# Creating Palindromes

While adventuring for treasure, you and a colleague stumble upon an ancient safe with a surprisingly complex security system. "This safe must contain the most wonderful treasure!", you exclaim. "Let's figure out how to open it!". The safe contains a row of dials, each of which is circular and can be rotated to one of ten digits (0-9). The safe also contains a cryptic clue:
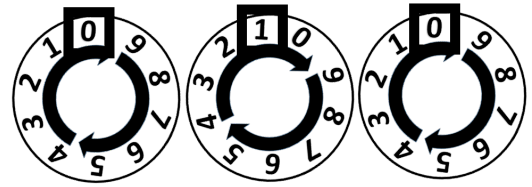
Turn these wheels right to uncover the treasures. Just to the right, and do it just right, so the numbers read forwards and backwards. Beware of the overflow, which doesn't feel right, it flows not to the right.

After thinking careful about this clue, you discover the solution! You've deciphered the text in the following way:

1. *so the numbers read forwards and backwards* must mean that the final combination is a palindrome: a number that reads the same forwards and backwards.

2. *Just to the right...* means that the wheels can only be turned to the right (increasing the number on a dial OR wrapping from 9 to 0), not to the left.

3. *do it just right* means that you must make a palindrome by turning wheels the minimum number of total times (one increase in value equals one "action").

4. This last part is a bit tough, but you figure out that *beware of the overflow, which doesn't feel right, it flows not to the right.* means that when a wheel increases from 9 and wraps to 0, it will automatically increase the wheel to its left by 1, but only counts as one total action.

With this in mind, you realize that to get the treasure, you must turn the wheels using a minimum number of actions and turn the current number sequence into a palindrome. Can you figure out how to do it?

HINT

Warning: This is a VERY difficult problem. Be aware that this one is going to require some planning, and thinking through edge cases, as well as some clever memoization. Consider the following hints:

1. Consider working outside-in. If you can get the two outside numbers to match, you can then recurse on the inside dial.

2. Think about how you are going to model the overflow from one dial to another. One option is to use parameters to a recursive function to force it. One parameter (*overflowIn*) is true iff there is overflow coming into the recursive call (so you are forced to turn your rightmost dial). A second (*overflowOut*) is true iff the recursive call is REQUIRED to wrap the left most dial to produce overflow to the outer solution.

3. Once you have the items above, think about the combinations of *overflowIn* and *overflowOut* and try each one. Take the option that leads to the best overall answer.

4. Good luck!!

Input

The input will consist of a single line containing an integer of 1 to 40 digits. The number of digits in the input is the number of wheels on the safe. Numbers might contain leading zeros.

Output

Print a single line of output containing the minimum number of wheel actions required to produce a palindrome and access the treasure!

Sample Input	Sample Output
29998	5