

Message from the Past

Input file: **standard input**
Output file: **standard output**
Time limit: 2 seconds
Memory limit: 1024 megabytes

This is a communication problem.

Dear friends, welcome to Shenyang! As the problem setters, along with the entire staff, we are deeply honored to have all of you here to enjoy a well-prepared event and witness the 11-th consecutive year since Northeastern University (NEU) started organizing the ICPC Shenyang Regional Contest.



The Lovely Northeastern University

Northeastern University (NEU) was founded on April 26, 1923. In its history of over 90 years, the university has formed its unique spirit: “Striving constantly for improvement and behaving in conformity with truth”. It has gained a number of high-level scientific research achievements, such as the first analog computer, the first domestically produced CT, the first piece of super steel, the new technology of smelting vanadium titanium magnetite, the energy-saving theory and technology of steel industry, the controlled rolling and controlled cooling technique, and the mixed intelligent optimization control technology. By establishing the first university science park in China, it has established a series of high-tech enterprises, such as the Neusoft Corporation and the Neunn Technology Inc., and formed its unique characteristics in the areas of technological innovation, technological transfer and industry-university cooperation.

The university is situated in Shenyang, the central city of the Northeastern China, and it also has a campus in Qinhuangdao City, Hebei Province. The university occupies a total area of 2,550,000 square meters, of which the architectural area amounts to 1,680,000 square meters. It has 4,538 faculty members, among whom 2,711 are full-time teachers. The university has 5 academicians of the Chinese Academy of Engineering, 4 foreign academicians, 18 scholars who are selected into “National High-level Personnel of Special Support Program”, 23 winners of “The National Science Fund for Distinguished Young Scholars”, 16 winners of the “Joint Research Fund for Overseas Chinese Scholars and Scholars in Hong Kong and Macao”, 102 who are selected into the “New Century Excellent Talents Support Project”, and 14 who are selected into “the National Outstanding Talents Project”. The university has 4 innovation groups of the National Natural Science Foundation and 3 innovation teams of the Ministry of Education. It has more than 100 research institutes including 3 national key laboratories, 4 national engineering (technology)

research centers and 3 national engineering laboratories. Besides, it has 2 national collaborative innovation centers and 3 collaborative innovation centers of Liaoning province.

You may view the website [About NEU-Northeastern University](#) for more related information.

Little Q reaches a year between 1923 and 2024 via a time machine to visit NEU in history. He has found out which year he has reached and writes down a 01-string of length 8 on a note.

As Little Q's best friend, you will find the note he left in the past in modern times. However, if the note is flipped over, the recorded 01-string will also be reversed, making it uncertain whether the 01-string should be read from left to right or from right to left.

To avoid confusion, you need to agree on a method of encoding and decoding the message with Little Q before he sets off, so that you can always determine the year Little Q has reached based on the note he left in the past.

On each test, your program will be **run twice**: first for writing a note, and then for reading it. The output of the first run (with possible changes) will be the input of the second run.

Your solution passes a test if you managed to determine the year Little Q has reached based on the note he left in the past.

Input

If Little Q needs to write a note, the first line contains the word “**write**”, and the second line contains an integer y ($1923 \leq y \leq 2024$), indicating the year he has reached.

If you need to read the note, the first line contains the word “**read**”, and the second line contains a 01-string of length 8, indicating the message on the note you find in modern times. It is guaranteed that the 01-string is the same as Little Q has written on the note, or in the reverse order.

Output

In the case of writing a note, output a line containing a 01-string of length 8, indicating the message on the note.

In the case of reading the note, output a line containing an integer, indicating the year Little Q has reached.

Example

standard input	standard output
write 1923	00001111
read 11110000	1923

Note

The example shows two runs of a certain solution on the sample test case.