

# 1. What are Tensors

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## 2. 0D Tensor/Scalar

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(2) (3)  
✓  
Scalars → 0D Tensor 0

### 3. 1D Tensor/Vector

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$[1, 2, 3, 4]$   $\rightarrow$  1D Tensor

$\rightarrow$  vector  
 $\rightarrow$  1D array / array

1D Tensor / Vector

$\rightarrow$  4D

$nDim \rightarrow 1$

Axis  
2 Dim

No. of axes = rank  
= dim

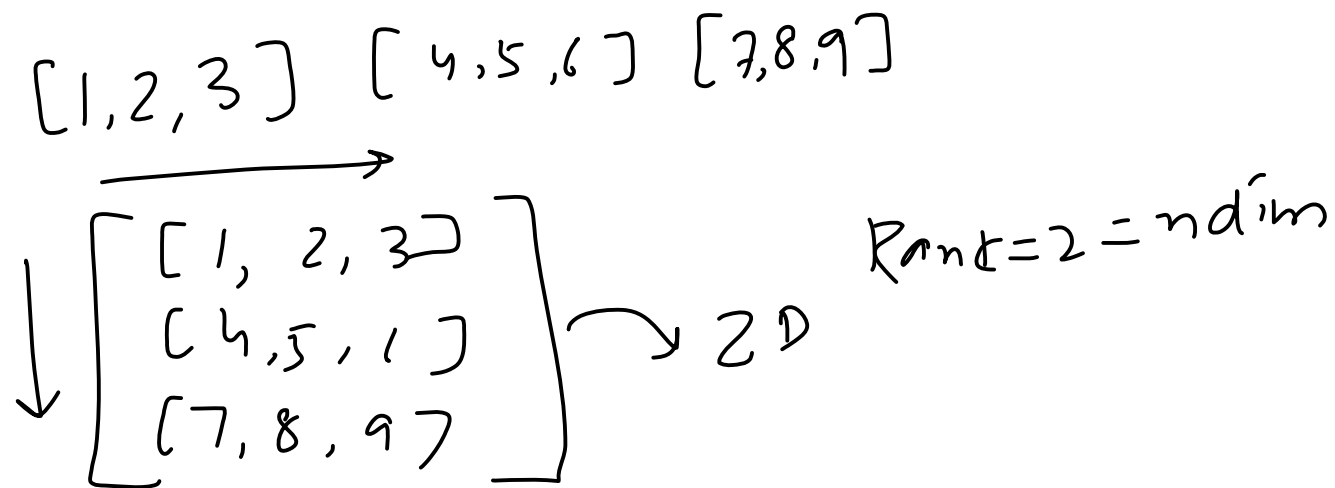
$[1, 2] \rightarrow$  vector (2)  
 $\rightarrow$  1D Tensor

