

07-20

Monday, July 20, 2020 6:26 PM

6:30 ~ 7:50 Quiz [Ping Chenxi if any question]

7:50 ~ 8:00 Break

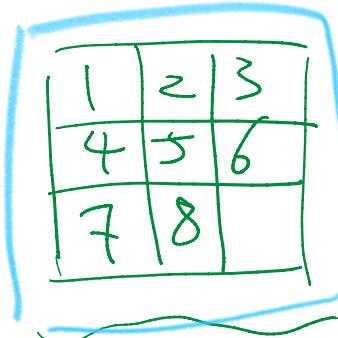
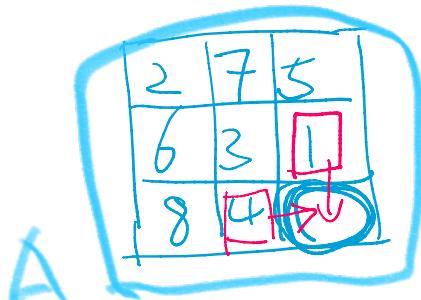
8:00 ~ 9:30 Lecture

7/27 : Shortest Path HW 50%

8/3 : MST Quiz 20%

8/10 : Quiz 4 + Final exam  
graph Final 30%  
2. Question

Puzzel-8 3x3 board numbers 1 to 8



- Is it possible?

