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.

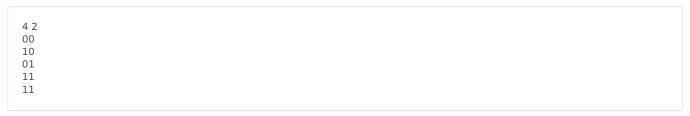
Constraints

 $1 \le N \le 10^5$ $1 \le M \le 20$

Output Format

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

Sample Input



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