This is CS50

EXPERIENCE THE a.r.t.

Views — Cambridge, Mass. & Harvard College. (1794.)

1794.

9412

This is CS50

2/3

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 end up relative to yourself when you began


MARIO
000700
×01
WORLD
1-1
TIME
287

C$50 Finance: Portfolio

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Incognito

C$50 Finance

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Symbol	Name	Shares	Price	TOTAL
CASH				$10,000.00
				$10,000.00

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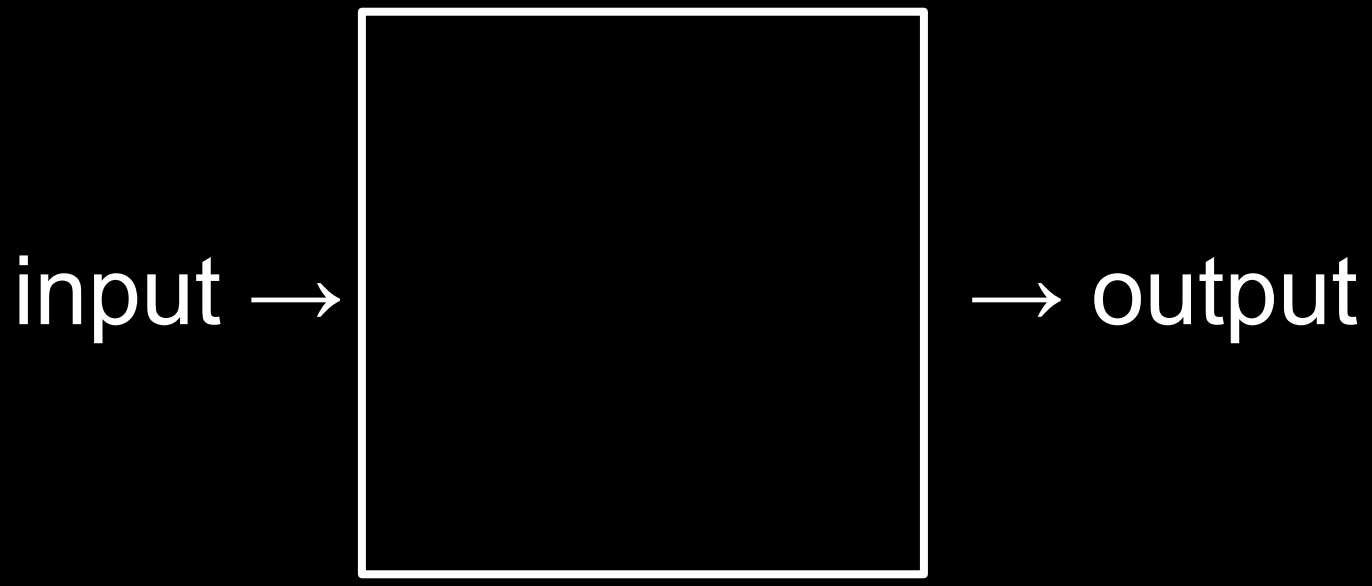

input →
→ output

representation

decimal

base-10

0 1 2 3 4 5 6 7 8 9

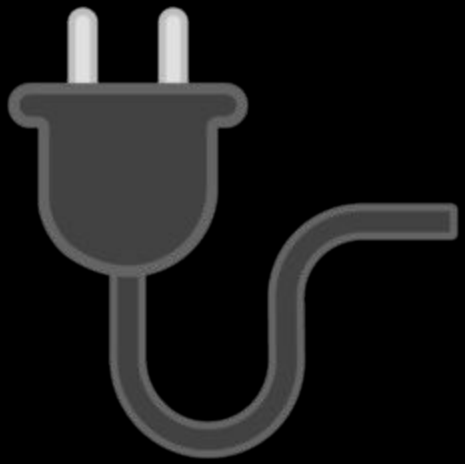
0 1

base-2

binary

0 1

bits



0

1

0 1

0 1 2 3 4 5 6 7 8 9

123

1

123

10 1

123

100 10 1

123

100 10 1

123

100×1

100 10 1

123

$100 \times 1 + 10 \times 2$

100 10 1

123

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

100 10 1

123

100 + 20 + 3

123

100 10 1

###

10^2 10^1 10^0

# # #

2^2 2^1 2^0

# # #

4 2 1

# # #

4 2 1

000

4 2 1

001

4 2 1

010

4 2 1

011

4 2 1

100

4 2 1

101

4 2 1

110

4 2 1

111

This is CS50

A

65

01000001

ASCII

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

72 73 33

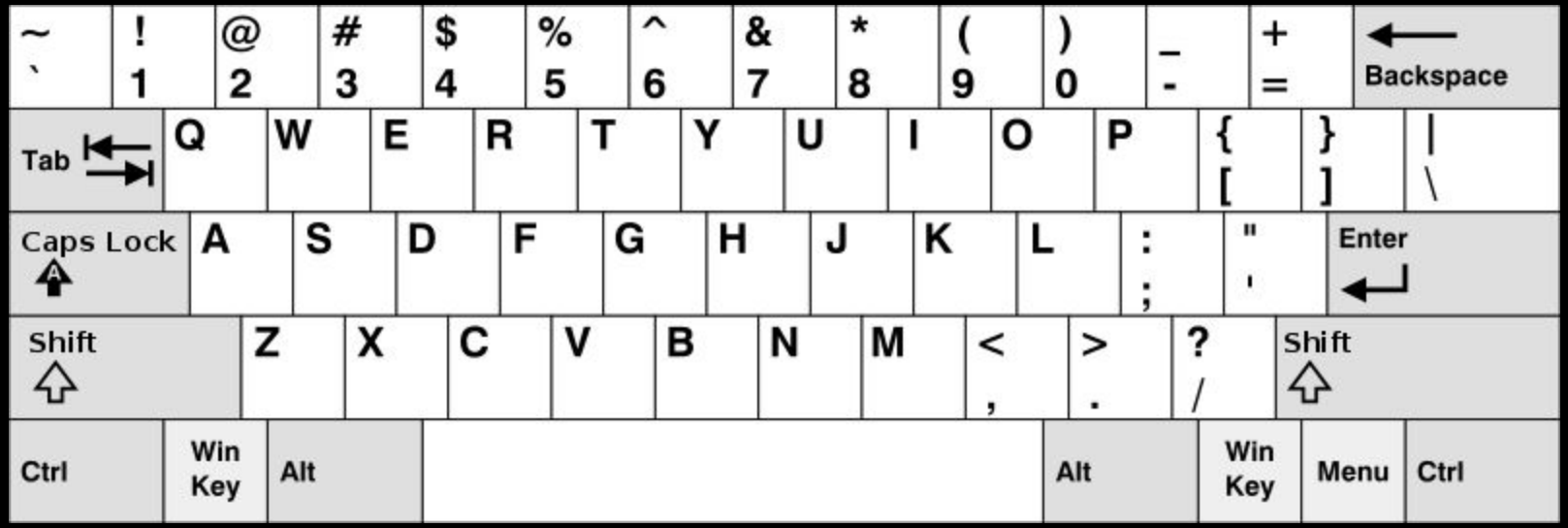
H	I	
72	73	33

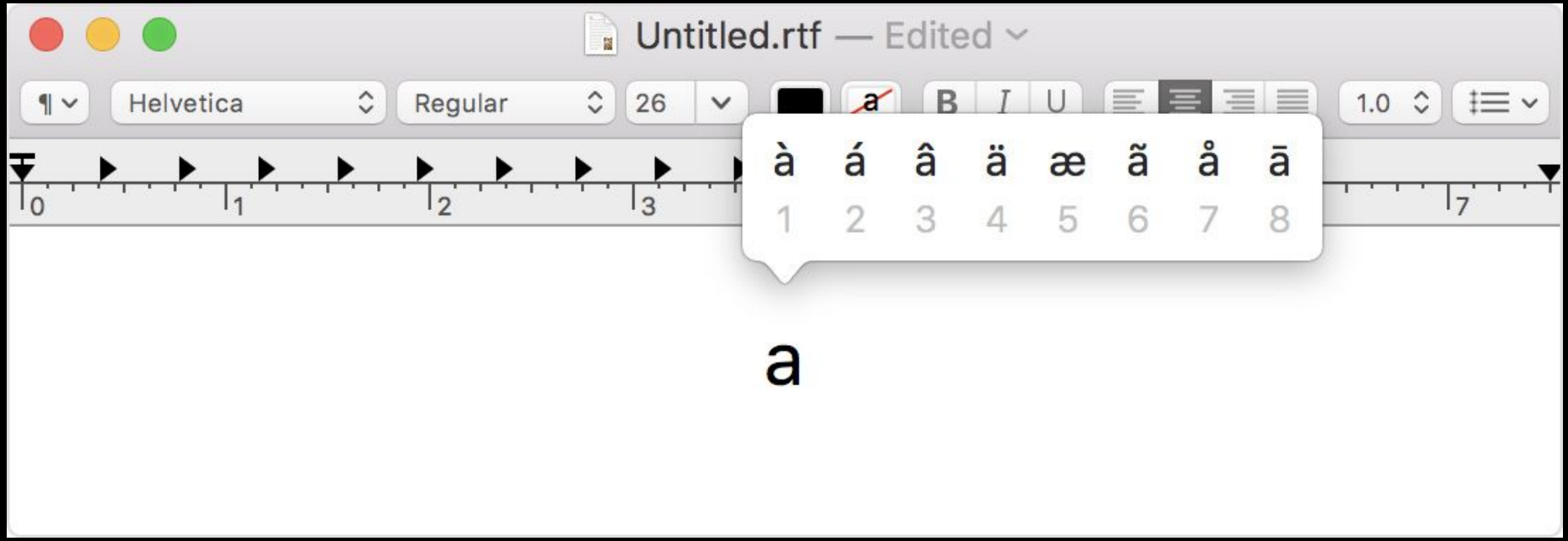
0	NUL	16	DLE	32	SP	48	0	64	@	80	P	96	`	112	p
1	SOH	17	DC1	33	!	49	1	65	A	81	Q	97	a	113	q
2	STX	18	DC2	34	"	50	2	66	B	82	R	98	b	114	r
3	ETX	19	DC3	35	#	51	3	67	C	83	S	99	c	115	s
4	EOT	20	DC4	36	$	52	4	68	D	84	T	100	d	116	t
5	ENQ	21	NAK	37	%	53	5	69	E	85	U	101	e	117	u
6	ACK	22	SYN	38	&	54	6	70	F	86	V	102	f	118	v
7	BEL	23	ETB	39	'	55	7	71	G	87	W	103	g	119	w
8	BS	24	CAN	40	(	56	8	72	H	88	X	104	h	120	x
9	HT	25	EM	41	)	57	9	73	I	89	Y	105	i	121	y
10	LF	26	SUB	42	*	58	:	74	J	90	Z	106	j	122	z
11	VT	27	ESC	43	+	59	;	75	K	91	[	107	k	123	{
12	FF	28	FS	44	,	60	<	76	L	92	\	108	l	124	|
13	CR	29	GS	45	-	61	=	77	M	93	]	109	m	125	}
14	SO	30	RS	46	.	62	>	78	N	94	^	110	n	126	~
15	SI	31	US	47	/	63	?	79	O	95	_	111	o	127	DEL

