import numpy as np #numpy arrays

import sys

import matplotlib.pyplot as plt

np.set\_printoptions(threshold=sys.maxsize) # para visualizar la matriz

#matriz

a = np.array([[1,1,1,1,1,1,0,1,1,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,1,1,1,1,1,1,1,1,1,1],

[1,1,1,1,1,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,1,1,1,1,1,1,1,1,1],

[1,1,1,1,1,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,1,1,1,1,1,1,1,1,1],

[1,1,1,1,1,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,1,1,1,1,1,1,1,1,1],

[1,1,1,1,1,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,1,1,1,1,1,1,1,1],

[1,1,1,1,1,0,0,0,0,0,0,0,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1],

[1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1],

[1,1,1,1,1,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,0,0,0,0,1,1,0,0,1,1,1,1,1],

[1,1,1,1,1,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,0,0,0,1,1,1,0,0,1,1,1,1],

[1,1,1,1,1,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,0,0,1,1,1,1,0,0,1,1,1],

[1,1,1,1,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,0,0,1,1,1,1,1,0,1,1,1],

[1,1,1,1,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,1,1,1,1,1,1,0,1,1],

[1,1,1,1,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,1,1,1,0,0,1,0,0,1],

[1,1,1,1,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,0,0,0,1,1,1,0,1,1,1,0,0,0,1,0,1],

[1,1,1,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,0,0,0,0,1,1,1,0,1,1,1,0,0,0,1,0,0],

[1,1,1,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,0,0,0,0,1,1,1,0,0,1,1,0,0,0,1,0,0],

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[1,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,0,0,0,1,1,1,0,0,0,1,1,1,1,1,1,0],

[0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,0,1,1,1,1,0,0,1,0,1,1,1,1,1,1,0],

[1,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,0,1,1,0,0,0,0,0,1,0,0],

[1,1,0,0,0,0,0,1,1,1,0,0,0,1,1,1,1,1,1,1,1,1,1,1,0,0,1,0,0,0,0,0,0,1,0],

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[1,1,0,0,0,0,1,1,1,0,0,0,1,1,0,0,0,0,0,0,0,0,0,1,1,1,0,0,0,0,0,0,0,0,0],

[1,0,0,0,0,0,1,1,1,0,0,0,1,1,1,1,1,0,0,0,0,1,1,1,1,1,1,0,0,0,0,0,0,0,0],

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[1,1,1,1,1,0,0,1,1,1,1,1,1,0,0,0,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,1,0,0,1],

[1,1,1,1,1,0,0,1,1,1,1,1,1,0,0,0,0,0,0,0,1,1,1,1,0,0,0,0,0,0,1,1,0,1,1],

[1,1,1,1,1,1,0,0,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,0,1,1,1],

[1,1,1,1,1,1,1,0,0,1,1,1,1,1,0,0,0,1,1,1,0,0,0,0,0,0,0,0,0,1,0,0,1,1,1],

[1,1,1,1,1,1,1,1,0,0,1,1,1,1,1,0,1,1,1,1,1,1,0,1,1,1,0,0,1,0,0,1,1,1,1],

[1,1,1,1,1,1,1,1,1,0,0,1,1,1,1,1,0,0,1,1,1,1,1,1,1,0,0,1,0,0,1,1,1,1,1],

[1,1,1,1,1,1,1,1,1,1,0,0,0,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1],

[1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,1,1,0,1,1,0,0,0,0,0,1,1,1,1,1,1,1,1],

[1,1,1,1,1,1,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,1,1,1,1,1,1,1,1,1,1]])

fig,ax = plt.subplots()

im = ax.imshow(a)

lenght = len(a) #lenght of the matrix = 35

lenght0 = len(a[0])

reverse = a[::-1] #para rotar a la derecha

aX = a[::1]

r = [[a[i][j] for i in range(lenght)] for j in range(lenght0)] #rotación izquierda

print()

for j in r:

print(j)

print()

r = [[reverse[i][j] for i in range(lenght)] for j in range(lenght0)] #rotación derecha

print()

for j in r:

print(j)

print()

print(reverse) #reflejo y

print()

print(aX) #reflejo x

<https://teamtreehouse.com/community/how-do-i-get-the-first-4-and-last-4-items-of-a-list>

<https://www.datacamp.com/community/tutorials/python-numpy-tutorial?utm_source=adwords_ppc&utm_campaignid=1455363063&utm_adgroupid=65083631748&utm_device=c&utm_keyword=&utm_matchtype=b&utm_network=g&utm_adpostion=&utm_creative=278443377095&utm_targetid=dsa-473406585115&utm_loc_interest_ms=&utm_loc_physical_ms=9047090&gclid=EAIaIQobChMIgqSw-bD_5wIV1BZ9Ch3EjQC8EAAYASAAEgICP_D_BwE>

<https://www.geeksforgeeks.org/transpose-matrix-single-line-python/>