
Obtain submatrix**X46890_en**

Given a matrix v (of characters) with dimensions $n \times m$ (indexed starting from 0) and indices $0 \leq i_1 \leq i_2 < n$ and $0 \leq j_1 \leq j_2 < m$, we want to obtain the submatrix of elements $v[i][j]$ for $i_1 \leq i \leq i_2$ and $j_1 \leq j \leq j_2$. (Note that the resulting submatrix has dimensions $(i_2 - i_1 + 1) \times (j_2 - j_1 + 1)$ and must be indexed starting from 0.)

For example, for the given matrix:

nwlrbbb

mqbhcd

arzowk

kyhidd

and the indices $i_1 = 1$, $j_1 = 2$, $i_2 = 2$, $j_2 = 3$, we obtain the submatrix:

bh

zo

Complete the function `obtain_submat` of the following code to achieve this goal, so that we obtain a program that treats several cases of obtaining a submatrix of a given starting matrix.

```
#include <iostream>
#include <vector>

using namespace std;

typedef vector<vector<char> > Mat;

Mat read_mat()
{
    int n,m;
    cin>>n>>m;
    Mat v(n,vector<char> (m));
    for (int i=0;i<n;i++)
        for (int j=0;j<m;j++)
            cin>>v[i][j];
    return v;
}

void write_mat(const Mat& v)
{
    int n=int(v.size());
    int m=int(v[0].size());
    for (int i=0;i<n;i++) {
        for (int j=0;j<m;j++)
            cout<<v[i][j];
        cout<<endl;
    }
    cout<<endl;
}
```

```

// Pre: 0<=i1<=i2<n and 0<=j1<=j2<m where v is a nxm matrix.
// Post: returns a matrix with dimensions (i2-i1+1)x(j2-j1+1)
// whose elements correspond to the submatrix of v
// with rows between i1 and i2, and columns between j1 and j2.
Mat obtain_submat(const Mat& v,int i1,int j1,int i2,int j2)
{
    ...
}

int main()
{
    Mat v=read_mat();
    int i1,j1,i2,j2;
    while (cin>>i1>>j1>>i2>>j2)
        write_mat(obtain_submat(v,i1,j1,i2,j2));
}

```

Exam score: 2.5 **Automatic part:** 100%

Input

The first line of the input has two values $n, m \geq 1$. Next, there is the description of a matrix v of $n \times m$ characters, that is, n lines with m characters at each line, where each character is a lowercase English letter. There is a blank line after the matrix description. Next, there are several cases of queries for obtaining submatrices of v , each one consisting in four integers i_1, j_1, i_2, j_2 holding $0 \leq i_1 \leq i_2 < n$ and $0 \leq j_1 \leq j_2 < m$. Each query appears in a different line.

Output

For each query, print the corresponding submatrix of v , written in the same format as above (the dimensions must not be written), followed by a blank line.

Sample input

```

4 6
nwlrbb
mqbhcd
arzowk
kyhidd

0 3 2 5
0 0 3 5
0 0 2 5
1 2 2 3
0 2 1 5
1 0 1 2
0 1 3 3
0 1 2 5
0 3 1 5

```

Sample output

```

rbb
hcd
owk

nwlrbb
mqbhcd
arzowk
kyhidd

nwlrbb
mqbhcd
arzowk

bh
zo

lrbb
bhcd

```

mqb

wlr
qbh
rzo
yhi

wlrbb
qbhcd
rzowk

rbb
hcd

Problem information

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