H	I	!
72	73	33

H	I	!
01001000	01001001	00100001

bytes


~ ` ! 1 @ 2 # 3 $ 4 % 5 ^ 6 & 7 * 8 (9) 0 _ - + = Backspace
Tab Q W E R T Y U I O P { [}] | \
Caps Lock A S D F G H J K L : ; " ' Enter
Shift Z X C V B N M < , > . ? / Shift
Ctrl Win Key Alt Alt Win Key Menu Ctrl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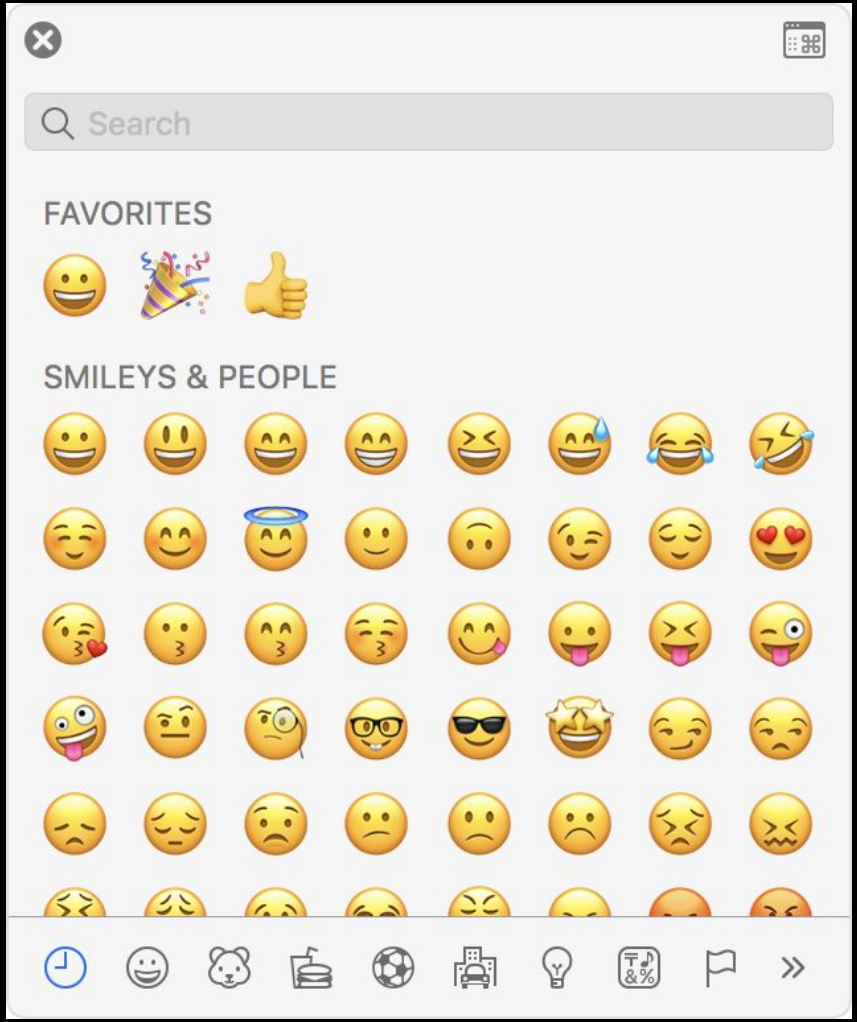
à á â ä æ ã å ā
1 2 3 4 5 6 7 8
a


