







# 72%

of CS50 students  
have never taken CS before



what ultimately matters in this course is not so much where you end up relative to your classmates but where you, in **Week 12**, end up relative to yourself in **Week 0**

```
#include <stdio.h>
```

```
int main(void)
```

```
{
```

```
    printf("hello, world\n");
```

```
}
```

# computational thinking

inputs → algorithms → outputs

# computational thinking

inputs → algorithms → outputs

# binary

0, 1

# decimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

1 2 3

100

10

1

1

2

3



100

10

1

1

2

3

100 × 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

000

4

0

2

0

1

0

4

0

2

0

1

1



4

2

1

0

1

0

4

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1

4

2

1

100

4 2 1

101

4

2

1

1

1

0

4

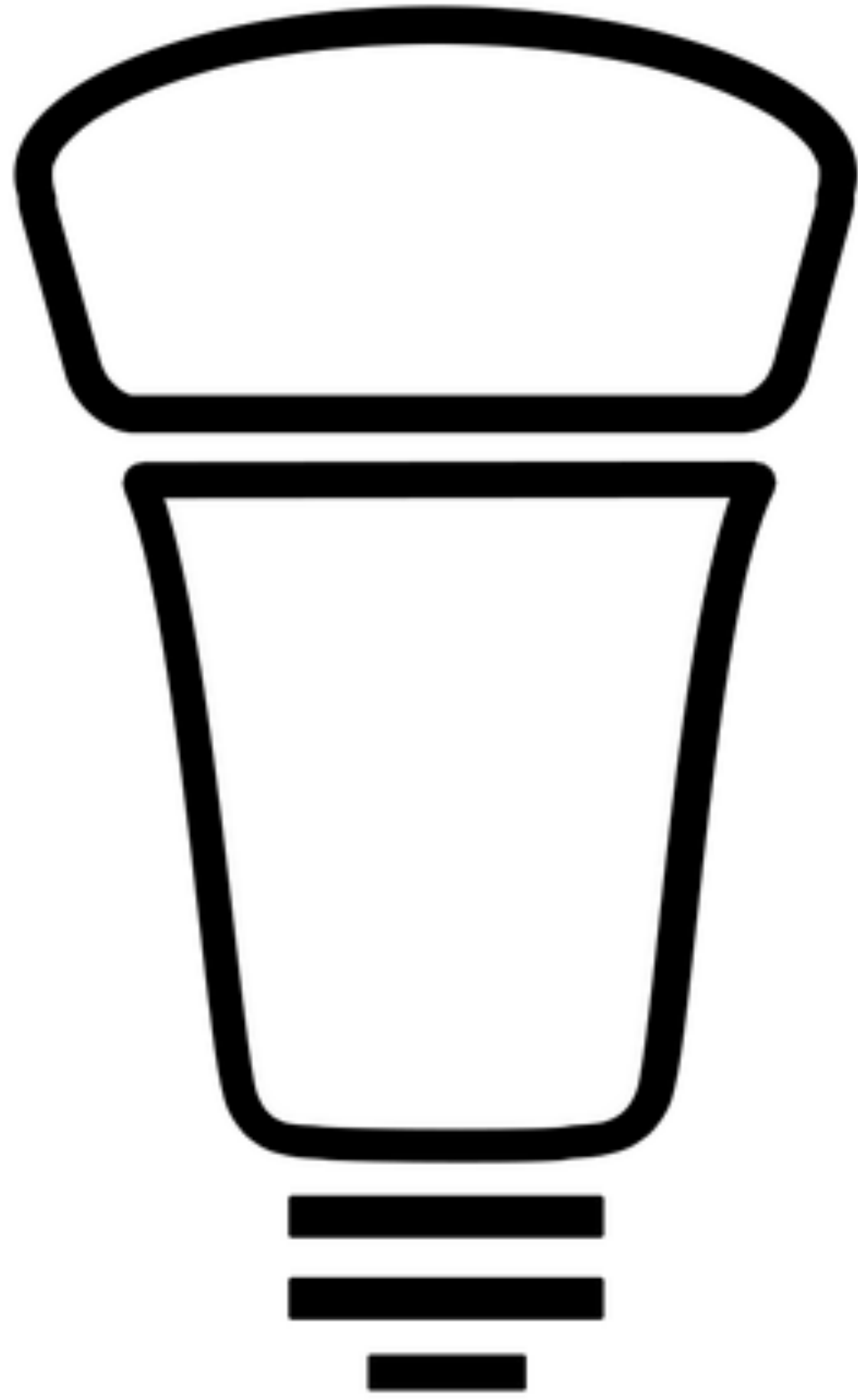
1

2

1

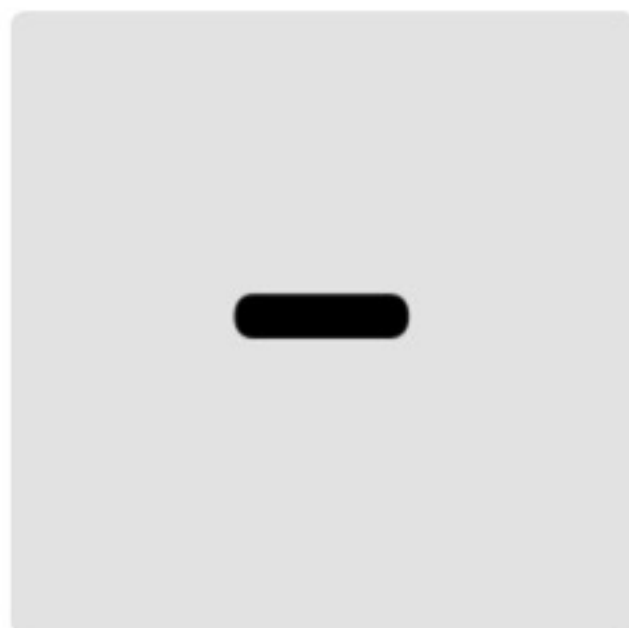
1

1









0



All Off

Game Mode

All On



```
PUT /api/newdeveloper/lights/1/state HTTP/1.1
```

```
{"on":true, "bri":255, "transitiontime":0}
```

# ASCII

A	B	C	D	E	F	G	H	I	J	K	L	M
65	66	67	68	69	70	71	72	73	74	75	76	77
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
78	79	80	81	82	83	84	85	86	87	88	89	90



H

72

73

33

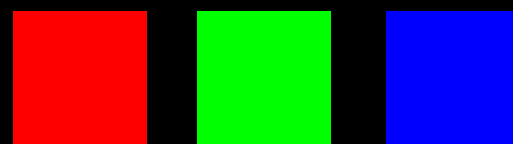
H I

72 73 33

H I !

