

This is CS50

```
/*
 * hello.c
 *
 * Assignment: Assignment 1
 *
 * Name: David Malan
 *
 * A program to print "Hello, CS50!" on the screen.
 */

#include <stdio.h>

/*
 * main
 */

void main ()
{
    printf ("Hello, CS50!\n");

    exit (0);
}

/*
 * end of hello.c
 */
```

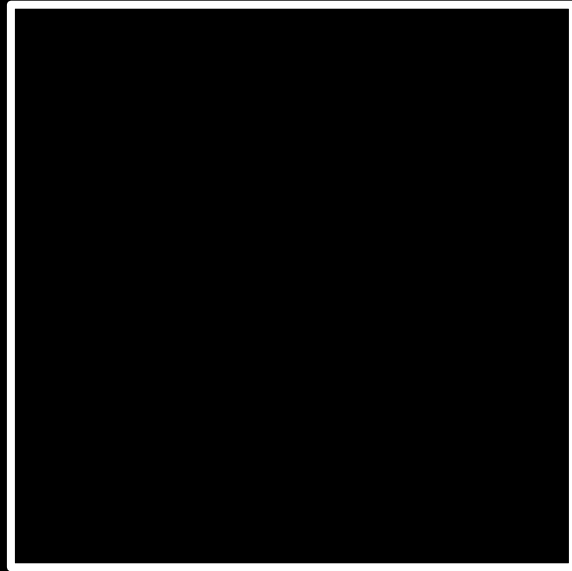
(-2) for hello.out, we wanted output of hello,  
not of make.

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

2/3

of CS50 students have never taken CS before

input →



→ output

000

001

010



011

100

101

110

111

123

1

123

10 1

123



100 10 1

123

100 10 1

123

$100 \times 1$

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**

A

65

0100001

ASCII

... A B C D E F G H I ...

... 65 66 67 68 69 70 71 72 73 ...

72

73

33



H

72

I

73

33

H  
72

I  
73

!  
33

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

H  
72

I  
73

!  
33

H

01001000

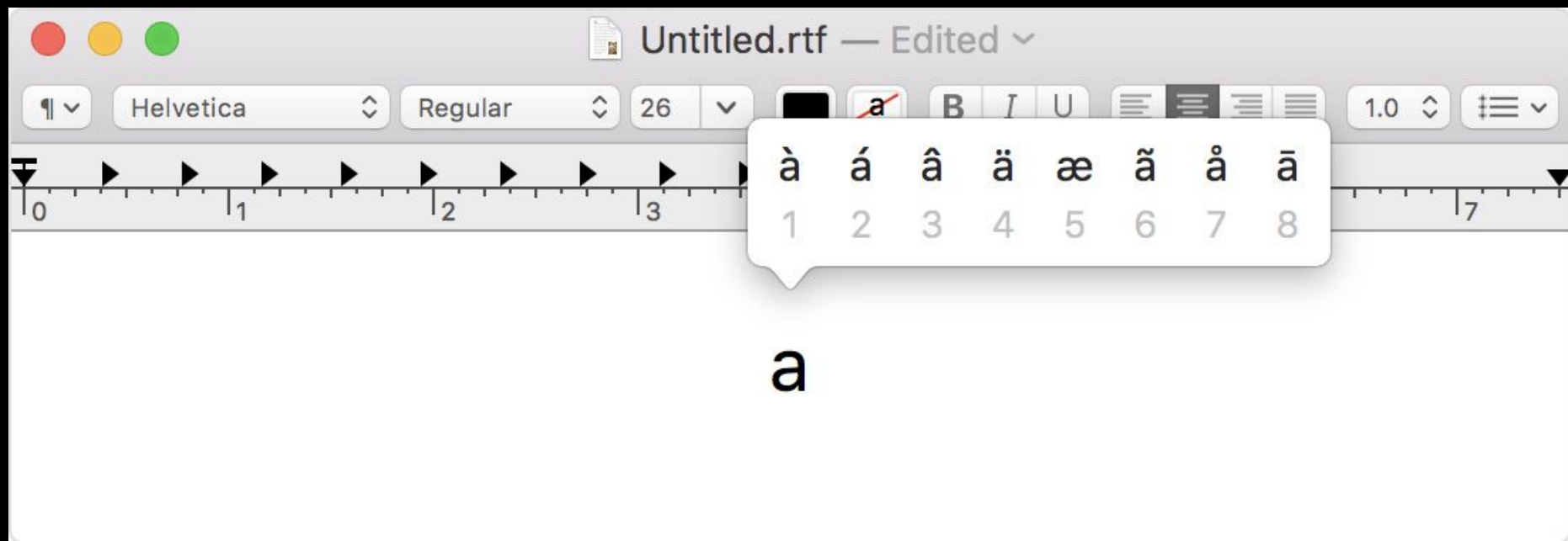
I

01001001

!