$[0, 1, 2, 3]$

4 scalars  $\rightarrow$  vector

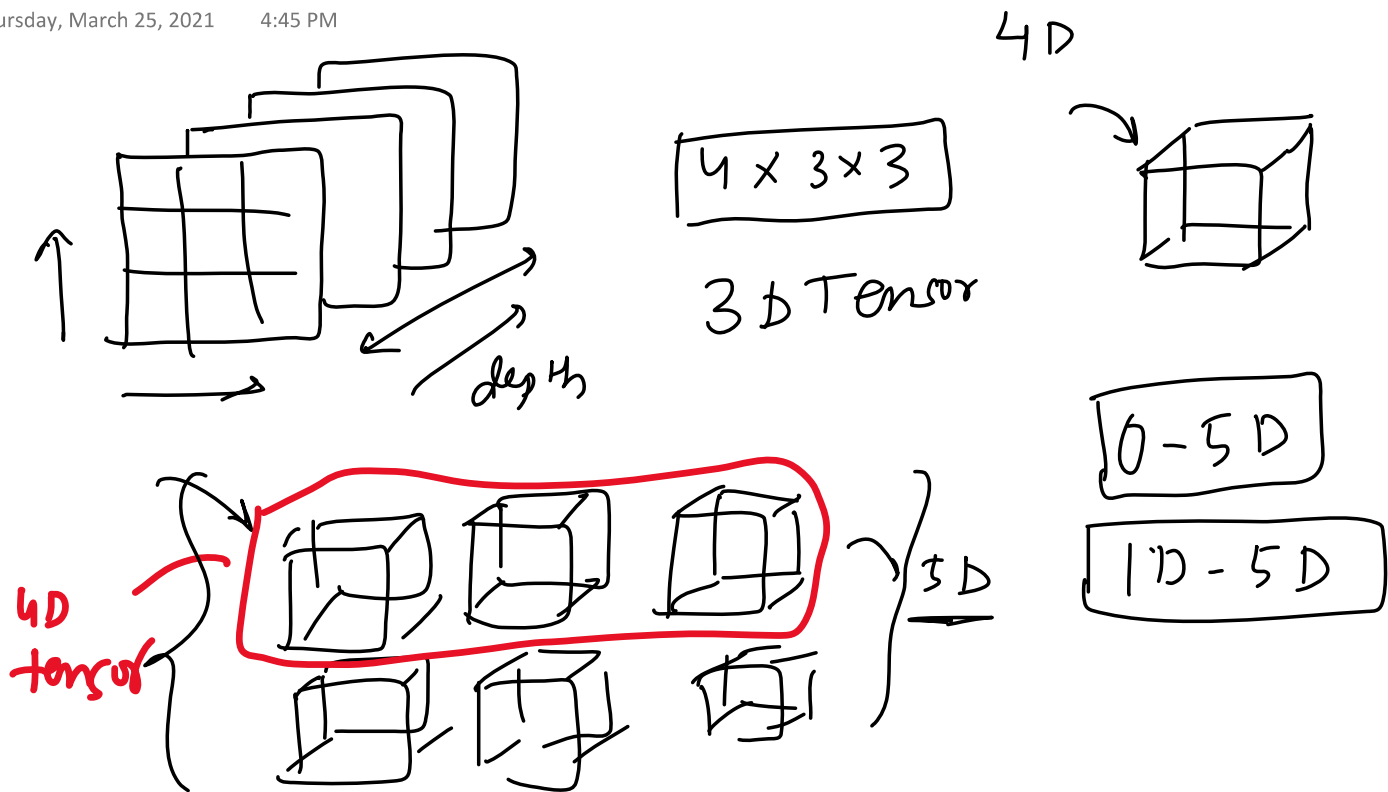
## 4. 2D Tensor/Matrices

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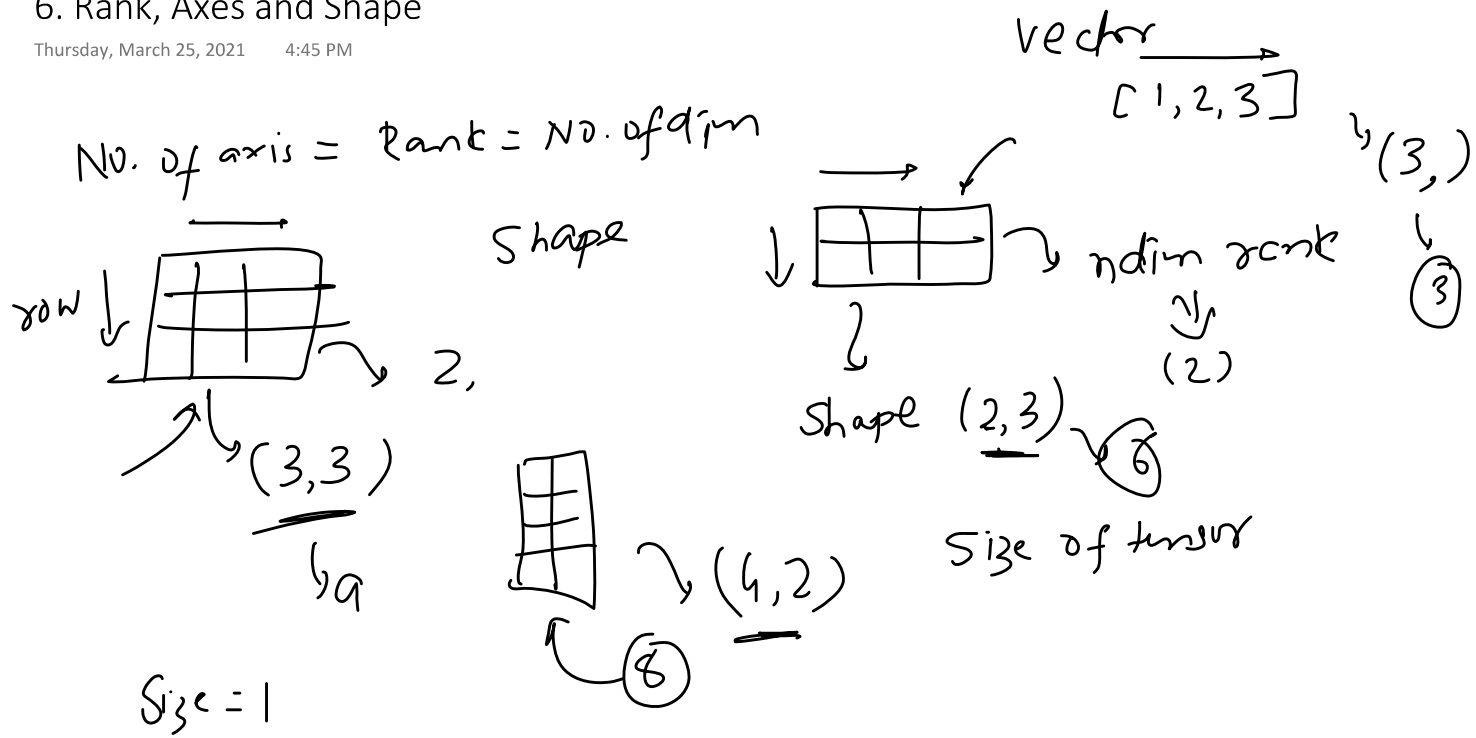
## 5. ND Tensors

