2D Lists

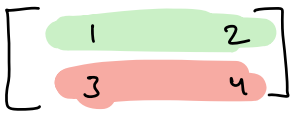
Careers Hub

Agenda

- 2D List Introduction
- Reading Input
- Sum of matrices
- Transpose
- Identity Matrix

2D Introduction

Matrix — Matrices (Plural)



2 x 2 → 2 Rows, 2 Columns

$$\begin{bmatrix} 1 & 2 \\ 0 & -1 \\ -5 & 10 \end{bmatrix}$$

3 x 2 → 3 rows, 2 cols

Linear Algebra

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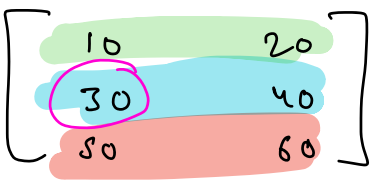
b =



b[1][0] → 30

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generate (3, 2) →

```
[
    [0, 0]
    [0, 0]
    [0, 0]
]
```

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x, y = a
[2, 3]

→ x, y = [2, 3]

Sum of matrices

$$\begin{bmatrix} 10 & 20 & 30 \\ 40 & 50 & 60 \end{bmatrix} + \begin{bmatrix} 0 & 5 \\ 10 & 15 \end{bmatrix}$$

Addition is NOT possible.

→ Dimensions must be same to add

$$\begin{bmatrix} 10 & 20 \\ 30 & 40 \end{bmatrix} + \begin{bmatrix} 0 & 5 \\ 10 & 15 \end{bmatrix} = \begin{bmatrix} 10 & 25 \\ 40 & 55 \end{bmatrix}$$

A B C

$$C[i][j] = A[i][j] + B[i][j]$$

Transpose

1	4	6
5	7	2
8	9	5

1	5	8
4	7	9
6	2	5

A

$$\begin{bmatrix} 10 & 20 & 30 \\ 40 & 50 & 60 \end{bmatrix}$$

2 x 3

N M

T

$$\begin{bmatrix} 10 & 40 \\ 20 & 50 \\ 30 & 60 \end{bmatrix}$$

3 x 2

M N

10 - A[0][0] → T[0][0]

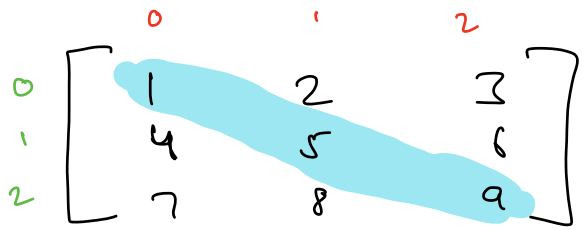
50 - A[1][1] → T[1][1]

20 - A[0][1] → T[1][0]

60 - A[1][2] → T[2][1]

A[i][j] → T[j][i]

Identity Matrix



i → rows

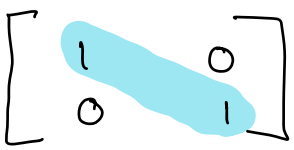
j → cols

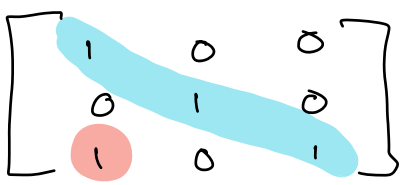
Diagonal elements → i = j

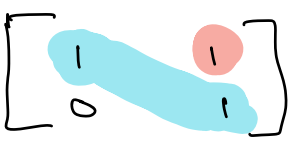
A matrix that has all diagonal elements = 1

and, other elements = 0

is called an Identity Matrix







→ Not an identity matrix

Doubts

Thank you

Sunday - Doubt Session

Monday, Wednesday } Strings - Pranav

Good Night

Thank you

Sunday - Doubt

Monday - Strings