

R9

2D Array Questions

For discord mail to support@learnyard.com

Input

Input elements of matrix1:

1 2 3

4 5 6

7 8 9

Input elements of matrix2:

9 8 7

6 5 4

3 2 1

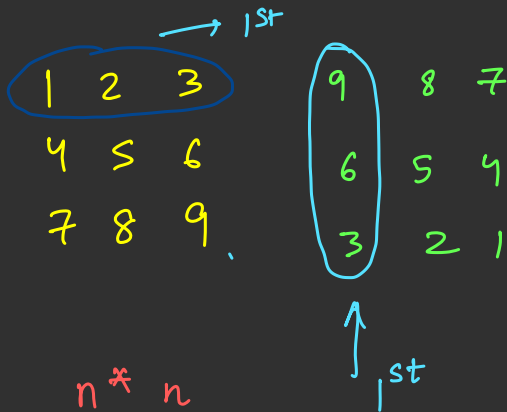
Output

Product of matrices =

30 24 18

84 69 54

138 114 90



$$\begin{aligned} & 9 * 1 + 2 * 6 + 3 * 3 \\ \hline & \rightarrow 9 + 12 + 9 = 30 \end{aligned}$$

Explanation slide

Matrix Multiplication

Two matrices can be multiplied only and only if number of columns in the first matrix is same as number of rows in second matrix. Multiplication of two matrices is defined as –

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix} \begin{bmatrix} e & f \\ g & h \end{bmatrix} = \begin{bmatrix} ae+bg & af+bh \\ ce+dg & cf+dh \end{bmatrix}$$

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$$\begin{array}{cc} a & b \\ \rightarrow c & d \\ \hline \end{array} \quad \begin{array}{cc} e & f \\ g & h \end{array} \quad \begin{array}{cc} ae+bg & af+bh \\ ce+dg & cf+dh \end{array}$$

↑

$A[i]$ $B[j]$

Explanation slide

$i \rightarrow a \ b$

$A \leftarrow c \ d$

$\nearrow B$
 $d \ e$
 $f \ g$

$i \rightarrow (0 \ \dots \ n-1)$
 \uparrow
 j

\uparrow
 j

$A[i][0] * B[0][j]$

$A[i][1] * B[1][j]$

Explanation slide

Input 2 matrix

Multiply \rightarrow A i^{th} row * B j^{th} column

\swarrow
row

\swarrow
column

Extra loop

Thank You!

Please practice more questions and examples as above !!