

CS50 for MBAs

Data Structures

<code>bool</code>	Boolean value
<code>float</code>	floating-point value
<code>int</code>	integer
<code>str</code>	string
<code>...</code>	

dict

list

range

set

tuple

...





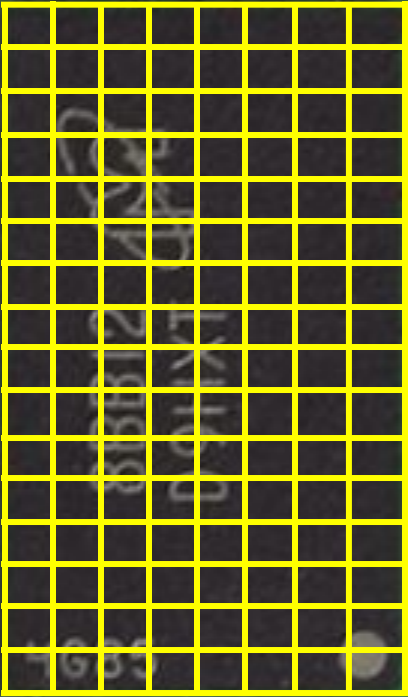
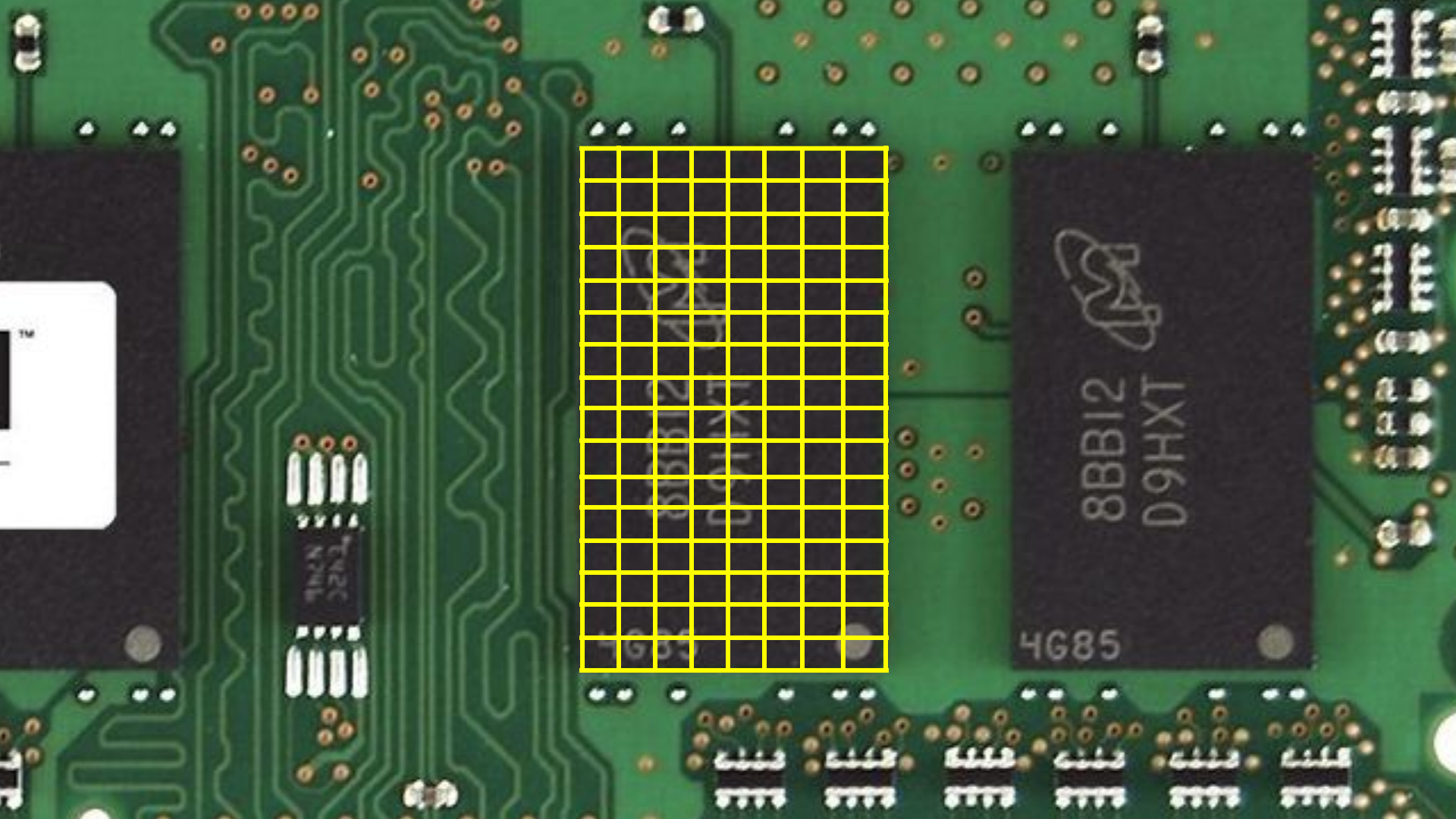
8BB12
D9HXT