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## 6. Rank, Axes and Shape

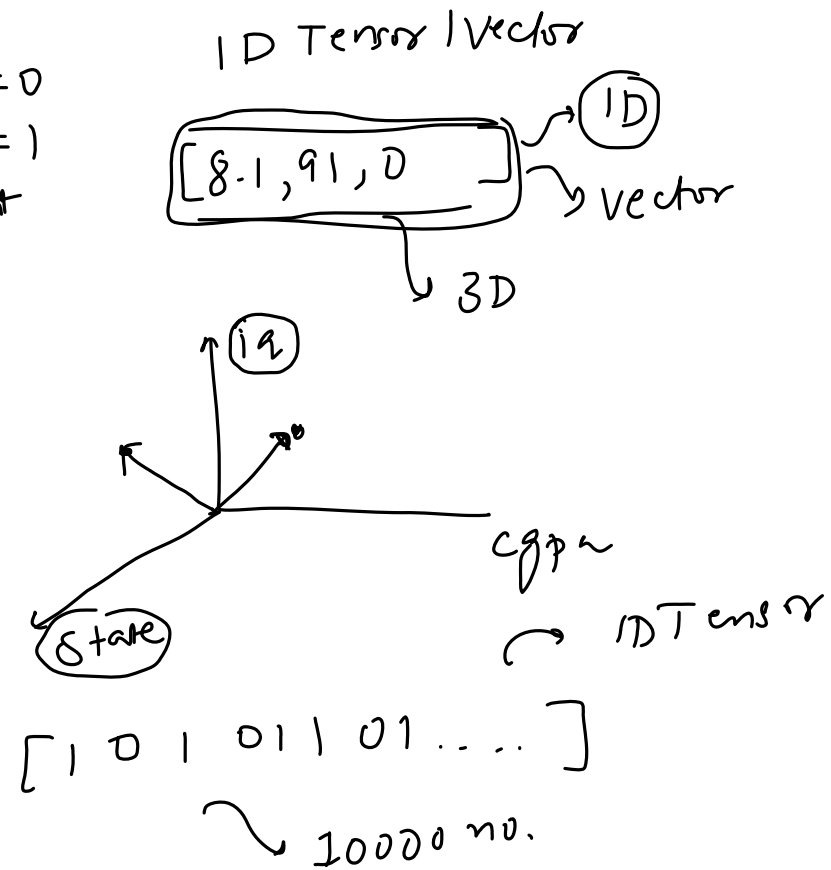
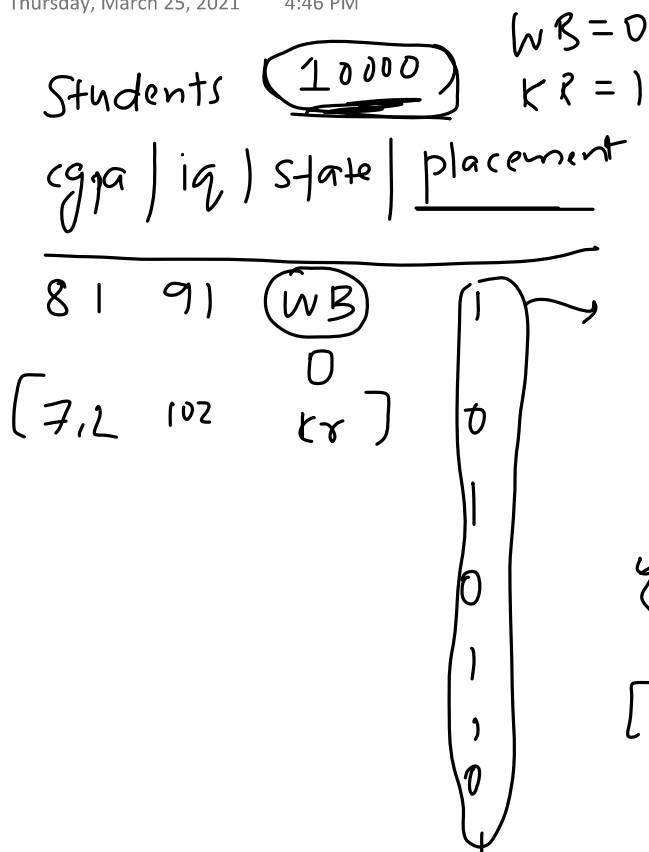
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## 7. Example of 1D Tensors