00100001

~ ,	! 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		



a



Search

### FAVORITES



### SMILEYS & PEOPLE





Unicode

4,036,991,159

11110000 10011111 10011000 10110111







RGB



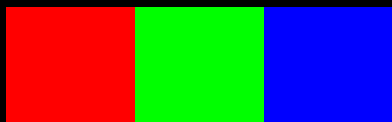


72 73 33

72

73

33



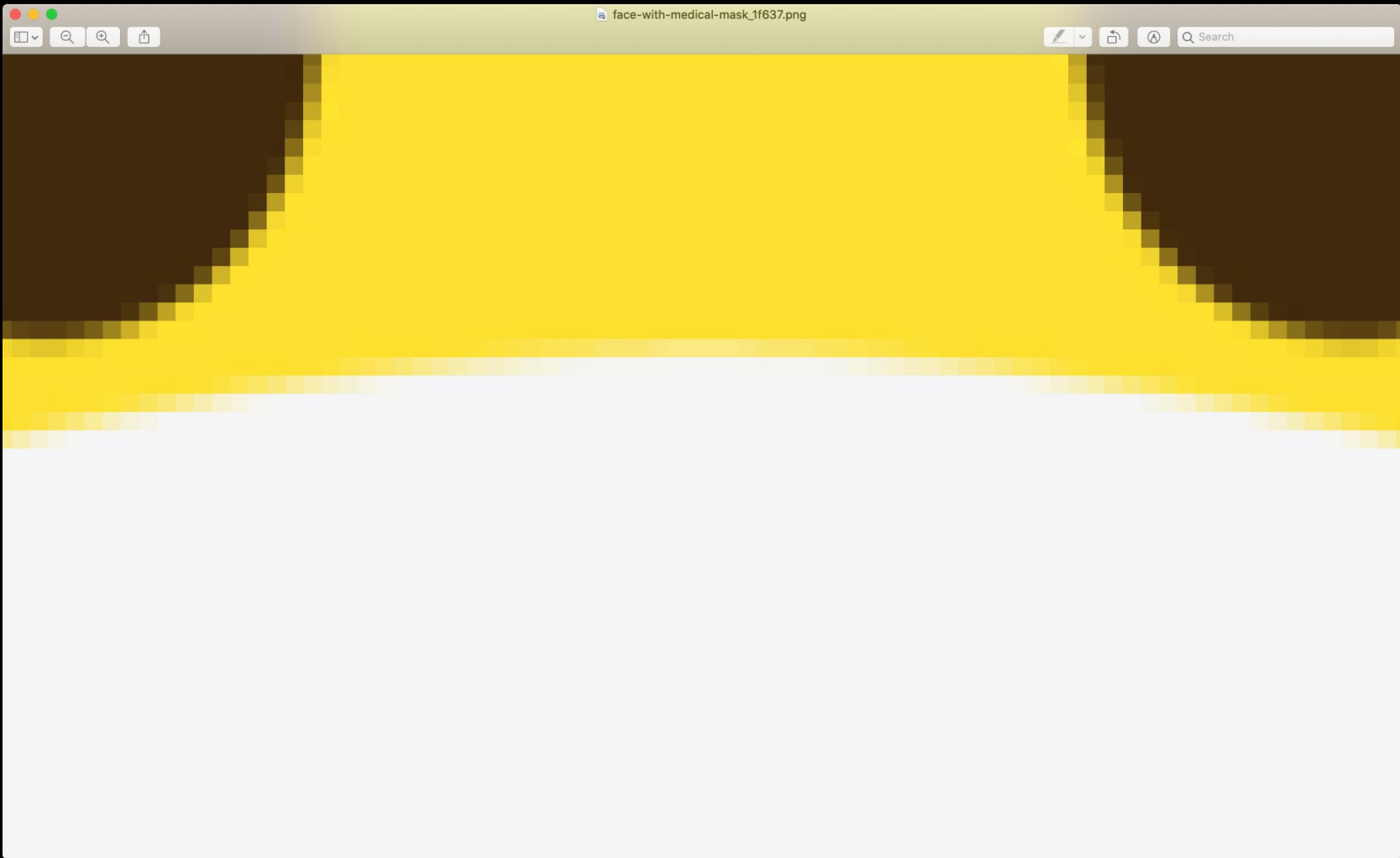




face-with-medical-mask\_1f637.png

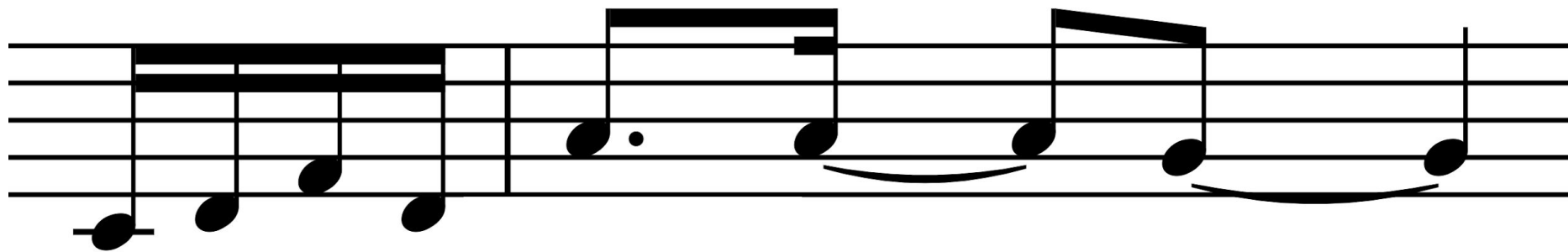












144 60 64

128 60 64

144 62 64

128 62 64

144 65 64

128 65 64

144 62 64

128 62 64

