April Fools Day Contest 2020

A. Is it rated?

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

B. Limericks

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

There was once young lass called Mary,
Whose jokes were occasionally scary.
On this April's Fool
Fixed limerick rules
Allowed her to trip the unwary.

Can she fill all the lines
To work at all times?
On juggling the words
Right around two-thirds
She nearly ran out of rhymes.

Input
The input contains a single integer a ($4 \le a \le 998$). Not every integer in the range is a valid input for the problem; you are guaranteed that the input will be a valid integer.

Output
Output a single number.

Examples

input
35
output
57

input
57
output
319

input
391
output
1723

C. ...And after happily lived ever they

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Input
The input contains a single integer a ($0 \le a \le 63$).

Output
Output a single number.

Examples

input
2
output
2

input
5
output
24

input
35
output
50

D. Again?

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

Input

The only line of the input contains a 7-digit hexadecimal number. The first "digit" of the number is letter A, the rest of the "digits" are decimal digits 0-9.

Output

Output a single integer.

Examples

input
A278832
output
0

input
A089956
output
0

input
A089957
output
1

input
A144045
output
1

E. Jordan Smiley

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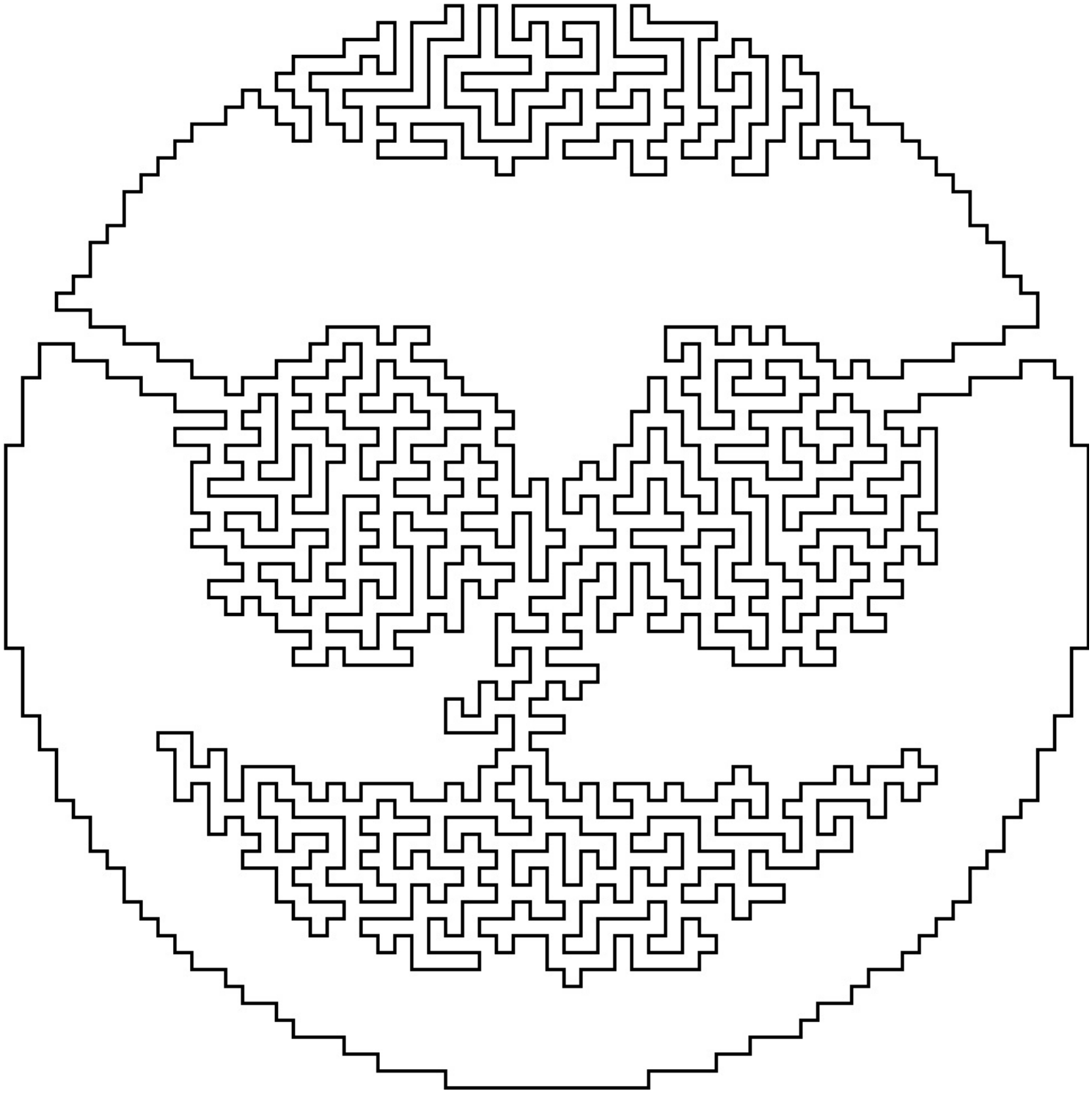