Search
FAVORITES
SMILEYS & PEOPLE

Unicode

128514

00000001111101100000010

RGB

72 73 33

72	73	33

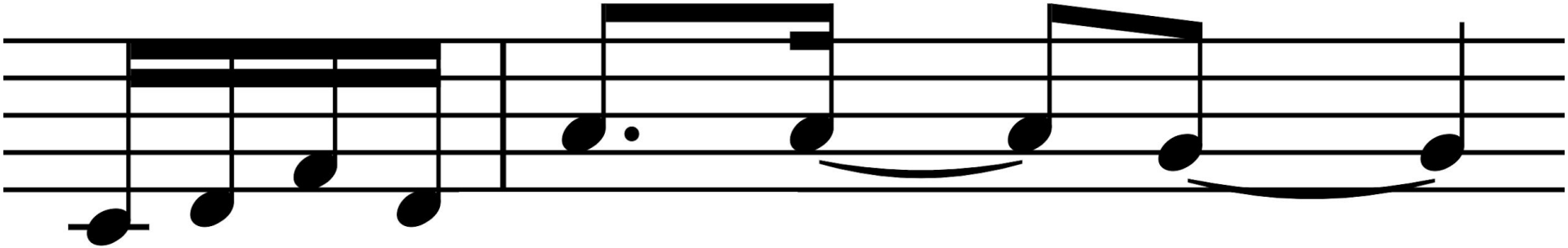
face-with-tears-of-joy_1f602.png

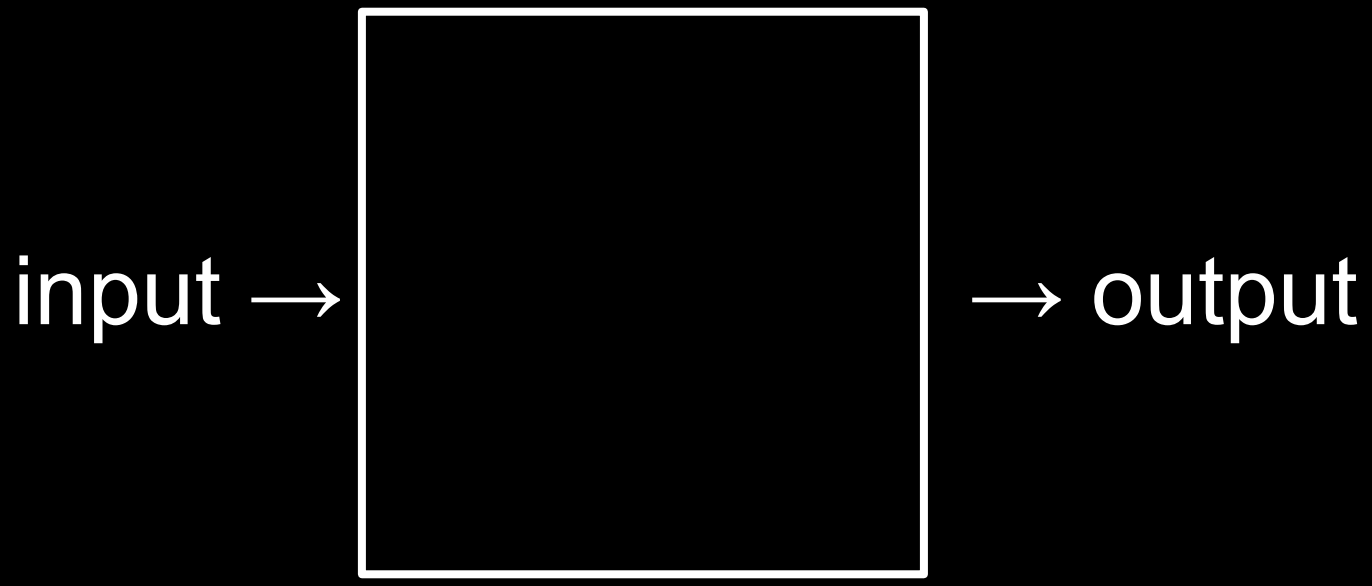
Search

face-with-tears-of-joy_1f602.png

face-with-tears-of-joy_1f602.png

face-with-tears-of-joy_1f602.png