144 69 64

128 69 64

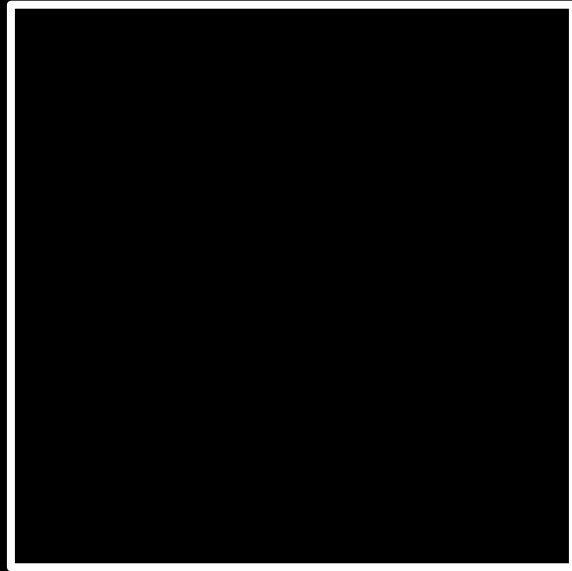
144 69 64

128 69 64

144 67 64

128 67 64

input →



→ output

algorithm



Groups



# Contacts

Q 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  
#

< Contacts

Edit



John Harvard



message



call



video



mail



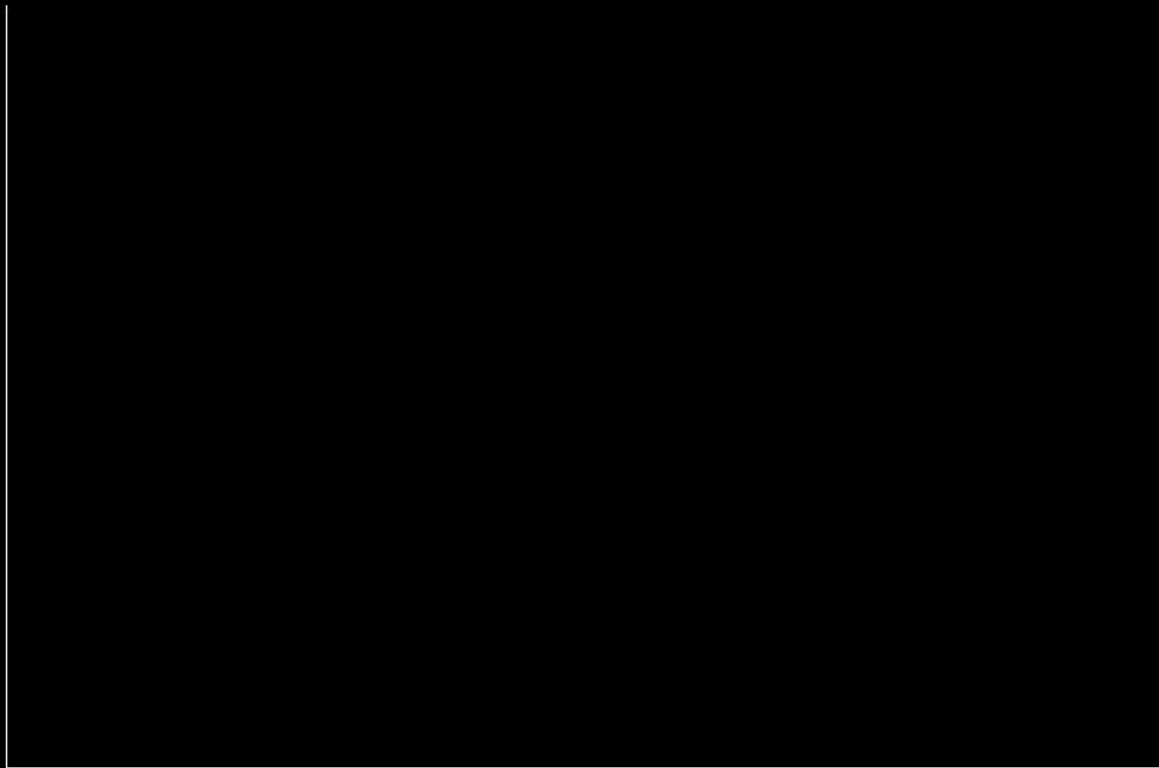
pay

mobile

+1 (949) 468-2750

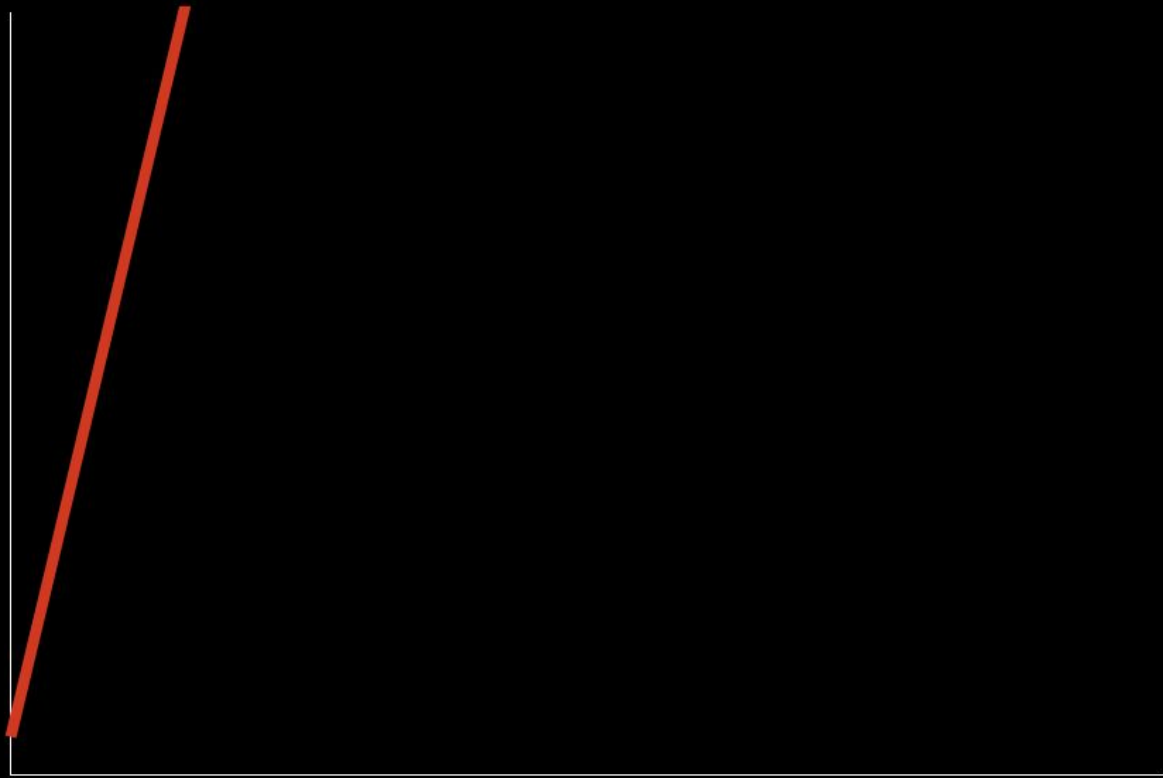
time to solve

size of problem





time to solve



$n$

size of problem