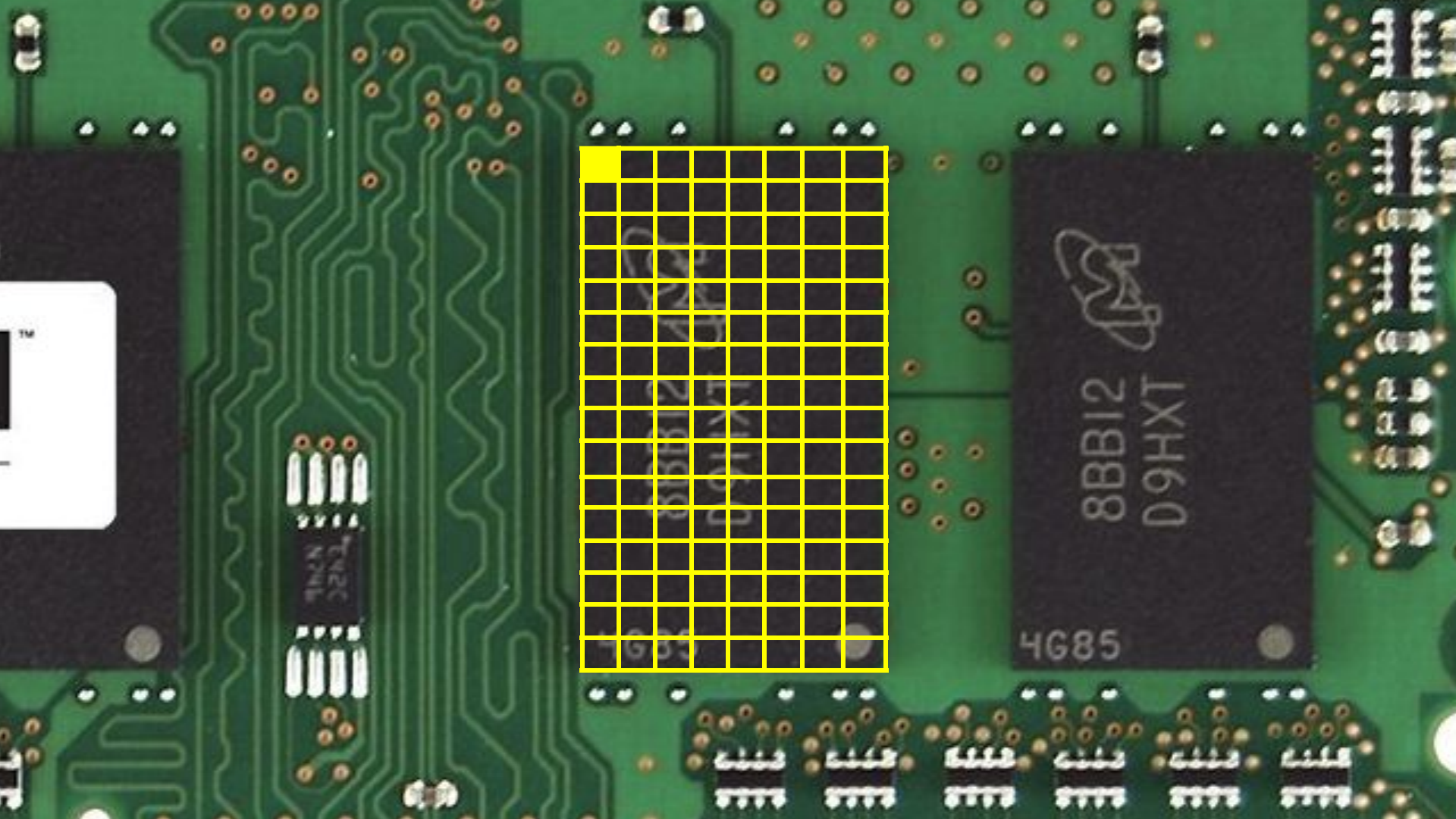
4G85



8BB12
D9HXT

4G85



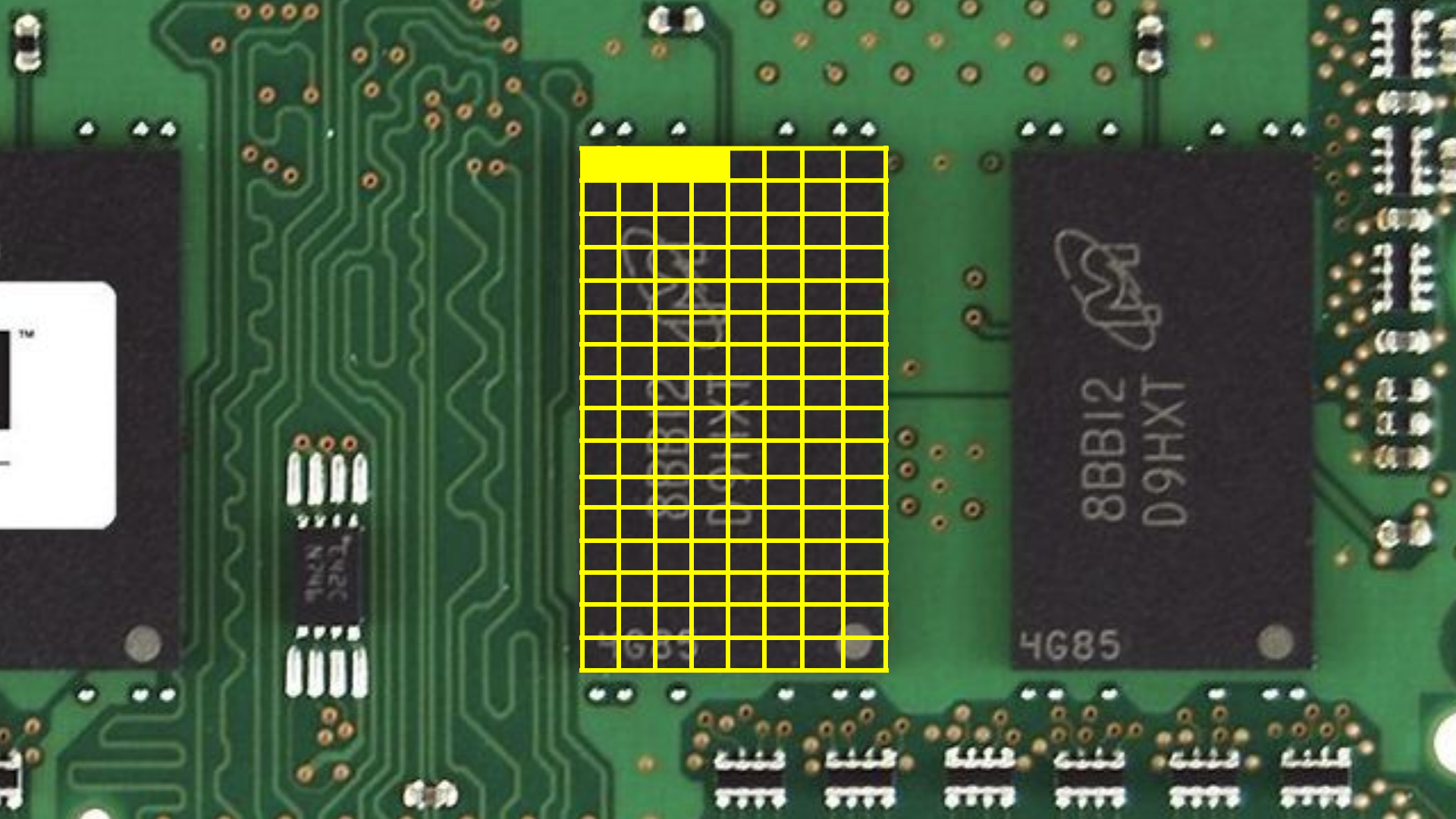




8BB12
D9HXT

4G85