Input

The input contains two integers row, col ($0 \leq row, col \leq 63$), separated by a single space.

Output

Output "IN" or "OUT".

Examples

input
0 0
output
OUT

input
27 0
output
IN

input
0 27
output

OUT

input
27 27
output
IN

F. Elementary!

time limit per test: 1 second
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input: standard input
output: standard output

Input
The input consists of a single string of uppercase letters A-Z. The length of the string is between 1 and 10 characters, inclusive.

Output
Output "YES" or "NO".

Examples

input
GENIUS
output
YES

input
DOCTOR
output
NO

input
IRENE
output
YES

input
MARY
output
NO

input
SMARTPHONE
output
NO

input
REVOLVER
output
YES

input
HOLMES
output
NO

input
WATSON
output
YES

G. Lingua Romana

time limit per test: 1 second
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input: standard input
output: standard output

```
per nextum in unam tum XI conscribementis fac sic
   vestibulo perlegementum da varo.
   morde varo.
   seqis cumula varum.
cis

per nextum in unam tum XI conscribementis fac sic
   seqis decumulamenta da varo.
   varum privamentum fodementum da aresulto.
   varum tum III elevamentum tum V multiplicamentum da bresulto.
   aresultum tum bresultum addementum da resulto.

   si CD tum resultum non praestantiam fac sic
      dictum sic f(%d) = %.2f cis tum varum tum resultum egresso describe.
      novumversum egresso scribe.
   cis
   si CD tum resultum praestantiam fac sic
      dictum sic f(%d) = MAGNA NIMIS! cis tum varum egresso describe.
      novumversum egresso scribe.
   cis
cis
```

Input
The input consists of several integers, one per line. Each integer is between -50 and 50, inclusive.

Output
As described in the problem statement.

Example

input
0 1 -2 -3 -4 -5 -6 -7 -8 -9 10
output
f(10) = MAGNA NIMIS! f(-9) = -3642.00 f(-8) = -2557.17 f(-7) = -1712.35 f(-6) = -1077.55 f(-5) = -622.76 f(-4) = -318.00 f(-3) = -133.27 f(-2) = -38.59 f(1) = 6.00 f(0) = 0.00

H. It's showtime

time limit per test: 1 second
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given a mysterious language (codenamed "UnknownX") available in "Custom Test" tab. Find out what this language is, and use it to solve the following problem.

You are given an integer $input = 1000 * n + mod$ ($1 \le n, mod \le 999$). Calculate double factorial of n modulo mod.

Input
The input contains a single integer $input$ ($1001 \le input \le 999999$). You are guaranteed that $input \mod 1000 \neq 0$.

Output
Output a single number.

Examples

input
6100
output
48

input
9900
output
45

input
100002
output
0

input
123456
output
171

Note

In the first test case you need to calculate $6!! \mod 100$; $6!! = 6 * 4 * 2 = 48$.

In the second test case you need to calculate $9!! \mod 900$; $9!! = 9 * 7 * 5 * 3 = 945$.

In the third test case you need to calculate $100!! \mod 2$; you can notice that $100!!$ is a multiple of 100 and thus is divisible by 2.

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