← Practice Programming Problems / Kth Shortest Path

Kth Shortest Path

Submissions Attempted by: 43 | Solved by: 23 | Partially Solved by: 4 |

Algorithms Hard Edit

Problem Editorial My Submissions Analytics August Jam

The problem "Kth Shortest Path" doesn't have any editorial. You can contribute it by sending editorial in markdown format to chandan@hackerearth.com.

Add Editorial

Author Solution by ankit srivastava

```
1. import java.io.*;
2. import java.util.ArrayList;
3. import java.util.StringTokenizer;
4.
5. class Solution {
6.     static boolean MAKE = true;
7.     static int SENTINEL = (int) (-1e7);
8.     static ArrayList<Integer> dp[][];
9.
10.    static void go(InputStream inputStream, OutputStream outputStr
11.        BufferedReader bufferedReader = new BufferedReader(new Inp
12.        PrintWriter printWriter = new PrintWriter(outputStream);
13.        int t = Integer.parseInt(bufferedReader.readLine());
14.        while (t-- > 0) {
15.            String[] args = bufferedReader.readLine().split(" ");
16.            int rowCount = Integer.parseInt(args[0]);
17.            int colCount = Integer.parseInt(args[1]);
18.            int[][] cost = new int[rowCount][colCount];
19.            for (int i = 0; i < rowCount; i++) {
20.                int j = 0;
21.                for (StringTokenizer tokenizer = new StringToken
22.                    String s = tokenizer.nextToken();
23.                    if (s.equals("##")) cost[i][j++] = SENTINEL;
24.                    else cost[i][j++] = Integer.parseInt(s);
25.                }
26.            }
27.            dp = new ArrayList[rowCount][colCount];
28.            for (int i = 0; i < rowCount; i++) {
29.                for (int j = 0; j < colCount; j++) {
30.                    dp[i][j] = new ArrayList<Integer>();
31.                }
```

```
            }
            assert (cost[0][0] != SENTINEL);
            dp[0][0].add(cost[0][0]);
            for (int i = 1; i < rowCount; i++) {
                if(dp[i - 1][0].size() > 0 && cost[i][0] != SENT
                    dp[i][0].add(dp[i - 1][0].get(0) + cost[i][0
            }
            for (int j = 1; j < colCount; j++) {
                if(dp[0][j - 1].size() > 0 && cost[0][j] != SENT
                    dp[0][j].add(dp[0][j - 1].get(0) + cost[0][j
            }
            for (int i = 1; i < rowCount; i++) {
                for (int j = 1; j < colCount; j++) {
                    ArrayList<Integer> top = dp[i - 1][j];
                    ArrayList<Integer> left = dp[i][j - 1];
                    if (cost[i][j] == SENTINEL) continue;
                    int p1 = 0, p2 = 0;
                    while (p1 < top.size() && p2 < left.size() &
                        if (top.get(p1) < left.get(p2)) {
                            dp[i][j].add(top.get(p1) + cost[i][
                            p1++;
                        } else {
                            dp[i][j].add(left.get(p2) + cost[i]
                            p2++;
                        }
                    }
                    while (p1 < top.size() && p1 + p2 < 101) {
                        dp[i][j].add(top.get(p1) + cost[i][j]);
                        p1++;
                    }
                    while (p2 < left.size() && p1 + p2 < 101) {
                        dp[i][j].add(left.get(p2) + cost[i][j]);
                        p2++;
                    }
                }
            }
            int queryCount = Integer.parseInt(bufferedReader.read
            while (queryCount --> 0) {
                int query[] = new int[3];
                int j = 0;
                for (StringTokenizer tokenizer = new StringToken:
                    String s = tokenizer.nextToken();
                    query[j ++] = Integer.parseInt(s);
                }
                int tx = query[0], ty = query[1], k = query[2];
                if(cost[tx][ty] == SENTINEL) printWriter.println(
                else if(dp[tx][ty].size() < k) printWriter.printl
                else printWriter.println(dp[tx][ty].get(k - 1));
            }
        }
        printWriter.close();
    }

    public static void main(String[] args) throws IOException {
```

```
        InputStream inputStream = System.in;
        OutputStream outputStream = System.out;
        for (int i = 0; i < 1; i++) {
            go(inputStream, outputStream);
        }
    }
}
```