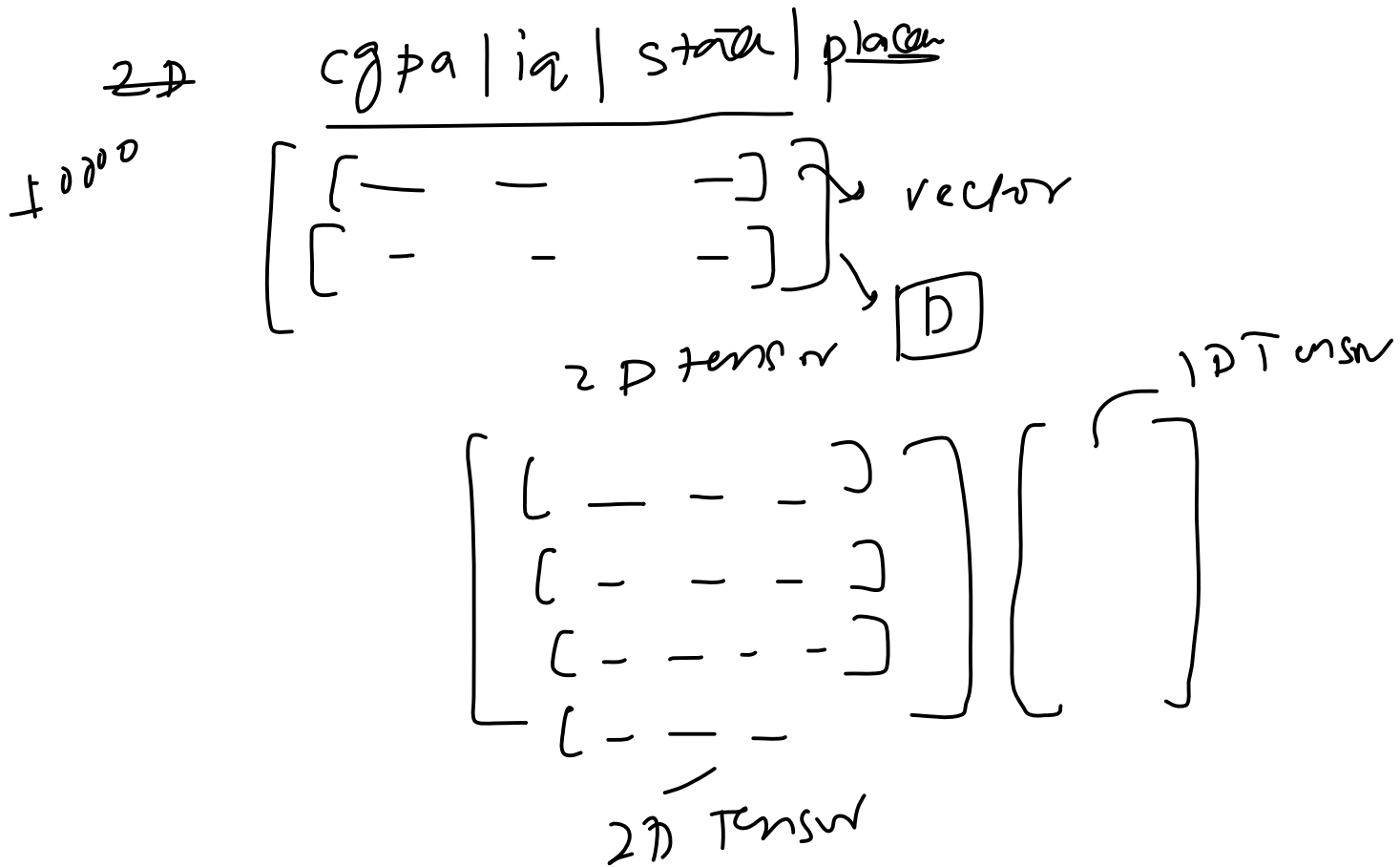
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## 8. Example of 2D Tensors