input →
→ output

algorithms

9:00

Groups

Contacts

Search

A

Albus

C

Cedric

D

Draco

F

Fred

G

George

Ginny

H

Hagrid

Harry

Hermione

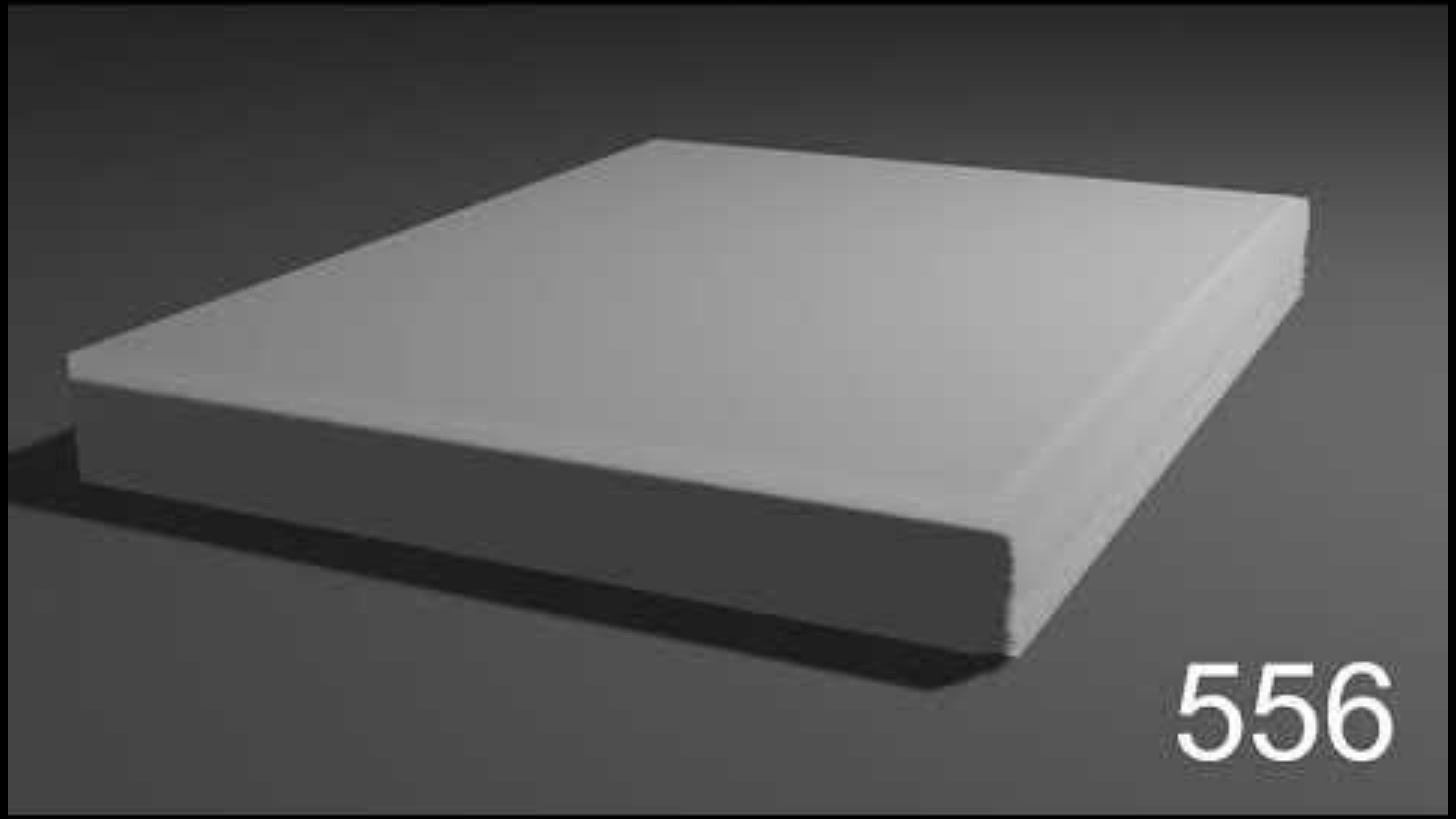
J

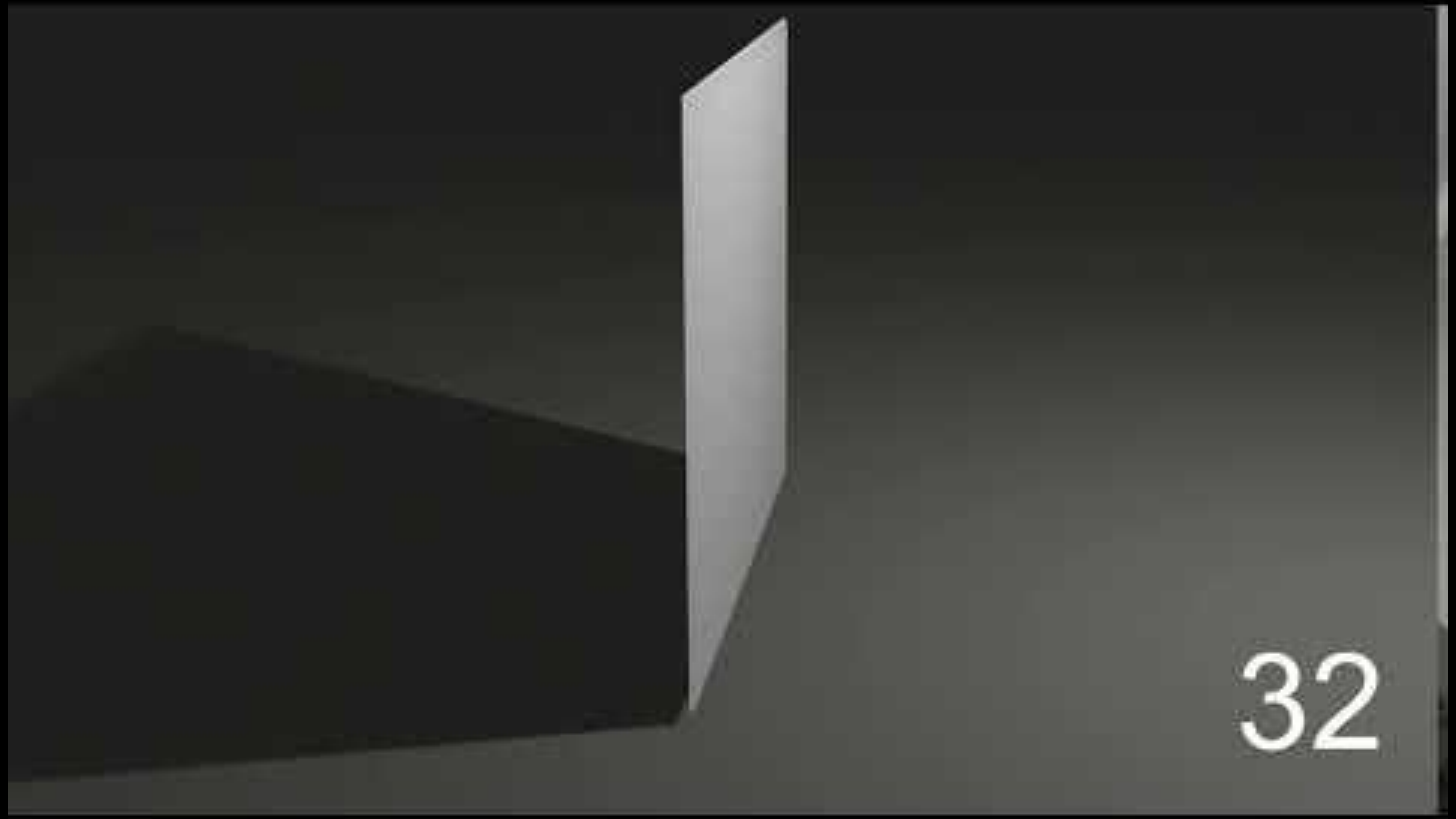
James

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z #

This is CS50

