

Editorial

Spoj - Help Bob

[Problem Link](#)

Prerequisites - DP with bitmask

Explanation -

Yes.. it can be solved using DP+bitmasking.

Consider Bob takes 1 pizza, any 2 pizzas, any three pizzas or all m pizzas. We will take minimum of all these answers as our final output.

Let our recurrence relation is $f(s)$ where 's' denotes the set whose ith setbit('1' bit) indicates that ith pizza is selected by Bob.

Finally we will take minimum value of $f(s)$ where s varies from 1 to $(1 < m) - 1$.

Now our recurrence relation can be defined as :

$$f(s) = \min(f(s - \{e\}) * (\text{sum of areas of pizzas including in } s \text{ excluding } e) + \text{price}(e) * (\text{discount due to pizzas including in } s \text{ excluding } e)) / (\text{sum of areas of pizzas including in } s))$$

If you are not getting this.. just read the following lines and try to implement it yourself :P

For each possible set (total 2^m sets), exclude each set('1') bit from it one by one, after excluding that bit calculate the new (price/area) from each remaining set-bit and allocate the minimum answer for each set.

This algorithm runs in $O(n * n * 2^n)$ and will be accepted if we use fast input/output :D