

Priority Queue 3

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

You are given a string S of length $N + M$ consisting of $N +$ characters and $M -$ characters, and a set $A = \{A_1, A_2, \dots, A_M\}$ consisting of M integers.

Prepare two sets $X = \{\}$ and $Y = \{\}$, and perform the following operations in order for $i = 1, 2, \dots, N+M$:

- When the i -th character of S is $+$, select one integer from 1 to N that is not included in either X or Y , and add it to X .
- When the i -th character of S is $-$, remove the smallest integer m contained in X from X and add m to Y . From the constraints, it is guaranteed that X is not empty just before this operation.

There are $N!$ ways to determine the order of integers to be added to X . Among them, find the number of ways such that after performing all operations, $Y = A$. Print the answer modulo 998244353.

Input

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

```
 $N$   $M$   
 $S$   
 $A_1$   $A_2$  ...  $A_M$ 
```

- All input numbers are integers.
- $1 \leq M \leq N \leq 300$
- S is a string of length $N + M$ consisting of $N +$ characters and $M -$ characters.
- For $i = 1, 2, \dots, N + M$, the number of $-$ characters appearing up to the i -th character does not exceed the number of $+$ characters appearing up to the i -th character.
- $1 \leq A_1 < A_2 < \dots < A_M \leq N$

Output

Print the answer on a single line.

Examples

standard input	standard output
4 2 +-+-- 1 3	4
6 4 ++-+----++ 2 3 4 6	48
20 10 ++++-+++++---+---+++++---+-+-- 1 2 3 4 5 6 7 9 12 13	179396825

Note

For the first example, as an example of a sequence of operations that satisfies the conditions, the following can be considered:

- When $i = 1$, add 3 to X . Now $X = \{3\}$ and $Y = \{\}$.
- When $i = 2$, add 4 to X . Now $X = \{3, 4\}$ and $Y = \{\}$.
- When $i = 3$, remove the smallest integer 3 from X and add it to Y . Now $X = \{4\}$ and $Y = \{3\}$.
- When $i = 4$, add 2 to X . Now $X = \{2, 4\}$ and $Y = \{3\}$.
- When $i = 5$, add 1 to X . Now $X = \{1, 2, 4\}$ and $Y = \{3\}$.
- When $i = 6$, remove the smallest integer 1 from X and add it to Y . Now $X = \{2, 4\}$ and $Y = \{1, 3\}$.

For the second example, The end of S is not necessarily -.