

# Largest square formed in a matrix

---

Given a binary matrix **mat** of size **n** \* **m**, find out the maximum size square sub-matrix with all 1s.

## Example 1:

```
Input: n = 2, m = 2
mat = {{1, 1},
       {1, 1}}
Output: 2
Explanation: The maximum size of the square
sub-matrix is 2. The matrix itself is the
maximum sized sub-matrix in this case.
```

## Example 2:

```
Input: n = 2, m = 2
mat = {{0, 0},
       {0, 0}}
Output: 0
Explanation: There is no 1 in the matrix.
```

## Your Task:

You do not need to read input or print anything. Your task is to complete the function **maxSquare()** which takes **n**, **m** and **mat** as input parameters and returns the size of the maximum square sub-matrix of given matrix.

**Expected Time Complexity:**  $O(nm)$

**Expected Auxiliary Space:**  $O(nm)$

## Constraints:

$1 \leq n, m \leq 50$

$0 \leq \text{mat}[i][j] \leq 1$

```
class Solution:
    def maxSquare(self, n, m, mat):
        # code here
        if n==1 or m==1:
            if n==1:
                return max(mat[0])
            if m==1:
```

```

        return max([mat[i][0] for i in range(len(mat))])
dp = [[0]*m for _ in range(n)]
ans = 0
for i in range(n-1,-1,-1):
    for j in range(m-1,-1,-1):
        if i==n-1 and j==m-1:
            dp[i][j] = mat[i][j]
        elif i==n-1:
            dp[i][j] = mat[i][j]
        elif j==m-1:
            dp[i][j] = mat[i][j]
        else:
            if mat[i][j]==0:
                dp[i][j] = 0
            else:
                dp[i][j] = min(dp[i+1][j],min(dp[i][j+1],dp[i+1]
[j+1]))+1

            if dp[i][j]>ans:
                ans = dp[i][j]

# print(dp)
return ans

```