Preparation for the Exam

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	1024 mebibytes

Based on real events.

Misha sat down to prepare for the philosophy exam. The exam will take place in t hours and will consist of n parts. In the i-th part, there are q_i questions, each of which will take one hour to prepare for. Misha will receive n questions on the exam: one random question will be independently and uniformly selected from each part. To pass the exam, he must answer all n questions correctly. Misha can strategically prepare for all t hours and learn some subset of the questions. What is the maximum probability of passing the exam that he can ensure?

Input

The first line contains two integers t and n: the remaining time until the exam and the number of parts ($1 \le t \le 10^9$; $1 \le n \le 10^5$). The next line contains n integers $q_1, \ldots, q_n$: the number of questions in each part of the exam ($1 \le q_i \le 10^9$).

Output

Let $p = k/\ell$ be the desired probability represented as an irreducible fraction. Output p as a fraction modulo $M = 10^9 + 7$ as two integers: numerator and denominator.

Formally, output any two integers x and y ($-2^{63} \le x, y \le 2^{63} - 1$) such that $x\ell - yk$ is divisible by M, but y is not divisible by M. It is guaranteed that such numbers always exist.

For example, if $0 \le k \le \ell \le 2^{63} - 1$, you can just print "$k$ ℓ".

Examples

standard input	*standard output*
1 2 2 2	0 4
3 2 2 2	2 4

Note

If you are more accustomed to problems where the answer requires finding a residue x of a rational number modulo a prime, you can simply output "x 1", and this answer will be accepted. In particular, in the second example, the answers "1 2", "-1 -2", "1000000006 -1000000009", "500000004 1", and many others will be accepted.