72 73 33





72 73 33

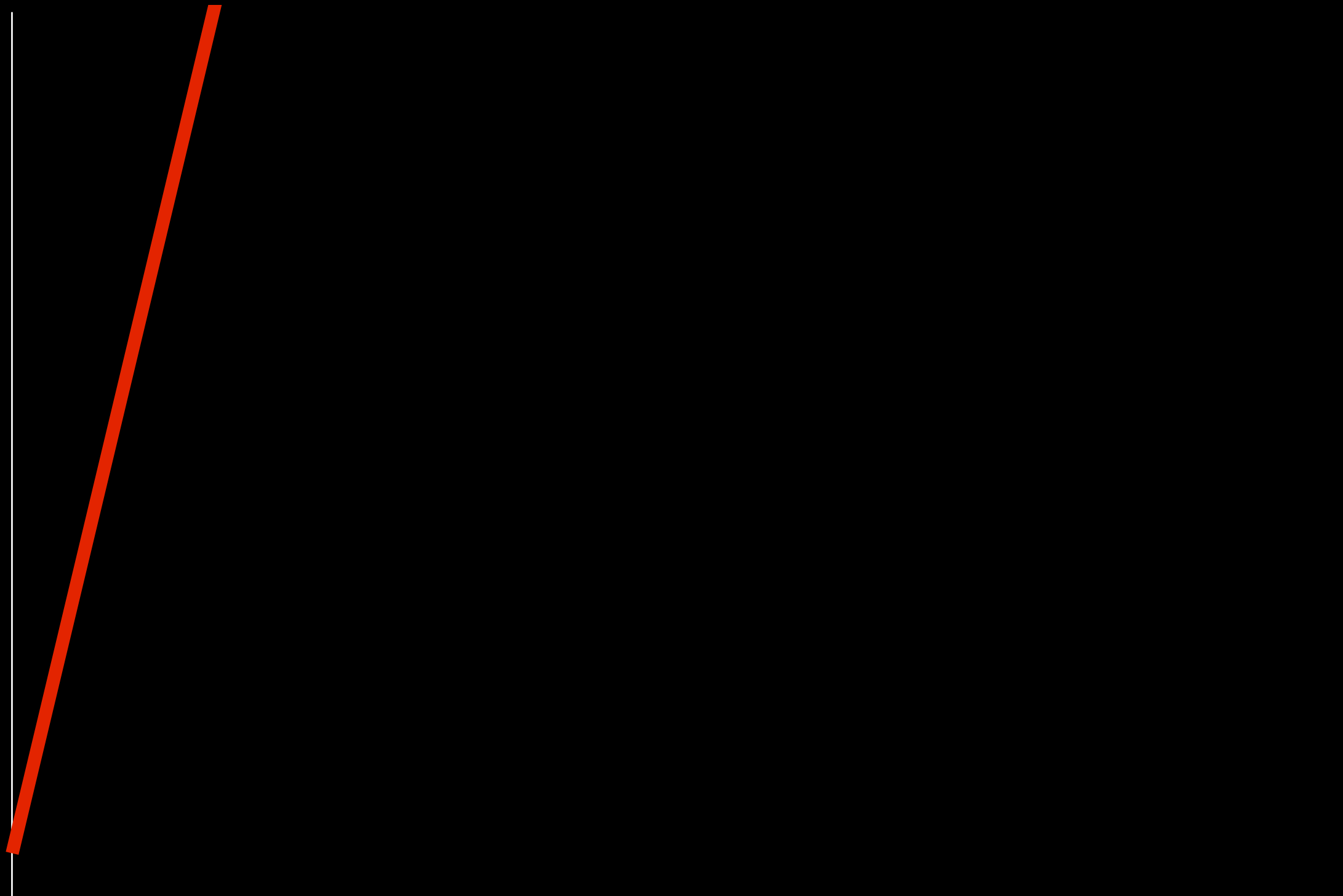


# computational thinking

inputs → algorithms → outputs

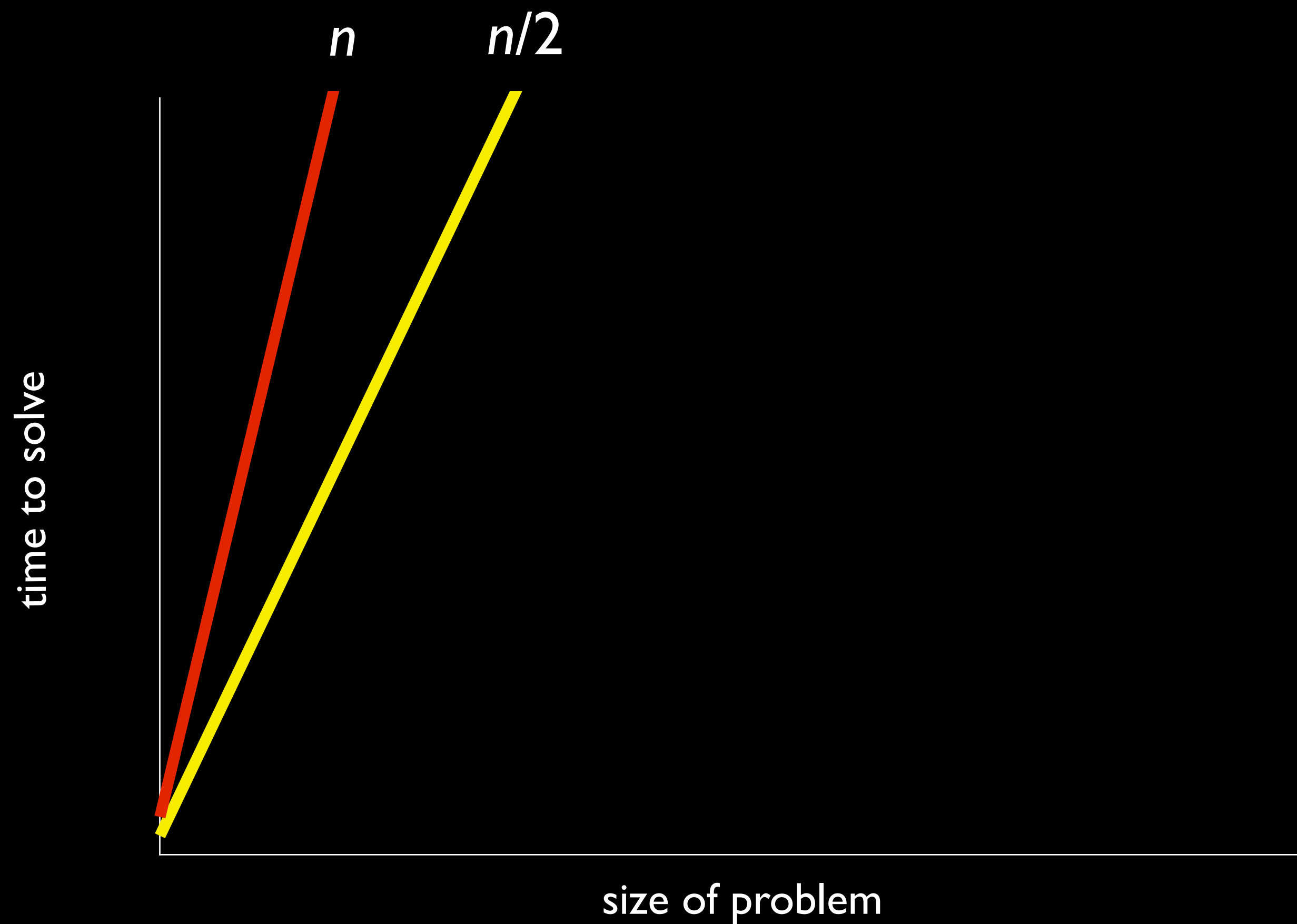


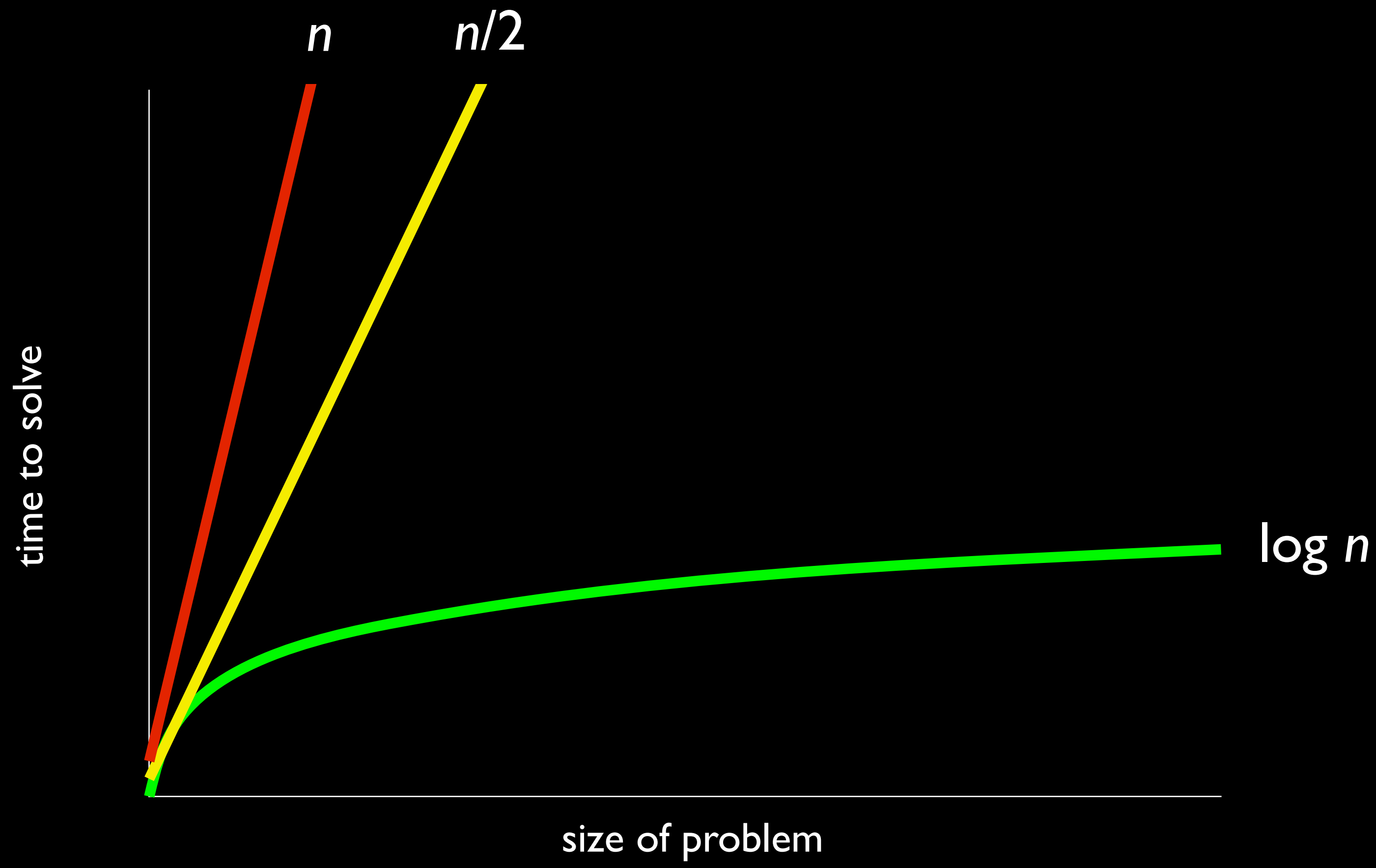
time to solve



$n$

size of problem





pseudocode



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

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**Mark Zuckerberg** ✓

August 27 at 4:33pm · 🌐

We just passed an important milestone. For the first time ever, one billion people used Facebook in a single day.

On Monday, 1 in 7 people on Earth used Facebook to connect with their friends and family.



















Abby Lyons Adam Cimpeanu Akshay Saini Aleksandra Zakrzewska Alex Goldberg Alex Pong  
Alex Reinking Ali Monfre Alicia Vargas-Morawetz Aliess Kingsley Andi Peng Andrew Malta Anita  