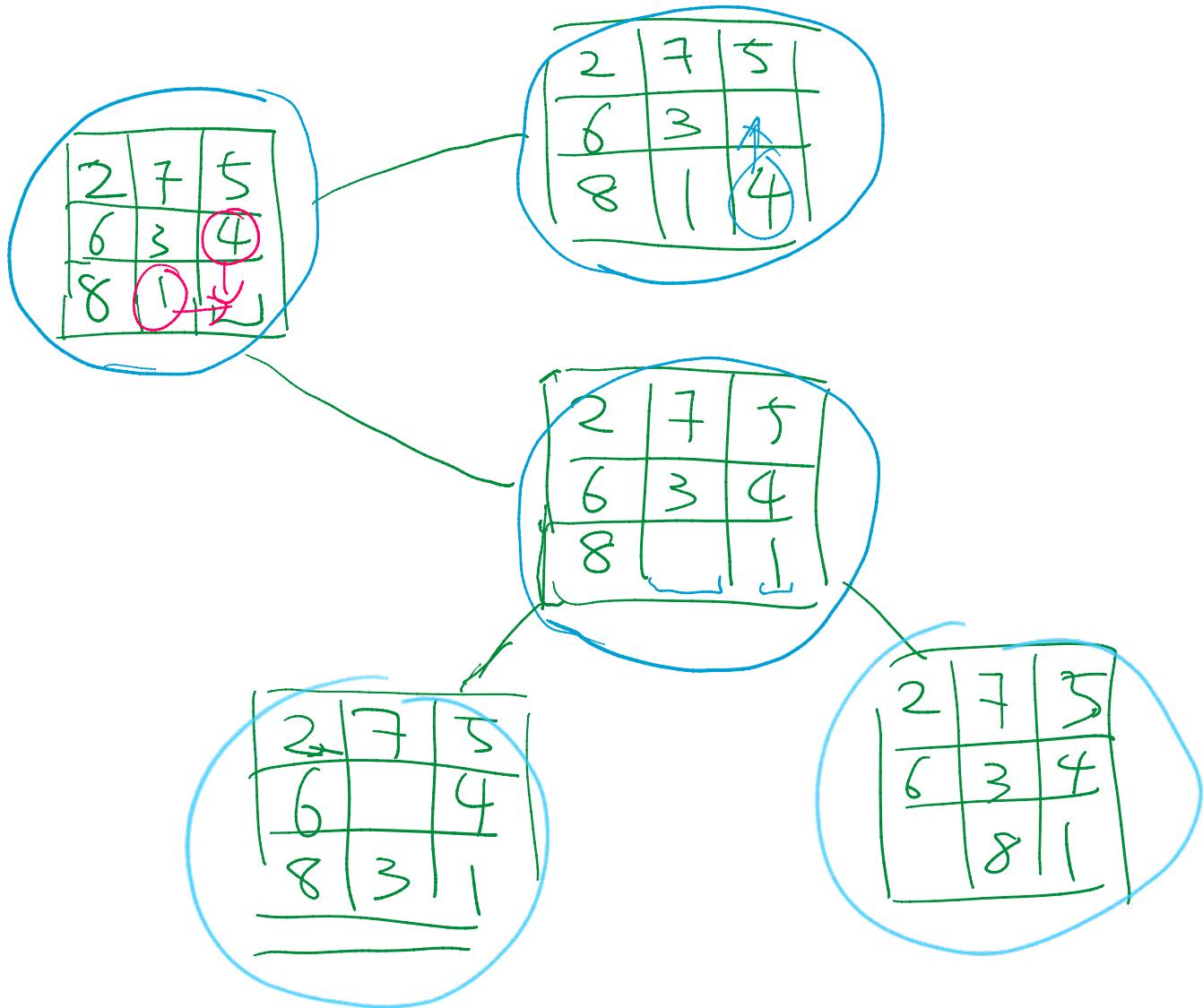
- Find a soln if possible

- Find "best" soln

[minimum # of moves]

