Problem H
Enemy at the Gateway
Input: Standard Input
Output: Standard Output

This is the year 9002, the war between the Earth and Triton has broken out. Being a spy for the Earth, you are trying to find all means to destroy Triton protections. Being a very smart spy, you have somehow managed to enter into the Triton network and take over the control of a gateway. Now, you are trying to decode the messages passed between them.
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The messages are arbitrarily long sequence of integers with a preamble of P integers. Each integer will fit inside a 32 bit signed integer. You have managed to capture the actual preamble. But, the communication lines are too noisy, and for this reason, you can not get the sequence accurately. For each number in the sequence s_i, you have determined that, it can actually be any value between p_i and q_i inclusive.

Now, given the sequence of numbers, find in how many places, the message may start.

Input

First line contains T, the number of test cases. Each test case starts with an integer P, the length of the pattern. The next line contains P integers. Next line contains 10 integers, N, p_0, q_0, A, B, C, D, E, F, M. N is the length of the sequence. The range for each element in the sequence is generated using a generator function

```
p_i = (A * p_{i-1} + B * q_{i-1} + C) % M
q_i = (D * p_{i-1} + E * q_{i-1} + F) % M
if(q_i < p_i) swap(p_i,q_i)
```

$[p_1,q_1]$, $[p_2, q_2]$,...,$[p_N,q_N]$ describes the sequence. Please note that $[p_0, q_0]$ is not included in the sequence

Output

For each test case, output the number of places, the preamble may start.

Constraints

- $T <= 100$
- $P <= 60$
- $N <= 1000000$
- $0 <= p_0,q_0,A,B,C,D,E,F,M <= 1000000000$

Input

Input file contains at most 125 lines of inputs. Each line contains an integer $S(0<S \leq 80000)$. Input is terminated by a line containing a single zero, which should not be processed.

Output

For each line of input produce two or more line of output. The first line should contain the serial of output. The next lines should contain possible values of s7, s8 and s9. Please note than you should

print only those solutions where s7 ≤ s8 ≤ s9. If there is more than one solution then print them in the ascending order of s7. If there is still a tie then print in the ascending order of S8. If no valid values of s7, s8 and s9 is found print the line "Peter has Forgotten Everything" instead. Look at the output for sample input for details.

Sample Input

```
2
1
10
4 6 12 1 0 2 0 1 2 100000
2
1 2
3 1 3 1 0 0 0 1 0 10
```

Output for Sample Input

```
Case 1: 2
Case 2: 2
```

In the first case. the intervals are:
[8,14],[10,16],[12,18],[14,20]. The value 10 can only be contained in the first two.

In the second case, all the intervals are [1,3], so, you can find two positions to start the preamble.

Problem setter: Manzurur Rahman Khan
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