

Problem F. Rize's code

Rize passed the entrance examination of Ecole Normale Super Paris. Her major is computer science and technology. She hopes to realize her dream of being a teacher in college and teach Chimame March to write code in the future.

One day, she wants to find all the sub-matrices of a matrix A , calculate the sum of the elements of each sub-matrix, and then add these sums to get the result. In other words, she wanted to ask for this:

$$\sum_{B \text{ is a sub-matrix of } A} \sum B_{i,j}$$

Formally, a sub-matrix B of matrix A is a group of four integers u, d, l, r ($1 \leq u \leq d \leq n; 1 \leq l \leq r \leq m$). We will assume that the sub-matrix contains cells $A_{i,j}$ ($u \leq i \leq d; l \leq j \leq r$). The area of the sub-matrix the number of cells it contains.

And Rize wrote the following code without hesitation:

```
# include <stdio>
const int N = ?;
int a[N][N];
int main(){
    int n,m;
    scanf("%d %d",&n,&m);
    for(int i = 1;i <= n;i++)
        for(int j = 1;j <= m;j++)
            scanf("%d",&a[i][j]);
    long long ans = 0;
    // (u,l) is the top left corner of the sub-matrix
    // (d,r) is the bottom right corner of the sub-matrix
    for(int u = 1;u <= n;u++){
        for(int l = 1;l <= m;l++){
            for(int d = u;d <= n;d++){
                for(int r = l;r <= m;r++){
                    for(int i = u;i <= d;i++){
                        for(int j = l;j <= r;j++){
                            ans += a[i][j];
                        }
                    }
                }
            }
        }
    }
    printf("%lld\n",ans);
}
```

But after Rize finished writing, she thought the code was too ugly. She observed that the final result is actually equivalent to multiplying each element by a constant, and then adding up the results. So her code can be simplified as follows:

```
# include <stdio>
long long get_const(int x,int y,int n,int m){
    long long ans = 0;
    // ??
    return ans;
}
int main(){
    int n,m,t;
    long long ans = 0;
    scanf("%d %d",&n,&m);
    for(int i = 1;i <= n;i++){
        for(int j = 1;j <= m;j++){
            scanf("%d",&t);
            long long c = get_const(i,j,n,m);
            ans += c * t;
        }
    }
    printf("%lld\n",ans);
}
```

But Rize doesn't know how to calculate this number. In other words, she does not know how to implement the function `get_const()` of the above code. She is stumped, and she hopes to solve this problem as soon as possible and then go to other topics. Can you help her?

Input

There is an integer Q ($1 \leq Q \leq 10^5$) in the first line, which means there are Q queries. Next Q lines, each line contains four integers x, y, n, m ($1 \leq x \leq n \leq 9e4, 1 \leq y \leq m \leq 9e4$), representing the parameters of the function `get_const()`.

Output

For each query, output an integer representing the return value of function `get_const()` on a line.

Example

| standard input | standard output |
|-------------------------|-----------------|
| 3 | 16 |
| 2 2 3 3 | 36 |
| 1 3 4 5 | 2500000000 |
| 50000 50000 50000 50000 | |