~ 1... search

- A clearly graph search  
 B take some time  
 C hard to see



# of vertices : 9! n!  
 # of edges : O(n) spare

- create graph once

- create graph as search

BFS

queue

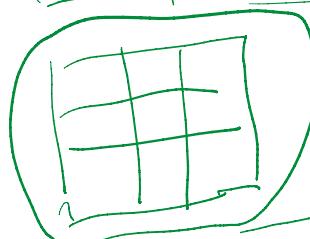
visited

array

1	2	3
4	5	6
7	8	

int / string

set / map

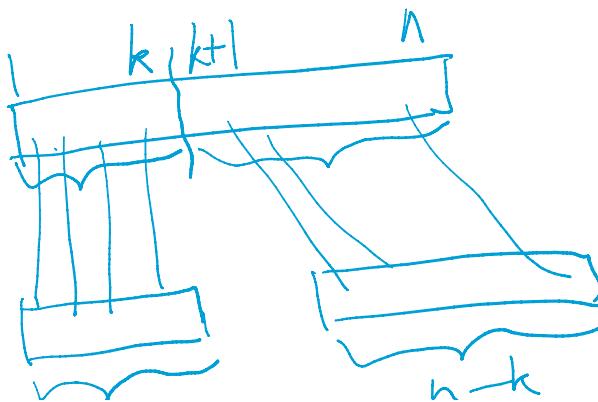


hash / comparison

set / map

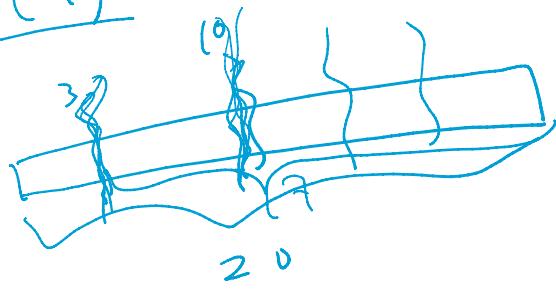


HW5 Prob 10

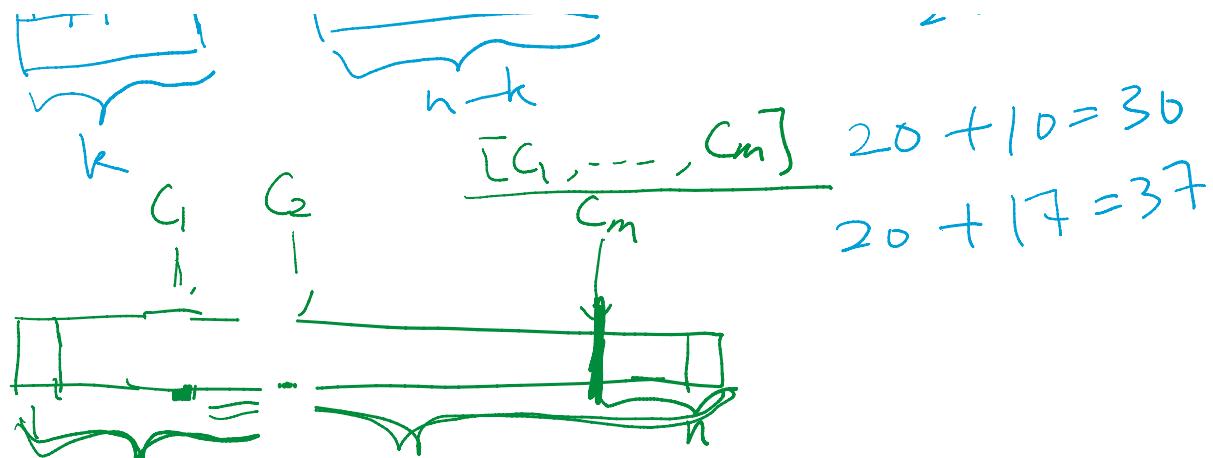


$O(n)$

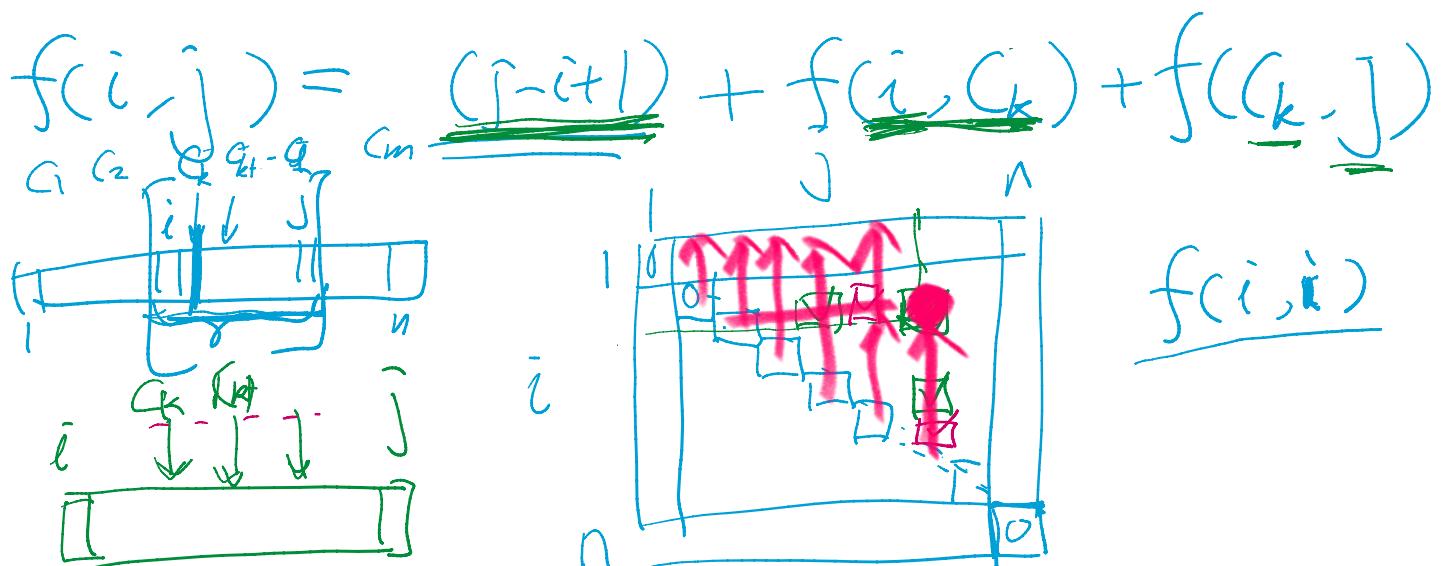
$[C_1, C_2, \dots, C_m]$



$\dots - 2n$



$$f(\underline{l}, n) = \min \left\{ \begin{array}{l} n + \underline{\square} + \underline{f(G_1, n)} \\ n + \underline{f(l, G_2)} + \underline{f(G_2, n)} \\ \dots \\ n + \underline{f(l, C_m)} + \underline{f(C_m, n)} \end{array} \right.$$

