Problem Submissions

Correct Answer

Report

Submitted on May 15, 2022, 5:40:58 PM

Penalty	Score	Test Cases
10%	72	8/8

Runtime	Language
351ms	C++ (g++ 5.4)

Previous Submissions

Submitted On	Status	Score	Penalty
6 mins ago	Correct Answer 8/8 Test cases Passed	80 / 80	0%
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2 mins ago	Correct Answer 8/8 Test cases Passed	80 / 80	0%

C++ (g++ 5.4)

```
        ans = max(ans, solve(0, i, matrix, rows, dp));
    }
    return ans;
    */

    /*
    //This is Tabulation Approach
            //TC = O(n*n)
            //SP = O(n*n)
    int columns = matrix[0].size();
    int rows = matrix.size();
    vector<vector<int>> dp(rows, vector<int>(columns, -1));
    int ans = -1e8;
    for(int c = 0; c < columns; c++)
        dp[rows - 1][c] = matrix[rows - 1][c];

    for(int r = rows - 2; r >= 0; r--){
        for(int c = 0; c < columns; c++){
            if(c == 0){
                int d = matrix[r][c] + dp[r + 1][c];
                int dr = matrix[r][c] + dp[r + 1][c + 1];
                dp[r][c] = max(d, dr);
            }
            else if(c == (columns - 1)){
                int d = matrix[r][c] + dp[r + 1][c];
                int dl = matrix[r][c] + dp[r + 1][c - 1];
                dp[r][c] = max(d, dl);
            }
            else{
                int d = matrix[r][c] + dp[r + 1][c];
                int dl = matrix[r][c] + dp[r + 1][c - 1];
                int dr = matrix[r][c] + dp[r + 1][c + 1];
                dp[r][c] = max(d, max(dl, dr));
            }
        }
    }
    for(int c = 0; c < columns; c++)
        ans = max(ans, dp[0][c]);
    return ans;
    */

        //This is space optimized solution
            //TC = O(n^2)
            //SP = O(n)
    int columns = matrix[0].size();
    int rows = matrix.size();
    vector<int> current(columns, -1), prev(columns, -1);
    int ans = -1e8;

    for(int c = 0; c < columns; c++)
        prev[c] = matrix[rows - 1][c];

    for(int r = rows - 2; r >= 0; r--){
        for(int c = 0; c < columns; c++){
            if(c == 0){
                int d = matrix[r][c] + prev[c];
                int dr = matrix[r][c] + prev[c + 1];
                current[c] = max(d, dr);
            }
            else if(c == (columns - 1)){
                int d = matrix[r][c] + prev[c];
                int dl = matrix[r][c] + prev[c - 1];
                current[c] = max(d, dl);
            }
            else{
                int d = matrix[r][c] + prev[c];
                int dl = matrix[r][c] + prev[c - 1];
                int dr = matrix[r][c] + prev[c + 1];
                current[c] = max(d, max(dl, dr));
            }
        }
        prev = current;
    }
    for(int c = 0; c < columns; c++)
        ans = max(ans, prev[c]);
    return ans;

}
```

Console

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