

①  $\begin{bmatrix} [1, 2, 3] \\ [4, 5, 6] \\ [7, 8, 9] \end{bmatrix}$

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

$\begin{bmatrix} 1, 2, 3 \end{bmatrix}, \begin{bmatrix} 4, 5, 6 \end{bmatrix}$



$[1] \rightarrow [1] \rightarrow [1, 4] \Rightarrow [[1, 4]]$   
 $[2] \rightarrow [2] \rightarrow [2, 5] \Rightarrow [[1, 4], [2, 5]]$   
 $[3] \rightarrow [3] \rightarrow [3, 6] \Rightarrow [[1, 4], [2, 5], [3, 6]]$

- ① output = []
- ② Get # rows & cols in inp
- ③ For the # of cols in inp
  - 3.1 row = []
  - 3.2 For the # of rows in inp
    - 3.2.1 Append  $\begin{bmatrix} 1 \\ 4 \end{bmatrix}$   $\rightarrow$  row
  - 3.3 Append row into output

```
def transpose_matrix(m):
    output = []
    nrow = len(m)
    ncol = len(m[0])
    for small_arrow in range(ncol):
        row = []
        for big_arrow in range(nrow):
            row.append(m[big_arrow][small_arrow])
        print(row)
        output.append(row)
        print(output)
    return output

print(transpose_matrix([[1,2,3],[4,5,6]]))
```

Output of print statement

```
[1]
[1, 4]
[2]
[2, 5]
[[1, 4], [2, 5]]
[3]
[3, 6]
[[1, 4], [2, 5], [3, 6]]
[[1, 4], [2, 5], [3, 6]]
```