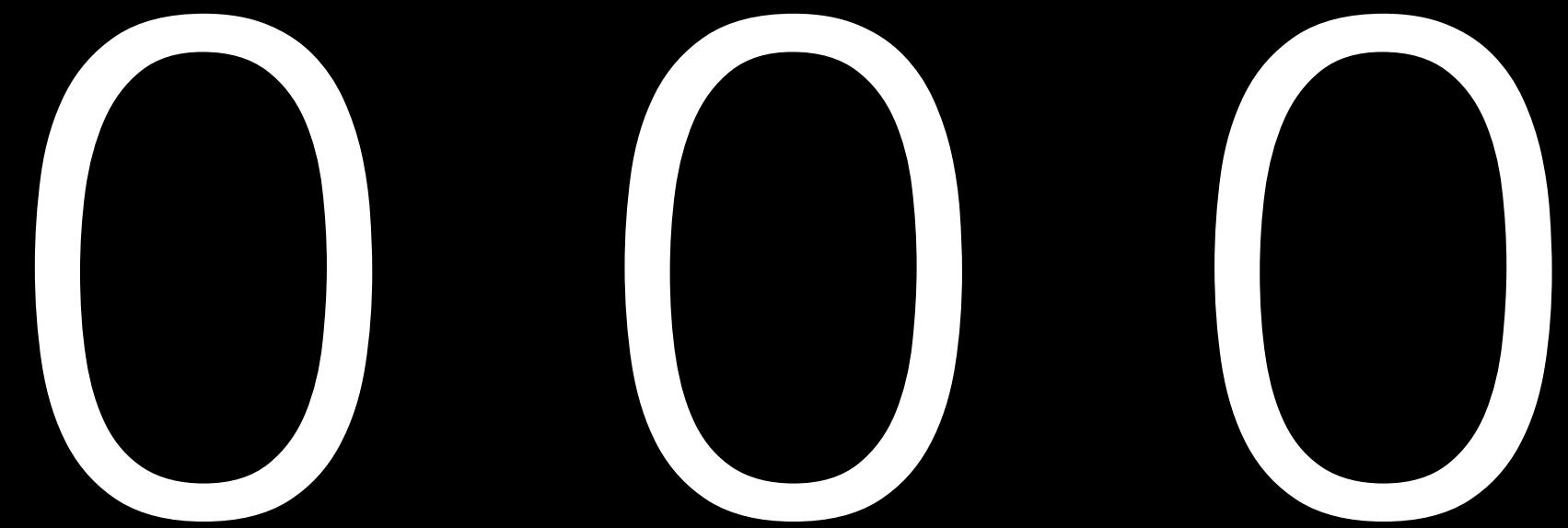
+

20

+

3

1 2 3



4

2

1

001

4

2

1

0 1 0

4

2

1

0 1 1

4 2 1  
1 0 0

1 0 1

4

2

1

110

4

2

1

1 1 1

4

2

1



50

# ASCII

A	B	C	D	E	F	G	H	I	...
65	66	67	68	69	70	71	72	73	...

72 73 33

H

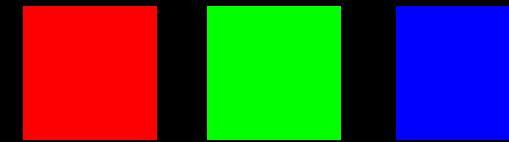
72 73 33

H I

72 73 33

H | !

