DAV - 1

Problem Solving

Prev Session Pandas - 2

Two pending topics:

1. Duplicate Rows / Values
2. Sort

$$A = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix} \qquad \text{shape}(A) = (3,)$$

$$B = \begin{bmatrix} 10 & 20 & 30 \end{bmatrix} \qquad \text{shape}(B) = (3,)$$

$$A + B = \begin{bmatrix} 11 & 22 & 33 \end{bmatrix}$$

$$A * B = \begin{bmatrix} 10 & 40 & 90 \end{bmatrix}$$

$$C = \begin{bmatrix} [1, 2], \\ [3, 4] \end{bmatrix}$$ shape → (2, 2)

$$D = [10, 20]$$ shape → (2,)

$$C + D = \begin{bmatrix} [11, 22], \\ [13, 24] \end{bmatrix}$$ shape → (2, 2)

$$\underset{C}{\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}} + \underset{D}{\begin{bmatrix} 10 & 20 \\ 10 & 20 \end{bmatrix}}$$

$X = [1, 2, 3]$ shape → $(3,)$

$Y = [10, 20]$ shape → $(2,)$

$X + Y =$

Broadcasting

shape $(2, 2)$ shape → 2

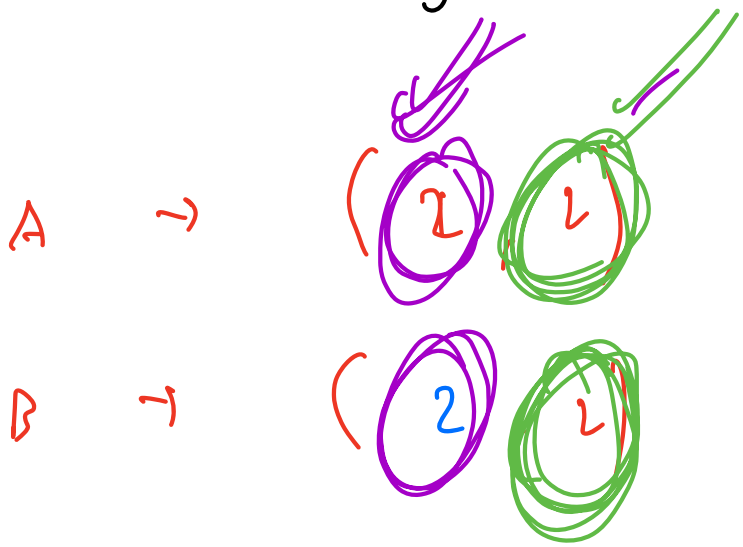
① If shapes of the two arrays are UNEQUAL

→ To the smaller array prepend '1's till you get the same shape

A → (2, 2) → (2, 2)

B → (2,) → (1, 2)

② In each corresponding "PAIR" if there are ANY '1s' you can "broadcast" 1 to the larger number



(3) Now look at every pair

if ALL pairs have equal values

→ YOU CAN BROADCAST

$X = [1, 2, 3]$ shape → $(3,)$

$Y = [10, 20]$ shape → $(2,)$

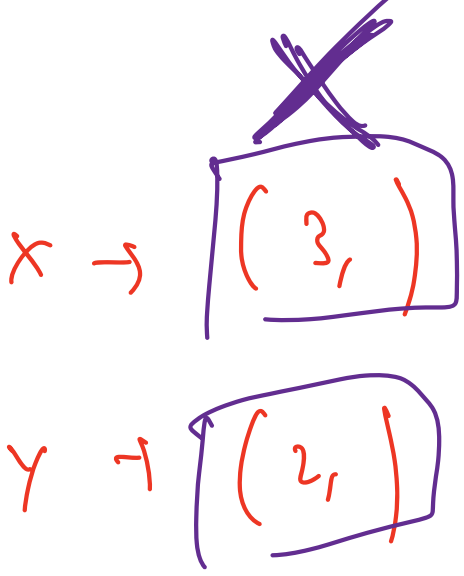
$X + Y =$

① They have same no of dimensions
No prepending '1's required

② $X \rightarrow (3,)$

$Y \rightarrow (2,)$

(3)



