Problem J. Ropes

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	512 mebibytes

N persons are sleeping. They are numbered 1 through N. Snuke wants to connect them using $N - 1$ ropes!

- The two ends of each rope must be attached to two distinct persons. These two persons will be directly connected by a rope.

- All persons must be connected by ropes directly or indirectly.

- Exactly a_i ropes must be attached to the person i.

Compute the number of ways to connect the persons while satisfying all conditions above, modulo $10^9 + 7$. Two ways are considered different if there is a pair of persons which are directly connected by a rope in one of the ways but not in the other one.

Input

First line of the input contains one integer N ($2 \le N \le 10^5$). The i-th of next N lines contains one integer a_i — number of ropes which must be attached to i-th person ($1 \le a_i \le 3$).

Output

Print the answer in a single line.

Example

standard input	standard output
9 1 3 2 1 3 1 2 1 2	1260