8BB12
D9HXT
4G85

8BB12
D9HXT

arrays





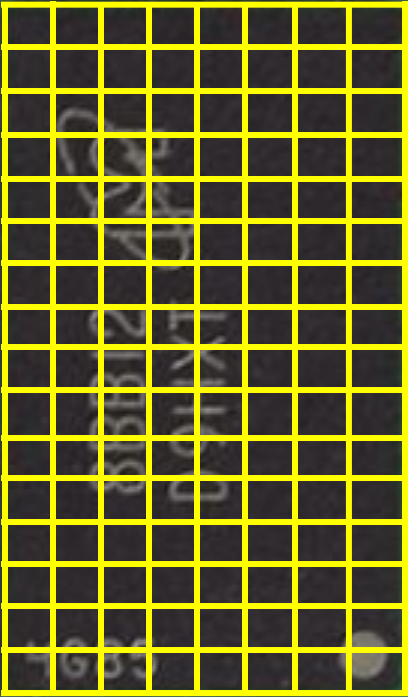
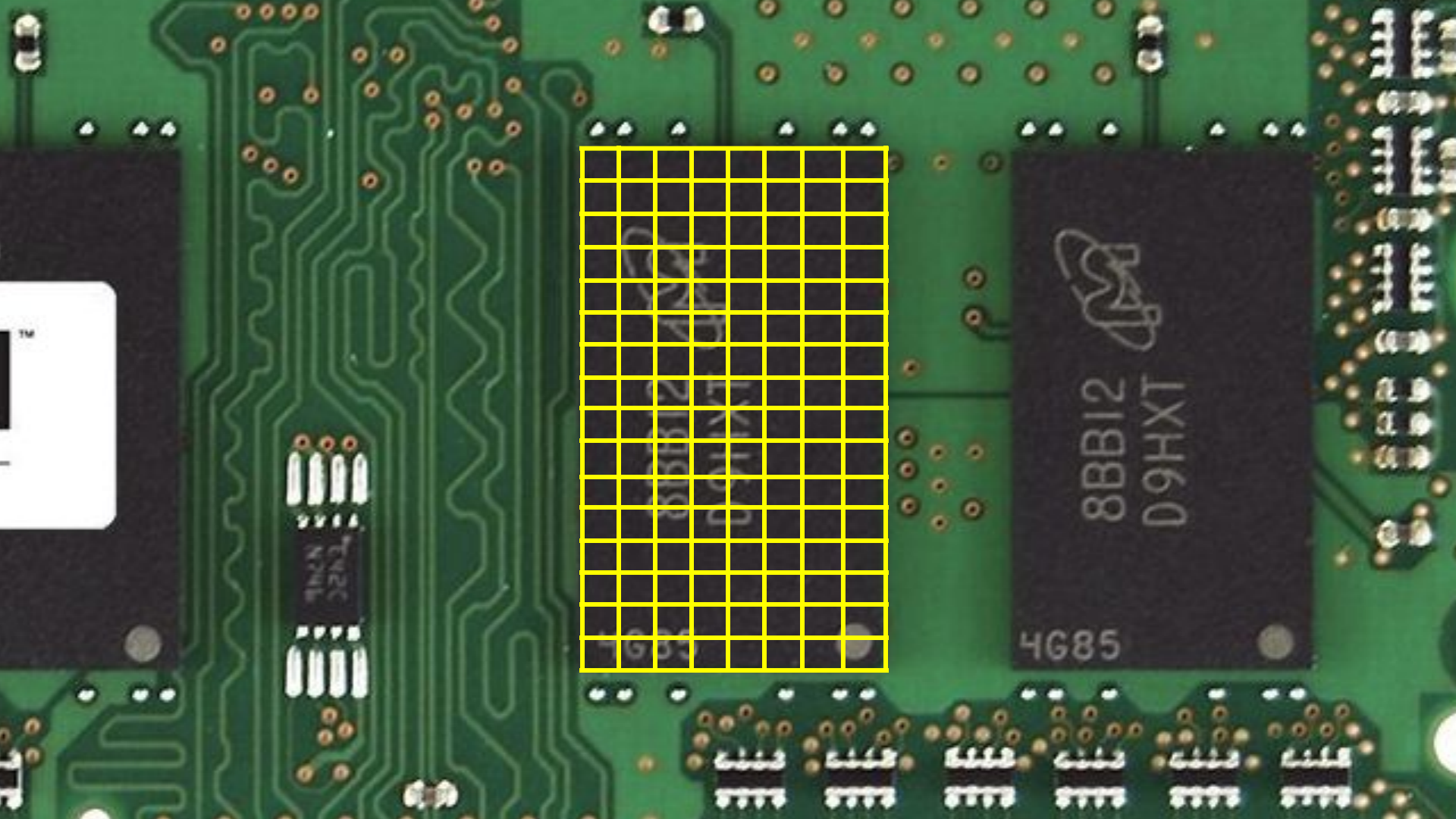
8BB12
D9HXT