+1-949-468-2750


556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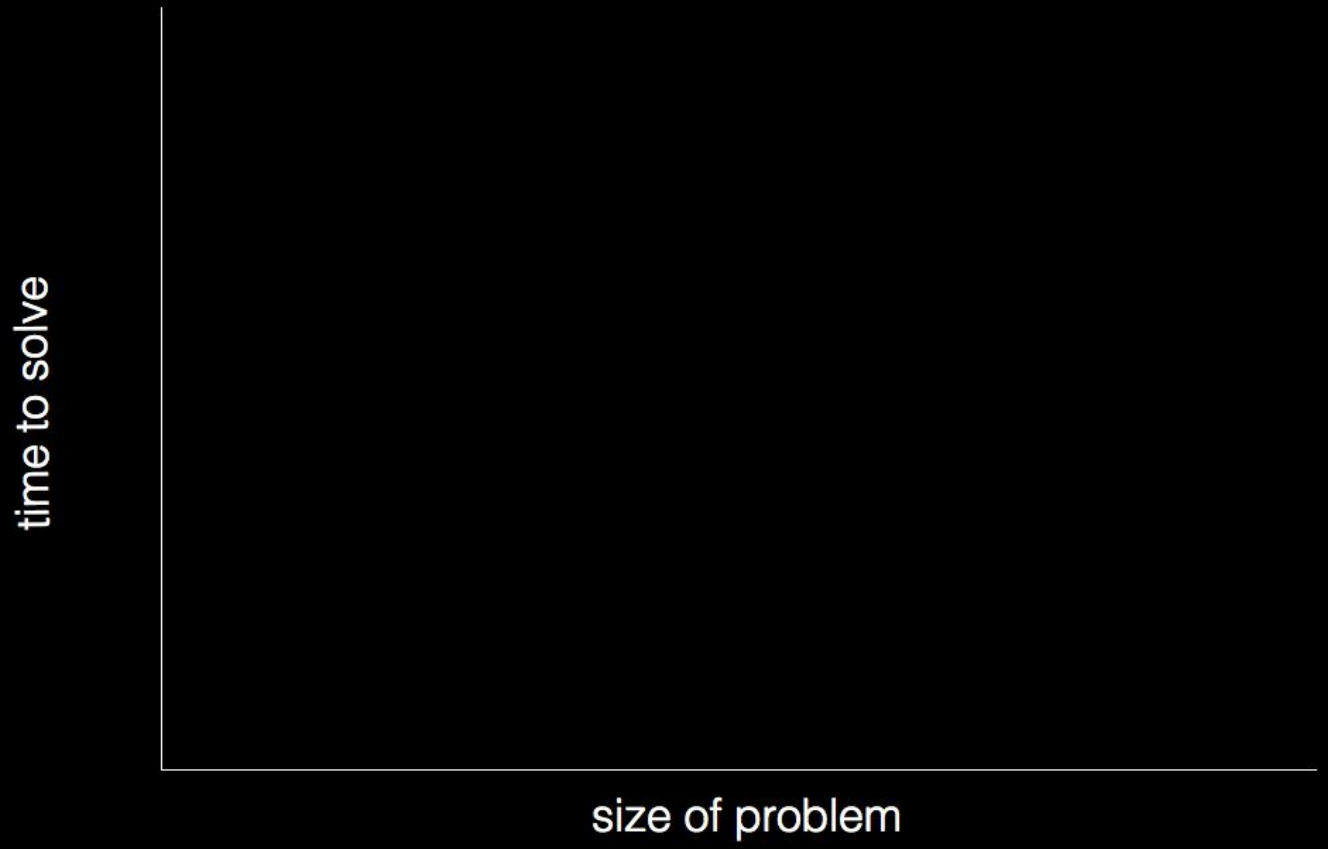
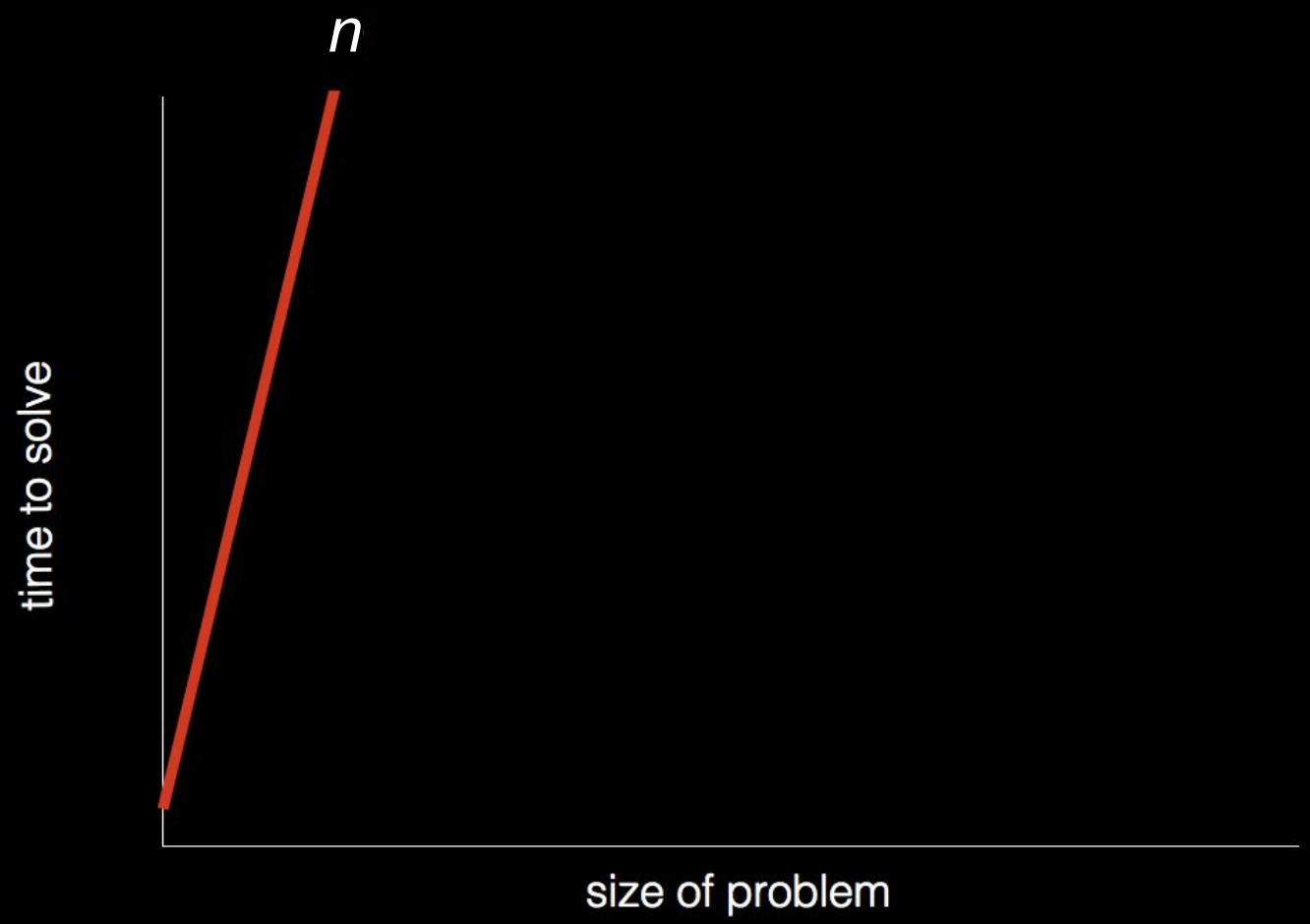
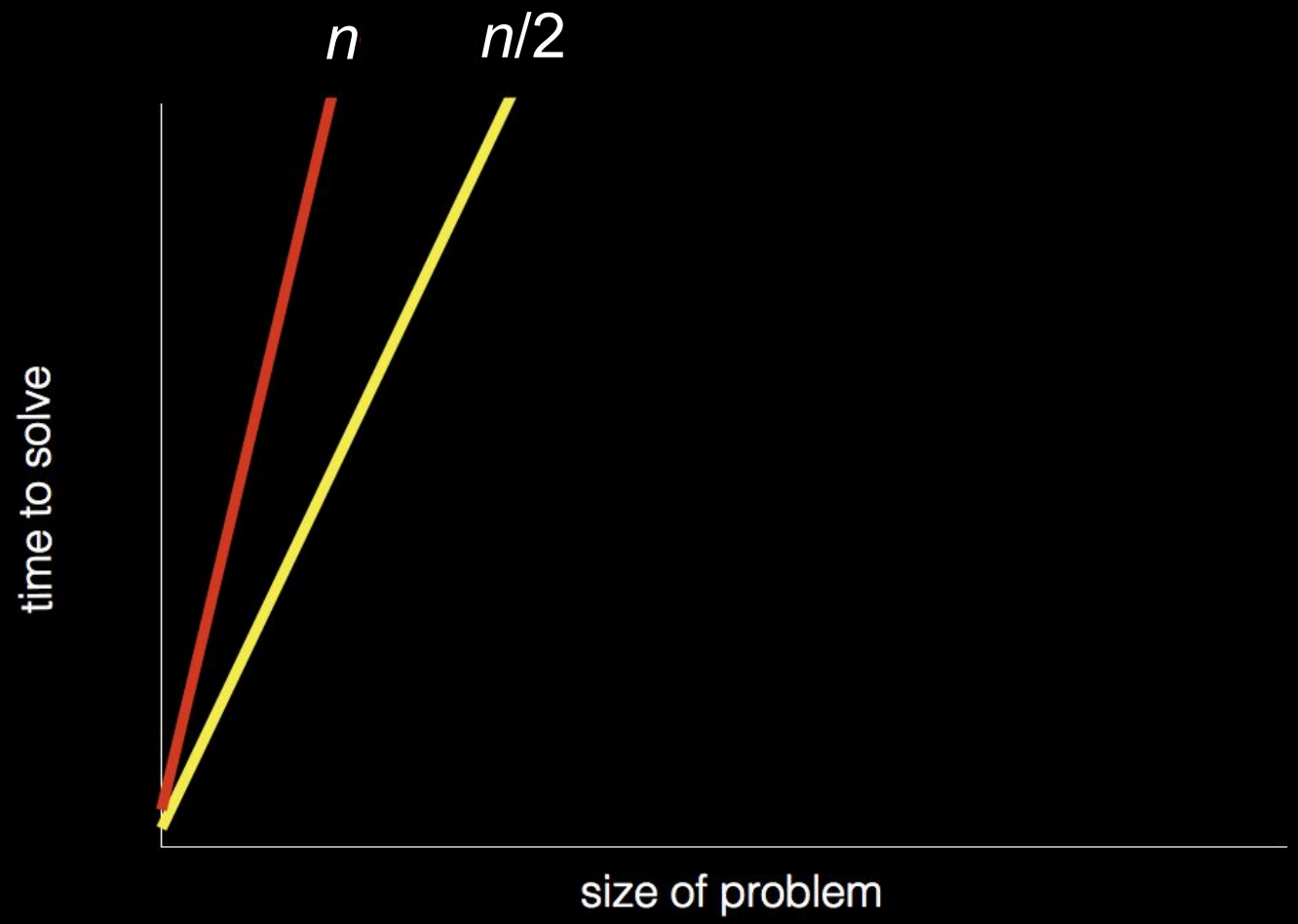
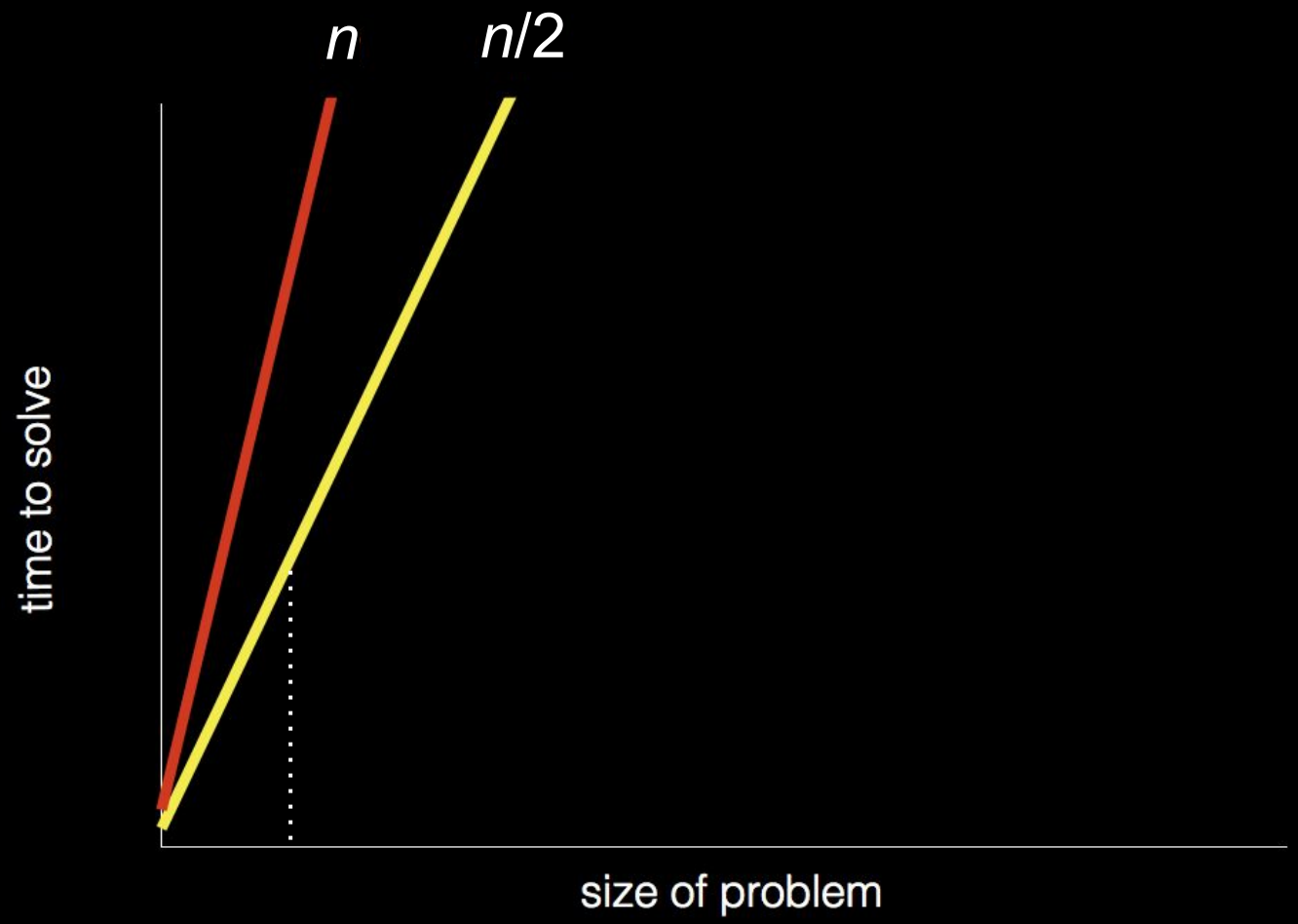
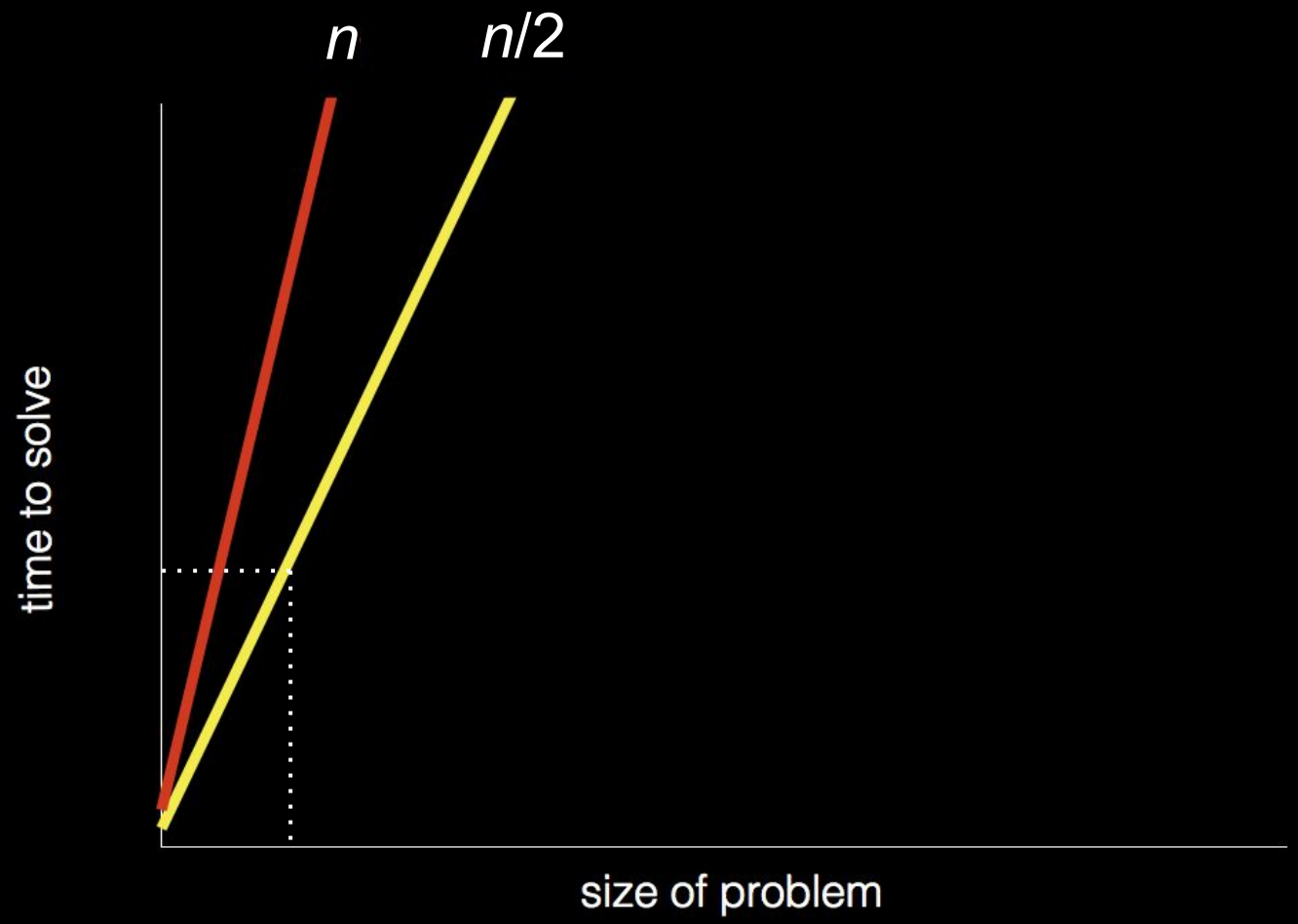
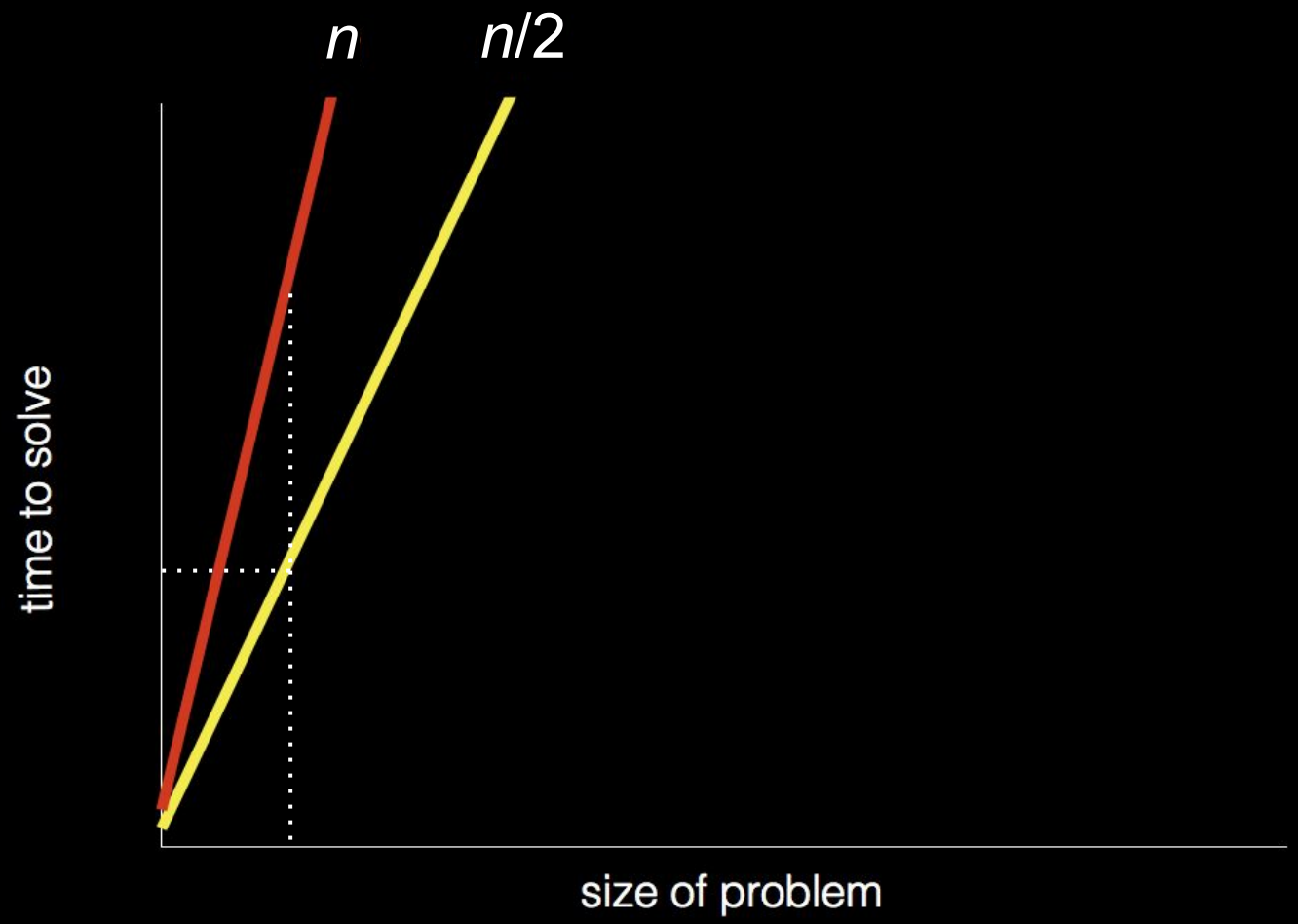