Broadcasting is NOT possible

shape → (3, 1)

p → [[0] ,
[10] ,
[20]]

q → shape → (3,)

Step-1

p → (3, 1)

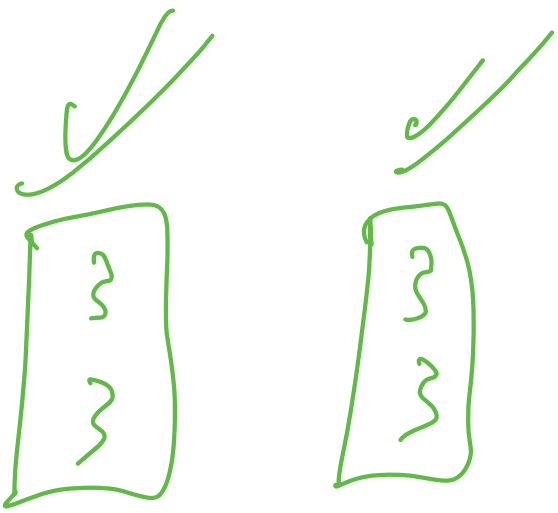
q → (1, 3)

Step-2

p → (3, 3)

q → (3, 3)

Step 3



r = p f q : (3, 3)

$$p = \begin{bmatrix} 0 & 0 & 0 \\ 10 & 10 & 10 \\ 20 & 20 & 20 \end{bmatrix}$$

$$q = \begin{bmatrix} 10 & 11 & 12 \\ 10 & 11 & 12 \\ 10 & 11 & 12 \end{bmatrix}$$

$$r = \begin{bmatrix} 10 & 11 & 12 \\ 20 & 21 & 22 \\ 30 & 31 & 32 \end{bmatrix}$$

Resuming at 8:33 AM IST

$$a = \begin{bmatrix} 1 & 10 \\ 5 & 25 \end{bmatrix}$$

a.T →

np.transpose(a) →

$$a^T \begin{bmatrix} 1 & 5 \\ 10 & 25 \end{bmatrix}$$

a[::, ::] →

$$\begin{bmatrix} 1 & 10 \\ 5 & 25 \end{bmatrix}$$

a = [::, ::-1] →

$$\begin{bmatrix} 10 & 1 \\ 25 & 5 \end{bmatrix}$$

a[::-1, ::-1] →

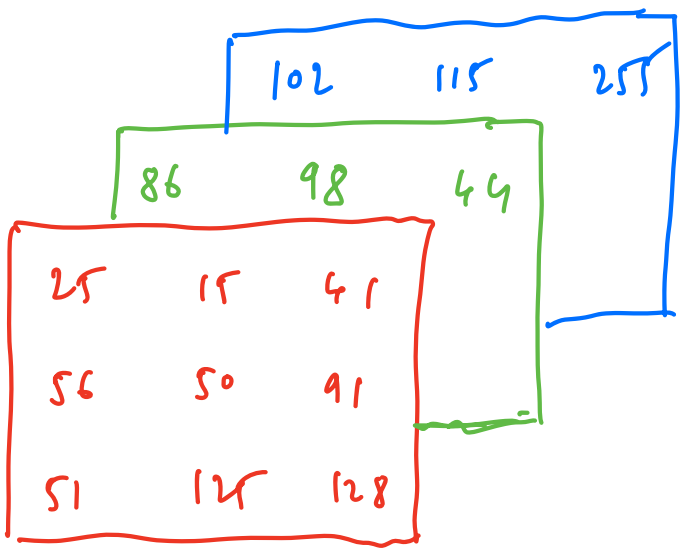
$$\begin{bmatrix} 25 & 1 \\ 10 & 5 \end{bmatrix}$$

Extra info from Q & A session
Outside the scope of our module

3x3

41	100	41
15	25	82
90	15	68

R G B



Extra

```
mask = (df['pop'] > 1_000_000)

mask2 = df['country'].str.contains('C')
```