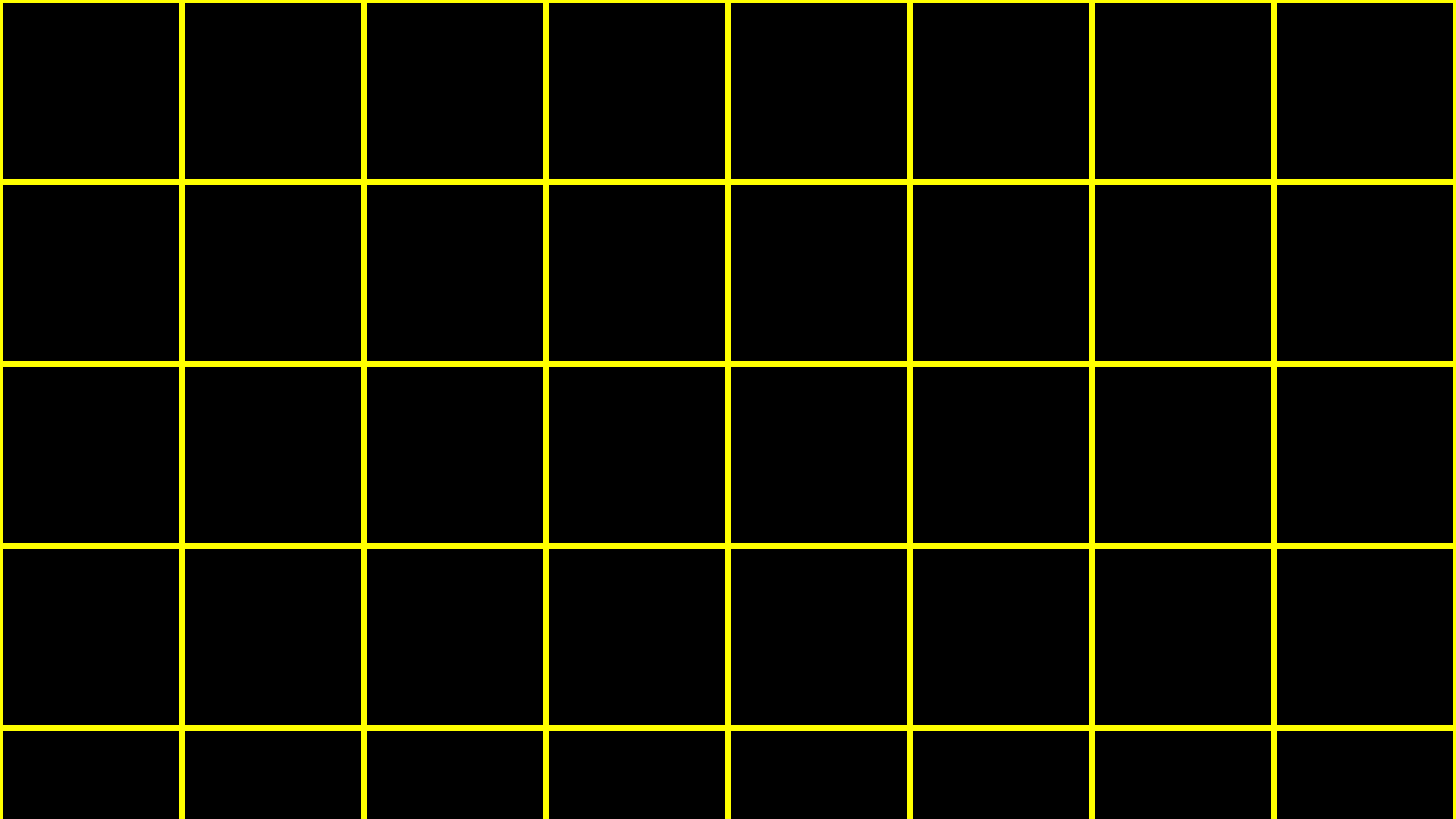
4G85

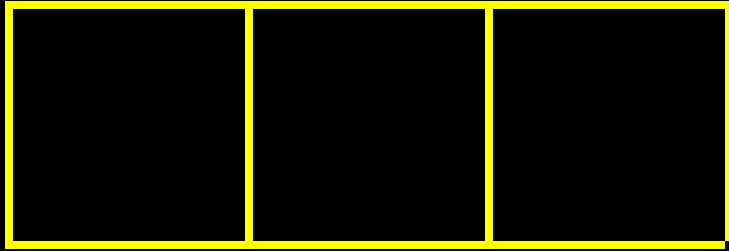


8BB12
D9HXT

4G85





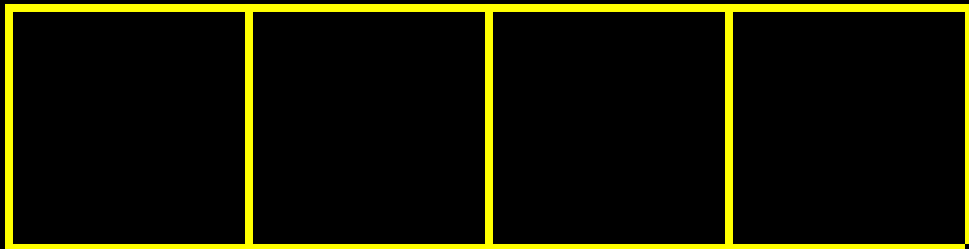
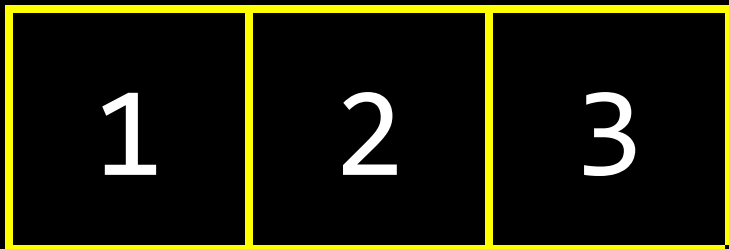


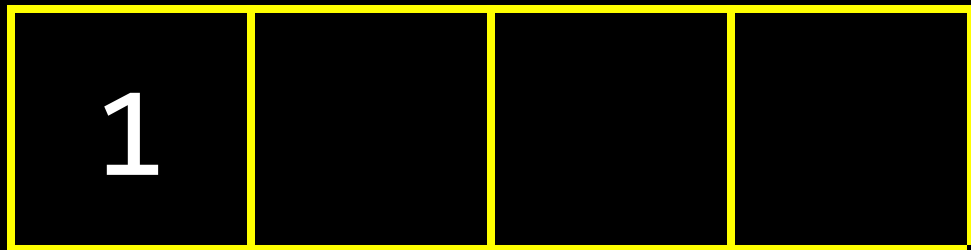
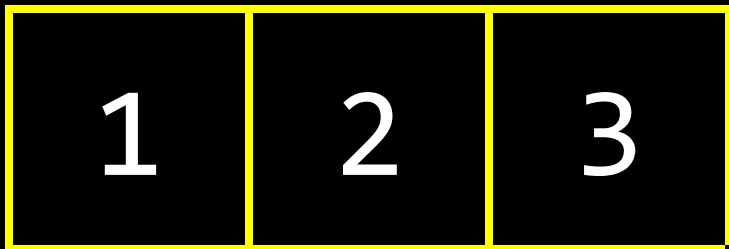
1	2	3
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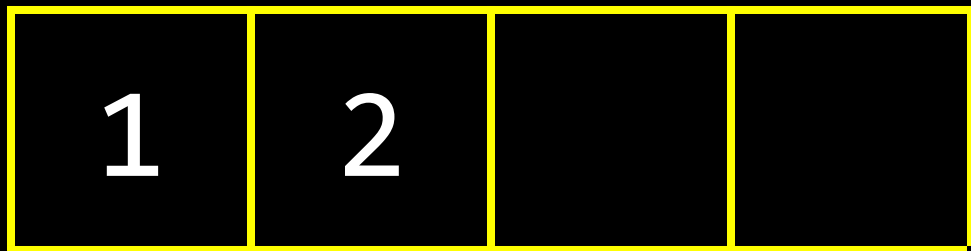
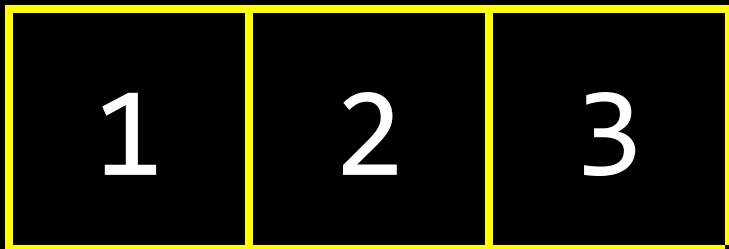
1	2	3	
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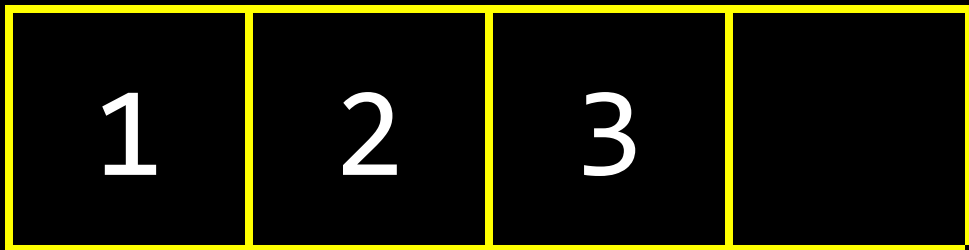
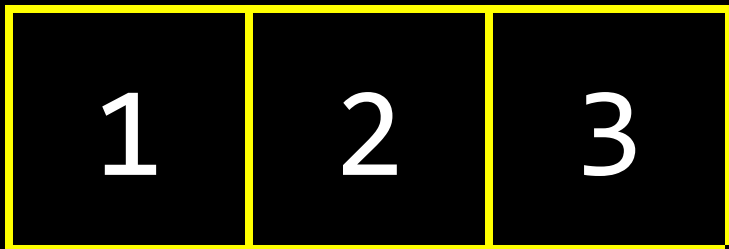
	1	2	3				

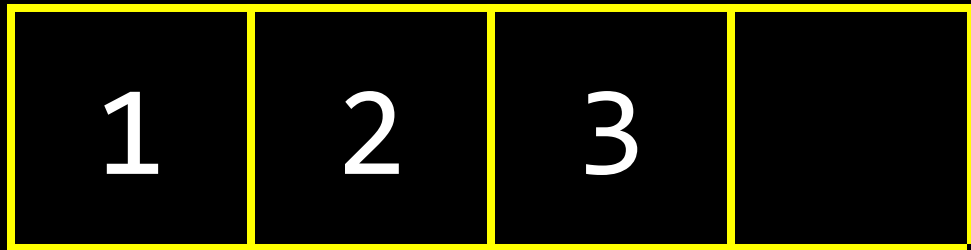
?	?	?	?	?	?	?	?
?	1	2	3	?	?	?	?
?	?	?	?	?	?	?	?
?	?	?					

