Objects in a room X53931_en

We represent a room with objects as a matrix of Item, defined as followed:

```
struct Item {
    string name;
    int quantity;
};
```

Each Item in the matrix indicates the name of the object and its quantity at the same position in the room.
Given a room and a sequence of triplets f, c, s where f, c are integers and s is a string, for each triplet the program outputs the total amount of objects having name s included in the submatrix whose upper left corner is at position row f, column c and whose lower right vertex coincides with that of the original matrix.
You have to complete the code given below. You can ONLY add code in the indicated parts and you MUST NOT change any of the other parts of the code. Otherwise, your program will be considered as INVALID.

```
#include <iostream>
#include <vector>
using namespace std;

struct Item {
    string name;
    int quantity;
};

typedef vector<vector<Item> > Room;

// Pre: n, m integers greater than 0
// Post: it returns a valid n x m Room
Room read_room(int n, int m) {
    // YOUR CODE HERE
}

// Pre: room has at least one object;
//      f, c is a valid position of room.
// Post: it returns the total amount of objects in room having name s
//       and included in the submatrix having its top left corner at
//       position row f, column c, and its bottom right corner as in room
int how_many_objects(const Room& room, int f, int c, string s) {
    // YOUR CODE HERE
}

int main() {
    int n, m;
    cin >> n >> m;
```

```
    Room room = read_room(n, m);
    int f, c;
    string s;
    while (cin >> f >> c >> s) {
        cout << s << ": " << how_many_objects(room, f, c, s) << endl;
    }
}
```

Exam score: 2.500000 **Automatic part:** 0.000000%

Input

The input consists of a room R followed by a sequence S of triplets f, c, s where f, c is a valid room position and s is a lowercase string.
Room R is represented by two integers n, m greater than 0 which are the dimensions of the room, followed by an $n \times m$ matrix of pairs string s (name of the object) and natural number q (quantity).

Output

For each triplet (f, c, s) of sequence S, the program outputs the total amount of objects named s included in the submatrix whose upper left corner is at position row f, column c and whose lower right vertex coincides with that of room R.

Sample input

```
4 3
lapiz 4 boli 2 lapiz 1
raqueta 2 boli 3 lapiz 5
mesa 1 silla 2 mesa 3
silla 4 lapiz 2 raqueta 1

0 0 lapiz
3 1 lapiz
0 2 lapiz
3 2 raqueta
0 0 cuchara
2 1 silla
1 2 silla
```

Sample output

```
lapiz: 12
lapiz: 2
lapiz: 6
raqueta: 1
cuchara: 0
silla: 2
silla: 0
```

Problem information

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