

064. Minimum Path Sum

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- Dynamic Programming+Array

Description

Given a $m \times n$ grid filled with non-negative numbers, find a path from top left to bottom right which *minimizes* the sum of all numbers along its path.

Note: You can only move either down or right at any point in time.

Example 1:

```
[[1,3,1],
 [1,5,1],
 [4,2,1]]
```

Given the above grid map, return **7** . Because the path $1 \rightarrow 3 \rightarrow 1 \rightarrow 1 \rightarrow 1$ minimizes the sum.

1. Thought line

2. Dynamic Programming+Array

```
1 class Solution {
2 public:
3     int minPathSum(vector<vector<int>>& grid) {
4         if (grid.empty()) return 0;
5         int m = grid.size(), n = grid[0].size();
6         for (int i=0; i<=m-1; ++i){
7             for (int j=0; j<=n-1; ++j){
8                 if (i==0 && j==0) continue;
9                 else if (i==0) grid[i][j] += grid[i][j-1];
10                else if (j==0) grid[i][j] +=grid[i-1][j];
11                else grid[i][j] += min(grid[i][j-1],grid[i-1][j]);
12            }
13        }
14        return grid[m-1][n-1];
15    }
16 };
```