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 $m_1$, $m_2$,…, $m_n$ (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 $i = 1, 2,\ldots,n$.

• 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