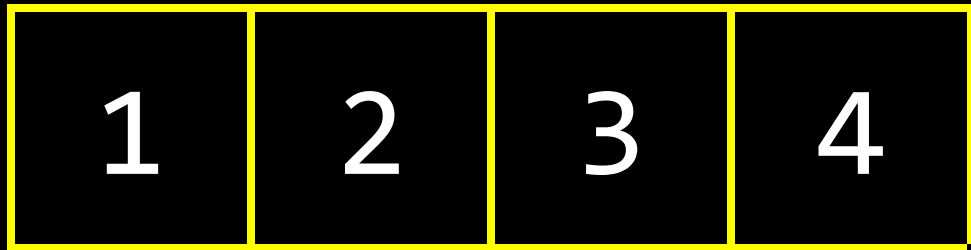












$O(n^2)$

$O(n \log n)$

$O(n)$

$O(\log n)$

$O(1)$

$O(n^2)$

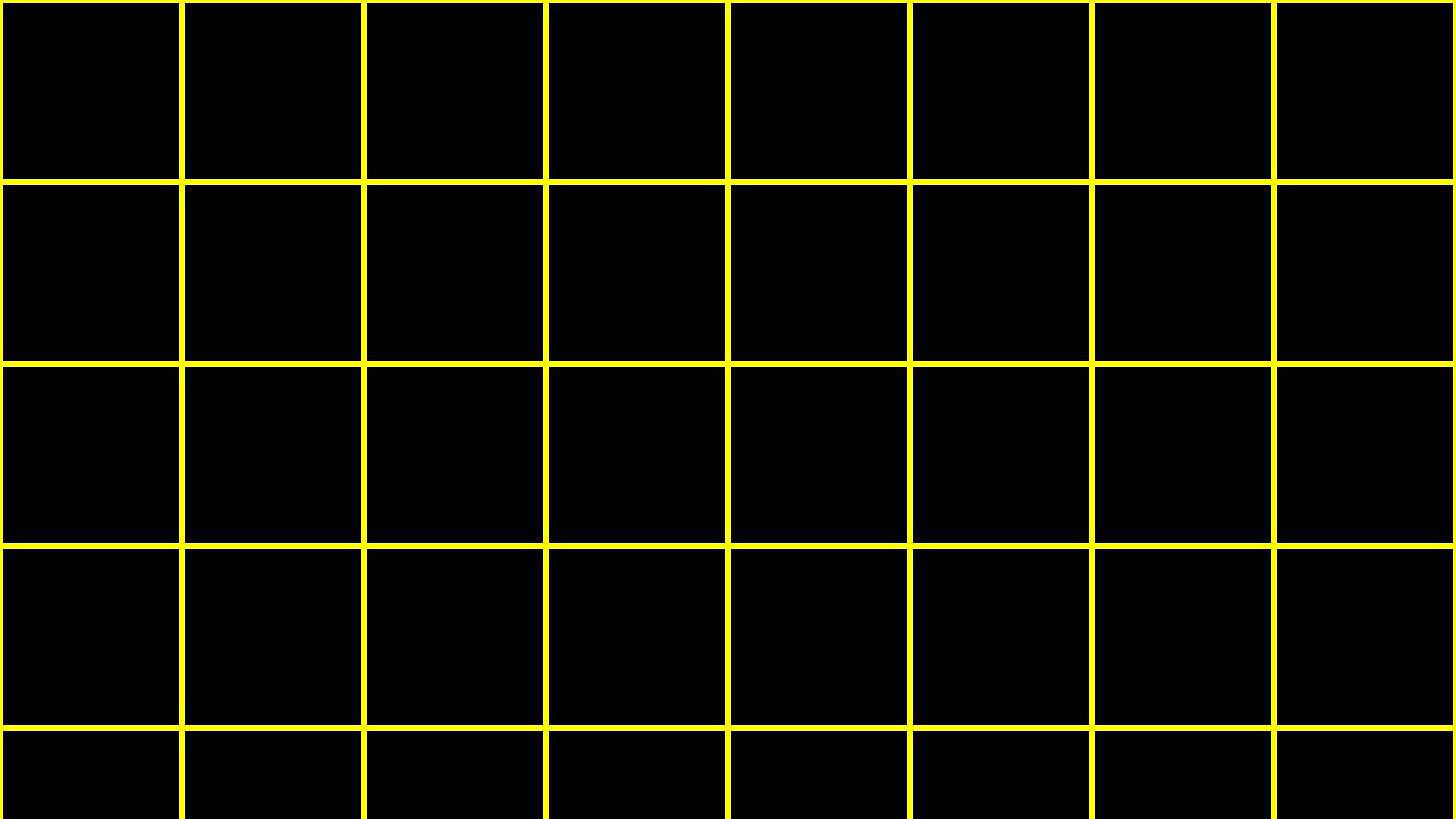
$O(n \log n)$

$O(n)$ insert

$O(\log n)$ search

$O(1)$

linked lists



1

0x123

1

0x123

2

0x456

1

0x123

2

0x456

3

0x789

1

0x123

2

0x456

3

0x789

1

0x123

0x456

2

0x456

3

0x789

1

0x123

0x456

2

0x456

0x789

3

0x789

1

0x123

0x456

2

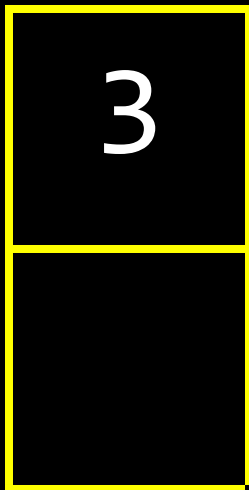
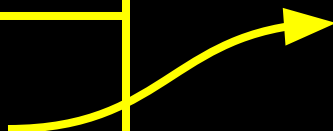
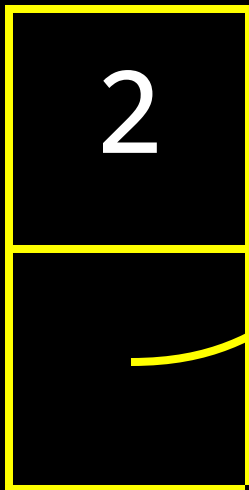
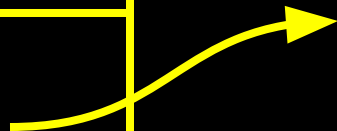
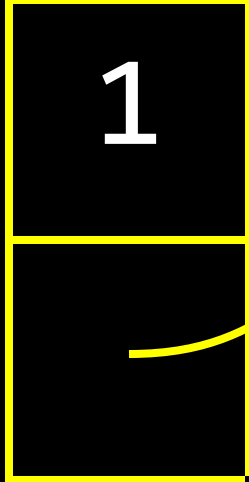
0x456

0x789

3

0x789

0x0



dict

list

range

set

tuple

...