72 73 33

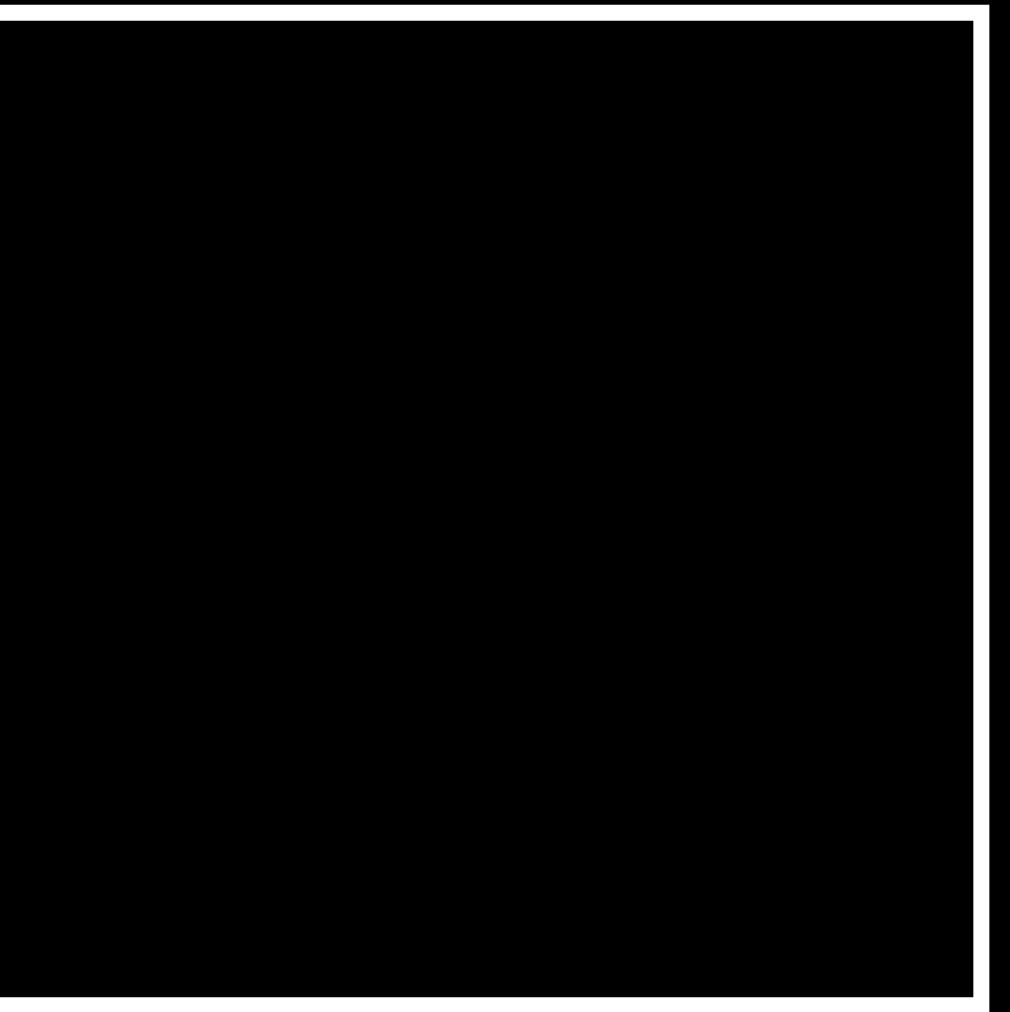


72 73 33



abstraction

inputs →



→ outputs

algorithms

algorithms

time to solve

size of problem

time to solve

$n$

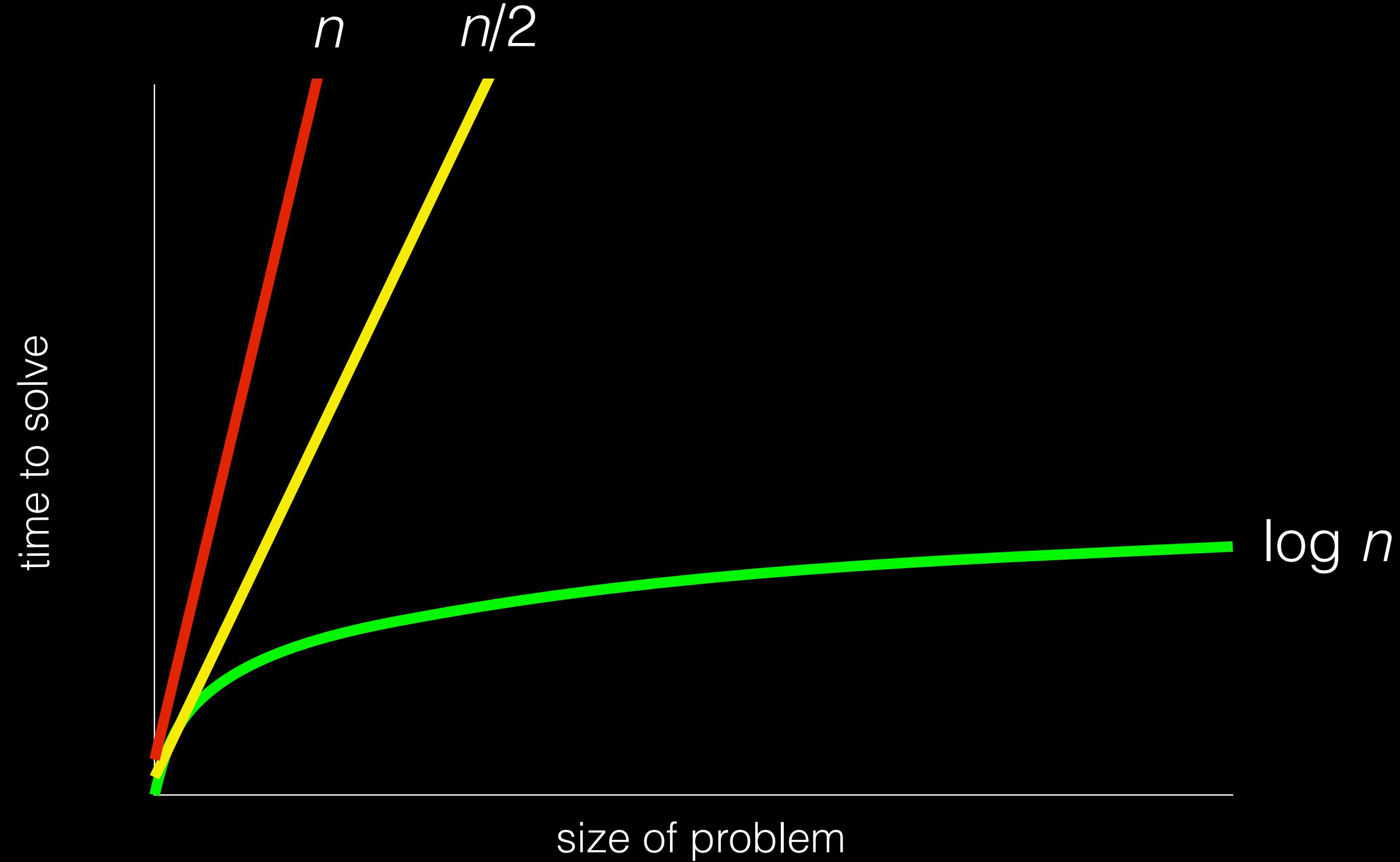
size of problem

time to solve

$n$

$n/2$

size of problem



pseudocode

```
0  pick up phone book
1  open to middle of phone book
2  look at names
3  if Smith is among names
4      call Mike
5  else if Smith is earlier in book
6      open to middle of left half of book
7      go back to step 2
8  else if Smith is later in book
9      open to middle of right half of book
10     go back to step 2
11 else
12 quit
```

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```
#include <stdio.h>

int main(void)
{
    printf("hello, world\n");
}
```



when  clicked

say **hello, world**

functions

conditions

Boolean expressions

loops

...

functions

conditions

Boolean expressions

loops

variables

threads

events

...



A Scratch script consisting of a single green control script. It features a purple speech bubble pointing left. Inside the bubble, the word "say" is written in black, followed by the text "hello, world" in a white, multi-colored font.

```
say [hello, world]
```

if  $x < y$  then  
say "x is less than y"

if  $x < y$  then

say "x is less than y"

else

if  $x > y$  then

say "x is greater than y"

else

say "x is equal to y"





forever

say hello, world



set **i** to 0

when  clicked

when  clicked

broadcast message ▾

when I receive message ▾

