Input Matrix

$$\begin{bmatrix} 5 & 1 & 9 & 11 \\ 2 & 4 & 8 & 10 \\ 13 & 3 & 6 & 7 \\ 15 & 14 & 12 & 16 \end{bmatrix}$$

Step 1: Transpose the Matrix

Logic: Swap `matrix[i][j]` with `matrix[j][i]` for `i < j`.

i	j	Swap `matrix[i][j]` with `matrix[j][i]`	Updated Matrix
0	1	(1 ↔ 2)	$\begin{bmatrix} 5 & 2 & 9 & 11 \\ 1 & 4 & 8 & 10 \\ 13 & 3 & 6 & 7 \\ 15 & 14 & 12 & 16 \end{bmatrix}$
0	2	(9 ↔ 13)	$\begin{bmatrix} 5 & 2 & 13 & 11 \\ 1 & 4 & 8 & 10 \\ 9 & 3 & 6 & 7 \\ 15 & 14 & 12 & 16 \end{bmatrix}$
0	3	(11 ↔ 15)	$\begin{bmatrix} 5 & 2 & 13 & 15 \\ 1 & 4 & 8 & 10 \\ 9 & 3 & 6 & 7 \\ 11 & 14 & 12 & 16 \end{bmatrix}$
1	2	(8 ↔ 3)	$\begin{bmatrix} 5 & 2 & 13 & 15 \\ 1 & 4 & 3 & 10 \\ 9 & 8 & 6 & 7 \\ 11 & 14 & 12 & 16 \end{bmatrix}$
1	3	(10 ↔ 14)	$\begin{bmatrix} 5 & 2 & 13 & 15 \\ 1 & 4 & 3 & 14 \\ 9 & 8 & 6 & 7 \\ 11 & 10 & 12 & 16 \end{bmatrix}$
2	3	(7 ↔ 12)	$\begin{bmatrix} 5 & 2 & 13 & 15 \\ 1 & 4 & 3 & 14 \\ 9 & 8 & 6 & 12 \\ 11 & 10 & 7 & 16 \end{bmatrix}$

Step 2: Reverse Each Row

Now, we reverse each row.

Row	Before Reverse	After Reverse
0	`[5, 2, 13, 15]`	`[15, 13, 2, 5]`
1	`[1, 4, 3, 14]`	`[14, 3, 4, 1]`
2	`[9, 8, 6, 12]`	`[12, 6, 8, 9]`
3	`[11, 10, 7, 16]`	`[16, 7, 10, 11]`

Final Output Matrix

$$\begin{bmatrix} 15 & 13 & 2 & 5 \\ 14 & 3 & 4 & 1 \\ 12 & 6 & 8 & 9 \\ 16 & 7 & 10 & 11 \end{bmatrix}$$