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## 9. Example of 3D Tensors

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NLP

Hi Nitish

Hi Rahul

Hi Ankit

Hi	Nitish	Rahul	Ankit
1	0	0	0
0	1	0	0
0	0	1	0
0	0	0	1

$\left[ \left[ [1, 0, 0, 0], [0, 1, 0, 0] \right] \right]$

(2)

$(3, 2, 4)$

$\left[ [1, 0, 0, 0], [0, 0, 1, 0] \right] \rightarrow 3D \text{ Tensor}$

$\left[ [1, 0, 0, 0], [0, 0, 0, 1] \right]$

Timeseries Data

(2)

Highest | Lowest

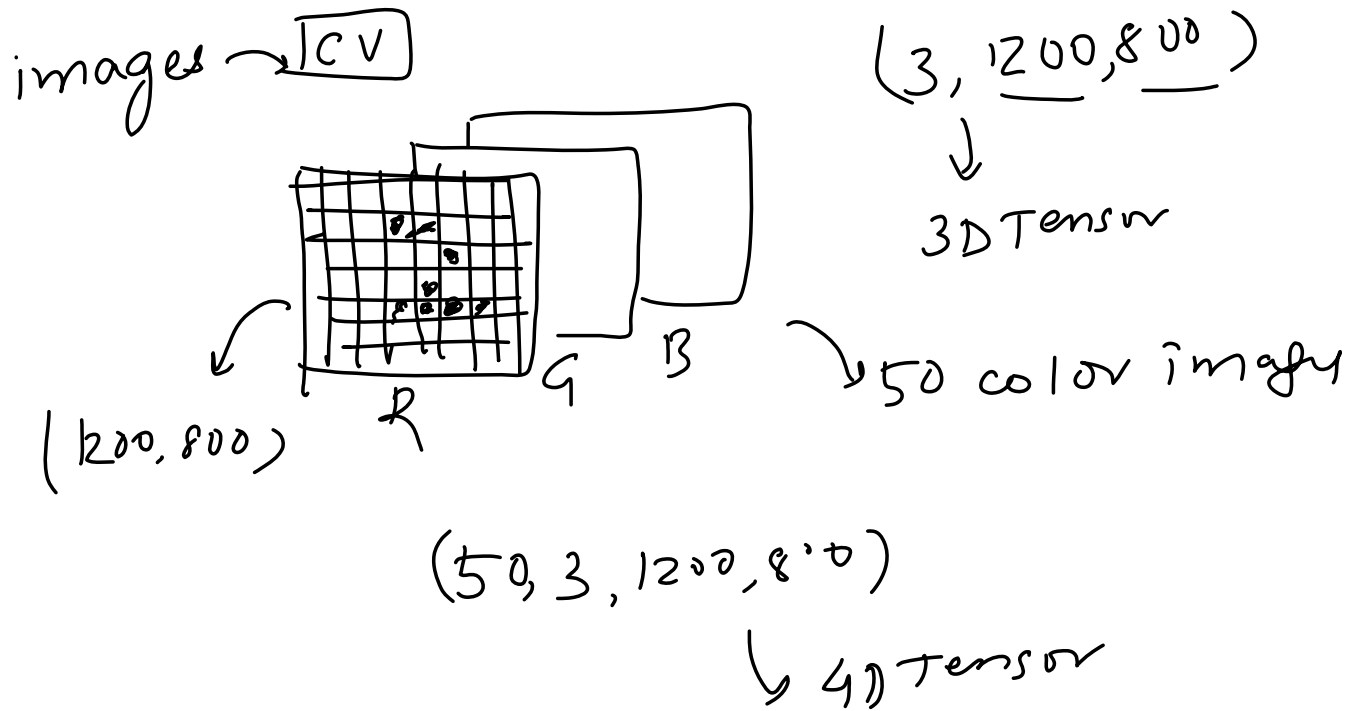
$\rightarrow 70 \text{ years}$   
 $(365, 2)$

Day 1 — —  
Day 2 — —  
Day 365 — —  
365

$\rightarrow 2D \rightarrow 10$   
 $(10, 365, 2)$   
time axis  
 $\rightarrow 3D \text{ Tensor}$

## 10. Example of 4D Tensors

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## 12. Example of 5D Tensors

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