Xu Annaleah Ernst Antuan Tran Aparna Nathan Arianna Benson Arsalan Sufi Aubrey Wahl  
Brahm Gardner Brian Arroyo Brian Scassellati Camille Rekhson Charles Jin Charlie Proctor  
Charly Walther Chris Lim Claire Carroll Collin Styring Colton Ogden Connor Harris Dan  
Armendariz Dan Coffey Daven Farnham David J. Malan David J. Malan David McPeek Devansh  
Tandon Diego Torres Quintanilla Doug Lloyd Eli Block Emily Houlihan Eric Ouyang Erika Puente  
Evan Hellmuth Ezra Zigmond Filip Bujaroski Frank Wu George Zhang Glenn Holloway Hannah  
Blumberg Hannia Zia Haohang Xu Henrique Vaz Ian Sexton India Patel Jacob Lurye Jacob  
Scherba Jason Brooks Jason Hirschhorn Jason Shen Jay Hou Jennifer Hsiao Jessica Lee  
Jessica Zhu Jon Kim Jordan Canedy Jordan Hayashi Juan Bedoya Juliette Grantham Karl  
Otness Katelynn Kyker Kevin Dong Kevin Zhang Khalid Tawil Kyle Kwong Larry Zhang Lauren  
Scully Lee Danilek Leila Hofer Lien Tran Linda Song Lisa Chille Marcus Powers Maria Zlatkova  
Mary Farner Matt Beatty Megan Valentine Michael Ge Michael Menz Michael Patterson Michael  
Rose Minh Tri Pham Mirhee Kim MJ Richardson Neel Mehta Nicholas Larus-Stone Nick Joseph  
Nicole Fish Patrick Pan Peter Chang Peter Jin Ramon Galvan Rob Bowden Robbie Gibson  
Robert Krabek Ross Rheingans-Yoo Sahil Gupta Sam Cheng Sam Levatic Samuel Green Sarah  
Strohkorb Shane Campayne Shreyas Tirumala Stelios Rousoglou Stephen Krewson Summer Wu  
Sylvan Zheng Ted Tuckman Thomas Lively Tim Tamm Travis Yeh Victor Domene Ribeiro dos  
Santos Walter Martin Wilder Wohns Winnie Wu Winston Boucher Zack Chauvin Zamyra Chan





