Problem H
Count Unique Packing

Time Limit: 2 seconds

You work at the Identifiability in Container Packing Center, where you research the uniqueness of container packings.

You are given N items. Item i has a positive integer weight A_i ($1 \leq i \leq N$).

You consider packing a (nonempty) subset $S \subseteq \{1, 2, \ldots, N\}$ of the items into containers. You may use any number of nonempty containers (empty containers are not allowed). Fix a positive integer w denoting the capacity of each container. A valid packing of S is an assignment of the items in S to containers that satisfies all of the following:

Cover: Every item in S is placed in exactly one container.

Capacity: In each container, the total weight of its items is at most w.

Non-mergeability: For any two distinct containers A and B, the total weights of the items contained in A or B is strictly greater than w (i.e., no two containers can be merged into a single container without violating capacity w).

Containers are indistinguishable and items are distinct even if some have the same weight. Two packings are considered the same if and only if they induce the same partition of S; equivalently, for any distinct $i, j \in S$, items i and j are in the same box in one packing if and only if they are in the same box in the other.

For a fixed w, call a subset S *uniquely packable* if there is exactly one valid packing of S that satisfies all conditions.

You are given an integer W. Let $f(w)$ ($w = 1, 2, \ldots, W$) be the number of uniquely packable nonempty subsets for capacity w. For each $w = 1, 2, \ldots, W$, output $f(w)$ modulo 998244353. In other words, for each $w = 1, 2, \ldots, W$, define

$$f(w) \;=\; \#\{\, S \subseteq \{1, 2, \ldots, N\} \mid S \text{ is nonempty and uniquely packable for capacity } w \,\}.$$

Output W integers; for each $w = 1, 2, \ldots, W$, print $f(w)$ modulo 998244353.

Input

The input consists of a single test case of the following format.

N W
A_1 A_2 $\cdots$ A_N

The first line contains two integers N ($1 \leq N \leq 5\,000$) representing the number of items and W ($1 \leq W \leq 5\,000$) representing upper bound on the capacity parameter w (i.e., the maximum capacity to consider). The second line contains N positive integers $A_1, A_2, \ldots, A_N$ ($1 \leq A_i \leq W$). Each A_i represents the weight of the item i.

Output

Output W integers in a single line separated by spaces: for each $w = 1, 2, \ldots, W$, the w-th integer is $f(w)$ modulo 998244353 (the answer for capacity w).

Sample Input 1

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4 4
1 3 2 4
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Sample Output 1

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1 3 7 13
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Sample Input 2

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3 9
9 1 4
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Sample Output 2

```
1 1 1 3 3 3 3 3 7
```

Sample Input 3

```
2 2
2 2
```

Sample Output 3

```
0 3
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