

12472 Binary Substring

Binary string of an integer is the string representation of it in binary without any leading zero. For example binary string of 5 is "101" where binary string of 13 is "1101".

A substring is any contiguous portion of a string. For example "01" is a substring of "1011" but "00" and "111" are not.

Given A , B and P . Find the smallest integer S such that P is a binary substring of S and $A \leq S$ and $S \leq B$. $1 \leq A, B, P \leq 10^{15}$ and $A \leq B$.

For example, $A = 9$, $B = 20$, $P = 5$ ("101"). 10 ("1010") is the smallest number in that range containing P as a substring.

Input

Input starts with an integer $T \leq 1000$, denoting the number of test cases followed by T test cases. Each of the following T lines will contain three space separated integers A , B and P .

Output

For each case, print a line of the form 'Case $\langle x \rangle$: $\langle S \rangle$ ', where x is the case number and S is the number (in decimal). If there is no valid S , then output 'NONE' (quotes for clarity).

Sample Input

```
4
10 20 5
10 100 9
1 1000 7
10 20 21
```

Sample Output

```
Case 1: 10
Case 2: 18
Case 3: 7
Case 4: NONE
```