SI100B, Spring 2018
Homework 1: Programming Basics

March 1, 2018

1 Problem Description

The goal of this homework is to implement a simple program that takes an input of $m \times n$ matrix and outputs the number of vertical and horizontal lines represented by "x" as shown in **Fig. 1**. **A line is represented by at least two consecutive "x"s**.

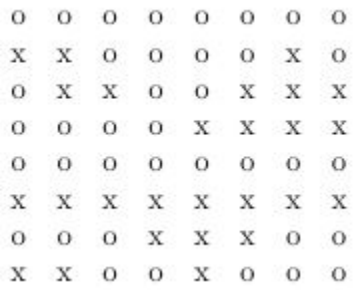


Figure 1: Example Matrix

Consider the above 8×8 matrix, the output should be: 7 horizontal lines and 7 vertical lines.

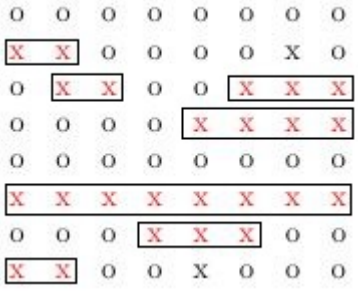


Figure 2: Horizontal Lines

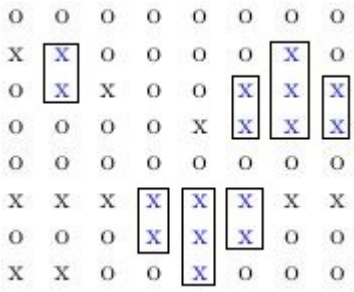


Figure 3: Vertical Lines

2 Requirements

- The program uses standard input and output.
- It prints out **a string** containing **two answers** in the terminal, **separated by a whitespace**. It must be the following format:

  `x y`

  where x is the number of **horizontal lines** and y is the number of **vertical lines** in the matrix. For example, the output of the example in Figure 1 is

  7 7

- Due:

  23:59:59, March 18, 2018

- Submission:

  – We have established a OnlineJudging platform for code assignment.
  The website is 199.247.31.5.
  After your first login, **please make sure you have set *your full-Chinese real name* in the profile before the deadline**, or **your score will be zero even if your program has been accepted**.
  Detailed manual will be given later on piazza.
  Since it is the first time to use this system, feel free to ask TAs for help if necessary.

  – Meanwhile, please email your **final code** to the email:

  $$SI100B@163.com$$

  Subject is "student ID" with your program attached.
  The program should be named as "student ID.py".
  For example:

  $$Subject : 47422183$$

  $$Program : 47422183.py$$

  If we do not receive your email with your code before **23:59:59, March 18, 2018**, your score will be zero, too.

3 Testcases

We provide 20 public testcases for you to debug. We have posted them on piazza.

- **How to use testcases?**
  Under Linux or MacOS system,
  - First, put your program in the folder where testcases are
  - Then, open the terminal
  - Then, type in the following commands (for example you want to use testcase 1):

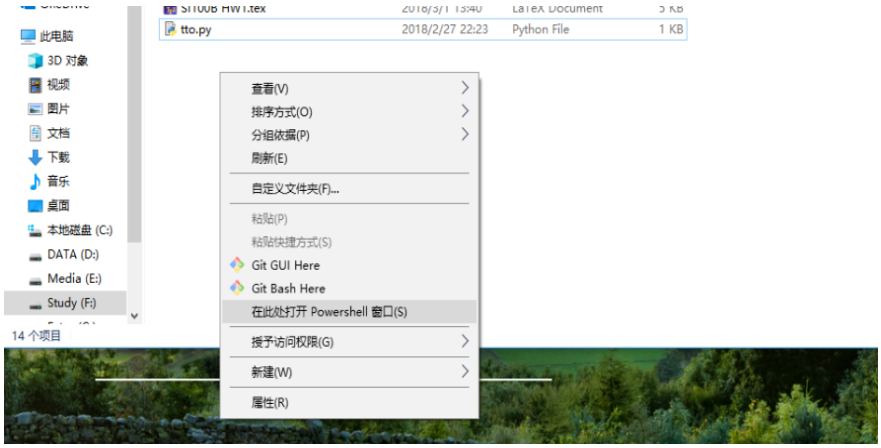
```
$ python3 matrix.py < 1.in > myout.out
$ diff myout.out 1.out
```

    If nothing happens, it means your program has passed the testcase.
    If the terminal reports differences, it means your program works out the wrong answer.

  We highly recommend you to use Linux or MacOS instead of Windows when programming, since there are some input differences between Windows and Linux.

  If you insist on Windows, follow instructions below. I

  - Open the folder where your program is
  - Then, **press Shift buttion** and right click your mouse. Click the **Open Windows PowerShell button**



  - For example you want to use testcase 1, type in command:

```
cat 1.in | python matrix.py
```

    Compare your result with output file (for example, 1.out) to see whether your program works properly.

```
PS F:\ShanghaiTech\Sophomore\Semester 2\SI100B\Programming\HW1\testcase\public_testcase> cat 1.in | python matrix.py
3 5
```