Money Transfer

Max. score: 100

This problem is no longer available for practice. Apology for any inconvenience!

SeaMoney has a feature to transfer money between users. Let's imagine a simple scenario.

N usernames—consisting of lowercase Latin characters—each starts with a balance b. Amongst them, T transactions happened, where user u_a transfers x amount of money to u_b. If x is larger than the u_a's balance when the transaction happens, the transaction is automatically rejected.

Output the final balance of each user.

Input

The first line contains two numbers N and T $(1 \leq N, T \leq 1000)$. Each of the next N following lines contain username u_i $(1 \leq |u_i| \leq 10)$ and integer b_i $\left(1 \leq b_i \leq 10^9\right)$, denoting the balance of user u_i. Following that are T lines, each containing two usernames u_a and u_b $(u_a \neq u_b)$ followed by an integer x $\left(1 \leq x \leq 10^9\right)$, denoting the amount of money transferred from u_a to u_b .

Output

Output the balance of all users in alphabetical order.

SAMPLE INPUT

```
3 4
amir 10
brenda 10
charlie 10
amir brenda 5
brenda charlie 5
charlie amir 20
charlie amir 7
```

SAMPLE OUTPUT

```
amir 12
brenda 10
charlie 8
```

Explanation

NA

Time Limit:	1.0 sec(s) for each input file.
Memory Limit:	256 MB
Source Limit:	1024 KB
Marking Scheme:	Score is assigned when all the testcases pass.
Allowed Languages:	Bash, C, C++, C++14, C++17, Clojure, C#, D, Erlang, F#, Go, Groovy, Haskell, Java, Java 8, Java 14, JavaScript(Rhino), JavaScript(Node.js), Julia, Kotlin, Lisp, Lisp (SBCL), Lua, Objective-C, OCaml, Octave, Pascal, Perl, PHP, Python, Python 3, Python 3.8, Racket, Ruby, Rust, Scala, Swift-4.1, Swift, TypeScript, Visual Basic