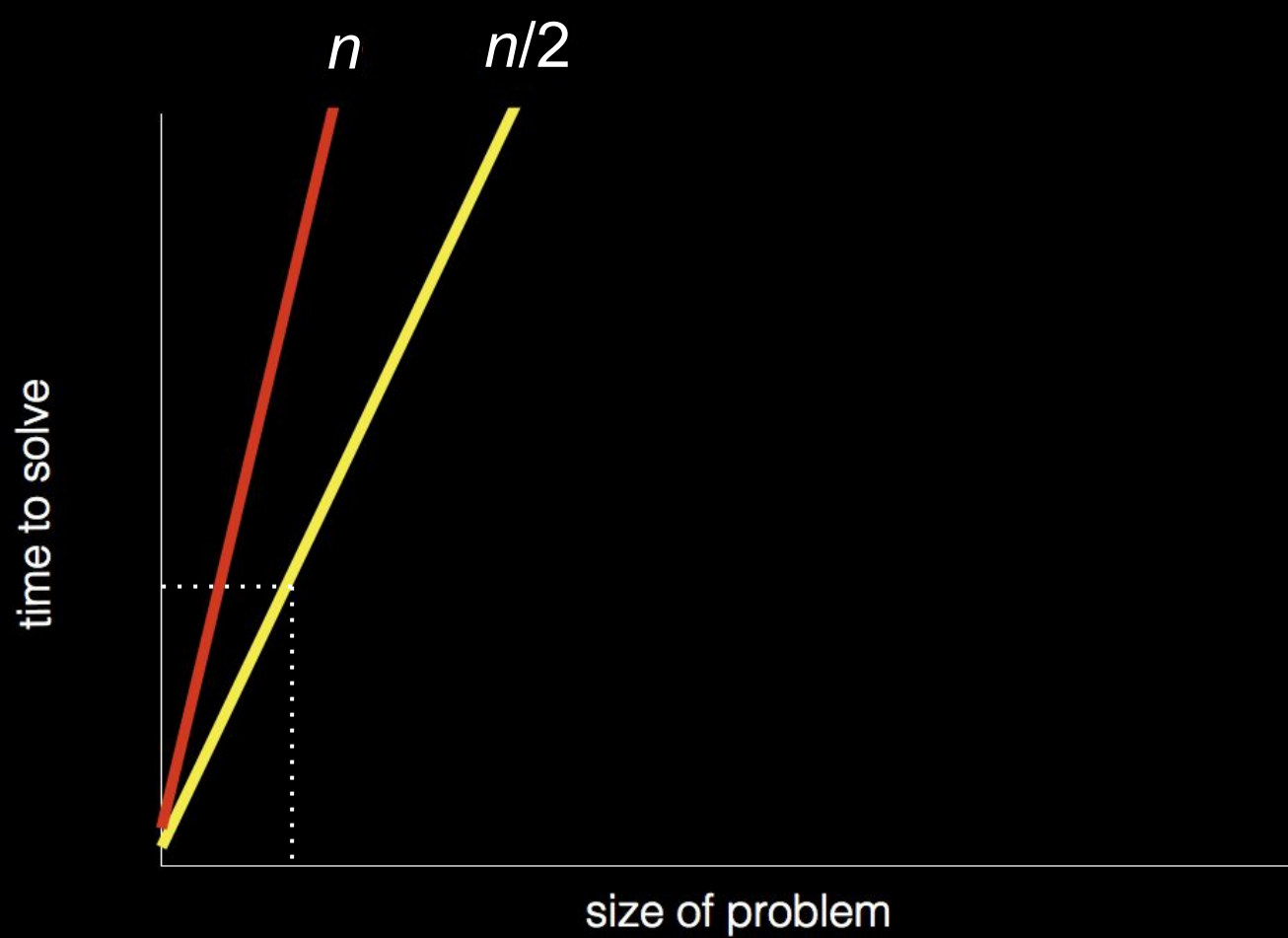
time to solve

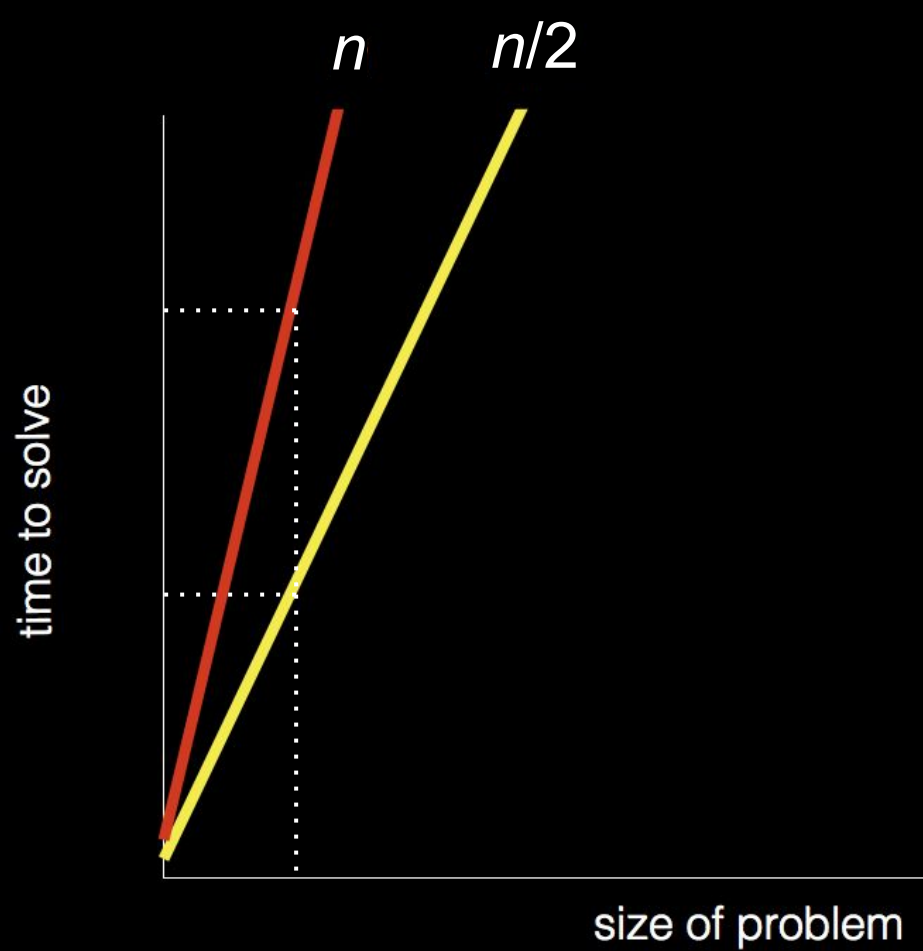


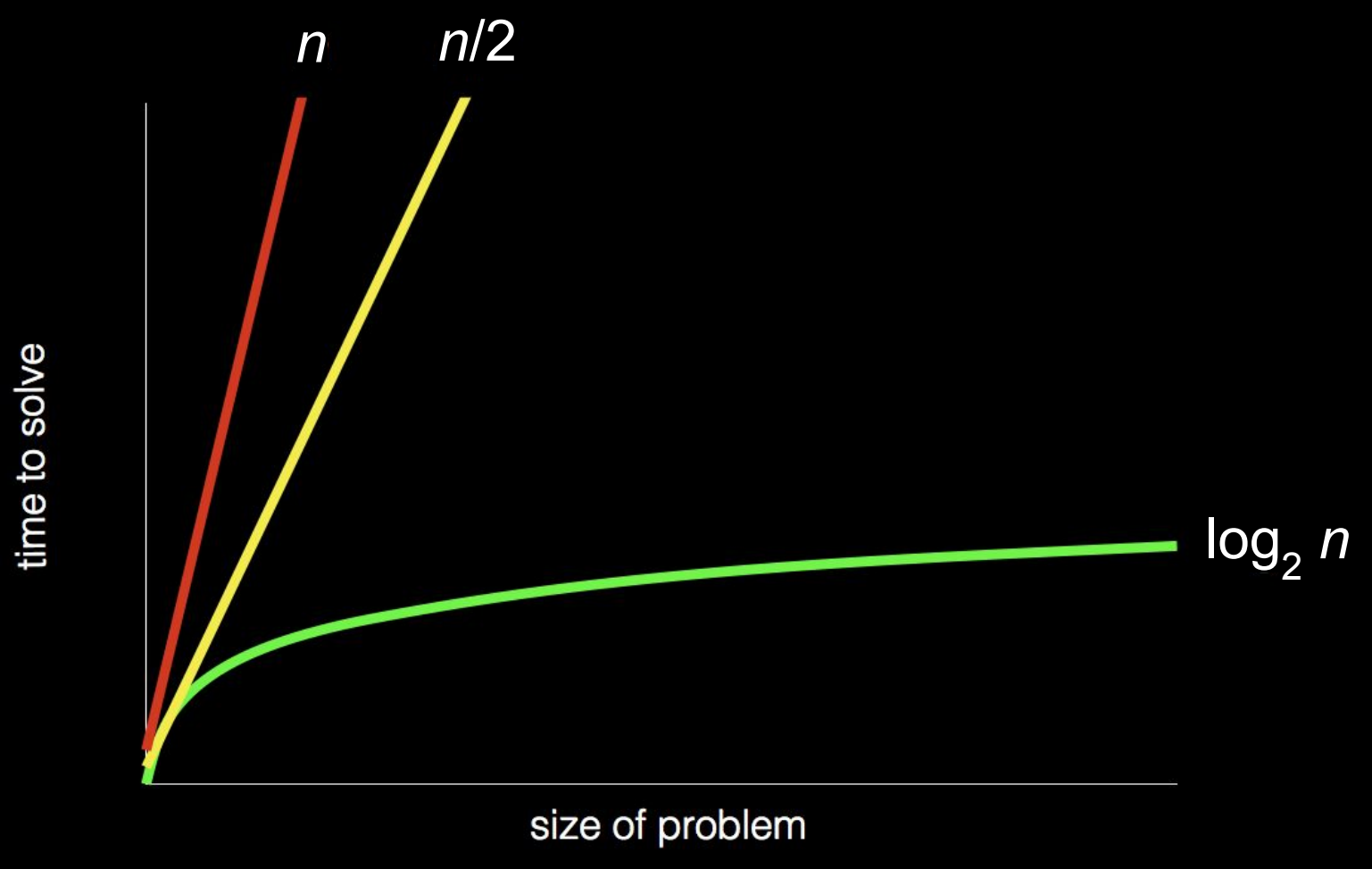
$n$

$n/2$

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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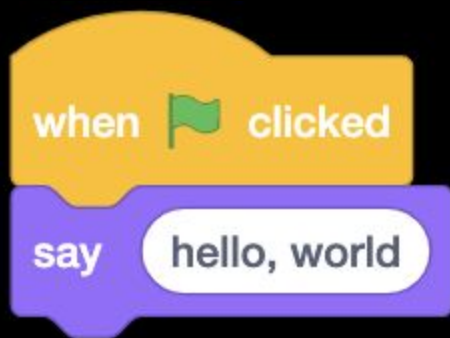
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12 Else
13    Quit
```

- **functions**
  - arguments, return values
- **conditionals**
- **Boolean expressions**
- **loops**
- variables
- ...