**CS50**  
**PUZZLE DAY**  
2015

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**PUZZLE DAY**  
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2015







lectures

# sections

less comfortable, more comfortable, somewhere in between

office hours

# problem sets

walkthroughs, postmortems

# problem sets

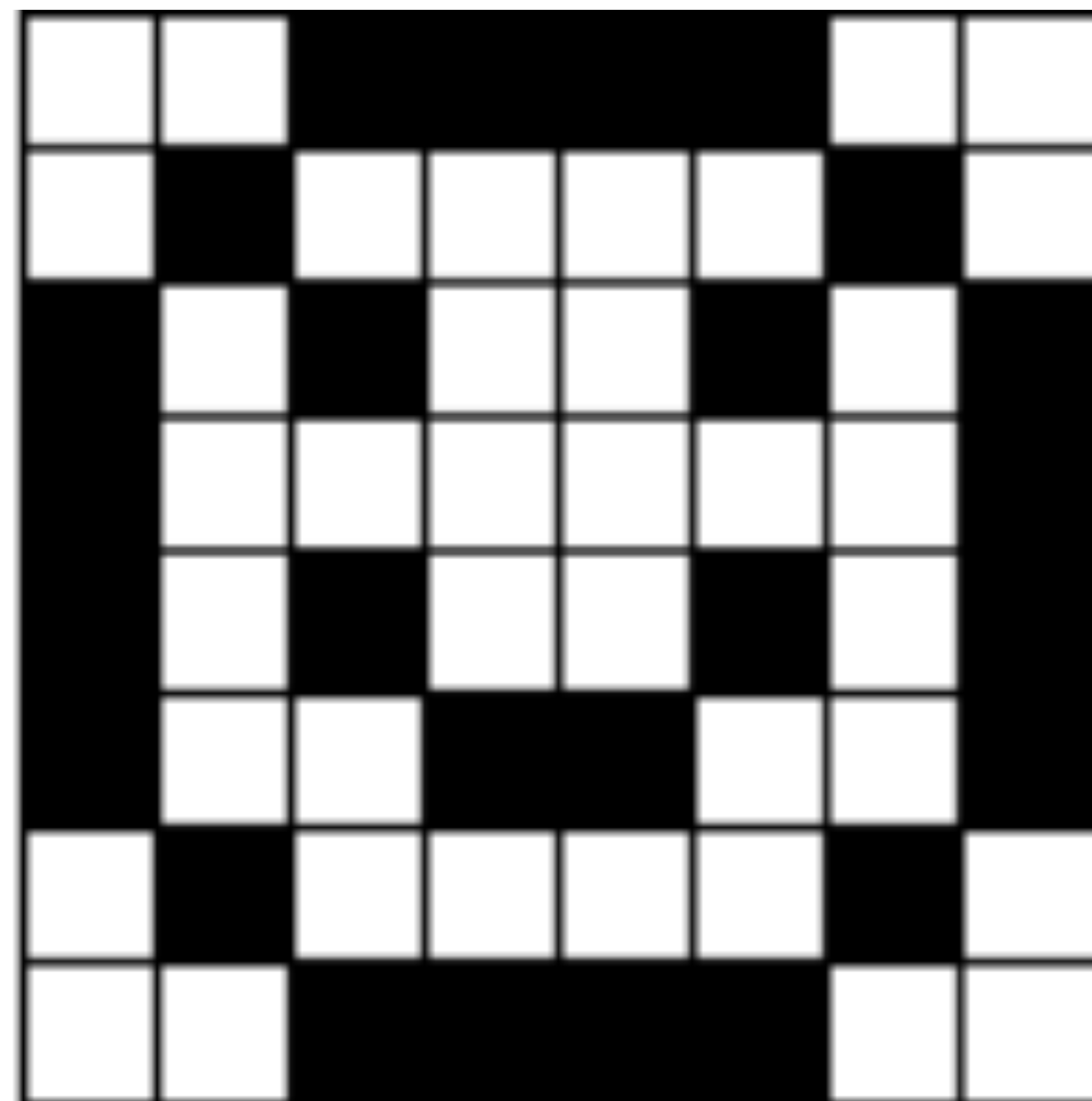
2 editions, 9 late days, lowest dropped

when  clicked

say hello, world!

uggcf://lbhgh.or/bUt5FWLEUN0

11000011  
10111101  
01011010  
01111110  
01011010  
01100110  
10111101  
11000011





143,091

GET / HTTP/1.1

C\$50 Finance

# final project

CS50 Hackathon, CS50 Fair





**FIRE+ICE**  
an improvisational grill  
in harvard square

**FIRE+ICE**  
an improvisational grill  
in harvard square





**INDIAN CUISINE**







































This is CS50.