Code Jam to I/O for Women 2017 - Code Jam to I/O for Women

Word Search

Problem

In honor of Google I/O 2017, we would like to make an I/O-themed word search grid. This will be a rectangular grid in which every cell contains one of the three characters `I`, `/`, or `O`. The people solving our word search will look for all instances of the string `I/O` that appear contiguously forwards or backwards in a row, column, or diagonal. For example, the following grid contains eight instances of `I/O`, representing all eight possible directions in which the string can appear:

```
OOOOO
O///O
O/I/O
O///O
OOOOO
```

To control the difficulty level of our word search, we would like the string to appear *exactly* **N** times in the grid. Moreover, we do not want the grid to be too large; it cannot have more than **D** rows or more than **D** columns.

Can you help us design a grid that meets these specifications?

Input

The first line of the input gives the number of test cases, **T**. **T** test cases follow. Each test case consists of one line with two integers **D** and **N**, as described above.

Output

For each test case, first output one line containing `Case #x:`. Then output R lines of exactly C characters each, representing the rectangular grid. Each of those characters must be either `I`, `/`, or `O`. You may choose any values of R and C as long as both are at least 1 and neither exceeds **D**. Your grid must contain *exactly* **N** instances of the string `I/O`, per the rules described in the statement.

If there are multiple valid answers, you may output any of them.

Limits

Time limit: 20 seconds per test set.
Memory limit: 1GB.
$0 \leq \mathbf{N} \leq 287$.
It is guaranteed that at least one valid grid exists for each test case.

Small dataset (Test set 1 - Visible)

$1 \leq \mathbf{T} \leq 25$.
D = 50.

Large dataset (Test set 2 - Hidden)

1 ≤ **T** ≤ 100.
D = 15.

Sample

Input	Output
4 50 1 IIIOOO 50 0 /I/O/O 50 3 IIIOOO 50 8 Case #4: OOOOO O///O O/I/O O///O OOOOO	Case #1: O / I Case #2: IO Case #3:

The sample output displays one set of answers to the sample cases. Other answers may be possible. Note that these cases would only appear in the Small dataset.