Matrix chain multiplication: A and B can be multiplied when number of row in B= number of column in A

$$A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{23} & a_{23} \end{bmatrix} \xrightarrow{B} = \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \\ b_{31} & b_{32} \end{bmatrix} \xrightarrow{V} 3xJ.$$

$$A \times B = \begin{bmatrix} a_{11} b_{11} + a_{12} b_{21} + a_{13} b_{31} & a_{11} b_{12} + a_{12} b_{22} + a_{13} b_{32} \\ a_{21} b_{11} + a_{22} b_{21} + a_{23} b_{31} & a_{21} b_{12} + a_{22} b_{22} + a_{23} b_{32} \end{bmatrix}$$

$$a_{21} b_{12} + a_{22} b_{22} + a_{23} b_{32}$$

$$a_{21} b_{12} + a_{22} b_{22} + a_{23} b_{32}$$

$$a_{21} b_{12} + a_{22} b_{22} + a_{23} b_{32}$$

No. of multiplications = 12 (By observation).

= 2+3+2 = 12. (by formulae).

 $A_1 = 2 \times 3$ $A_2 = 3 \times 4$ $A_3 = 4 \times 2$.

Minimum multiplication to find AIAZA3.

$$A_1 = 2 \times 3$$
 $A_2 = 3 \times 4$ $A_3 = 4 \times 2$.

Minimum multiplication to find AIAZA3.

(A1.A2) . A3

A1 (A2. A3)

Dimensions 2×3 3×4 4×2 Cost- $2\times3+4=24$ Resulting Dimension 2×4 Cost = $2\times4\times2=16$

:. Told cost operations = 24+16=40.

A₁ · (A₂ · A₃) Dimensions 2×3 3×4 4×2 Cost Dimension 3×4 3×2 COST = 2+3*2=12.

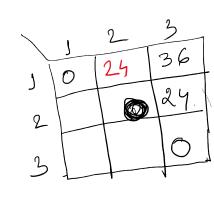
: Tow ar = 24+12 = 36.

A1 = 2×3 A2 = 3×4 A3 = 4×2

Minimum multiplication to find AIA2A3.

$$c[1,1] = A_1 \quad c[2,2] = A_2$$

 $c[1,2] = A_1 A_2$
 $c[2,3] = A_2 A_3$.
 $c[1,3] = A_1 A_2 A_3$.



$$C[1/3] = A_1 A_2 A_3 - C[1/1] = A_1$$

$$A = 2 \times 3 \qquad A_2 = 3 \times 4 \qquad A_3 = 4 \times 2.$$

$$C[1/3]$$

$$A_1 A_2 A_3$$

$$C[1/2] + C[3/3] + C[1/2] + C[3/3] + C[1/2] + C[3/3] + C[1/2] +$$