code jam
cout << "hello, world!" << endl;

Practice Mode

Contest scoreboard | Sign in

Round 1C 2010

A. Rope Intranet

B. Load Testing

C. Making Chess Boards

Contest Analysis

Questions asked

Submissions

Rope Intranet

9pt	Not attempted **2989/3075 users** correct (97%)
13pt	Not attempted **2662/2973 users** correct (90%)

Load Testing

14pt	Not attempted **1060/1468 users** correct (72%)
22pt	Not attempted **829/1020 users** correct (81%)

Making Chess Boards

18pt	Not attempted **640/836 users** correct (77%)
24pt	Not attempted **226/547 users** correct (41%)

Top Scores

ZhukovDmitry	100
darnley	100
morriship	100
xdliutao	100
Onufry	100
Clann	100
SergeyFedorov	100
kubus	100
K.A.D.R	100
Murphy	100

Problem C. Making Chess Boards

This contest is open for practice. You can try every problem as many times as you like, though we won't keep track of which problems you solve. Read the Quick-Start Guide to get started.

Small input
18 points

Download C-small-practice.in

your output file: Choose File No file chosen

source file(s): not needed for the practice contest

Submit file Hide

Large input
24 points

Download C-large-practice.in

your output file: Choose File No file chosen

source file(s): not needed for the practice contest

Submit file Hide

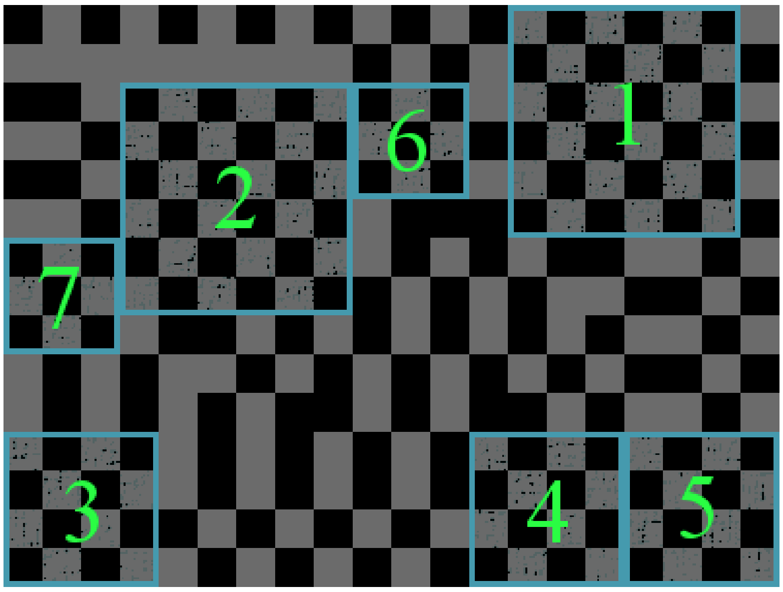
Problem

The chess board industry has fallen on hard times and needs your help. It is a little-known fact that chess boards are made from the bark of the extremely rare Croatian Chess Board tree, (*Biggus Mobydiccus*). The bark of that tree is stripped and unwrapped into a huge rectangular sheet of chess board material. The rectangle is a grid of black and white squares.

Your task is to make as many large square chess boards as possible. A chess board is a piece of the bark that is a square, with sides parallel to the sides of the bark rectangle, with cells colored in the pattern of a chess board (no two cells of the same color can share an edge).

Each time you cut out a chess board, you must choose the largest possible chess board left in the sheet. If there are several such boards, pick the topmost one. If there is still a tie, pick the leftmost one. Continue cutting out chess boards until there is no bark left. You may need to go as far as cutting out 1-by-1 mini chess boards.

Here is an example showing the bark of a Chess Board tree and the first few chess boards that will be cut out of it.



Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each one starts with a line containing the dimensions of the bark grid, **M** and **N**. **N** will always be a multiple of 4. The next **M** lines will each contain an (**N**/4)-character hexadecimal integer, representing a row of the bark grid. The binary representation of these integers will give you a strings of **N** bits, one for each row. Zeros represent black squares; ones represent white squares of the grid. The rows are given in the input from top to bottom. In each row, the most-significant bit of the hexadecimal integer corresponds to the leftmost cell in that row.

Output

For each test case, output one line containing "Case #x: **K**", where x is the case number (starting from 1) and **K** is the number of different chess board sizes that you can cut out by following the procedure described above. The next **K** lines should contain two integers each -- the size of the chess board (from largest to smallest) and the number of chess boards of that size that you can cut out.

Limits

1 ≤ **T** ≤ 100;
N will be divisible by 4;
Each hexadecimal integer will contain exactly **N**/4 characters.
Only the characters 0-9 and A-F will be used.

Small dataset

1 ≤ **M** ≤ 32;
1 ≤ **N** ≤ 32.

Large dataset

1 ≤ **M** ≤ 512;
1 ≤ **N** ≤ 512;
The input file will be at most 200kB in size.

Sample

```
Input       Output

4           Case #1: 5
15 20       6 2
55555       4 3
FFAAA       3 7
2AAD5       2 15
D552A       1 57
2AAD5       Case #2: 1
```

```
D542A    1 16
4AD4D    Case #3: 2
B52B2    2 1
52AAD    1 12
AD552    Case #4: 1
AA52D    2 4
AAAAA
5AA55
A55AA
5AA55
4 4
0
0
0
0
4 4
3
3
C
C
4 4
6
9
9
6
```

The first example test case represents the image above.