```
#include <stdio.h>

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

```
print("hello, world")
```



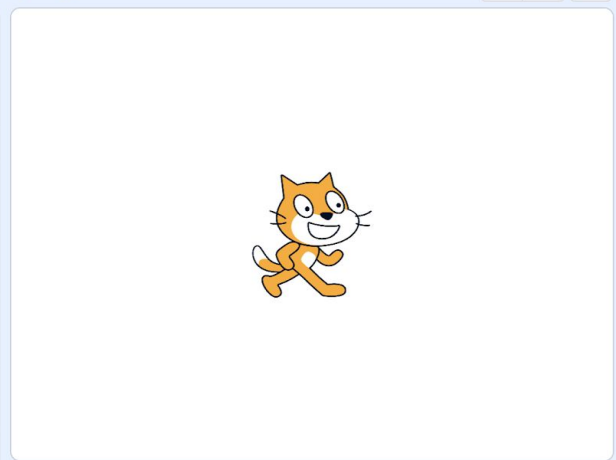
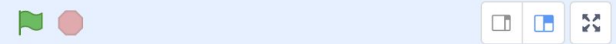
Code Costumes Sounds

- 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

Stage

Backdrops: 1

Sprite1





Code Costumes Sounds

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turn 15 degrees

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go to x: 0 y: 0

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glide 1 secs to x: 0 y: 0

point in direction 90

point towards mouse-pointer

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set y to 0

if on edge, bounce



Sprite Sprite1 x 0 y 0 Show Size 100 Direction 90



Stage Backdrops 1

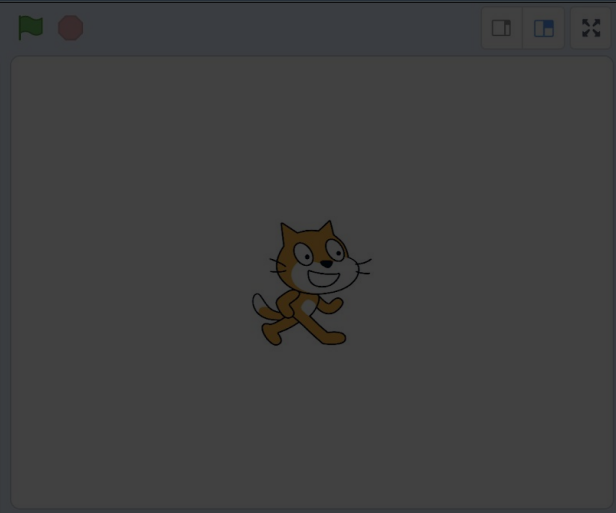
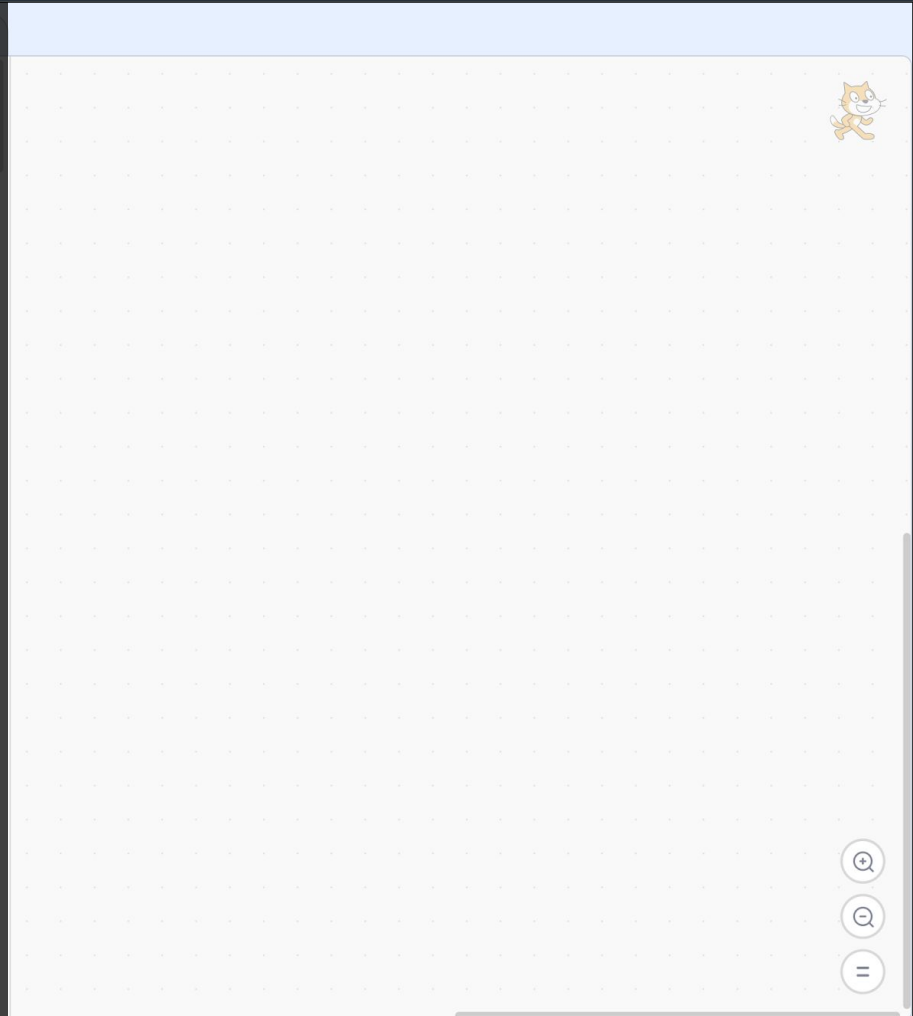


Code Costumes Sounds

- Motion
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Sprite Sprite1 x: 0 y: 0

Show Show Size 100 Direction 90

Sprite1

Stage

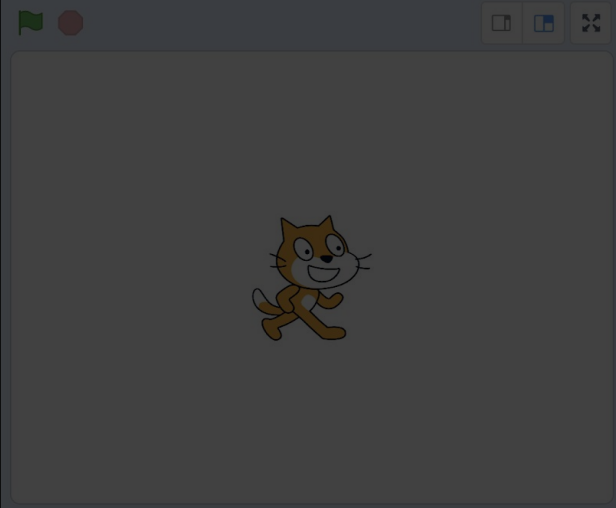
Backdrops 1

Code Costumes Sounds

- Motion
- Looks
- Sound
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Sprite Sprite1

x 0 y 0

Show

Size 100 Direction 90

Stage

Backdrops 1

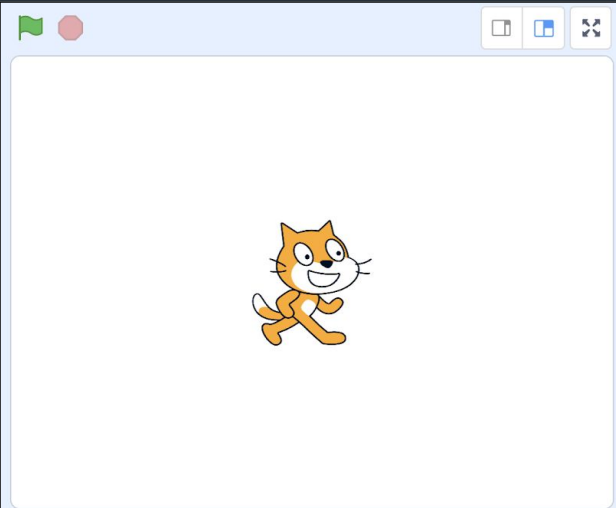
Sprite1

Code Costumes Sounds

- Motion
- Looks
- Sound
- Events
- Control
- Sensing
- Operators
- Variables
- My Blocks

