Muffin Factory (Hard)

Input file:	`standard input`
Output file:	`standard output`
Time limit:	3 seconds
Memory limit:	256 megabytes

The only difference between the easy and hard version of the problem is the size of the constraints. Please read both the problems carefully

Pr0rundhati loves to eat muffins so she decided to work at a muffin factory. Everyday she decided she will eat at most k out of the n muffins that are being produced sequentially. The size of the muffins being produced aren't necessarily the same (in fact sometimes no two muffins might have the same size), so she wants to maximise the quantity of muffins she can eat in terms of the size. The problem is that if she eats two muffins that were adjacent two one another, the factory would detect a failure and the factory would shut down, hence she can't eat 2 muffins that were produced consecutively.

Can you calculate what is the maximum total quantity of the at most k muffins she can eat?

Input

The first line contains the number of muffins $1 \leq n \leq 1000$ and $k \leq \frac{n}{2}$. This is followed by n non-negative integers a_i denoting the size of the i^{th} muffin, where $1 \leq a_i \leq 10^8$

Note: n is an even number and value of k is not necessarily $\frac{n}{2}$ now.

Output

Print a single non-negative integer d where d is the maximum total quantity of the at most k muffins she can eat.

Note: d doesn't exceed 10^{11}.

Examples

standard input	standard output
10 5 1 2 3 4 5 6 7 8 9 10	30
10 4 10 2 3 4 7 6 5 8 9 1	31