

B. Marcin and Training Camp

time limit per test: 3 seconds

memory limit per test: 256 megabytes

input: standard input

output: standard output

Marcin is a coach in his university. There are n students who want to attend a training camp. Marcin is a smart coach, so he wants to send only the students that can work calmly with each other.

Let's focus on the students. They are indexed with integers from 1 to n . Each of them can be described with two integers a_i and b_i ; b_i is equal to the skill level of the i -th student (the higher, the better). Also, there are 60 known algorithms, which are numbered with integers from 0 to 59. If the i -th student knows the j -th algorithm, then the j -th bit (2^j) is set in the binary representation of a_i . Otherwise, this bit is not set.

Student x thinks that he is better than student y if and only if x knows some algorithm which y doesn't know. Note that two students can think that they are better than each other. A group of students can work together calmly if no student in this group thinks that he is better than everyone else in this group.

Marcin wants to send a group of at least two students which will work together calmly and will have the maximum possible sum of the skill levels. What is this sum?

Input

The first line contains one integer n ($1 \leq n \leq 7000$) — the number of students interested in the camp.

The second line contains n integers. The i -th of them is a_i ($0 \leq a_i < 2^{60}$).

The third line contains n integers. The i -th of them is b_i ($1 \leq b_i \leq 10^9$).

Output

Output one integer which denotes the maximum sum of b_i over the students in a group of students which can work together calmly. If no group of at least two students can work together calmly, print 0.

Examples

input	Copy
4 3 2 3 6 2 8 5 10	
output	Copy
15	

input	Copy
3 1 2 3 1 2 3	
output	Copy
0	

input	Copy
1 0 1	
output	Copy
0	

Dasha Code Championship - SPb Finals Round (only for onsite-finalists)

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Practice

You are registered for practice. You can solve problems unofficially. Results can be found in the contest status and in the bottom of standings.

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++11 5.1.0

Choose file: 未选择任何文件

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.

Submit

→ Problem tags

brute force greedy

No tag edit access

Note

In the first sample test, it's optimal to send the first, the second and the third student to the camp. It's also possible to send only the first and the third student, but they'd have a lower sum of b_i .

In the second test, in each group of at least two students someone will always think that he is better than everyone else in the subset.

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