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- change x by 10
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- set y to 0
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Sprite Sprite1

x: 0 y: 0

Show

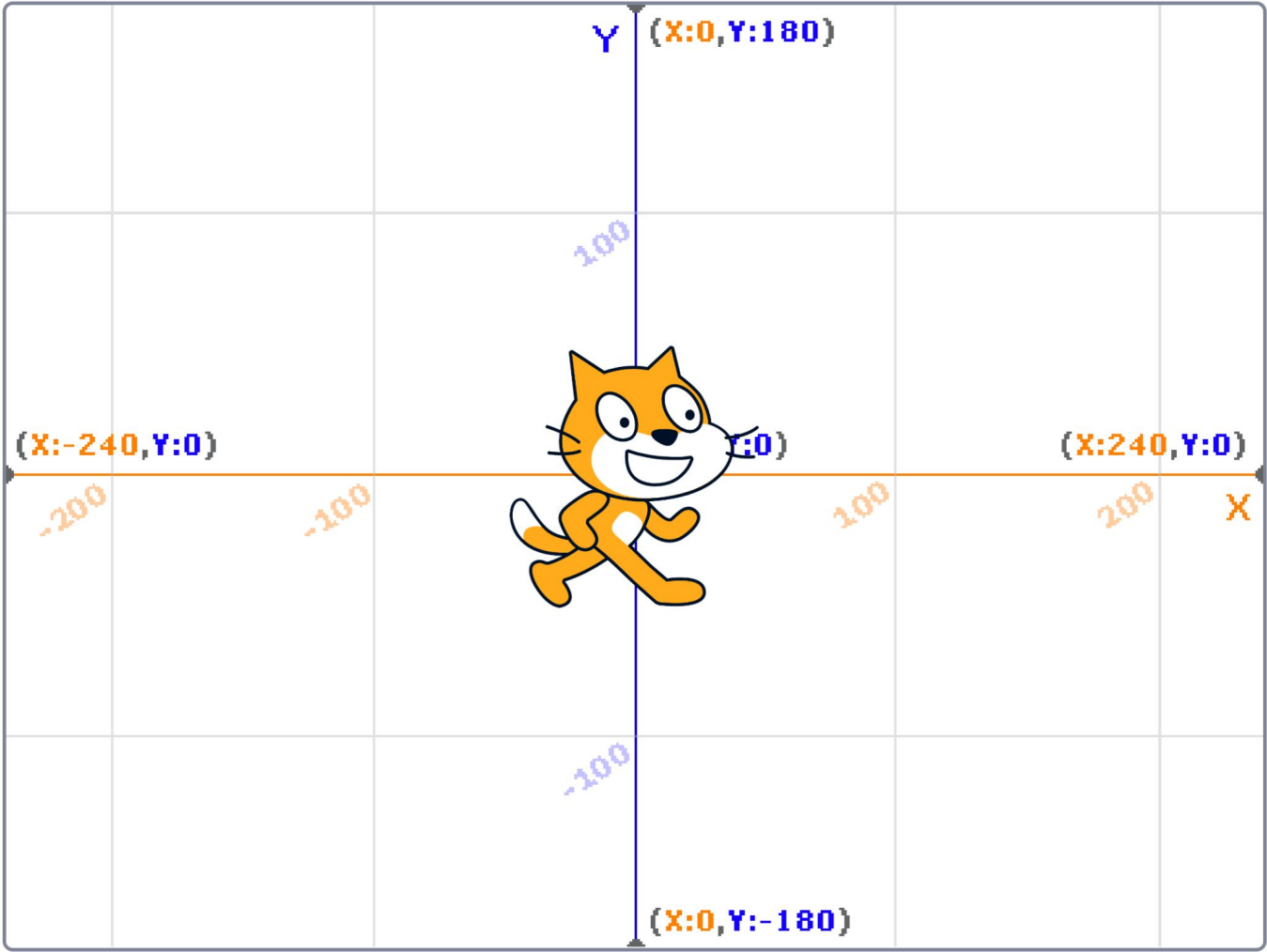
Size 100 Direction 90

Sprite1

Stage

Backdrops 1

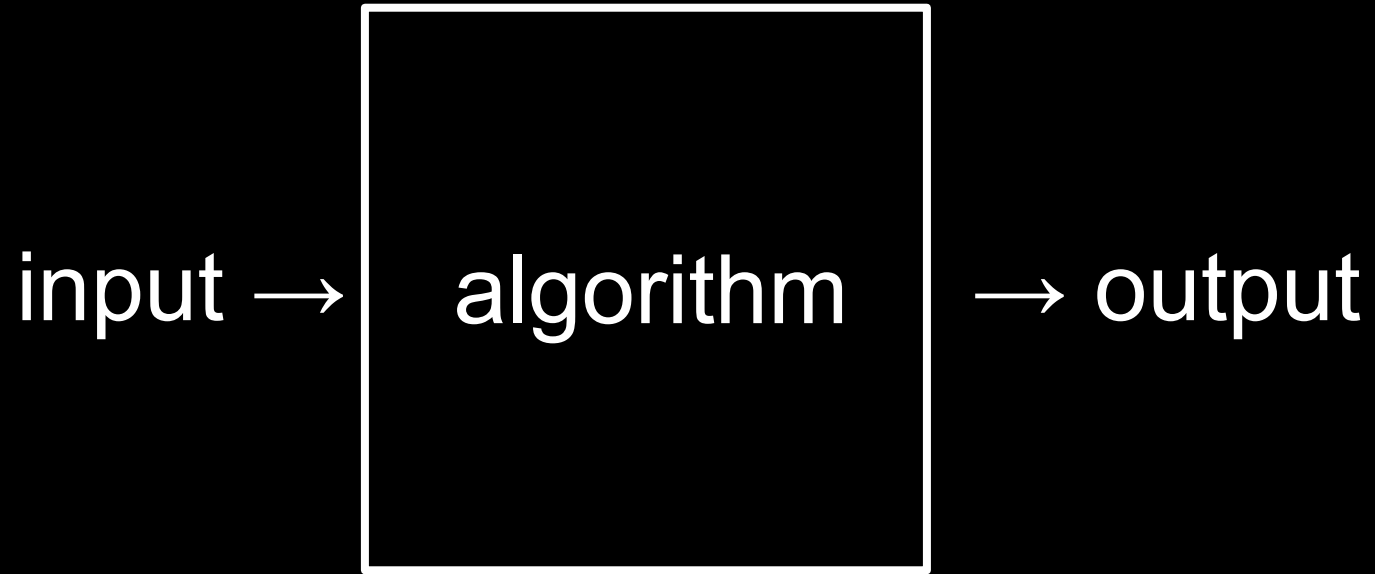




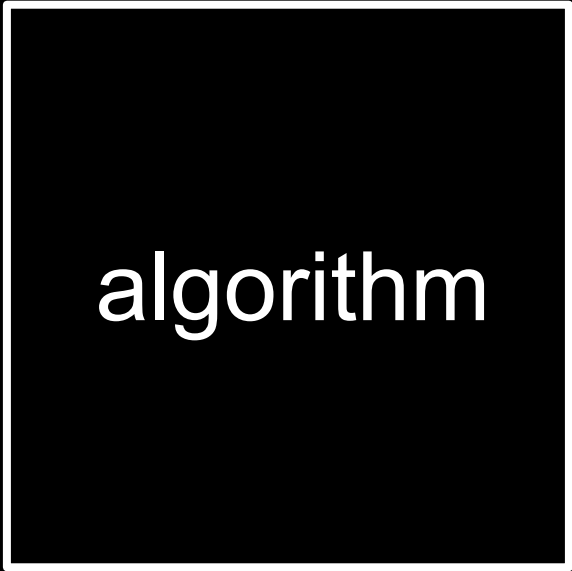
A purple Scratch 'say' block with a white oval containing the text 'hello, world'. The block has a notch on the left side for interlocking with other code blocks.

