

Suppose, you are considering opening a series of restaurants along the Dhaka-Cox's Bazar highway. There are n possible locations, and the distances of these locations from Dhaka are m_1, m_2, \dots, m_n (in increasing order). The constraints are as follows:

- At each location, you may open at most one restaurant. The expected profit from opening a restaurant at location i is p_i , where $p_i > 0$ and $i = 1, 2, \dots, n$.

- Any two restaurants should be at least k miles apart, where k is a positive integer.

Give an efficient algorithm to compute the maximum expected total profit subject to the given constraints. (Hint: consider the subproblems you get if you choose to open a restaurant at the i -th location and if you choose not to)

Sample I/O

$m = 5, k = 3$

Location	1	2	3	4	5
Distance from Dhaka	1	2	4	6	9
Profit	1	3	6	5	1

Output: locations: {2,4,5}, Total profit: 9

$m = 5, k = 3$

Location	1	2	3	4	5
Distance from Dhaka	1	2	4	6	9
Profit	3	3	6	5	1

Output: locations: {1,3,5}, Total profit: 10

$m = 5, k = 5$

Location	1	2	3	4	5
Distance from Dhaka	1	2	4	6	9
Profit	3	3	6	5	1

Output: locations: {1,4}, Total profit: 8