Problem B: Excellence

Filename: `excellence`

Time limit: `2 seconds`

The World Coding Federation is setting up a huge online programming tournament of teams comprised of pairs of programmers. Judge David is in charge of putting teams together from the South Eastern delegation. Luckily, he has an even number of students who desire to compete, so that he can make sure that each student does compete. However, he'd like to maintain his pristine reputation amongst other judges by making sure that each of the teams he fields for the competition meet some minimum total rating. We define the total rating of a team to be the sums of the ratings of both individuals on the team. Help David determine the maximal value, X, such that he can form teams, each of which have a total rating greater than or equal to X. Note that every student must be placed on exactly one team of two students.

Input

Each input will consist of a single test case. Note that your program may be run multiple times on different inputs. The first line of each test case will be a positive even integer, n ($n \leq 10^5$), representing the number of students who desire to enter the online programming tournament. The following n lines will contain one single integer, s_i ($1 \leq s_i \leq 10^6$), each, representing the rating of student i.

Output

Output a single integer on a line by itself representing the maximal value, x, such that David can form teams where every team has a total rating greater than or equal to x.

Samples

Input	Output
4 1 2 3 5	5
2 18 16	34
4 13 12 19 14	27