

BIS 420 PROGRAMMING FOR DATA SCIENCE
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CHAPTER 10 EXERCISE 11.10
ILLINOIS STATE UNIVERSITY

Two words are “rotate pairs” if you can rotate one of them and get the other (see rotate_word in Exercise 8.12). Write a program that reads a wordlist and finds all the rotate pairs. Solution: http://thinkpython.com/code/rotate_pairs.py.

```
from __future__ import print_function, division
```

```
def rotate_letter(letter, shift):
```

```
    if letter.islower():
```

```
        start = ord('a')
```

```
    elif letter.isupper():
```

```
        start = ord('A')
```

```
    else:
```

```
        return letter
```

```
    return chr(start + (ord(letter) - start + shift) % 26)
```

```
def rotate_word(word, shift):
```

```
    return ''.join(rotate_letter(c, shift) for c in word)
```

```
def find_rotate_pairs(word_list):
```

```
    rotate_pairs = []
```

```
    word_set = set(word_list)
```

```
for word in word_list:
    for shift in range(1, 26):
        rotated = rotate_word(word, shift)
        if rotated in word_set:
            rotate_pairs.append((word, rotated))
```

```
return rotate_pairs
```

```
if __name__ == '__main__':
```

```
    with open('/Users/prajaktapohare/Library/CloudStorage/OneDrive-ILStateUniversity/BIS420/Week 11/words.txt') as f:
```

```
        word_list = [line.strip() for line in f]
```

```
pairs = find_rotate_pairs(word_list)
```

```
for pair in pairs:
```

```
    print(pair)
```

Users > prajaktapohare > Library > CloudStorage > OneDrive-ILStateUniversity > BIS420 > Week 11 > BIS420_PrajaktaPohare_Ch11_11.10.py > find_rotate_pairs

```
1  from __future__ import print_function, division
2
3  def rotate_letter(letter, shift):
4      if letter.islower():
5          start = ord('a')
6      elif letter.isupper():
7          start = ord('A')
8      else:
9          return letter
10     return chr(start + (ord(letter) - start + shift) % 26)
11
12 def rotate_word(word, shift):
13     return ''.join(rotate_letter(c, shift) for c in word)
14
15 def find_rotate_pairs(word_list):
16     rotate_pairs = []
17     word_set = set(word_list)
18
19     for word in word_list:
20         for shift in range(1, 26):
21             rotated = rotate_word(word, shift)
22             if rotated in word_set:
23                 rotate_pairs.append((word, rotated))
24
25     return rotate_pairs
26
27 if __name__ == '__main__':
28     with open('/Users/prajaktapohare/Library/CloudStorage/OneDrive-ILStateUniversity/BIS420/Week 11/words.txt') as f:
29         word_list = [line.strip() for line in f]
30
31     pairs = find_rotate_pairs(word_list)
32     for pair in pairs:
33         print(pair)
```