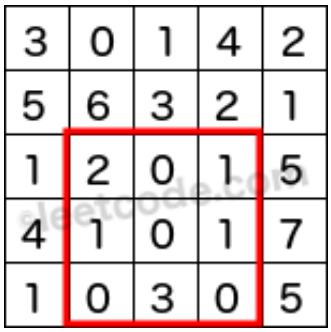
304. Range Sum Query 2D - Immutable

题目描述：https://leetcode.com/problems/range-sum-query-2d-immutable/

> 给定一个矩阵，求(i1, j1) -> (i2, j2) 的加和。
> 例如：
>
> 
>
>
> (2,1) -> (4,3) = 8

解题思路：

sum[i][j] 的意思是 从左上角到i，j的总和。
例如 sum[1][1] = 3; sum[i][j] = sum[i-1][j] + sum[i][j-1] + matrix[i-1][j-1] - sum[i-1][j-1]

代码：

```
class NumMatrix {
public:
    int row = 0, col = 0;
    vector<vector<int> > sum;
    NumMatrix(vector<vector<int>> &matrix) {
        row = matrix.size();
        if(row > 0)
            col = matrix[0].size();
        sum = vector<vector<int>>(row+1, vector<int>(col+1, 0));
        for(int i = 1; i <= row; i++) {
            for(int j = 1; j <= col; j++) {
                sum[i][j] = sum[i-1][j] + sum[i][j-1] + matrix[i-1][j-1] - sum[i-1
][j-1];
            }
        }
    }

    int sumRegion(int row1, int col1, int row2, int col2) {
        return sum[row2+1][col2+1] - sum[row1][col2+1] - sum[row2+1][col1] + sum[r
ow1][col1];
    }
};
```