Tester Solution by Prateek Gupta

```
#include <bits/stdc++.h>

using namespace std;

vector <int> dp[102][102];
int A[102][102];
bool obs[102][102];

int main()
{
        int t,n,m,q,x,a,b;
        cin >> t;
        while ( t-- ) {
         cin >> n >> m;
         for ( int i = 0; i < n; i++ ) {
                for ( int j = 0; j < m; j++ ) obs[i][j] = false,
         }
         for ( int i = 0; i < n; i++ ) {
                for ( int j = 0; j < m; j++ ) {
                        string s;
                        stringstream ss;
                        ss.clear();
                        cin >> s;
                        if ( s == "##" ) obs[i][j] = true, A[i][j]
                        else {
                                ss << s;
                                ss >> A[i][j];
                        }
                }
         }
         if ( !obs[0][0] ) dp[0][0].push_back(A[0][0]);
         for ( int i = 1; i < n; i++ ) {
                if ( !obs[i][0] ) {
                        if ( (int)dp[i-1][0].size() > 0 ) dp[i][0]
                }
         }
         for ( int j = 1; j < m; j++ ) {
                if ( !obs[0][j] ) {
                        if ( (int)dp[0][j-1].size() > 0 ) dp[0][j]
                }
         }

```

```
        for ( int i = 1; i < n; i++ ) {
                for ( int j = 1; j < m; j++ ) {
                        if ( !obs[i][j] ) {
                                int sz1 = (int)dp[i-1][j].size();
                                int sz2 = (int)dp[i][j-1].size();
                                int idx1 = 0, idx2 = 0, cnt = 0;
                                while ( (idx1 < sz1 || idx2 < sz2)
                                        if ( idx2 == sz2 ) {
                                                dp[i][j].push_back(
                                                idx1++;
                                        }
                                        else if ( idx1 == sz1 ) {
                                                dp[i][j].push_back(
                                                idx2++;
                                        }
                                        else {
                                                if ( dp[i-1][j][idx
                                                        dp[i][j].pu
                                                        idx2++;
                                                }
                                                else {
                                                        dp[i][j].pu
                                                        idx1++;
                                                }
                                        }
                                        cnt++;
                                }
                        }
                }
        }
        cin >> q;
        while ( q-- ) {
                cin >> a >> b >> x;
                if ( obs[a][b] ) {
                        cout << "Obstacle" << endl;
                        continue;
                }
                else if ( x > (int)dp[a][b].size() ) {
                        cout << "Not so many paths" << endl;
                        continue;
                }
                cout << dp[a][b][x-1] << endl;
          }
        }
        return 0;
}
```

PROFILE IMPACT

PROBLEMS SUGGESTED FOR YOU

RECENT SUBMISSIONS

TRENDING NOTES

Strings And String Functions
written by Vinay Singh

Segment Tree and Lazy Propagation
written by Akash Sharma

Number Theory - II
written by Tanmay Chaudhari

Matrix exponentiation
written by Mike Koltsov

Graph Theory - Part II
written by Pawel Kacprzak

more ...

DEVELOPERS TO FOLLOW

Murali Krishna
20 followers

niraj
0 followers

VIRAG
0 followers

COMPANIES TO FOLLOW

Syscloud
4296 followers

ThoughtWorks
5483 followers

WebEngage
3354 followers

RECOMMENDED CHALLENGES

Horlicks Hack 4 Fun

03 Sep 2015, 09:00 PM IST

Register

Hack The Talk

25 Sep 2015, 06:00 PM IST

Register

CODE-HUNT-2A

01 Oct 2015, 06:00 PM IST

Register

Dream11 Hiring Challenge

02 Oct 2015, 06:00 PM IST

Register

Urban Hack

03 Oct 2015, 10:00 AM IST

Register

Cube26 Android Developer Hiring Challenege

03 Oct 2015, 12:00 PM IST

Register

SUBSCRIBE TO HACKEREARTH NEWS

bhawnesh.dipu@gmail.com

Subscribe

JOIN PROGRAMMING CLUB ON FACEBOOK

Join now