Maximum K in a Window

Note: The time limit is strict, so that only algorithms with complexity O(NM) will pass.

You are given an array of N positive integers.
We define the score of a continuous subarray of length K as the sum of its top M elements.
Your task is to find the L-th minimum score.

Input
In the first line, there are 4 positive integers, N K M L.
N lines follow. The i-th of them contain the i-th element of the array.
It holds that:

- $1 \leq N \leq 10^6$
- $1 \leq K \leq N$
- $1 \leq M \leq 5$
- $1 \leq L \leq N-K+1$
- all elements are at most 2^{60}

Output
The L-th minimum score.

Example

Input

```
6 3 2 2
7
4
3
9
2
8
```

Output

```
12
```

Explanation
There are 4 different subarrays:
[7 4 3] with score 7+4 = 11.
[4 3 9] with score 4+9 = 13.
[3 9 2] with score 3+9 = 12.
[9 2 8] with score 9+8 = 17.
The second minimum is 12.