# Flower Games

locked

by *IEEEXtreme*



Intended complexity O(log N) per test, total complexity O(T log N)

Solution:

One key observation is that if N is a power of 2, ie N = 2^k the answer will always be 1. This can be easily proven: at the first cycle, you will remove all the even numbers, the you can relabel the remaining odd petals with numbers from 1 to N / 2. As the last removed petal is N, the next petal will be 1, so you are in the same case as when you started, but now you will only have N / 2 petals. Another observation is that if N = (2^K) + 1, the answer is 3, if N = (2^K) + 2, the answer is 5... until N = 2^(K+1) when the answer is again 1 and so on. The answer for an arbitrary N is this: find the biggest K with 2^K <= N, the answer is 1 + 2 * (N - 2^K).

There is also another alternate solution with recursion:

Answer(N) = 1 if N = 1

Answer(N) = 2 * Answer(N / 2) + 1 if N is odd

Answer(N) = 2 * Answer(N / 2) - 1 if N is even

## Statistics

**Difficulty: Hard**

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