say

hello, world



hello, world



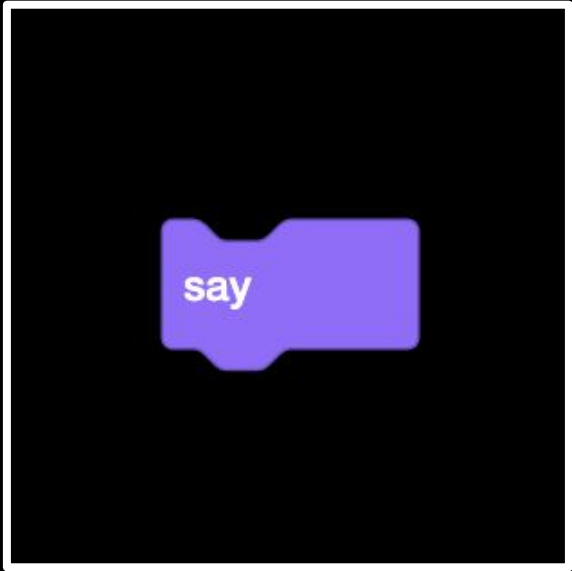
algorithm



output

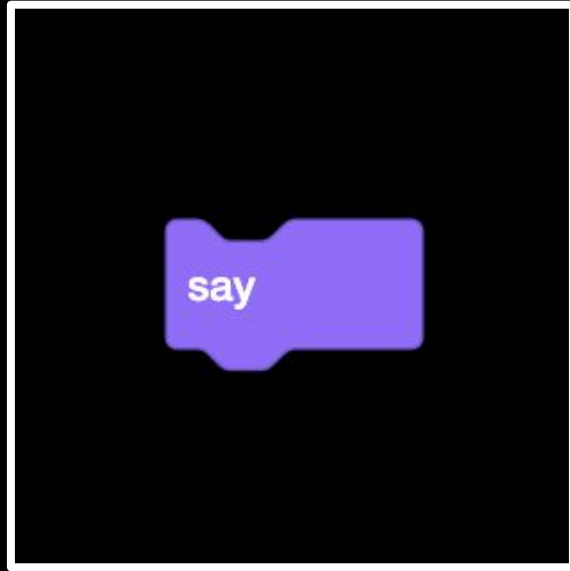


hello, world



output

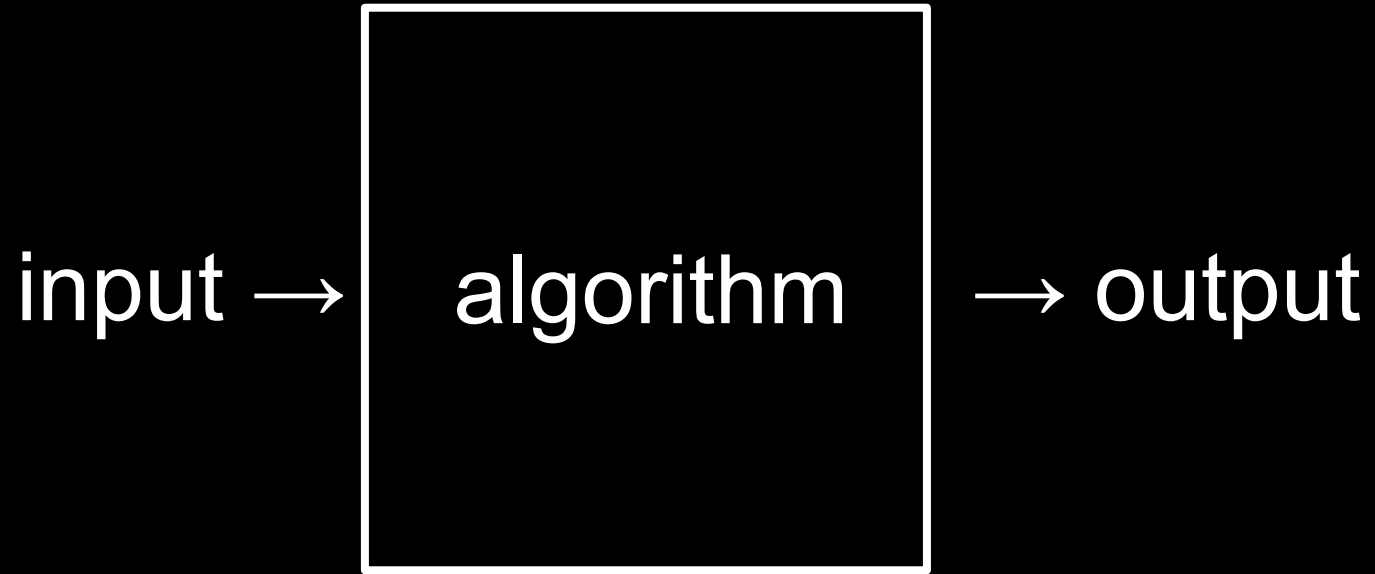
hello, world



ask

What's your name?

and wait



What's your name?

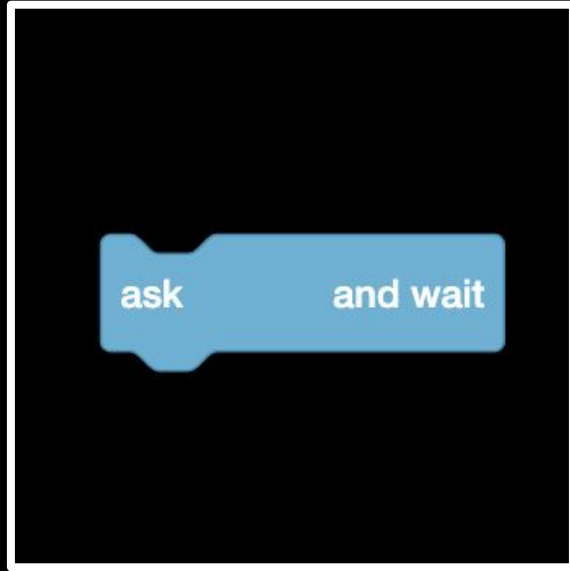


algorithm



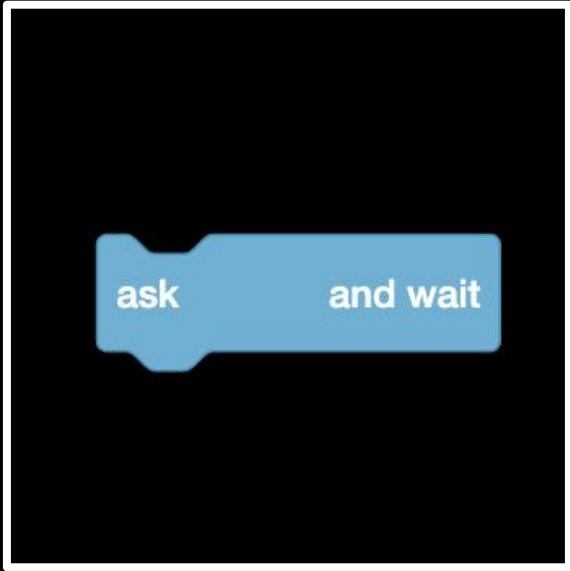
output

What's your name?