trees

binary search trees

1

2

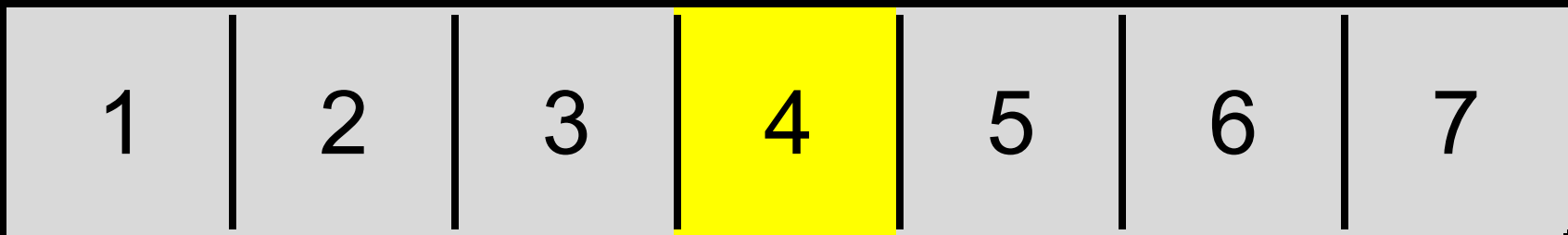
3

4

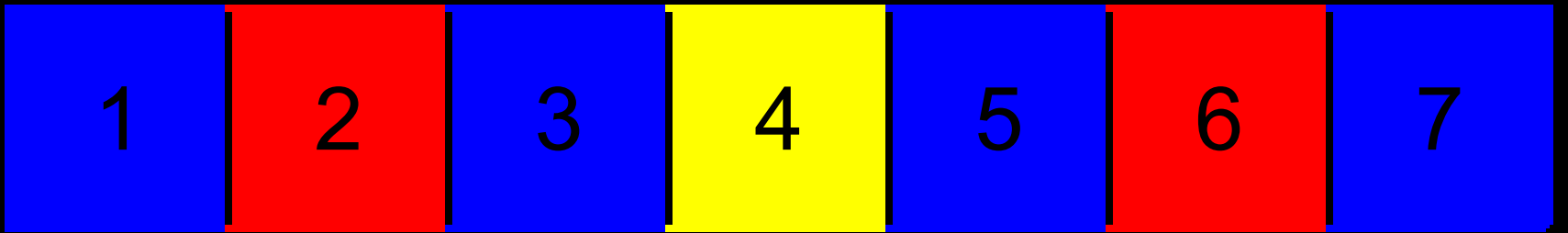
5

6

7







4

2

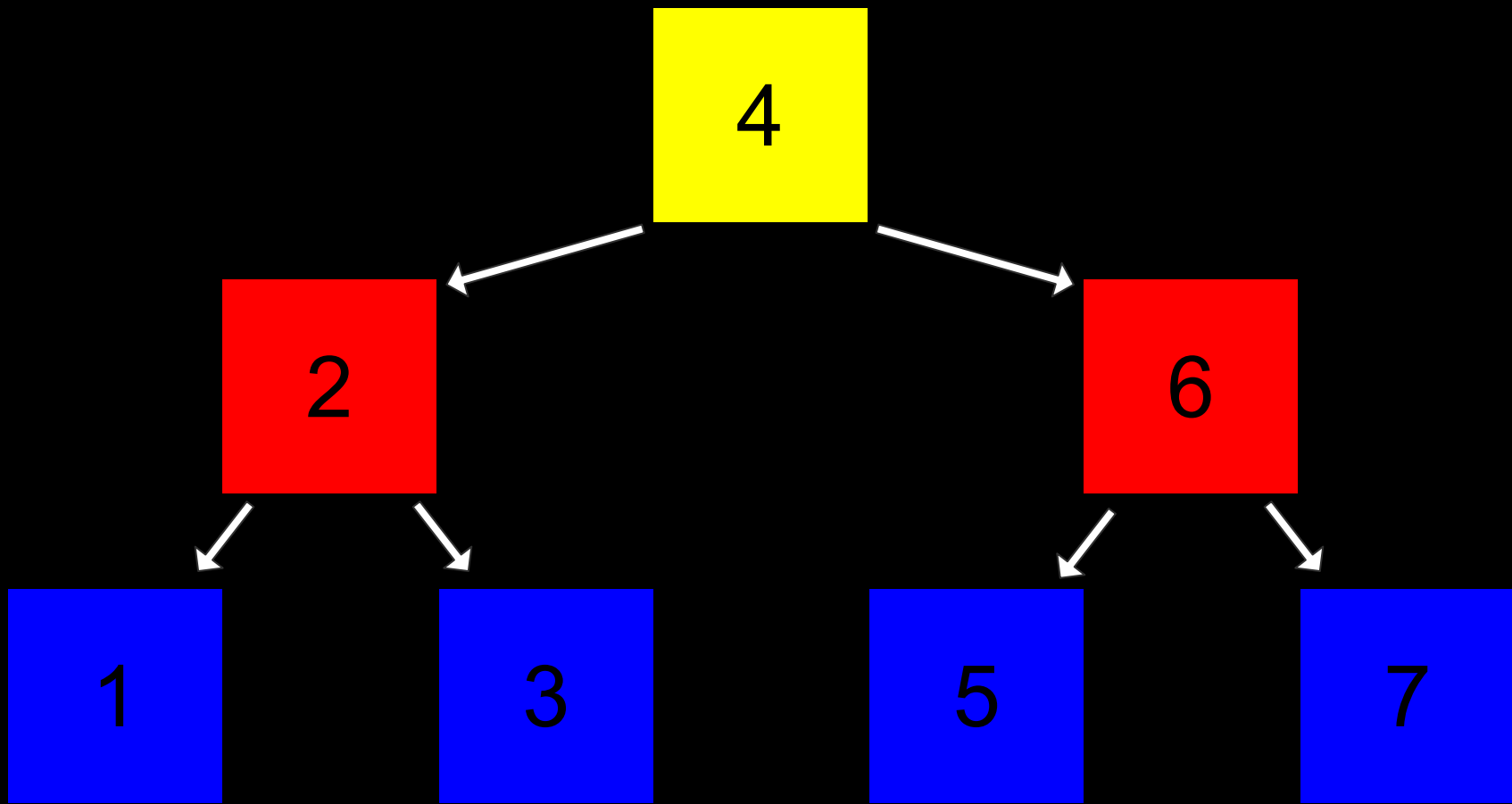
6

1

3

5

7



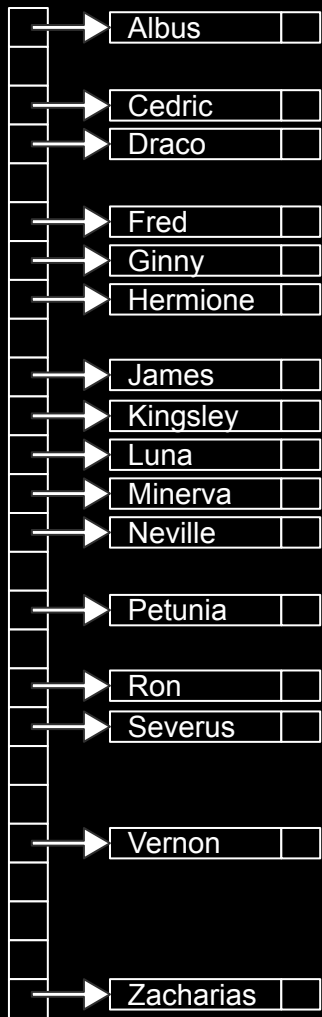
