



Practice Arena

Practice problems aimed to improve your coding skills.

- 📁 PRACTICE-02_SCAN-PRINT
- 📁 PRACTICE-03_TYPES
- 📁 LAB-PRAC-02_SCAN-PRINT
- 📁 LAB-PRAC-01
- 📁 PRACTICE-04_COND
- 📁 BONUS-PRAC-02
- 📁 LAB-PRAC-03_TYPES
- 📁 PRACTICE-05_COND-LOOPS
- 📁 LAB-PRAC-04_COND
- 📁 LAB-PRAC-05_CONDLLOOPS
- 📁 PRACTICE-07_LOOPS-ARR
- 📁 LAB-PRAC-06_LOOPS
- 📁 LAB-PRAC-07_LOOPS-ARR
- 📁 LABEXAM-PRAC-01_MIDSEM
- 📁 PRACTICE-09_PTR-MAT
- 📁 LAB-PRAC-08_ARR-STR
- 📁 PRACTICE-10_MAT-FUN
- 📁 LAB-PRAC-09_PTR-MAT
- 📁 LAB-PRAC-10_MAT-FUN
 - ❓ Stack
 - ❓ The Prutor Editor
 - ❓ Finding your identity
 - ❓ Queue
 - ❓ The Prutor Editor Part II
 - ❓ Only Ones
 - ❓ Graphs
 - ❓ How Mr C actually does Math
 - ❓ The Hidden Positives and Negatives
 - ❓ How Prutor Manages Memory
 - ❓ Message in the Matrix
 - ❓ The Hidden Key
- 📁 PRACTICE-11_FUN-PTR
- 📁 LAB-PRAC-11_FUN-PTR
- 📁 LAB-PRAC-12_FUN-STRUC
- 📁 LABEXAM-PRAC-02_ENDSEM
- 📁 LAB-PRAC-13_STRUC-NUM
- 📁 LAB-PRAC-14_SORT-MISC

Finding your identity

LAB-PRAC-10_MAT-FUN

Finding your identity [20 marks]

Problem Statement

In the first line of your input, you will be given two strictly positive integers n and m . In the next m lines, you will be given the n rows of an $n \times m$ matrix A , with each row on a separate line and two elements in a row separated by a single space. The matrix A will contain entries that are either 0 or 1.

In the first line of your output, print the size of the largest identity submatrix. In the next line, print the row index and column index of the top-left element of the largest identity submatrix in the format (rowIdx,colIdx). Note that there are no spaces in the output. If there is no identity submatrix, print "0" (without quotes) in the first line of your output and print "(-1,-1)" (without quotes) in the second line of your output.

About Submatrices

Given a string, any contiguous set of characters occurring in that string is considered a substring of that string. Similarly we can extend that notion to submatrices as well. Given any matrix, every contiguous rectangle/square of elements inside that matrix is a submatrix of that matrix. E.g. consider the matrix

```
1 2 3 4
5 6 7 8
0 2 4 6
```

Then the following are submatrices of the above matrix. Note that submatrices may be square or rectangular.

Example 1
1

Example 2
6 7 8
2 4 6

Example 3
2 3
6 7

Example 4
1 2 3 4
5 6 7 8
0 2 4 6

Caution

1. Your code may be cleaner and easier to debug if you write a function to check for identity submatrices. This is not necessary though.
2. We assure you that there will always be a unique largest identity submatrix in the input given to you
3. You have to print the row index and column index of the top left element of the matrix - not the human readable notation of row number and column number. Remember, indices start from 0.

4. Be careful about extra/missing lines and extra/missing spaces in your output.

EXAMPLE:

INPUT

```
3 4
1 1 1 1
1 1 0 1
1 0 1 0
```

OUTPUT:

```
2
(1,1)
```

Grading Scheme:

Total marks: **[20 Points]**

There will be partial grading in this question. There are two lines in your output. Printing each line correctly, in the correct order, carries 50% weightage. Each visible test case is worth 2 points and each hidden test case is worth 4 points. There are 2 visible and 4 hidden test cases.

Please remember, however, that when you press Submit/Evaluate, you will get a green bar only if all parts of your answer are correct. Thus, if your answer is only partly correct, Prutor will say that you have not passed that test case completely, but when we do autograding afterwards, you will get partial marks.

 **Start Solving!** (/editor/practice/6199)