## Experiment 12

Motrix Chain Multiplication (MCM) problem

Compatible: No. of columns of A must equal the no. of rows

If A is pxq matrix and B is a qxx matrix, the resulting matrix C is a pxx matrix

Pseudocode

MATRIX-MULTIPLY (A,B)

if columns[A] = nows[B]

then error ec incompatible dimensions?

else for i < 1 to news [A]

do for j ← 1 to columns [B]

do cli, jl +0

for Rel to columns [A]

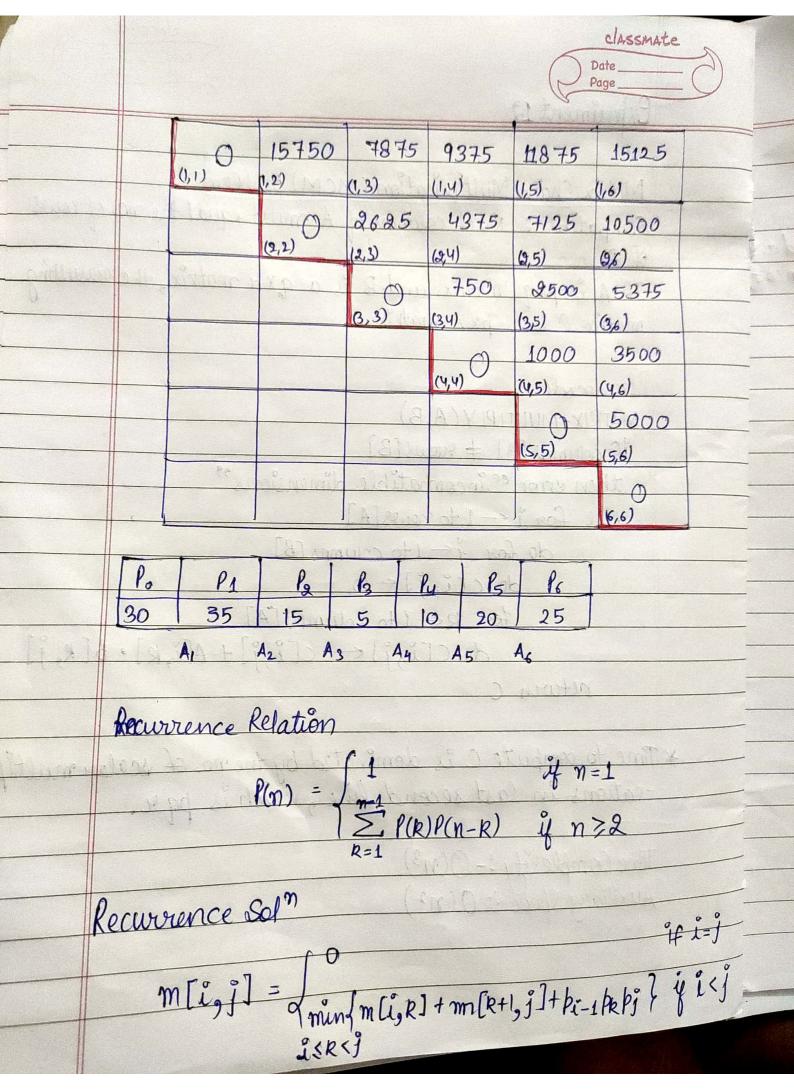
do c[i,j] < c[i,j] + A[i,k] · B[k,j]

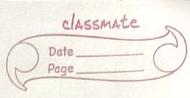
retwen C

\* Time to compute C is dominated by the no. of scalar multiplications in last second line, which is page.

Time Complexity: - O(n3)
Auxiliary Space: O(n2)

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*	m[1,1], $m[2,2]$ , $m[3,3]$ , $m[4,4]$ , $m[5,5]$ , $m[6,6] = 0$
	The Soul + East on + East on the same
*	m[1,2] = m[1,1]+m[2,2]+ lol1/2
Ma lenus	$= 0 + 0 + 30 \times 35 \times 15 = 15750$
The war (2)	similary m [2,3] = 2625
	m[3,4] = 750
	m(4,5] = 1000
	m [5,6] = 5000
*	$m[1,3] = min \int m[1,1] + m[2,3] + P_0 P_1 P_3 \int 7875 \sqrt{m[1,2]} + m[3,3] + P_0 P_2 P_3 \int 18000$
	m 1,2) + m 13,31+ Por2 r3
	Limilary, m[2,4] = 4375
	m[3,5] = 2500
	m [4,6] = 3500
	$m[1,4] = min \int m[1,1] + m[2,4] + l_0 l_1 l_4 $   14875
*	$m L1, 4J = m m$ $m [1,2] + m [3,4] + lol_2 ly = 420250$
	m[1,3] + m[4,4] + PoBPy 9375 ~
	similarly, m[2,5] = 7125
	m[3,6] = 5375
*	$m[1,5] = min   m[1,1] + m[2,5] + 6 l_1 l_5 $ [28125
70	m[1,2]+m[3,5]+0,00
	M [1,3] + M [Y = ] + 0 0 = = 1 a 30
	mill   + m   P
	similarly, m[2,6] = 10500 15375

	Page
*	$m[1,6] = \begin{cases} m[1,1] + m[3,6] + l_0 l_1 l_6 \end{cases}$ $m[1,2] + m[3,6] + l_0 l_2 l_6 \Rightarrow 15125$ $m[1,3] + m[4,6] + l_0 l_3 l_6 \Rightarrow 15125$ $m[1,4] + m[5,6] + l_0 l_4 l_6 \qquad (required ans.) $ $[m[1,5] + m[6,6] + l_0 l_5 l_6 \qquad (Minimum cost) \end{cases}$