CS3201 ALGORITHM DESIGN TERM PROJECT

Instructed by Asst. Prof. Dr. Thitipong Tanprasert

1123 Salary| Difficulty: 119

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Question

All employees of SKB Kontur like to get their salaries. Often and in large quantities. But the company management is of a bit different opinion and pays out strictly once a month. After some consultations the employees decided that if one of the parameters (frequency of payment) was fixed it was possible to change the second parameter (amount of the money paid out). They contrived the following scheme. A group of employees who proudly call themselves mathematics and mechanics faculty graduates visits the management and using their mathematical authority claims that the computers in the company's accounts department will work more efficiently if salaries of all the employees take the form of palindromes. As you know, a numerical palindrome is a number that does not change when you read it from right to left. For example, 12344544321 is a palindrome and 12345543210 is not. Of course, the management had to agree with this proposal, but upon one condition: each employee had to re-count his or her salary so that the salary took the form of the least possible palindrome that is greater than or equal to the original salary. You are asked to help the employees of SKB Kontur.

Input

consists of one string containing the original salary of an employee. The string is not longer than 2001 symbols.

Output

should consist of one string containing the new salary calculated according to the above rules.

Sample

Input	Output
940	949
5820	5885
505752	506625
21	22

Concept

For example

Ex.1
Given Salary = “123112”

Separate it into two substrings. first substring = 123 and last substring = 112
Check that if last digit of first substring (3) more than first digit of last substring (1)
Print first substring(123) and reverse first substring(321)

Ex.2
Given Salary = “123425”

first substring = 123 and last substring = 425

If last digit of first substring (3) less than first digit of last substring (4)
add 1 to the first substring. So it will be 124
Print first substring (124) and reverse first substring(421)

Full code

Code

```
2
3   salary = str(input())
4   n = len(salary)/2
5
6   #Check all digits are the same or not
7   def check(x)->bool:
8       for i in range(0, len(x)):
9           if x[i] != x[0]:
10              return False
11      return True
12
13  if check(salary) == False:
14      #if number of digit is even
15      if n % int(n) == 0:
16          n = int(n)
17
18          #Seperate to two substring
19          s = [salary[i:i+n] for i in range(0, len(salary), n)]
20
21          f, l = int(s[0]), int(s[1])
22
23          #salary 2digit
24          if n == 1 :
25              if f < l:
26                  f += 1
27
28              print(str(f) + str(f))
29          else:
30              if f%10 <= int(str(l)[:1]):
31                  f += 1
32
33              #reverse and join the string
34              r = reversed(str(f))
35              j = ''.join(map(str, r))
36
37              print(str(f) + j)
38      else:
```

Input 12
Output 22

Input 21
Output 22

Input 2012
Output 2002

Input 2621
Output 2662

Code

```
37                print(str(f) + j)
38            else:
39                #if number of digit is odd
40                n = int(n+0.5)
41
42                #Seperate to two substring
43                s = [salary[i:i+n] for i in range(0, len(salary), n)]
44
45                f, l, fl, lf = int(s[0]), int(s[1]), int(s[0][-2]), int(s[1][0])
46
47                #salary 3digit
48                if n == 2:
49                    if f//10 < l%10 :
50                        f += 1
51
52                    print(str(f) + str(f//10))
53                else:
54                    if fl <= lf:
55                        f += 1
56
57                    #reverse and join the string
58                    r = reversed(str(f))
59                    j = ''.join(map(str, r))
60
61                    print(str(f) + j[1:])
62        else:
63            print(salary)
64
```

Input 123
Output 131

Input 413
Output 414

Input 84732
Output 84748

Input 14524
Output 14541

Approval

ID	Date	Author	Problem	Language	Judgement result	Test #	Execution time	Memory used
9260056	20:51:18 9 Mar 2021	greatkub	1123. Salary	Python 3.8 x64	Accepted		0.078	480 KB

Thank you