|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Bessie's Path** | |  |  | | --- | --- | | Prob# | path | | Author | Mircea Pasoi | | Date | 2003 | | From | --- | |

|  |
| --- |
| Problem path: Bessie's Path [Mircea Pasoi, 2003]  Farmer John has announced he will present a lecture on Cowmputer  Science in exactly K (1 <= K <= 600) minutes. Knowing there are N  (1 <= N <= 5,000) farms conveniently numbered from 1..N in his  county, FJ decided to present the lecture in farm N.  Bessie is at farm 1 and wants to see FJ's lecture. She is so  meticulous that she wants her path to take exactly K minutes (so  that she will reach FJ's lecture exactly on time).  The cows know all about the roads. The farms are connected by M (1  <= M <= 15,000) two-way roads, and between any two different farms  with id's F1\_i and F2\_i, there is at most one road which Bessie  might traverse. Each road requires precisely one minute to traverse,  and each road i has its own traversal tax (0 <= T\_i <= 32,000).  Help Bessie find the cheapest path (minimizing the sum of all the  taxes; see below) from farm 1 to farm N in exactly K minutes. It  is guaranteed that such a path always exists, and that Bessie has  enough money to pay the crossing taxes.  PROBLEM NAME: path  INPUT FORMAT:  \* Line 1: Three space-separated integers: N, M, and K  \* Lines 2..M+1: Line i+1 describes road i with three space-separated  integers: F1\_i, F2\_i, and T\_i  SAMPLE INPUT (file path.in):  5 5 3  1 2 2  1 3 1  2 5 2  3 4 2  4 5 3  OUTPUT FORMAT:  \* Line 1: The minimum tax that Bessie has to pay.  SAMPLE OUTPUT (file path.out):  6  OUTPUT DETAILS:  The path 1 -> 3 -> 4 -> 5 takes exactly 3 minutes to cross and its cost is  the sum of taxes: 1 + 2 + 3 = 6. There is no other cheaper path. |

[USACO Gateway](http://ace.delos.com/upload4?init=1&a=PbkITzlyxZ0)  |  [Comment or Question](mailto:kolstad@ace.delos.com)