

7898 Hemi Palindrome

A group of historians sneaked into Ruins of Corvus and found some mysterious binary strings. They worked hard and found that those are all *Hemi Palindrome*. A binary string is called *Hemi Palindrome* if it reads the same forwards as backwards by ingoring digits in odd indices or even indices (1-based index). E.g. “101111” is *Hemi Palindrome* as the numbers on odd indices is “111”. “11001”, “10100” are both *Hemi Palindromes* but “101001”, “11000” are not.

Mr. Panda loves *Hemi Palindromes* so much and he wants to know the K -th smallest *Hemi Palindrome* with length N in lexicographic order.

Input

The first line of the input gives the number of test cases, T . T lines follow. Each line contains two integers N and K .

Output

For each test case, output one line containing ‘Case # x : y ’, where x is the test case number (starting from 1) and y is the result of *Hemi Palindrome* written in binary format. If there are less than K *Hemi Palindromes* with length N , y is ‘NOT FOUND!’.

Limits:

- $1 \leq T \leq 100$.
- $1 \leq N \leq 10^5$.
- $1 \leq K \leq 10^{18}$.

Sample Input

```
4
2 1
3 3
3 5
3 100
```

Sample Output

```
Case #1: 00
Case #2: 010
Case #3: 100
Case #4: NOT FOUND!
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