# Problem D
## Advertising ICPC
### Time limit: 1 second

You're making a flag to try to advertise ICPC! The flag takes the form of a grid that is already filled with some "C", "I", and "P" letters. A flag is *advertising ICPC* if there exists at least one $2 \times 2$ subgrid that looks exactly like the following:

```
IC
PC
```

The flag cannot be rotated or reflected. Every square in the grid must be filled with either a "C", "I", or "P". Count the number of ways to fill the unfilled locations on the flag such that the flag is advertising ICPC.

## Input

The first line contains two integers, $n$ and $m$ $(2 \leq n, m \leq 8)$, where $n$ is the number of rows and $m$ is the number of columns in the grid.

The next $n$ lines each contains a string of length $m$. Each character in the string is either a "C", "I", "P", or "?". A "?" means that that location is not yet filled with a letter.

These $n$ lines form the grid that represents the flag.

## Output

Output a single integer, which is the number of ways to fill the flag such that it is advertising ICPC, modulo $998{,}244{,}353$.

| Sample Input 1 | Sample Output 1 |
|---|---|
| 3 3<br>???<br>?I?<br>??? | 243 |

| Sample Input 2 | Sample Output 2 |
|---|---|
| 2 2<br>IC<br>PC | 1 |

This page is intentionally left blank.