

Longest Palindromic Subsequence

⇒ abcabca

	a	b	c	a	b	c	a
a	1	1	1	3	3	3	5
b	-	1	1	1	3	3	3
c	-	-	1	1	1	3	3
a	-	-	-	1	1	1	3
b	-	-	-	-	1	1	1
c	-	-	-	-	-	1	1
a	-	-	-	-	-	-	1

abcabca

i=0 j=6
1, 5

(i+1, j) (i, j-1)

(i+1, j-1)

— — — — —

Arithmetic Slices (LeetCode)

1 2 2 2

-1, 0, 1, 2, 0, 0, 1, 8, 9

no.
of A, S
ending at i^o

0	0	1	2	3	0	0	1	0	1
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$1 + dp[i-1]$



-1, 0, 1

0, 1, 2

-1, 0, 1, 2

1, 2, 3

0, 1, 2, 3

-1, 0, 1, 2, 3

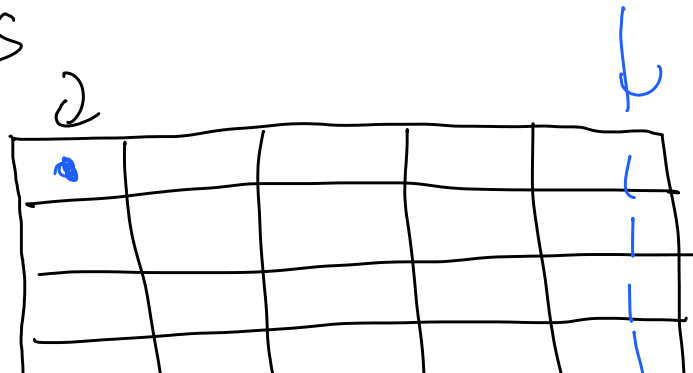
3, 5, 7

7, 8, 9



Unique Path I (Leetcode)

$m = 7, n = 5$



	15	10	6	3	1
	5	4	3	2	1
→	1	1	1	1	1

— p — p — p — p — p — p — p — p —

Unique Paths II

Input

.				
			1	
	1		.	
.				1
	1	.	.	.

DP

11	6	3	0	0
5	3	3	0	0
2	0	3	1	0
2	2	2	1	0
0	0	1	1	1

— p — p — p — p — p —

Max Sum Submatrix / rectangle



~~for(i=0; i<n; i++)~~
~~for(j=0; j<n; j++)~~
~~for(k=0; k<n; k++)~~
~~for(i=0; i<n; i++)~~

1	2	-1	-4	-20
-8	-3	4	2	1
3	8	10	1	3
-4	-1	1	7	-6

1	3	2	-2	-22
-7	-8	-5	-7	-26
-4	3	16	15	-1
-8	-2	12	18	-4

$O(n^3)$

$4(-9) + 2$

$\rightarrow O(n^4)$

~~for(i=0; i<n; i++) {~~
~~for(j=0; j<n; j++) {~~
~~temp[n] = {0};~~
~~for(int k=0; k<n; k++) {~~
~~temp[k] += arr[k][j]~~
~~Kadane()~~
~~}~~

$$n \times n \times (n + n) \rightarrow n^3 + n^3 = \underline{n^3}$$

1	2	-1	-4	-20
-8	-3	4	2	1
3	8	10	1	3
-4	-1	1	7	-6

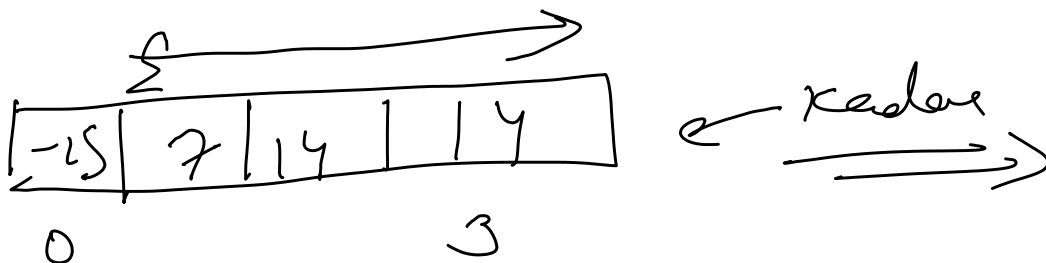
$n-1$

$\rightarrow 3-1 \Rightarrow 2$

$n=7$

$4+1-1$

1



reader

11

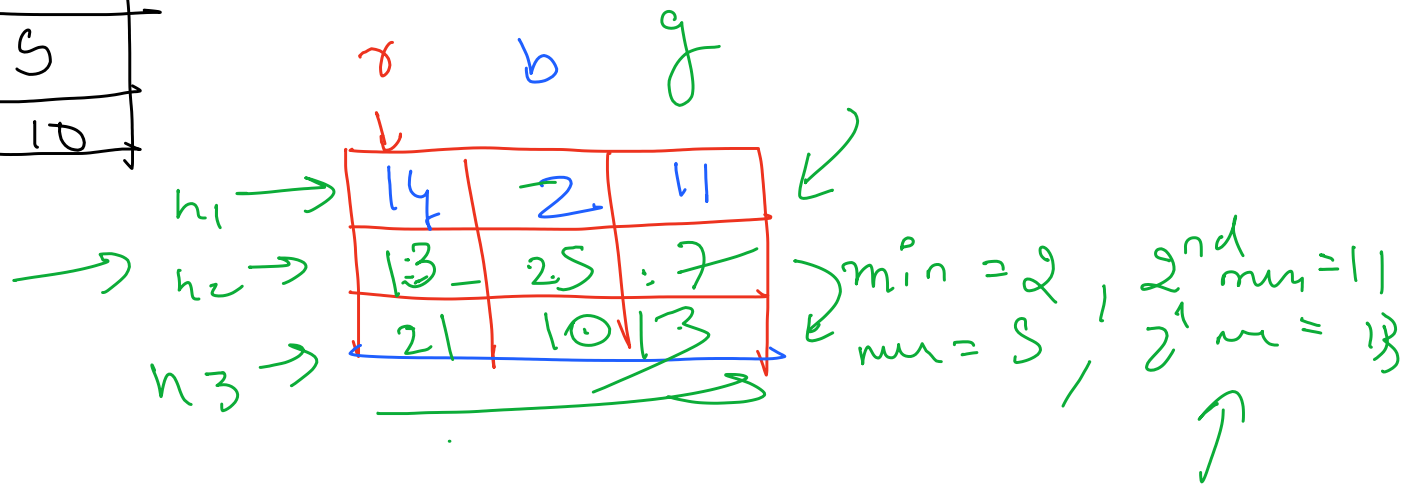
$O(n \times n \times (n + n))$

Paint House II (Lintcode)

r b g
 c_1 c_2 c_3

h_1	14	2	11
h_2	11	14	5
h_3	14	3	10

$i, j \rightarrow (h_i \rightarrow c_j) \rightarrow \text{cost?}$



n

$n \times (K + K + K)$

$(nK)K$