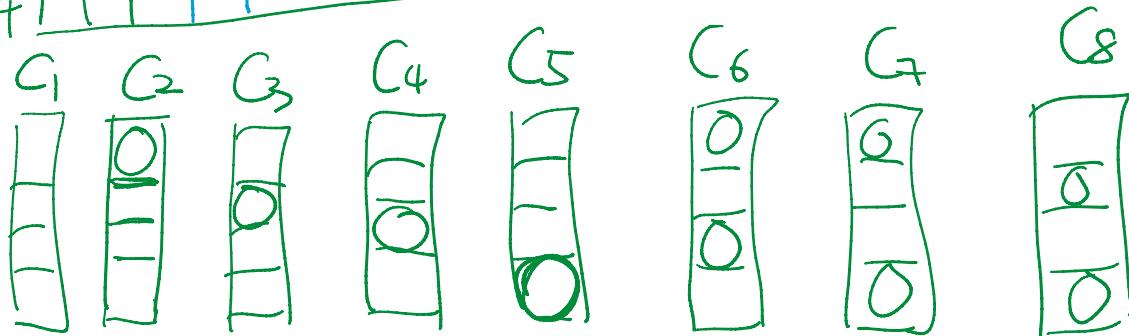


Pebbling a checkboard

12 X

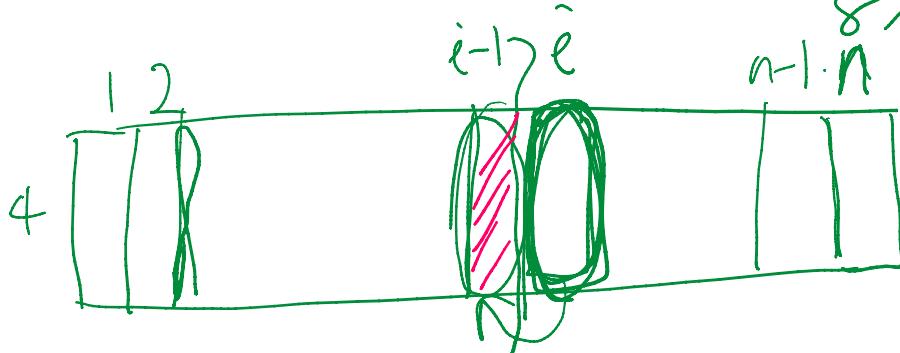
$2^n$  pebbles  
max score

	1	2	X	n
1	0	0	0	max score
2	0	0	0	
3				
4				



$C_i \& G_j \Rightarrow T/F$  compatible

$8 \times 8$  matrix



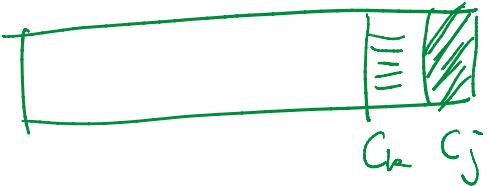
$f(i) = \max \text{ score}$  given board[4,  $i$ ]

$f(i, j)$   $\xrightarrow{j \text{ means choose } G_j \text{ for col } i}$   
 $j = 1, 2, \dots, 8$

$\max\{f(i, 1), f(i, 2), \dots, f(i, 8)\}$

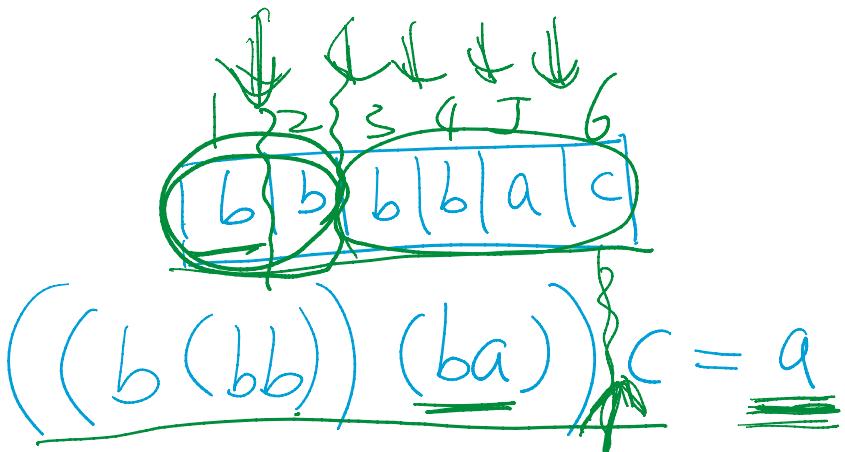
$f(i, j)$ 

$$= \max_{\substack{k: G_k \text{ is compatible} \\ i \text{ w/ } G_j}} \{f(i-1, k) + \boxed{G_j \text{ on } i^{\text{th col}}}\}$$



$$\max \{f(n, 1), f(n, 2), \dots, f(n, 8)\}$$

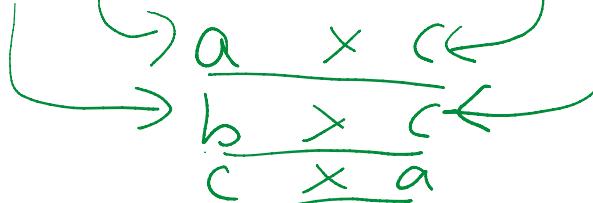
	a	b	c
a	b	b	a
b	c	b	a
c	a	c	c



$$\frac{f(1, 6)}{a}$$

$$\frac{f(1, 2)}{a}$$

$$\frac{f(3, 6)}{a}$$

 $f(i, j)$ 

$$\underline{f(i-j)} \Rightarrow a$$

 $B$ 

$$\underline{f(i, i)} \Rightarrow b$$

