④ Determine weather matrix can be obtain by rotation

mat = $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ ⟷ $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

target = $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ Same/equal after 90° rotating

Return true

– $\begin{bmatrix} 0 & 1 \\ 1 & 1 \end{bmatrix}$ $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

~~rotate~~ rotate by 90°

$\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$ rotate by 90° ⟷ $\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix}$ rotate by 90° $\begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$ rotate by 90° → $\begin{bmatrix} 0 & 1 \\ 1 & 1 \end{bmatrix}$

Question

∴ false

$\begin{bmatrix} 0 & 0 & 0 \\ 0 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix}$ 90° ⟶ $\begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ ↓90°

target $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ ⟺ Equal $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & 0 \\ 0 & 0 & 0 \end{bmatrix}$

partition

$$\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} \longleftrightarrow \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

↓ transpose

$$\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} \longleftrightarrow \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

ex:-

$$\begin{bmatrix} 0 & 0 & 0 \\ 0 & 1 & 0 \\ 1 & 1 & 1 \end{bmatrix} \xrightarrow{\text{transpose}} \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$$

↓ 90° ↓ flip

$$\begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix} \longleftrightarrow \begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$$

main

```
for (i=0; i<4; i++){
    if (check(mat, target)){
        return true;
    }
    rotate(mat);
}
return false;
```

check function

```
for(i=0; i<n; i++){
    for(j=0, j<n; j++){
        if(mat[i][j] != tar[i][j]){
            return false;
        }
    }
}
return true
```

rotate function

```
for(i=0; i<n; i++){
    for(j=0; j<i; j++){
        temp=mat[i][j];
        mat[i][j]=mat[j][i]
        mat[j][i]=temp;
    }
}
```

```
start = 0, end = n-1
while (start <= end) {
    for (i = 0; i < n; i++) {
        temp = mat[i][start];
        mat[i][start] = mat[i][end];
        mat[i][end] = temp;
```