hash tables



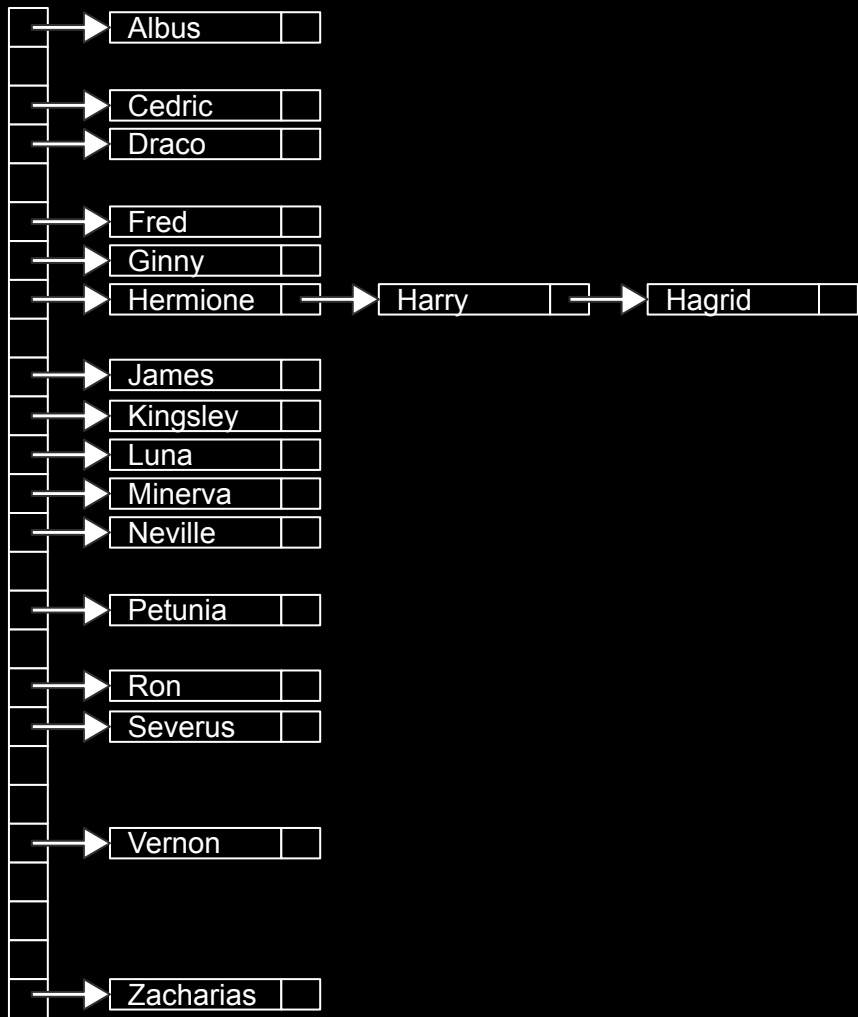
0	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

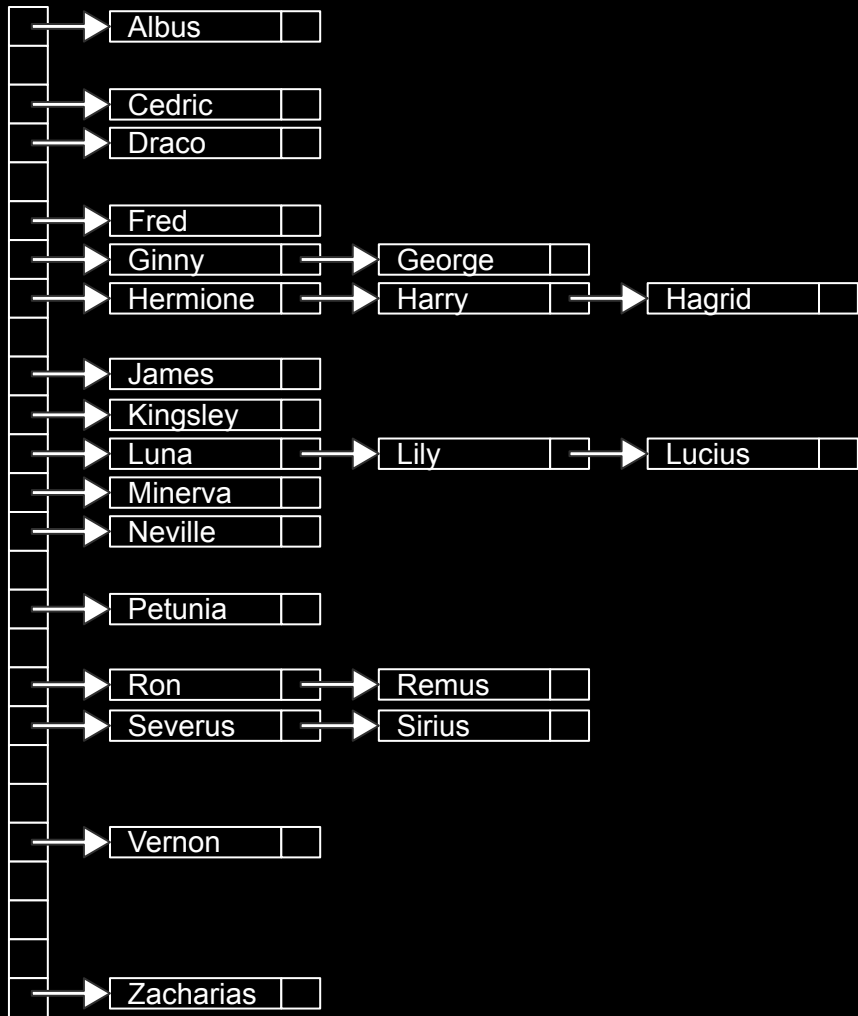
A	
B	
C	
D	
E	
F	
G	
H	
I	
J	
K	
L	
M	
N	
O	
P	
Q	
R	
S	
T	
U	
V	
W	
X	
Y	
Z	



