

7748 Bipartite Blanket

In a *bipartite graph*, nodes are partitioned into two disjoint sets A and B such that every edge connects a node from A with a node from B . A *matching* M is a set of edges where no two edges share a common node. We say that a matching M *blankets* a set of nodes V if every node in V is an endpoint of at least one edge in M .

We are given a bipartite graph where each node is assigned a *weight* — a positive integer. Weight of a set of nodes is simply the sum of the weights of the individual nodes.

Given an integer threshold t , find the number of different sets of nodes V such that the weight of V is at least t and V is blanketed by at least one matching M .

Input

The input file contains several test cases, each of them as described below.

The first line contains two integers n and m ($1 \leq n, m \leq 20$) — the number of nodes in A and B respectively. Let us denote the nodes of A with a_1, a_2, \dots, a_n and the nodes of B with b_1, b_2, \dots, b_m .

The following n lines contain m characters each that describe the edges of the graph. The j -th character in the i -th line is '1' if there is an edge between a_i and b_j and '0' otherwise.

The following line contains n integers v_1, v_2, \dots, v_n ($1 \leq v_k \leq 10000000$) — the weights of the nodes a_1, a_2, \dots, a_n . The following line contains m integers w_1, w_2, \dots, w_m ($1 \leq w_k \leq 10000000$) — the weights of the nodes b_1, b_2, \dots, b_m .

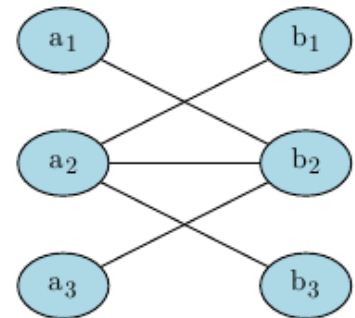
The following line contains an integer t ($1 \leq t \leq 400000000$) — the weight threshold.

Output

For each test case, output on a line by itself, the number of sets of nodes whose weight is at least t and are blanketed by at least one matching M .

Note for the Sample:

In the first example below, subset $\{a_1, a_2, b_2, b_3\}$ is blanketed by matching $\{(a_1, b_2), (a_2, b_3)\}$ and has weight 21. Subsets $\{a_3, b_2, b_3\}$ and $\{a_2, a_3, b_2, b_3\}$ are both blanketed by matching $\{(a_2, b_3), (a_3, b_2)\}$, and have weights 21 and 23 respectively. All the other subsets either weigh less than 21 or are not blanketed by any matching. For example, subset $\{a_2, a_3, b_1, b_3\}$ has weight 26, but is not blanketed by any matching, so it's not included in the count.



Sample Input

```
3 3
010
111
010
1 2 3
8 5 13
21
3 2
01
```

11
10
1 2 3
4 5
8

Sample Output

3
13