time to solve
size of problem

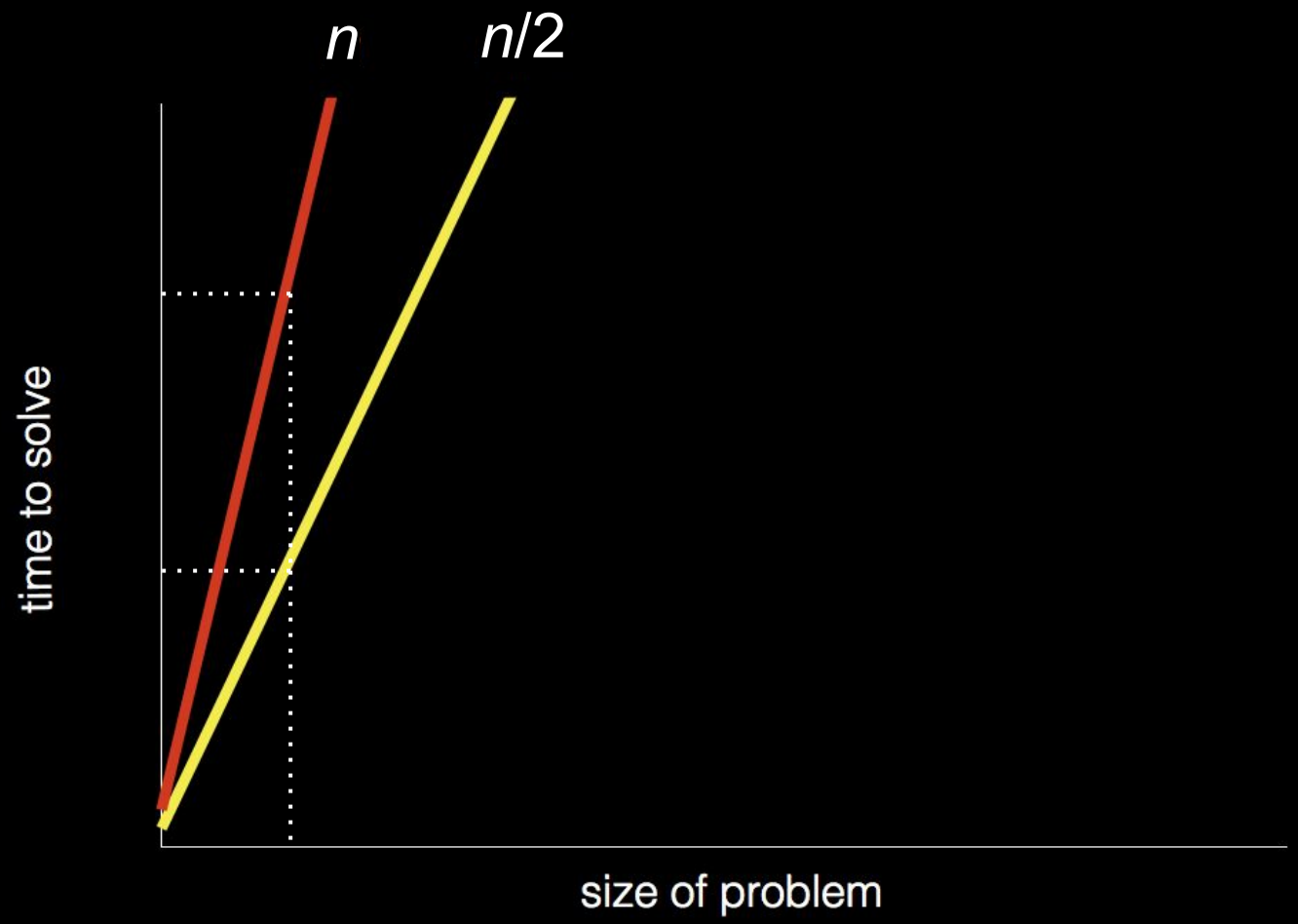

n
time to solve
size of problem

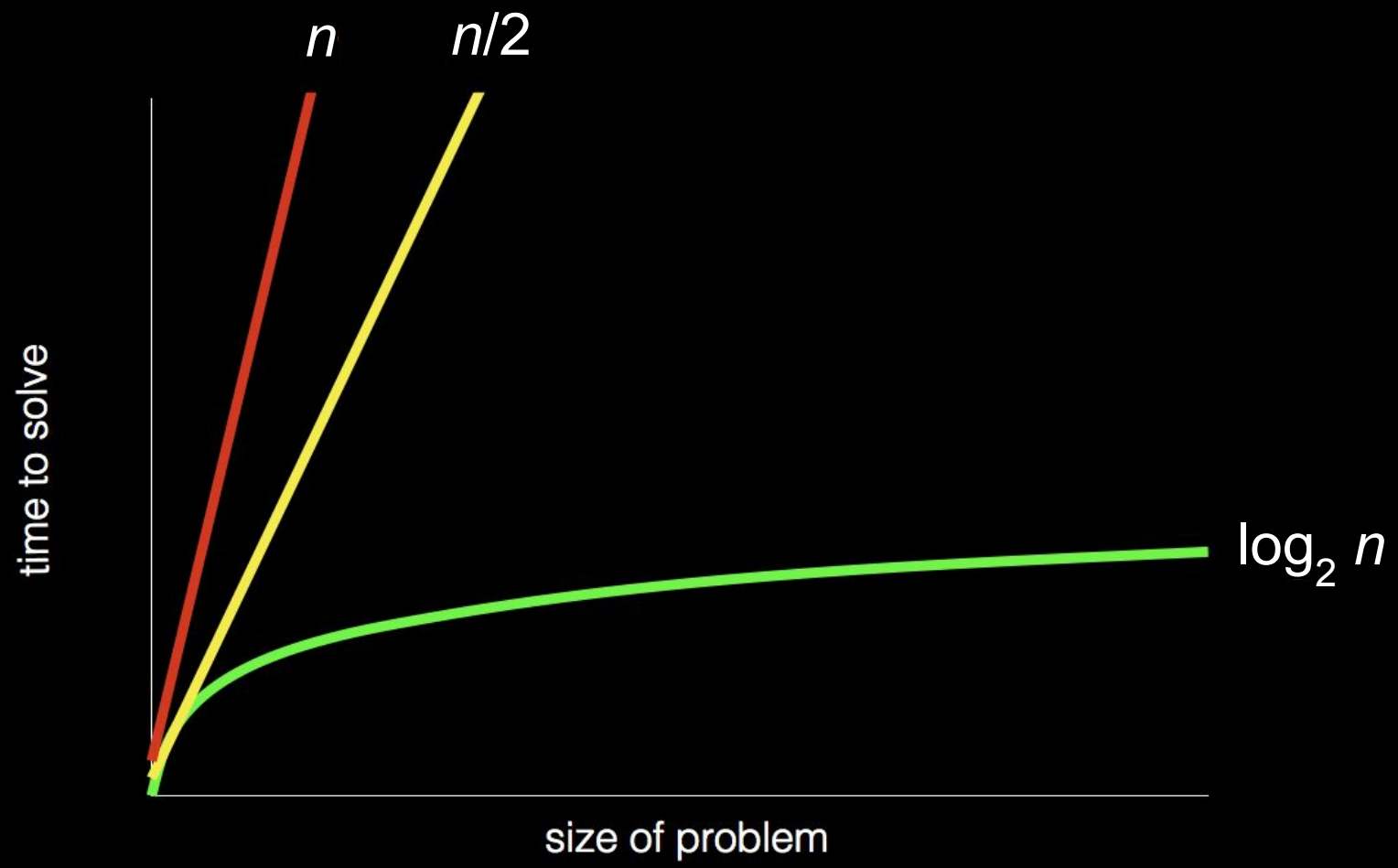

n
n/2
time to solve
size of problem


n
n/2
time to solve
size of problem


n
n/2
time to solve
size of problem


n
n/2
time to solve
size of problem


n
n/2
time to solve
size of problem


n
n/2
log2 n
time to solve
size of problem

pseudocode

```
1   Pick up phone book
2   Open to middle of phone book
3   Look at page
4   If person is on page
5       Call person
6   Else if person is earlier in book
7       Open to middle of left half of book
8       Go back to line 3
9   Else if person is later in book
10      Open to middle of right half of book
11      Go back to line 3
12  Else
13      Quit
```

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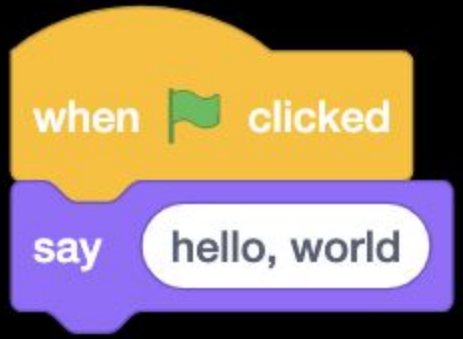
```

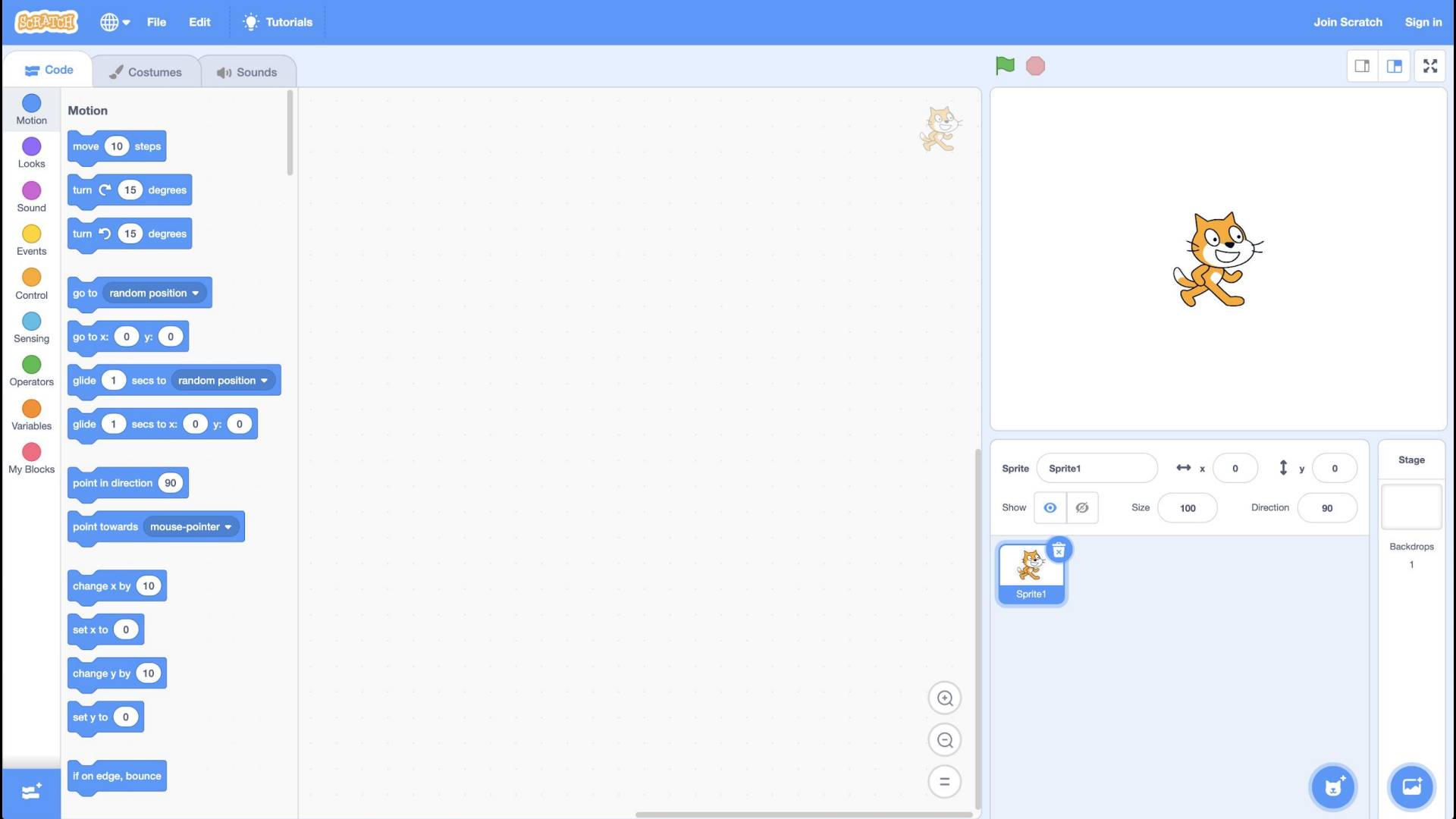
- functions
- conditions
- Boolean expressions
- loops

- functions
- conditions
- Boolean expressions
- loops
- variables
- threads
- events
- ...

```c
#include <stdio.h>

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


when clicked
say hello, world


File
Edit
Tutorials
Join Scratch
Sign in
Code
Costumes
Sounds
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks
Motion
move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 0 y: 0
glide 1 secs to random position
glide 1 secs to x: 0 y: 0
point in direction 90
point towards mouse-pointer
change x by 10
set x to 0
change y by 10
set y to 0
if on edge, bounce
Sprite
Sprite1
x
0
y
0
Show
Size
100
Direction
90
Sprite1
Stage
Backdrops
1

File Edit Tutorials Join Scratch Sign in

Code Costumes Sounds

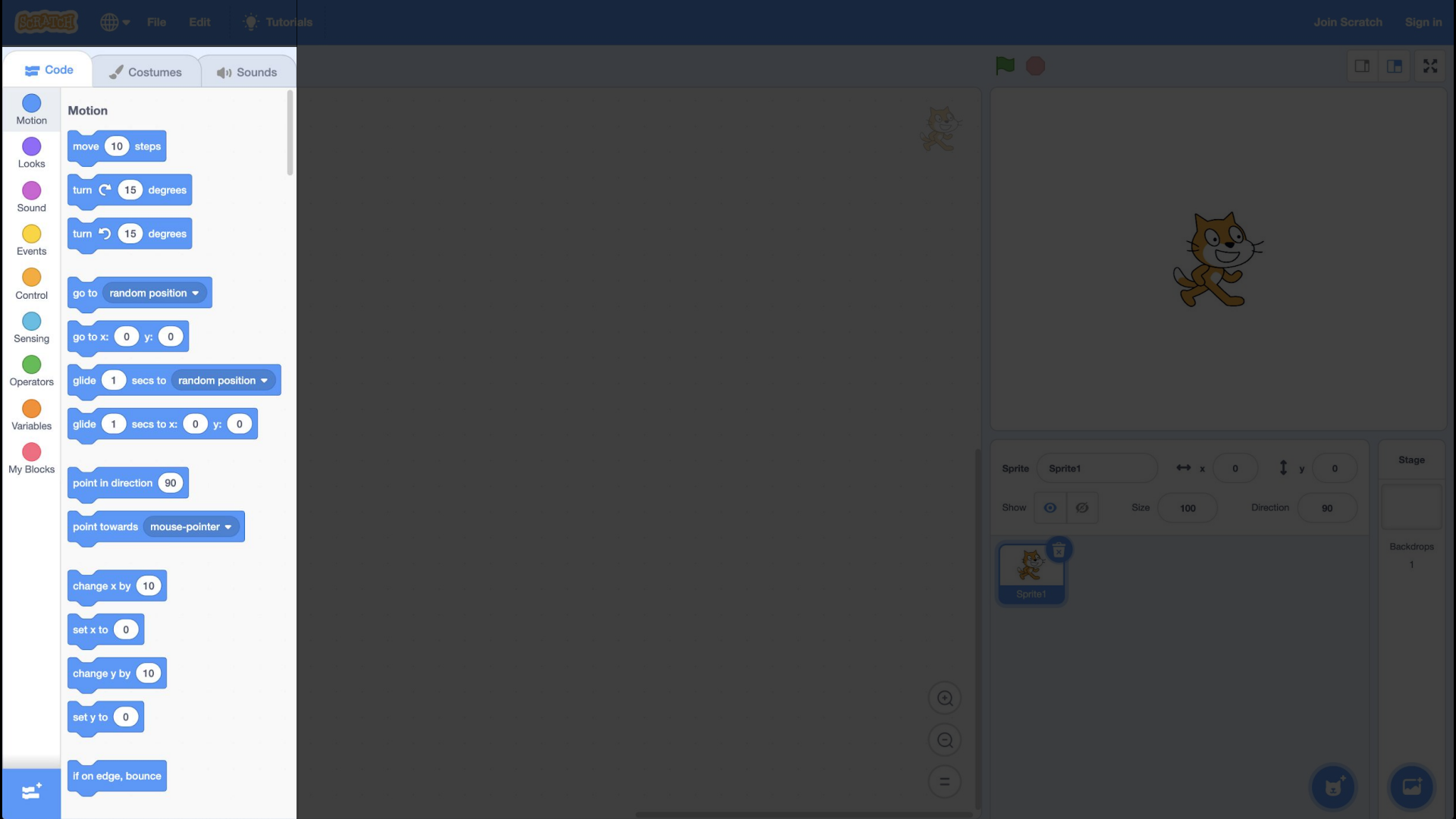
Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

