实验五 文件的输入输出

1. 对文本文件的输入输出,分别完成测试 open() 的只读 r ,写入 w ,附加 a 选项的输入输出操作.

```python
from importlib.resources import contents


filename = 'programing.txt'

# r: read只读模式;
# w: write写入模式;
# a: append附加模式; 不会覆盖原有内容

with open(filename,'w') as file_object:
    file_object.write("I Love Programing.\n")
    file_object.write("I love creating new games.\n")

with open(filename,'a') as file_object:
    file_object.write("I also love findings meaning in large datasets.\n")
    file_object.write("I LOVE creating apps that can run in a browser.\n")

with open(filename,'r') as file_object:
    contents = file_object.read()

print(contents.rstrip())
```

- 实验输出

```
programing.txt
1   I Love Programing.
2   I love creating new games.
3
```

```
I Love Programing.
I love creating new games.
I also love findings meaning in large datasets.
I LOVE creating apps that can run in a browser.
```

2. 使用 json 文件和 matplotlib 库完成对三次函数的绘制

```python
from fileinput import filename
import json
import numbers

import matplotlib.pyplot as plt
import numpy as np


filename  = "coefficient.json"

num = [4 , 3 , 9 , 6]
with open(filename,'w') as f:
    json.dump(num,f)

numbers = [4 , 3 , 9 , 6]
# Data for plotting
t = np.arange(-10, 10, 0.1)
x = 1
for i in numbers:
    if(i==numbers[0]):
        x *= i
    else:
        x *= t
        x += i

fig, ax = plt.subplots()
ax.plot(t, x)

ax.set(xlabel='time (s)', ylabel='voltage (mV)',
    title='About as simple as it gets, folks')
ax.grid()

fig.savefig("test.png")
plt.show()
```
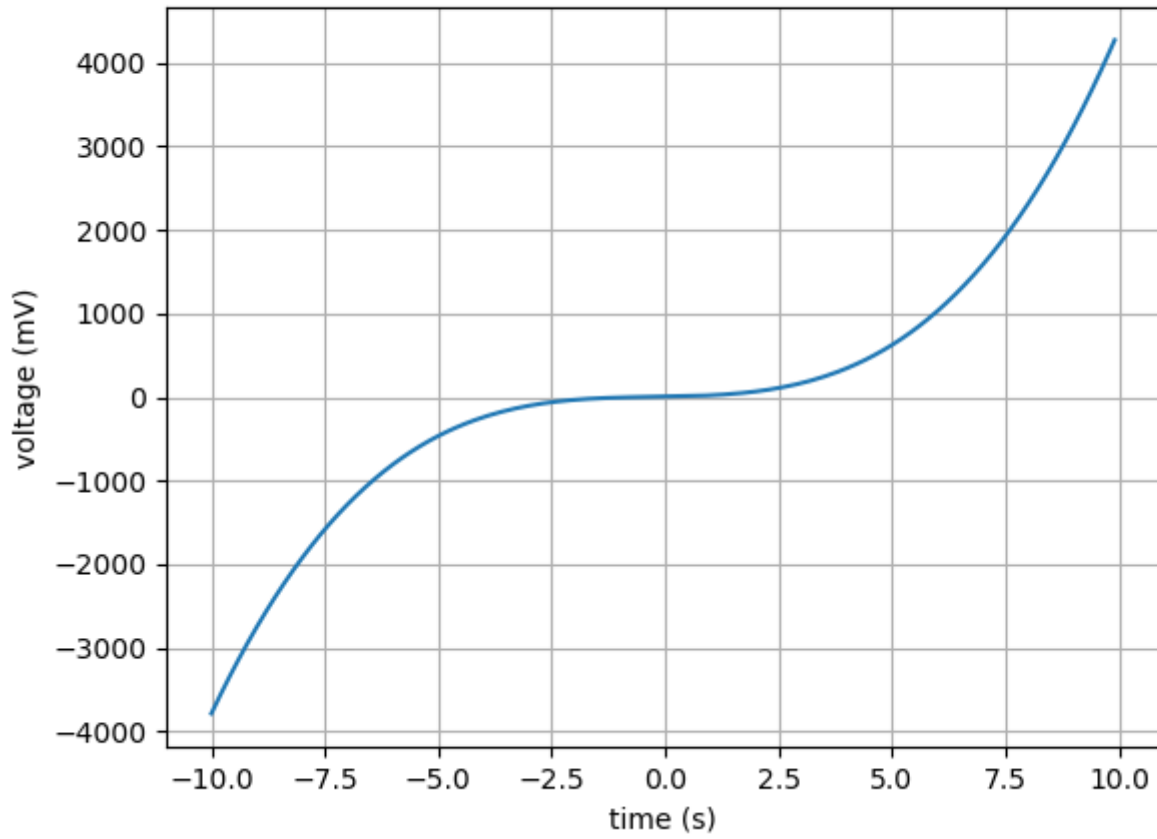
```python
from importlib.resources import contents
import json


def text_create():
    filename = 'programing.txt'

    # r: read只读模式;
    # w: write写入模式;
    # a: append附加模式; 不会覆盖原有内容

    with open(filename,'w') as file_object:
        file_object.write("I Love Programing.\n")
        file_object.write("I love creating new games.\n")

    with open(filename,'a') as file_object:
        file_object.write("I also love findings meaning in large datasets.\n")
        file_object.write("I LOVE creating apps that can run in a browser.\n")

    with open(filename,'r') as file_object:
        contents = file_object.read()

    return contents

def letter_count(file):
    hash = {'A':0,'B':0,'C':0,'D':0,'E':0,'F':0,'G':0,'H':0,'I':0,'J':0,'K':0,'L':0,
        'M':0,'N':0,'O':0,'P':0,'Q':0,'R':0,'S':0,'T':0,'U':0,'V':0,'W':0,'X':0,
        'Y':0,'Z':0}
    sum = 0
    for line in file:
        for i in line:
            hash[i] += 1
            sum += 1

    for n in hash.values():
        n = (n / sum).float()

    return hash

filename = 'output.json'
with open(filename,'w') as f:
    json.dump(letter_count(text_create()),f)
```

最终实验结果储存于output.json中