```swift
import Foundation
/// 剑指 Offer 29. 顺时针打印矩阵
/// 输入一个矩阵，按照从外向里以顺时针的顺序依次打印出每一个数字。
///
/// 示例 1：
/// 输入：matrix = [[1,2,3],[4,5,6],[7,8,9]]
/// 输出：[1,2,3,6,9,8,7,4,5]
///
/// 示例 2：
/// 输入：matrix = [[1,2,3,4],[5,6,7,8],[9,10,11,12]]
/// 输出：[1,2,3,4,8,12,11,10,9,5,6,7]
class Solution {
    func spiralOrder(_ matrix: [[Int]]) -> [Int] {
        if matrix.isEmpty { return [] }

        var result: [Int] = []
        /// 获取行列数目
        var left: Int = 0
        var right: Int = matrix.first!.count-1
        var top: Int = 0
        var bottom: Int = matrix.count-1

        while true {
            for i in left...right {
                result.append(matrix[top][i])
            }
            top += 1
            if top > bottom { break }

            for j in top...bottom {
                result.append(matrix[j][right])
            }
            right -= 1
            if right < left { break }

            for k in (left...right).reversed() {
                result.append(matrix[bottom][k])
            }
            bottom -= 1
            if top > bottom { break }

            for l in (top...bottom).reversed() {
                result.append(matrix[l][left])
            }
            left += 1
            if right < left { break }
        }
        return result
    }
}
```