6 The Missing Z-95 Headhunter

The Star Wars team needs your help! Our favorite galactic voyagers, Chewie and R2-D2, are zipping through a galaxy, far-far away in search of Luke Skywalker's missing Z-95 Headhunter but have limited fuel after many unneeded stops! The team has maps of multiple systems with planets where they think the missing spacecraft may be in addition to estimated fuel costs and travel times between well-established interplanetary routes.

As their favorite ground engineer at Tatooine, you have agreed to the laborious task of calculating the optimal travel itinerary for Chewie and R2-D2 such that fuel cost and travel time is minimized. Chewie and R2-D2 have determined that it is slightly more important to conserve fuel over time and have thus given the fuel/time cost relationship to be: C = 3*FUEL_COST + 2*TIME_COST (note that in order to eliminate rounding errors, the weights are integers as opposed to floating point values). You can assume there exists at least one well established travel route between the start and target planets. Keep in mind that the galaxy is large and there can be many different travel routes between planets, so your solution must be efficient. May the force be with you!

6.1 Constraints

Chewie and R2-D2 have estimated the following to help you: there are at most 1,000 planets on any given map, there are at most 10,000 travel paths on any given map and there exists at least 1 path between the start and target planet.

6.2 Input

N

T

P_0 PC A_{00} F_{00} T_{00} ... $A_{0(PC-1)}$ $F_{0(PC-1)}$ $T_{0(PC-1)}$

...

P_{N-1} PC $A_{(N-1)0}$ $F_{(N-1)0}$ $T_{(N-1)0}$ ... $A_{(N-1)(PC-1)}$ $F_{(N-1)(PC-1)}$ $T_{(N-1)(PC-1)}$

You will be relayed information in the format specified above, where:

- N is the number of planets in the system
- T is the target planet number
- P is a planet name
- PC is the number of connected planets to the given planet
- A is the name of a connected planet to the given planet P
- F is the fuel cost to travel between planets P and the closest leftmost planet A
- T is the travel time (in light-years) between planets P and the closest leftmost A

6.3 Output

You should output the total composite cost for the shortest path between planet *0* and *T*. Do not print any newline characters or additional spaces.

6.4 Assumptions:

- You may assume that planet names are represented by integer values
- You may assume that fuel and time costs will be given as integer values
- You may assume that integer values will never be negative
- You may assume that all input on a given line is separated by single spaces
- You may assume that planet names will always precede fuel costs which will always precede time costs
- You may assume that if there is an route between planets N and X, then there is a route between X and N as well (i.e. a map can be represented as an undirected graph)
- You may assume that any planet is reachable from a given planet (i.e. the graph is connected)
- You may **NOT** assume that maps can be represented acyclically

6.5 Sample Input/Output

Sample Input	Sample Output
10 6 0 4 7 42 210 4 24 122 4 32 128 2 17 66 1 5 9 47 240 7 35 188 5 23 128 5 26 123 3 19 66 2 3 8 32 187 6 30 120 0 17 66 3 3 9 34 188 6 20 97 1 19 66 4 2 0 24 122 0 32 128 5 4 6 18 31 6 11 34 1 23 128 1 26 123 6 5 9 15 95 3 20 97 5 18 31 5 11 34 2 30 120 7 3 9 17 68 1 35 188 0 42 210 8 1 2 32 187 9 4 1 47 240 6 15 95 7 17 68 3 34 188	513