April Fools Day Contest 2016

A. Da Vinci Powers

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

Input
The input contains a single integer a ($0 \le a \le 35$).

Output
Output a single integer.

Examples

input
3
output
8

input
10
output
1024

B. Scrambled

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

Btoh yuo adn yuor roomatme lhoate wianshg disehs, btu stlil sdmoeboy msut peorrfm tihs cohre dialy. Oen dya yuo decdie to idourtcne smoe syestm. Yuor rmmotaoe sstgegus teh fooniwllg dael. Yuo argee on tow arayrs of ientgres M adn R, nmebur upmicnog dyas (induiclng teh cunrret oen) wtih sicsescuve irnegets (teh ceurrnt dya is zreo), adn yuo wsah teh diehss on dya D if adn olny if terhe etsixs an iednx i scuh taht $D \bmod M[i] = R[i]$, otwsehrie yuor rmootmae deos it. Yuo lkie teh cncepot, btu yuor rmotaome's cuinnng simle meaks yuo ssecupt sthnoemig, so yuo itennd to vefriy teh fnerisas of teh aemnrgeet.

Yuo aer geivn ayarrs M adn R. Cuaclatle teh pceanregte of dyas on wchih yuo edn up dnoig teh wisahng. Amsuse taht yuo hvae iiiftlneny mnay dyas aehad of yuo.

Input

The first line of input contains a single integer N ($1 \le N \le 16$).

The second and third lines of input contain N integers each, all between 0 and 16, inclusive, and represent arrays M and R, respectively. All $M[i]$ are positive, for each i $R[i] < M[i]$.

Output

Output a single real number. The answer is considered to be correct if its absolute or relative error does not exceed 10^{-4}.

Examples

input
1 2 0
output
0.500000

input
2 2 3 1 0
output
0.666667

C. Without Text

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

You can preview the image in better quality by the link: http://assets.codeforces.com/files/656/without-text.png

Input

The only line of the input is a string (between 1 and 50 characters long, inclusive). Each character will be an alphanumeric character or a full stop ".".

Output

Output the required answer.

Examples

input
Codeforces
output
-87

input
APRIL.1st
output
17

D. Rosetta Problem

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

++++++++[>+>++>+++>++++>+++++>++++++>+++++++>++++++++>+++++++++>++++++++++>+
++++++++++>++++++++++++>++++++++++++>++++++++++++++>++++++++++++++++>+++++++
++++++++<<<<<<<<<<<<<<<<-]>>>>>>>>>>.<<<<<<<<<<>>>>>>>>>>>>>>>++.--<<<<<<<<<
<<<<<>>>>>>>>>>>>>>>>+.-<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>--.++<<<<<<<<<<<<<<<>>>>>>>>>
>>>>>>----.++++<<<<<<<<<<<<<<<<<>>>>.<<<<>>>>>>>>>>>>>>>>--.++<<<<<<<<<<<<<<<>>>>
>>>>>>>>>>>---.+++<<<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>>---.+++<<<<<<<<<<<<<<<>>>>>>>
>>>>++.--<<<<<<<<<<<<>>>>>>>>>>>>>>---.+++<<<<<<<<<<<<<<<>>>>>>>>>>>>>>>++.--<<<
<<<<<<<<<<.

DCBA:^!~}|{zyxwvutsrqponmlkjihgfedcba`_^]\[ZYXWVUTSRQPONMLKJIHdcbD`Y^]\UZYRv
9876543210/.-,+*)('&%$#"!~}|{zyxwvutsrqponm+*)('&%$#cya`=^]\[ZYXWVUTSRQPONML
KJfe^cba`_X]VzTYRv98TSRQ3ONMLEi,+*)('&%$#"!~}|{zyxwvutsrqponmlkjihgfedcba`_^
]\[ZYXWVUTSonPlkjchg`ed]#DCBA@?>=<;:9876543OHGLKDIHGFE>b%$#"!~}|{zyxwvutsrqp
onmlkjihgfedcba`_^]\[ZYXWVUTSRQPONMibafedcba`_X|?>Z<XWVUTSRKo\

v34*8+6+,78+9*3+,93+9*5+,28+9*1+,55+9*4+,23*6*2*,91,@,+7*9*25,*48,+3*9+38,+<
>62*9*2+,34*9*3+,66+9*8+,52*9*7+,75+9*8+,92+9*6+,48+9*3+,43*9*2+,84*,26*9*3^

Input

The input contains a single integer a ($0 \le a \le 1\,000\,000$).

Output

Output a single integer.

Example

input
129
output
1

E. Out of Controls

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

You are given a complete undirected graph. For each pair of vertices you are given the length of the edge that connects them. Find the shortest paths between each pair of vertices in the graph and return the length of the longest of them.

Input

The first line of the input contains a single integer N ($3 \le N \le 10$).

The following N lines each contain N space-separated integers. jth integer in ith line a_{ij} is the length of the edge that connects vertices i and j. $a_{ij} = a_{ji}$, $a_{ii} = 0$, $1 \le a_{ij} \le 100$ for $i \ne j$.

Output

Output the maximum length of the shortest path between any pair of vertices in the graph.

Examples

input
3 0 1 1 1 0 4 1 4 0
output
2

input
4 0 1 2 3 1 0 4 5 2 4 0 6 3 5 6 0
output
5

Note

You're running short of keywords, so you can't use some of them:

define
do
for
foreach
while
repeat
until
if
then
else
elif
elsif
elseif
case
switch

F. Ace It!

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

Input

The only line of the input is a string of 7 characters. The first character is letter A, followed by 6 digits. The input is guaranteed to be valid (for certain definition of "valid").

Output

Output a single integer.

Examples

input
A221033
output
21

input
A223635
output
22

input
A232726
output
23

G. You're a Professional

time limit per test: 2 seconds
memory limit per test: 64 megabytes
input: standard input
output: standard output

A simple recommendation system would recommend a user things liked by a certain number of their friends. In this problem you will implement part of such a system.

You are given user's friends' opinions about a list of items. You are also given a threshold T — the minimal number of "likes" necessary for an item to be recommended to the user.

Output the number of items in the list liked by at least T of user's friends.

Input

The first line of the input will contain three space-separated integers: the number of friends F ($1 \le F \le 10$), the number of items I ($1 \le I \le 10$) and the threshold T ($1 \le T \le F$).

The following F lines of input contain user's friends' opinions. j-th character of i-th line is 'Y' if i-th friend likes j-th item, and 'N' otherwise.

Output

Output an integer — the number of items liked by at least T of user's friends.

Examples

input
3 3 2 YYY NNN YNY
output
2

input
4 4 1 NNNY NNYN NYNN YNNN
output
4