Problem B. Some Sum of Subset

Time limit: 2 seconds
Memory limit: 1024 megabytes

You are given a sequence of positive integers $A = (A_1, A_2, \ldots, A_N)$ of length N. For $k = 0, 1, \ldots, N$, solve the following problem.

> Find the number of subsets S of $\{1, 2, \ldots, N\}$ that satisfy the following condition, modulo 998244353.
>
> - There exists a subset T of S such that $|T| = |S| - k$ and $\sum_{i \in T} A_i \geq M$.

Constraints

- $1 \leq N \leq 3000$
- $1 \leq M \leq 3000$
- $1 \leq A_i \leq 3000$

Input

The input is given in the following format from standard input:

N M

A_1 A_2 $\ldots$ A_N

Output

Output $N + 1$ lines. In the i-th line ($1 \leq i \leq N + 1$), output the answer for $k = i - 1$.

Examples

standard input	standard output
4 7 3 1 5 2	6 4 1 0 0
1 5 7	1 0
9 18 1 9 5 6 2 7 1 4 8	346 309 230 126 46 10 1 0 0 0

Note

For the first sample case:

As an example, let's explain the case when $k = 1$.

- For $S = \{1, 3, 4\}$, if we let $T = \{3, 4\}$, then $|T| = |S| - 1$ and $\sum_{i \in T} A_i \geq 7$, so it satisfies the condition.

Other subsets satisfying the condition are $S = \{1, 2, 3\}, \{2, 3, 4\}, \{1, 2, 3, 4\}$, totaling 3 subsets. Therefore, when $k = 1$, the answer is 4.