

# 1183. Maximum Number of Ones Premium

Hard Topics Companies Hint

Consider a matrix `M` with dimensions `width * height`, such that every cell has value `0` or `1`, and any **square** sub-matrix of `M` of size `sideLength * sideLength` has at most `maxOnes` ones.

Return the maximum possible number of ones that the matrix `M` can have.

## Example 1:

**Input:** `width = 3, height = 3, sideLength = 2, maxOnes = 1`

**Output:** `4`

**Explanation:**  
In a 3\*3 matrix, no 2\*2 sub-matrix can have more than 1 one.  
The best solution that has 4 ones is:  
`[1,0,1]`  
`[0,0,0]`  
`[1,0,1]`

## Example 2:

**Input:** `width = 3, height = 3, sideLength = 2, maxOnes = 2`

**Output:** `6`

**Explanation:**  
`[1,0,1]`  
`[1,0,1]`  
`[1,0,1]`

## Constraints:

- `1 <= width, height <= 100`
- `1 <= sideLength <= width, height`
- `0 <= maxOnes <= sideLength * sideLength`

Seen this question in a real interview before? 1/5

Yes No

Accepted **5.3K** | Submissions **7.7K** | Acceptance Rate **68.4%**

Topics

Greedy Heap (Priority Queue)

Companies

0 - 6 months

Qualcomm 2

Hint 1

Think of a greedy mathematical solution.

Hint 2

Say you choose to set some cell (i, j) to 1, all cells (x, y) such that `i % sideLength == x % sideLength` and `j % sideLength == y % sideLength` can also be set to 1 without increasing the max number of ones in a sub-matrix.

Hint 3

In one move, choose to set all the cells with some modulus (`i % sideLength, j % sideLength`) to 1.

Hint 4

Choose the cells with max frequency.

Discussion (5)