

Problem 3: Mod of Integer Powers

Bob, the minion, is a new Computer Science student. He learns that the normal *integer* is a data type with 32 unsigned bits which can contain 2^{32} values. So, he simulates the scenario to challenge you by giving two positive integers i and j such that the integer $K = i^j = i \cdot \exp(j)$ and $1 \leq i, j \leq 20$ then find K modulo i ($K \bmod i$).

For examples, $i = 5, j = 2$, then $K = i \cdot \exp(j) = 5^2 = 25$, and $K \bmod j = 25 \bmod 2 = 1$. If the integer K results in an overflow, the output will show "overflow" (without quotation mark).

INPUT

The first line of input contains M , the number of cases which is at most 100, and then M lines follow. Each subsequent line consists of a case with two positive integer numbers i and j .

OUTPUT

The output should be in form of:

Case #1

The results for case #1

Case #2

The results for case #2

...

Case # M

The results for case # M

SAMPLE

Input

3

5 2

2 5

20 20

Output

Case #1

1

Case #2

2

Case #3

overflow