Motion

move 10 steps
turn 15 degrees
turn 15 degrees
go to random position
go to x: 0 y: 0
glide 1 secs to random position
glide 1 secs to x: 0 y: 0
point in direction 90
point towards mouse-pointer
change x by 10
set x to 0
change y by 10
set y to 0
if on edge, bounce

Sprite Sprite1 x 0 y 0
Show Size 100 Direction 90
Sprite1

Stage
Backdrops 1


File
Edit
Tutorials
Join Scratch
Sign in
Code
Costumes
Sounds
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Sprite
Sprite1
x
0
y
0
Show
Size
100
Direction
90
Stage
Backdrops
1
Sprite1

File Edit Tutorials Join Scratch Sign In

Code Costumes Sounds

Motion
Looks
Sound
Events
Control
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Operators
Variables
My Blocks

Motion

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Sprite Sprite1 x 0 y 0
Show Size 100 Direction 90
Sprite1

Stage
Backdrops 1

File Edit Tutorials Join Scratch Sign in

Code Costumes Sounds

Motion
Looks
Sound
Events
Control
Sensing
Operators
Variables
My Blocks

Motion

move 10 steps
turn 15 degrees
turn 15 degrees
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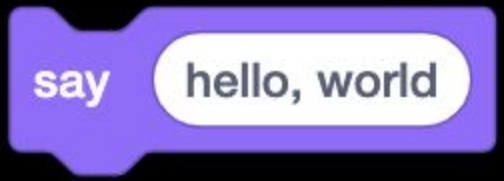
Sprite Sprite1 x 0 y 0
Show Size 100 Direction 90