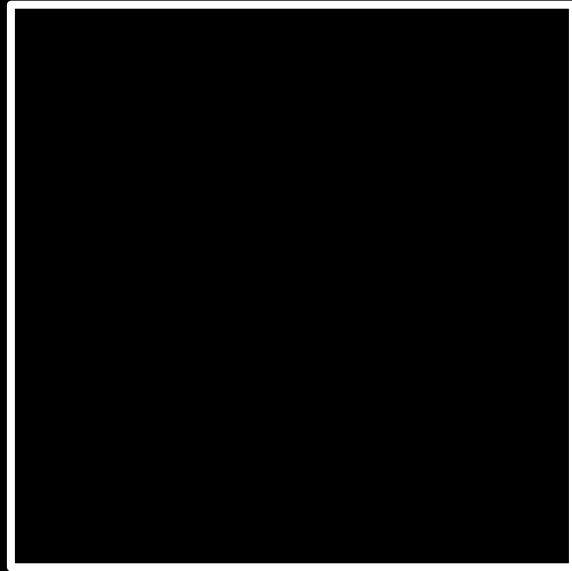








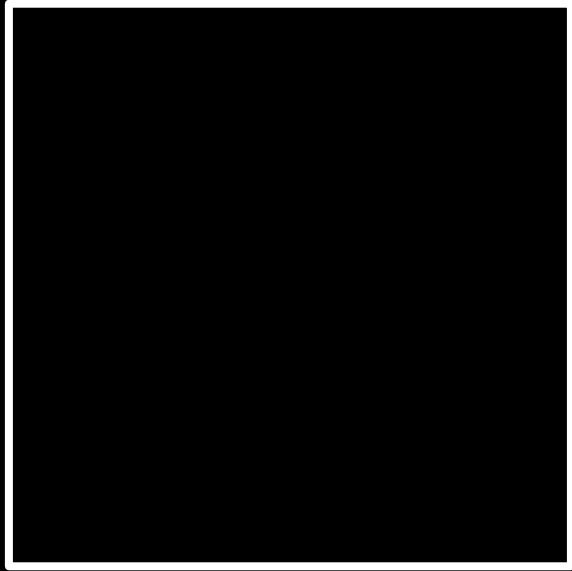
input →



→ output

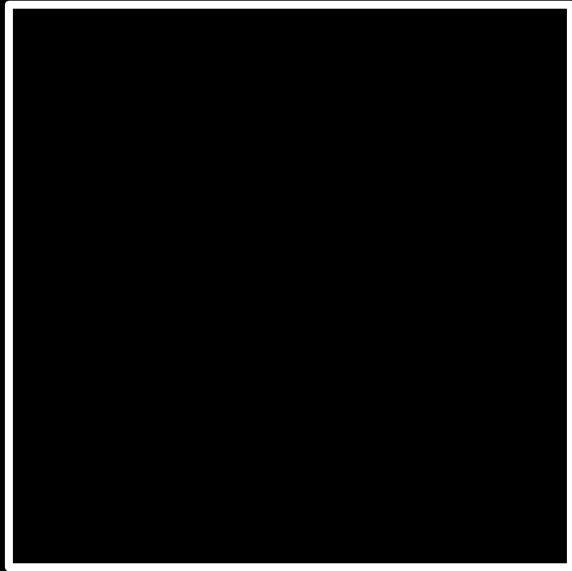
hash function

Albus →

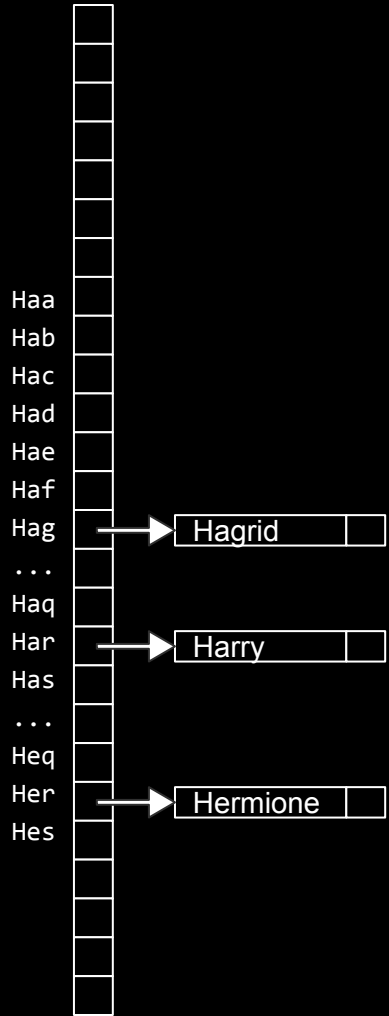


→ 0

Zacharias →



→ 25



$O(n^2)$

$O(n \log n)$

$O(n)$

$O(\log n)$

$O(1)$

$O(n^2)$

$O(n \log n)$

$O(n)$ search

$O(\log n)$

$O(1)$

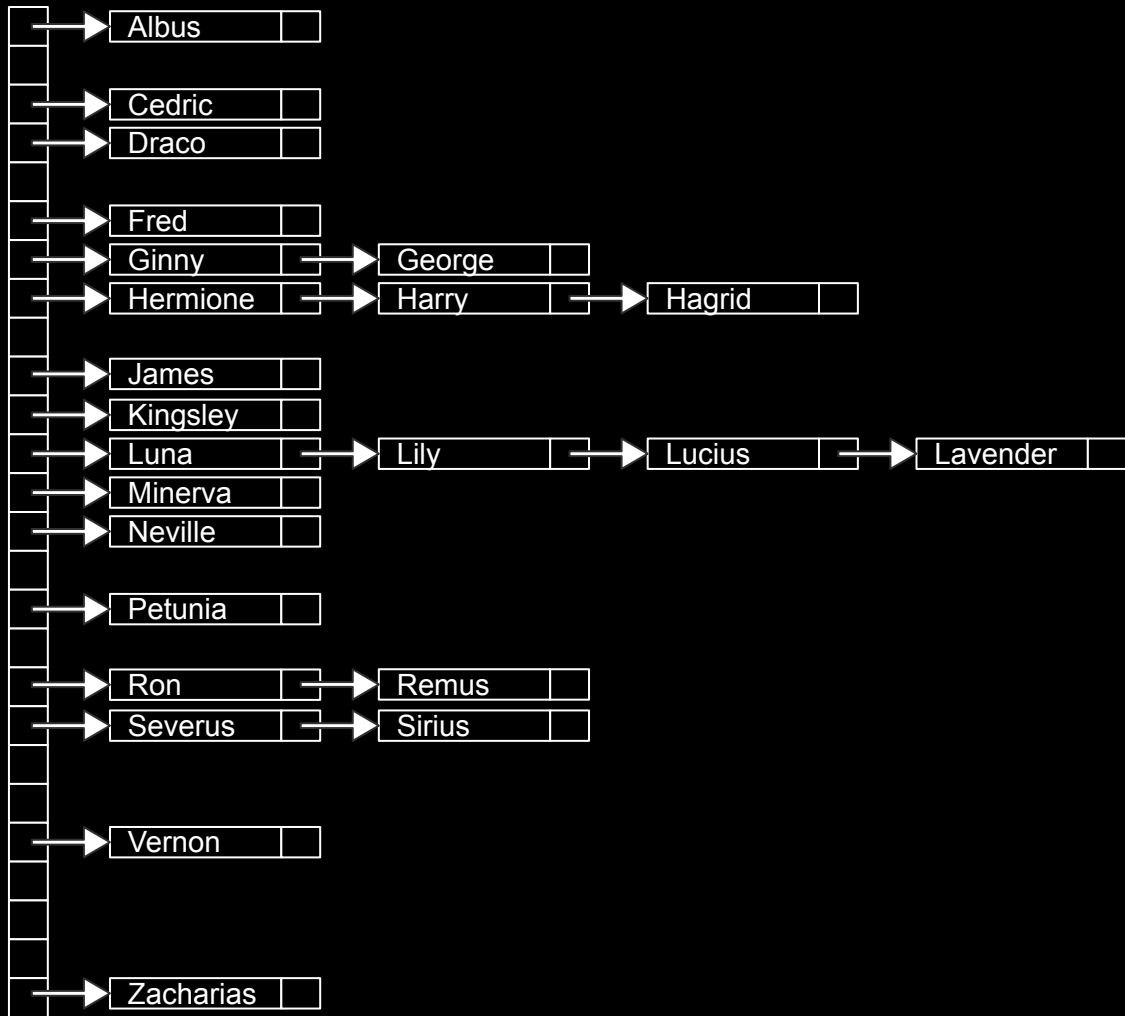
$O(n^2)$

$O(n \log n)$

$O(n)$ search

$O(\log n)$

$O(1)$ insert



dictionaries

dict

list

range

set

tuple

...

LICK ME UP



B C D E F G H I

K L M N O P Q R

T U- V W X Y Z



CHOKIN
FROM IS AHEAD
VISION STOPS RESPIRATOR

5 5 5

Assignment 3

Office Hours

Lab

CS50 for MBAs

Data Structures