BIS 420 PROGRAMMING FOR DATA SCIENCE

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CHAPTER 9 EXERCISE 9.8
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Here's another Car Talk Puzzler (http: // www. cartalk. com/ content/puzzlers):

"I was driving on the highway the other day and I happened to notice my odometer. Like most odometers, it shows six digits, in whole miles only. So, if my car had 300,000 miles, for example, I'd see 3-0-0-0-0-0. "Now, what I saw that day was very interesting. I noticed that the last 4 digits were palindromic; that is, they read the same forward as backward. For example, 5-4-4-5 is a palindrome, so my odometer could have read 3-1-5-4-4-5. "One mile later, the last 5 numbers were palindromic. For example, it could have read 3-6-5-4-5-6. One mile after that, the middle 4 out of 6 numbers were palindromic. And you ready for this? One mile later, all 6 were palindromic! "The question is, what was on the odometer when I first looked?"

Write a Python program that tests all the six-digit numbers and prints any numbers that satisfy these requirements. Solution: http: // thinkpython. com/ code/ cartalk2. py.

```
def is_palindrome(s):
    return s == s[::-1]


def find_readings():
    for num in range(100000, 1000000):
        s = str(num)
        if is_palindrome(s[2:]):
```

```
        if is_palindrome(str(num + 1)[1:]):
            if is_palindrome(str(num + 2)[1:5]):
                if is_palindrome(str(num + 3)):
                    print(f"The odometer reading when first looked was: {num}")

find_readings()
```