BIS 420 PROGRAMMING FOR DATA SCIENCE

PRAJAKTA POHARE
CHAPTER 9 EXERCISE 9.9
ILLINOIS STATE UNIVERSITY

Here's another Car Talk Puzzler you can solve with a search (http: // www.cartalk. com/ content/ puzzlers):

"Recently I had a visit with my mom and we realized that the two digits that make up my age when reversed resulted in her age. For example, if she's 73, I'm 37. We wondered how often this has happened over the years but we got sidetracked with other topics and we never came up with an answer.

"When I got home I figured out that the digits of our ages have been reversible six times so far. I also figured out that if we're lucky it would happen again in a few years, and if we're really lucky it would happen one more time after that. In other words, it would have happened 8 times over all. So the question is, how old am I now?"

Write a Python program that searches for solutions to this Puzzler. Hint: you might find the string method zfill useful.

Solution: http: // thinkpython. com/ code/ cartalk3. py .

```
def pad_number(i, n):
    return str(i).zfill(n)


def is_reversed(i, j):
    return pad_number(i, 2) == pad_number(j, 2)[::-1]


def count_palindromic_ages(diff, flag=False):
```

```
    daughter_age = 0
    count = 0
    while True:
        mother_age = daughter_age + diff
        if is_reversed(daughter_age, mother_age) or is_reversed(daughter_age,
mother_age + 1):
            count += 1
            if flag:
                print(daughter_age, mother_age)
        if mother_age > 120:
            break
        daughter_age += 1
    return count


def find_age_differences():
    diff = 10
    while diff < 70:
        n = count_palindromic_ages(diff)
        if n > 0:
            print(diff, n)
        diff += 1


print('diff  #instances')
find_age_differences()
```

print()

print('daughter mother')

count_palindromic_ages(18, True)