Tensors

Tensors is a container where we can store a number, or strings.

0D Tensor (scalar) :-

eg :- [1], [3]

no. of dimension = rank = 0 (no. of axis)

1D Tensor (vector) (1-D array) :-

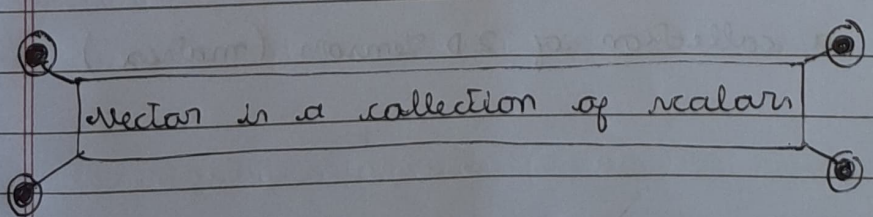
eg :- [1, 2, 3]

no. of dimension = rank = no. of axis = 1
(of Tensor)

no. of dimension = 3 [∵ There are 3 values inside the vector]
(of vector)

eg :- [1, 4, 5, 6]

no. of dimension (of Tensor) = 1
" " " (of vector) = 4



2D Tensor (matrix) :-

matrix is a collection of vectors

eg :- $\begin{bmatrix} 1, & 2, & 3 \\ 4, & 5, & 6 \\ 7, & 8, & 9 \end{bmatrix}$

no. of dimension = axis = rank = 2
(of tensor)

shape = (3, 3) size = 3 × 3 = 9

(3 ↙ row, 3 ↘ col)

eg :- $\begin{bmatrix} 1, & 2, & 3 \\ 6, & 7, & 8 \end{bmatrix}$

dimension = axis = rank = 2

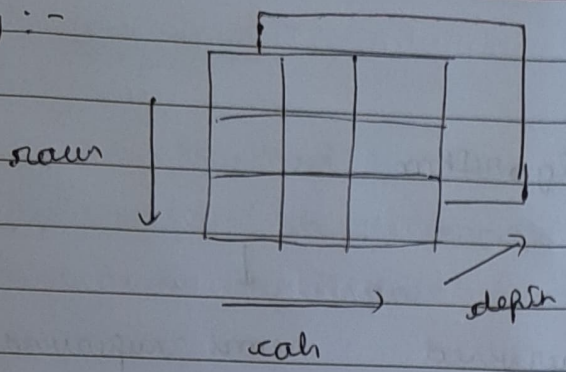
shape = (2, 3) size = 2 × 3 = 6

(2 ↙ row, 3 ↘ col)

3D Tensor :-

3D Tensor is a collection of 2D Tensor (matrix)

eg :-



dimension = rank = axes = 3

shape = (2 x 3 x 3)

depth row col

Similarly ND Tensor is a collection of (N-1)D Tensor