

# Maximum sum Rectangle

Given a 2D matrix M of dimensions RxC. Find the maximum sum submatrix in it.

## Example 1:

### Input:

R=4

C=5

M= [ [1, 2, -1, -4, -20],  
[-8, -3, 4, 2, 1],  
[3, 8, 10, 1, 3],  
[-4, -1, 1, 7, -6]]

### Output:

29

### Explanation:

The matrix is as follows and the blue rectangle denotes the maximum sum rectangle.

|    |    |    |    |     |
|----|----|----|----|-----|
| 1  | 2  | -1 | -4 | -20 |
| -8 | -3 | 4  | 2  | 1   |
| 3  | 8  | 10 | 1  | 3   |
| -4 | -1 | 1  | 7  | -6  |

### Example 2:

**Input:**

R=2

C=2

M=[ [-1,-2], [-3,-4] ]

**Output:**

-1

**Explanation:**

Taking only the first cell is the optimal choice.

**Your Task:**

You don't need to read input or print anything. Your task is to complete the function **maximumSumRectangle()** which takes the number R, C, and the 2D matrix M as input parameters and returns the maximum sum submatrix.

**Expected Time Complexity:** $O(R \cdot R \cdot C)$

**Expected Auxillary Space:** $O(R \cdot C)$

**Constraints:**

$1 \leq R, C \leq 500$

$-1000 \leq M[i][j] \leq 1000$