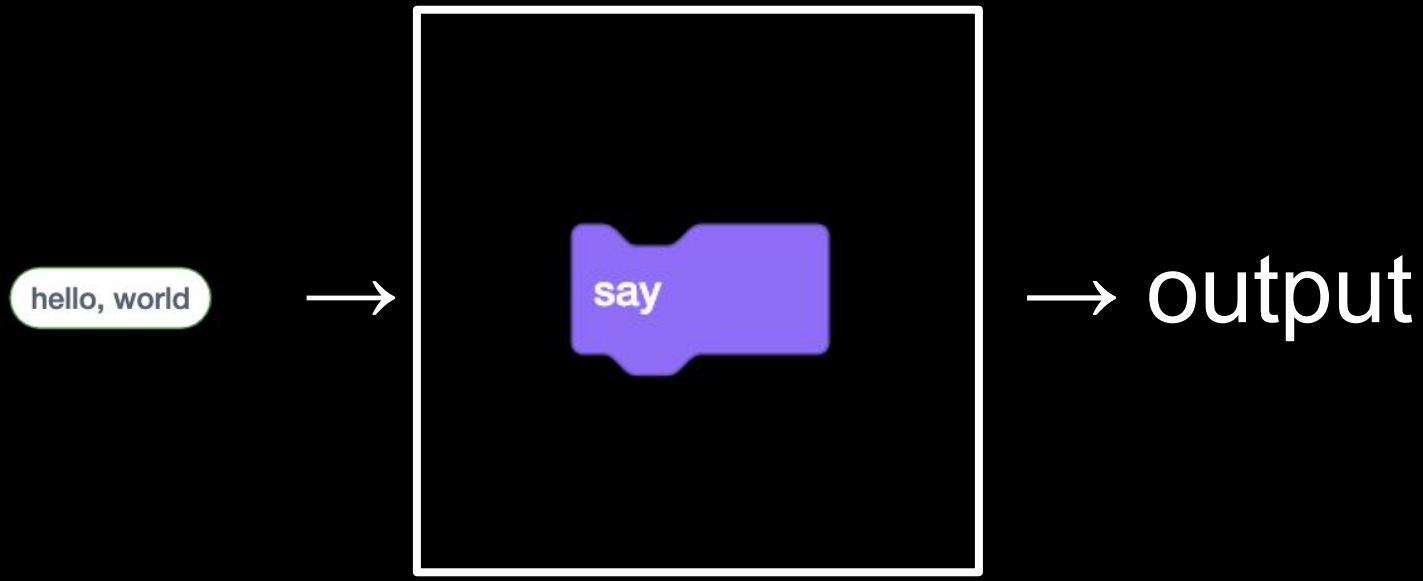
Sprite1

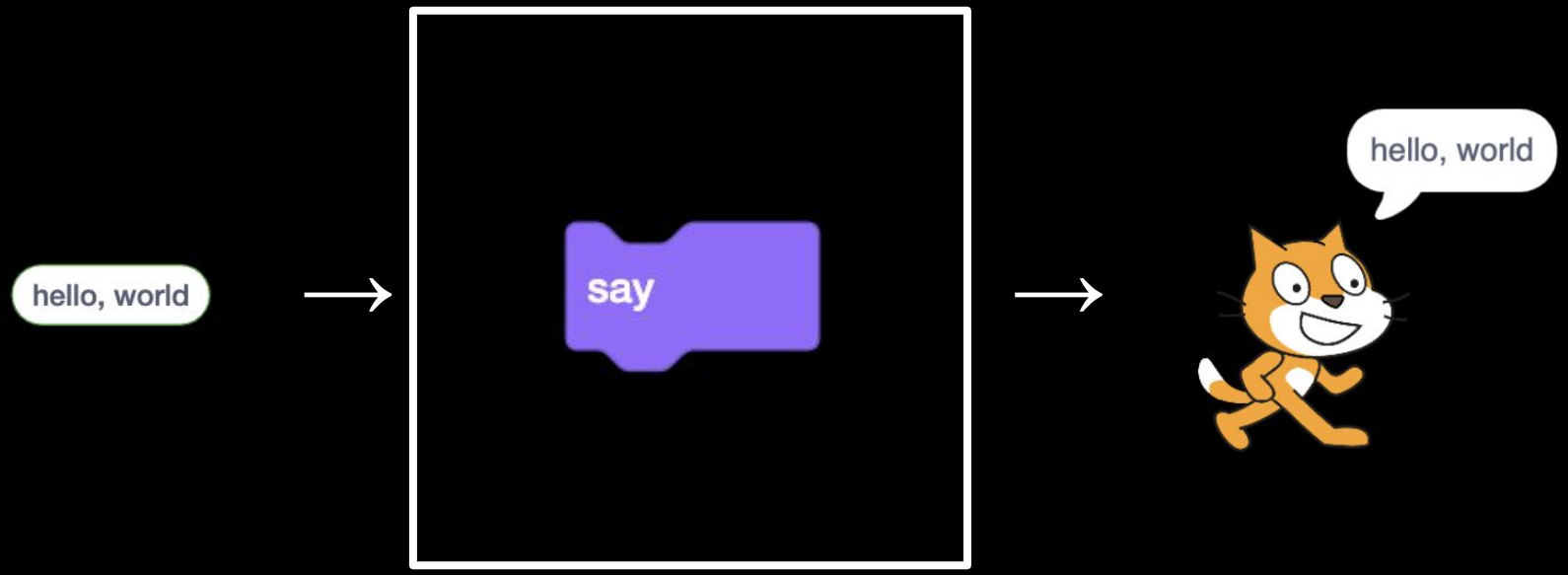
Stage
Backdrops
1

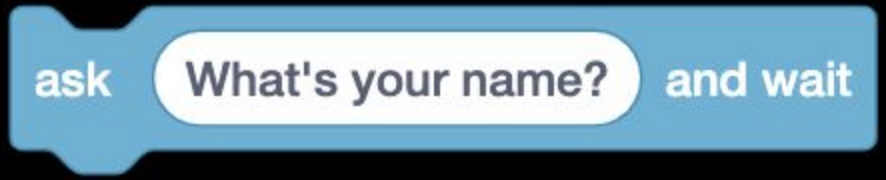

say
hello, world

input → algorithms → output

hello, world → algorithms → output


hello, world
say
output

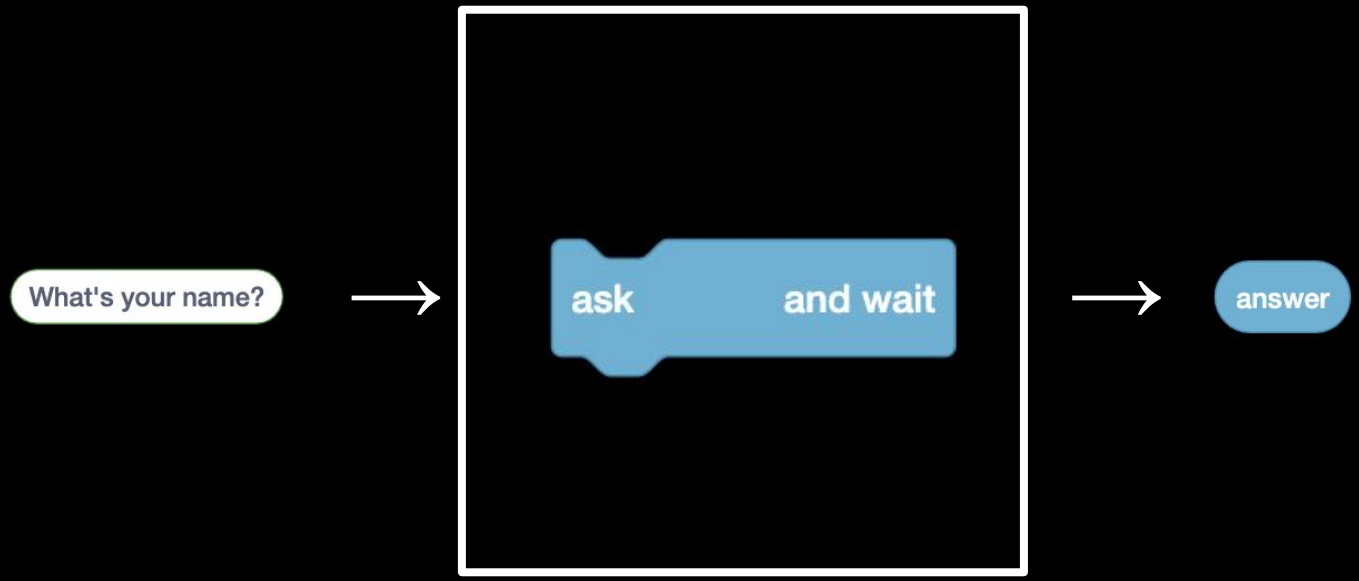

hello, world
say
hello, world

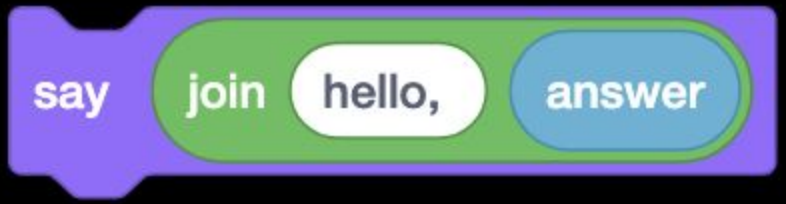

ask
What's your name?
and wait

input → algorithms → output

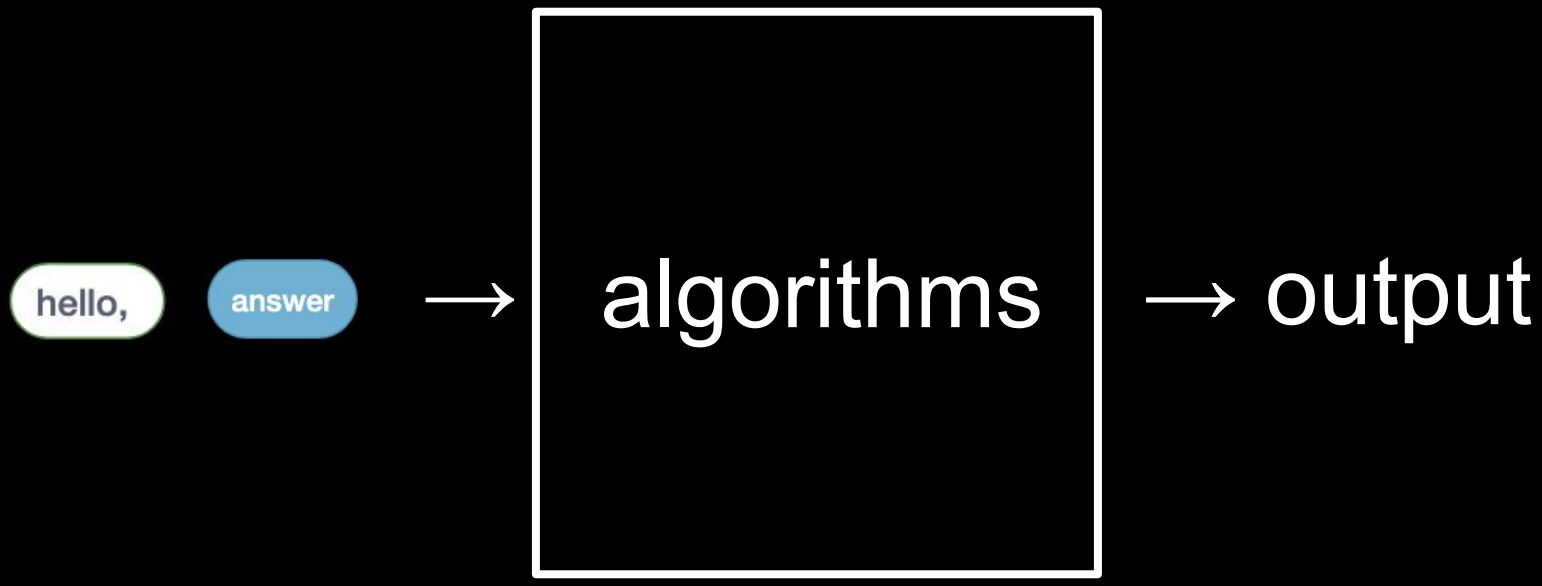
What's your name? → algorithms → output

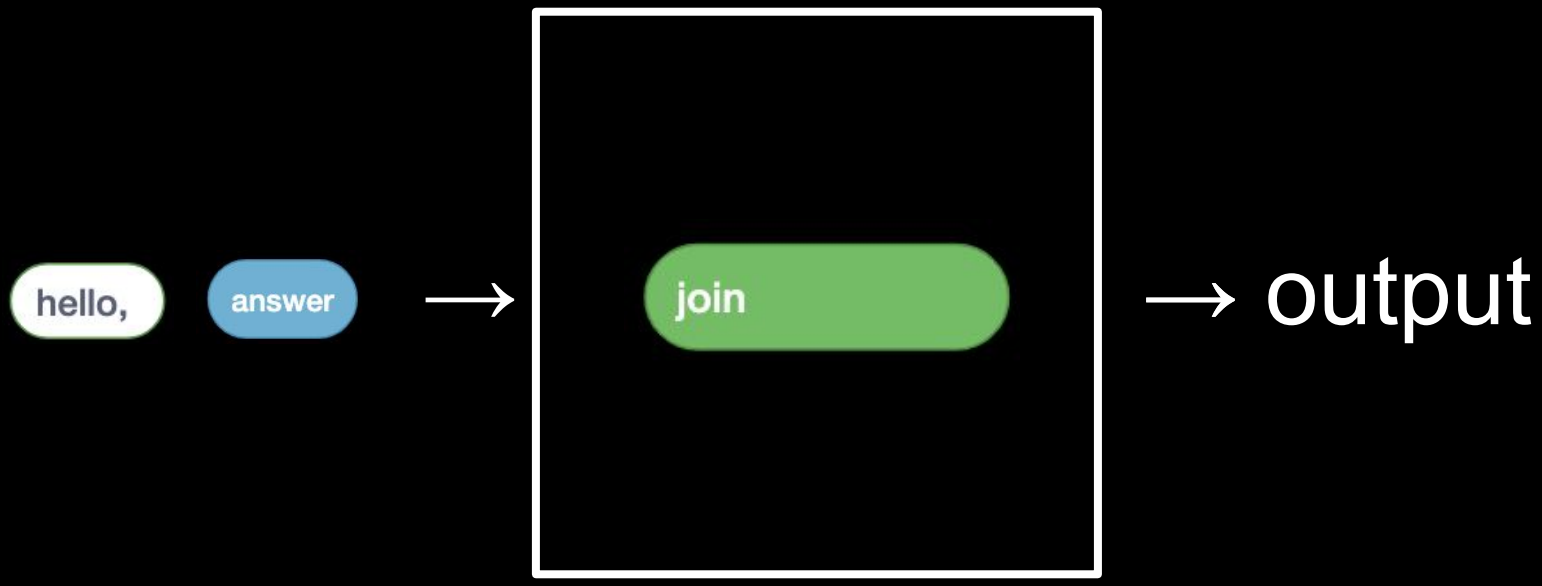
What's your name? → ask and wait → output

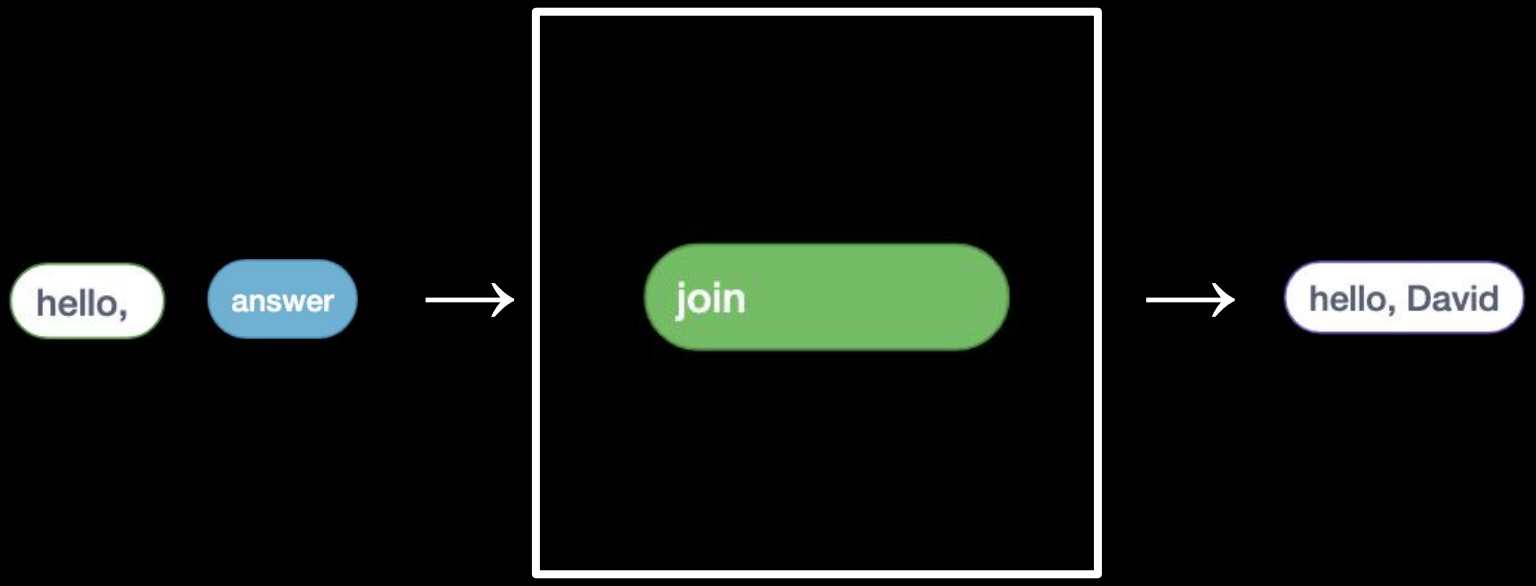

What's your name?
ask
and wait
answer


say
join
hello,
answer

input → algorithms → output

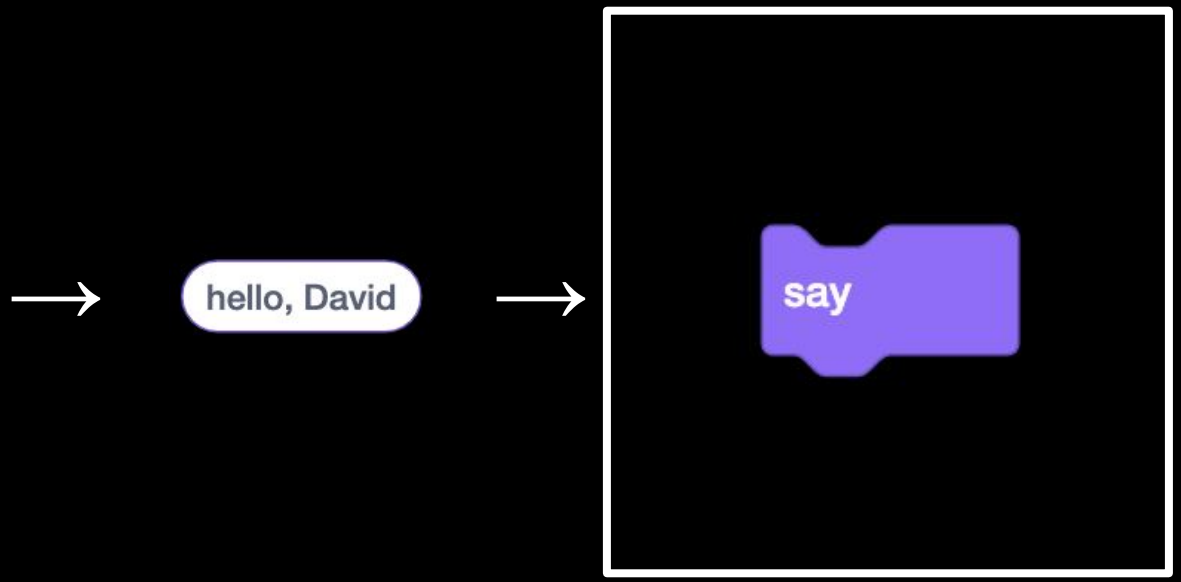

hello,
answer
→
algorithms
→ output


hello,
answer
join
output


hello,
answer
join
hello, David

→ hello, David

→ hello, David


hello, David
say


hello, David
say
hello, David

abstraction

This is CS50