Vim War

A war has broken down between Vim and Emacs. Gedit, being Vim's ally, is captured by Emacs as a prisoner of war and it is up to Vim to rescue him by defeating Emacs.

For this task, Vim has to assemble an army of appropriate skills. He can choose a **non-empty** subset of soldiers from a set of N soldiers (numbered from 1 to N). Each soldier has some subset of skills out of M different skills (numbered from 1 to M). The skill-set of an army is the union of skill-sets of its constituent soldiers. To win the war, Vim needs to know how many different subsets of soldiers satisfy his skill-set requirement. Since the answer can be huge, print it modulo $10^9 + 7$.

Note : The chosen army's skill-set must **exactly** match the skill-set requirement of Vim (i.e no extra skills must be present in the army's skill-set than what is required).

Input Format
The first line contains N and M, the number of soldiers to choose from and the number of different skills possible respectively.
The next N lines contain M boolean characters each. If the j^{th} character of the i^{th} line is 1, then the i^{th} soldier possess the j^{th} skill and if it is 0, then not.
The last line contains M boolean characters denoting the requirement skill-set of Vim where the j^{th} character being 1 signifies that Vim wants the j^{th} skill to be present in his final army and not, otherwise.

Constraints
$1 \leq N \leq 10^5$
$1 \leq M \leq 20$

Output Format
Output in a single line the required answer, as explained above.

Sample Input

```
4 2
00
10
01
11
11
```

Sample Output

```
10
```

Explanation
Vim wants both the skills to be present in his selected army. Hence, he can choose the following subsets of soldiers:

1. $1, 2, 3, 4$
2. $1, 2, 4$
3. $1, 3, 4$
4. $2, 3, 4$

5. $1, 4$
6. $2, 4$
7. $3, 4$
8. 4
9. $1, 2, 3$
10. $2, 3$