→ output

What's your name?



answer

A Scratch 'say' block, which is purple with a notch on the left and a bump on the right. It contains a green 'join' block, a white 'hello,' block, and a blue 'answer' block.

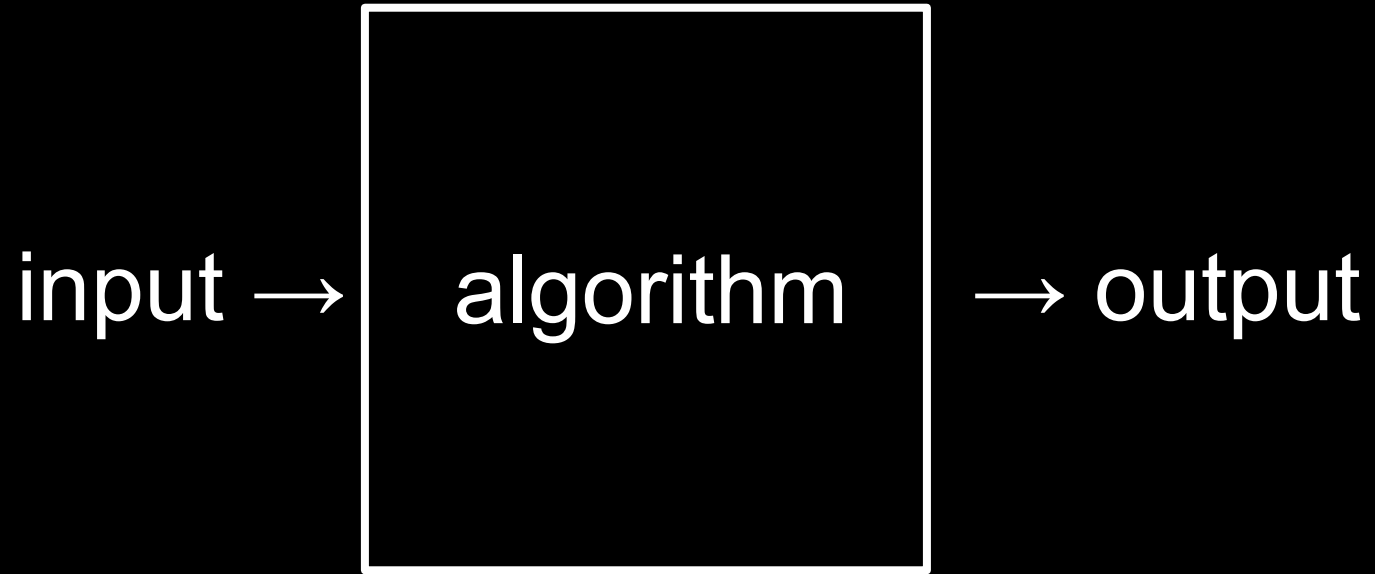
say

join

hello,

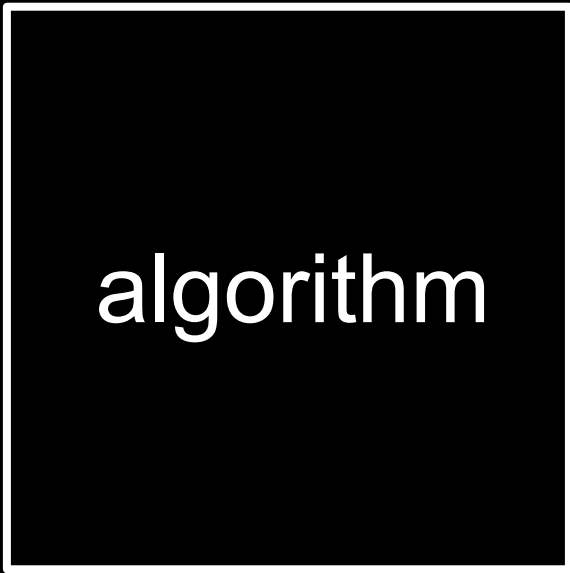
answer





hello,

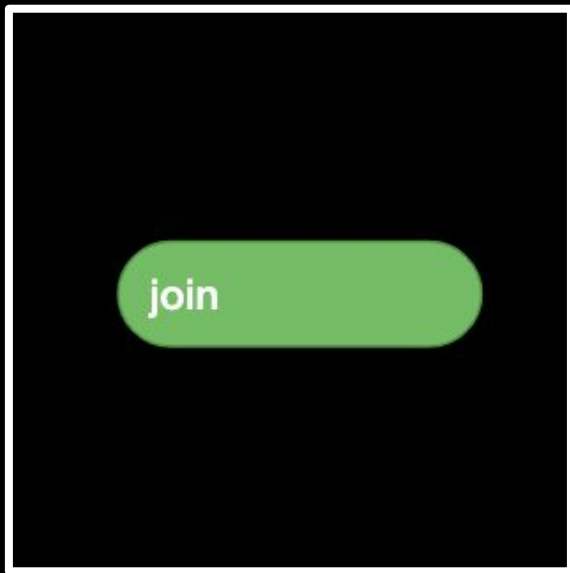
answer



output

hello,

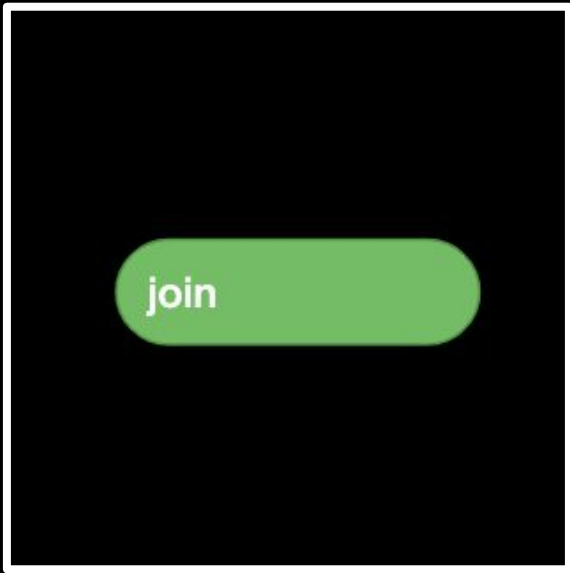
answer



output

hello,

answer



hello, David



hello, David



hello, David



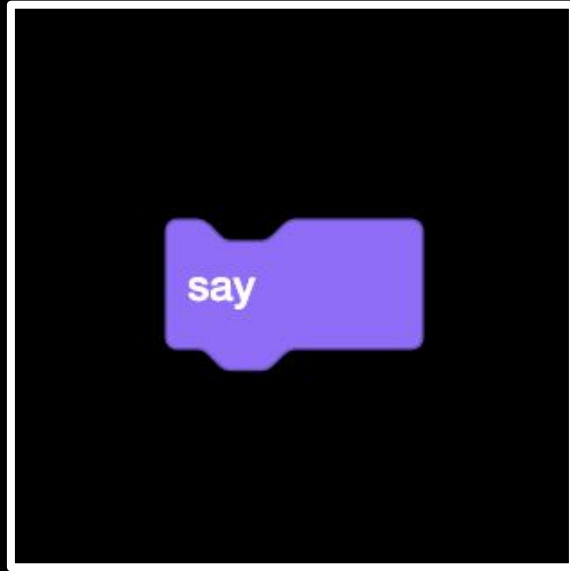
hello, David



say



hello, David



hello, David



This is CS50