Problem G. Good Graphs

Input file:	good.in
Output file:	good.out
Time limit:	2 seconds
Memory limit:	256 megabytes

Alex defined *good graphs*:

- Single vertex is a *good graph*.
- If two *good graphs* have no common vertex then their union is a *good graph*.
- If G is a *good graph* then $\overline{G}$ (complement of G) is a *good graph*.

Try to solve the problem of finding maximal weighted clique in a *good graph*.

Input

The first line of contains the integer N ($1 \le N \le 500$) — number of vertices in the *good graph* G.

The next N lines contain adjacency matrix of G.

Each of last N lines contains the integer w_i ($1 \le w_i \le 1000$) — the weight of ith vertex.

Output

In the single line of the output file print the maximal weight of clique of graph G.

Example

good.in	good.out
4 0000 0011 0101 0110 100 1 2 3	100