Maximum Sum

Time limit: 1.0s   **Memory limit:** 16M

Given an array of (positive) integers, find a subset with the maximal sum.
However, there is the additional restriction that no two numbers in the subset may be adjacent.

For example, for the array $4, 5, 6, 9, 10$:
$4, 6, 10$ is valid, while $5, 9, 10$ is invalid since 9 and 10 are next to each other.
$4, 6, 10$ happens to be the optimal sum in this case, so 20 is the answer.

Input Specification

An integer $1 < N \leq 100\,000$.
N lines, each with one positive integer in the sequence $\leq 1\,000$.

Output Specification

The maximum sum possible.