DISPLEJ

Because the sequence of N numbers repeats periodically, we can divide the number B by N and find the number displayed during minute B from the remainder. The sum we need to output can then be found by adding the K numbers displayed next.

PLATFORME

For every platform P and each of its two ends, imagine extending a pillar downwards from that end. Of all platforms below platform P, the pillar will end on the highest platform whose horizontal coordinates contain the coordinate of the end. The result is the sum of lengths of all pillars.

KUHAR

Let us first solve the following subproblem: how many dollars must we pay to buy G units of some ingredient?

This subproblem is easily solved by trying all possible numbers of large packages and calculating the number of small packages needed to achieve G units. The solution is the smallest cost over all choices for the number of large packages.

Now we can check if we have enough ingredients for S servings of the meal. For each ingredient we know how many units we need for S servings and we can calculate the cost for that many servings using the above algorithm. If we have enough money to buy all needed ingredients, then we can prepare S servings.

A solution that increments S while we can prepare S servings will score 90 points. To obtain the full score, use binary search to find the largest S such that we can prepare S servings.

JEDNAKOST

We solve the problem with dynamic programming. Consider the digits in left to right order, deciding where to place addition operators, keeping track of how much of the sum we still need to account for. The state is an ordered pair (position, remaining sum).

The smallest number of addition operations can be calculated as follows:

- For sum < 0, opt(position, remaining sum) = ∞;
- For position = N and remaining sum > 0, opt(position, remaining sum) = ∞;
- For position = N and remaining sum = 0, opt(position, remaining sum) = 0;
- Otherwise, opt(position, remaining sum) =

  $$\min\{\ \mathrm{opt}(i+1, (\text{remaining sum})-\mathrm{number}(\text{position}..i)),\ \text{for position} \le i \le N\ \},$$

  where number(A..B) is the number represented by digits A through B (inclusive).

After calculating and storing the values, the above relation can be used to reconstruct the solution. For implementation details see the official source code.