

Problem A
Date Bugs

There are rumors that, there are a lot of computers having a problem with the year 2000. As they use only two digits to represent the year, the date will suddenly turn from 1999 to 1900. In fact, there are also many other, similar problems. On some systems, a 32-bit integer is used to store the number of seconds that have elapsed since a certain fixed date. In this way, when 2^{32} seconds (about 136 Years) have elapsed, the date will jump back to whatever the fixed date is.

Now, what can you do about all that mess? Imagine you have two computers C_1 and C_2 with two different bugs: One with the ordinary Y2K-Bug (i. e. switching to 1900 instead of 2000) and one switching to 1904 instead of 2040. Imagine that the C_1 displays the year 1941 and C_2 the year 2005. Then you know the following (assuming that there are no other bugs): The real year can't be 1941, since, then, both computers would show the (same) right date. If the year would be 2005, the C_1 would show 1905, so this is impossible, too. Looking only at C_1, we know that the real year is one of the following: 1941, 2041, 2141, etc. We now can calculate what C_2 would display in these years: 1941, 1905, 2005, etc. So in fact, it is possible that the actual year is 2141.

To calculate all this manually is a lot of work. (And you don't really want to do it each time you forgot the actual year.) So your task is to write a program which does the calculation for you: find the first possible real year after 1937, knowing what some other computers claim and knowing their bugs.[1]

Input

The input file contains several test cases, in which the actual year has to be calculated. The description of each case starts with a line containing an integer n ($1 \leq n \leq 20$), the number of computers. Then, there is one line containing three integers y, a, b for each computer ($0 \leq b \leq y < a < 10000, b \leq 1937$). y is the year the computer displays, a is the year in which the bug happens (i. e. the first year which can't be displayed by this computer) and b is the year that the computer displays instead of a.

The input is terminated by a line containing a zero.

Output

For each test case, output the line "`Case #`k`:`", where k is the number of the situation. Then, output the line "`The actual year is` z`.`", where z is the smallest possible year (satisfying all computers and being greater or equal to 1937). If there is no such year less than 10000, output "`Unkown bugs detected.`".

Output a blank line after each case.

[1] 1937 is the year in which the Z1 computer was build by K. Zuse. Did the Z1 already have the Y2K bug? We don't know.

Sample Input

```
1
1999 2000 1900
2
132 200 100
135 200 100
0
```

Sample Output

```
Case #1:
The actual year is 1999.

Case #2:
Unknown bugs detected.
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