LJESNJAK

Scan the string, counting letters. Upon encountering one of the given sequences, skip all letters in the sequence, but count it as one letter.

JABUKA

We must find numbers of children C which divide both R and G. Each of these numbers is a possible solution – we can divide the fruit among C children so that each child gets R/C red apples and G/C green apples. To do this, we find all divisors of R (there are at most 2·sqrt(R) of them) and for each of them check if it also divides G.

JAGODA

Simulating the process in the task is efficient enough as long as each of the M steps is implemented in O(sqrt(N)), which is easy to achieve.

LUBENICA

We can describe the current state in the classroom with a bitmask, where the value of each bit tells whether a child received an even or odd number of melons during the previous class.

There are 2^N of these states, or about 10^6 for N=20. With a number of classes larger than this, a state is guaranteed to repeat and, once it does, it will keep looping through the same cycle. We can calculate the number of throws in one iteration of the cycle in $O(N \cdot 2^N)$ and, with careful implementation, skip most of the iterations through the cycle.

TRESNJA

Let f(n, prefix) consider all numbers in the interval [prefix·10^n, (prefix+1)·10^n>. The function calculates the total contribution towards the result of n digits yet to be placed to the right of the given prefix.

To calculate f, we add a group of any digit other than the last one in prefix. For example, suppose n=4 and prefix=112. f(4, 112) considers the numbers 1120000 through 1129999. If we decide to append the group 55 to the number, the contribution of this recursive branch is 5^2 + f(2, 11255).

It may seem that it takes too many recursive calls to calculate the result. However, many of these yield the same result for different prefixes, more precisely when the entire interval considered is contained inside [A, B]. For these cases we can memoize the result (it depends only on n). There are only O(log B) recursive calls in which we branch without memoization.

KRUSKA

The state is described by the current position, direction and day of week. The total number of states is 200·200·4·7 = 1120000. As in the fourth task, with a large number of moves Aladdin will eventually enter a cycle and we can predict what will happen with him.