1. Python3 program to rotate a matrix by 90 degrees.

N = 4

def rotateMatrix(mat):

# Consider all squares one by one

for x in range(0, int(N / 2)):

for y in range(x, N-x-1):

# store current cell in temp variable

temp = mat[x][y]

# move values from right to top

mat[x][y] = mat[y][N-1-x]

# move values from bottom to right

mat[y][N-1-x] = mat[N-1-x][N-1-y]

# move values from left to bottom

mat[N-1-x][N-1-y] = mat[N-1-y][x]

# assign temp to left

mat[N-1-y][x] = temp

# Function to print the matrix

def displayMatrix( mat ):

for i in range(0, N):

for j in range(0, N):

print (mat[i][j], end = ' ')

print ("")

# Driver Code

mat = [[0 for x in range(N)] for y in range(N)]

# Test case 1

mat = [ [1, 2, 3, 4 ],

[5, 6, 7, 8 ],

[9, 10, 11, 12 ],

[13, 14, 15, 16 ] ]

'''

# Test case 2

mat = [ [1, 2, 3 ],

[4, 5, 6 ],

[7, 8, 9 ] ]

# Test case 3

mat = [ [1, 2 ],

[4, 5 ] ]

'''

rotateMatrix(mat)

# Print rotated matrix

displayMatrix(mat)