

Numpy

③ Operation / Working with arrays.

① Combine

(i) Horizontal Stacking \rightarrow `np.hstack(arr1, arr2)`

(ii) Vertical Stacking \rightarrow `np.vstack(arr1, arr2)`

(iii) Depth Stacking \rightarrow `np.dstack(arr1, arr2)`

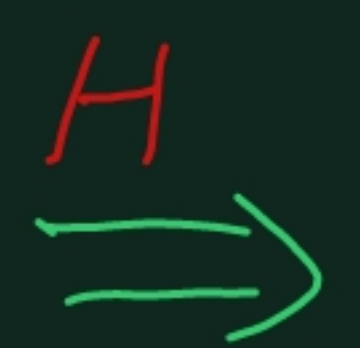
\longleftrightarrow Rows to Rows

\updownarrow Columns to Columns

1	2	3
4	5	6
7	8	9

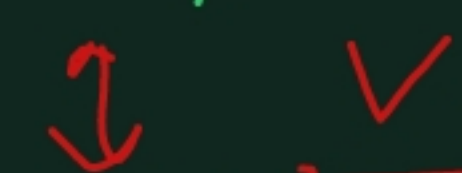


1	1	1	1
1	1	1	1
1	1	1	1



1	2	3	1	1	1	1
4	5	6	1	1	1	1
7	8	9	1	1	1	1

9881



9882

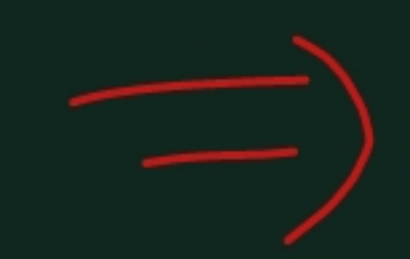


0	0	0
0	0	0
0	0	0
0	0	0



1	2	3
4	5	6
7	8	9
0	0	0
0	0	0
0	0	0
0	0	0

2	3	8
9	7	6
4	3	2



1	2	3
4	5	6
7	8	9



2	3	8
9	7	6
4	3	2

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}_{3 \times 3} + \begin{bmatrix} [5] & \dots & 5 \\ 1 & 1 & 1 \\ 5 & 5 & 5 \\ \vdots & \vdots & \vdots \\ 5 & 5 & 5 \end{bmatrix}_{3 \times 3} \approx$$

$$+ \begin{bmatrix} [3] & 2 & 1 \\ \vdots & \vdots & \vdots \\ 3 & 2 & 1 \\ \vdots & \vdots & \vdots \\ 3 & 2 & 1 \end{bmatrix}_{3 \times 3} \approx$$

$$+ \begin{bmatrix} [1] & \dots & 1 \\ [2] & \dots & 2 \\ [3] & \dots & 3 \end{bmatrix}_{3 \times 3}$$

Broadcasting
of
Arrays

$$arr = \begin{bmatrix} 1 & 2 & 3 & 4 \\ 5 & 6 & 7 & 8 \\ 9 & 10 & 11 & 12 \end{bmatrix}$$

`np.max(arr)`

$\rightarrow 12$

`np.min(arr)`

$\rightarrow 1$

`np.sum(arr)`

$\rightarrow 77$

`np.max(arr[0,2])`

$\rightarrow 11$

$\begin{bmatrix} 10 & 11 & 12 \\ 13 & 14 & 15 \\ 16 & 17 & 18 \end{bmatrix}$

access elem of this array

`np.nditer()` \rightarrow n-dimensional iteration

for `i` in `np.nditer(arr)`:
 `print(i)`

\Rightarrow
o/p

10
11
12
13
14
15
16
17
18

\Rightarrow ToDo

try using nested for loop

for loop \longrightarrow

for loop \longrightarrow
✓