

# python

The Python logo, consisting of two interlocking snakes, one blue and one yellow, is positioned below the word "python".

```
import turtle
turtle.setup(650,350,200,200)
turtle.penup()
turtle.fd(-250)
turtle.pendown()
turtle.pensize(25)
turtle.pencolor("purple")

for i in range(4):
    turtle.circle(40, 80)
    turtle.circle(-40, 80)
    turtle.fd(40)
    turtle.circle(16, 180)
    turtle.fd(40 * 2/3)
```

# 实例10: 文本词频统计

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# "文本词频统计"问题分析

# 问题分析

## 文本词频统计

- 需求：一篇文章，出现了哪些词？哪些词出现得最多？
- 该怎么做呢？

英文文本



中文文本

# 问题分析

## 文本词频统计

- 英文文本: *Hamlet*      分析词频

<https://python123.io/resources/pye/hamlet.txt>

- 中文文本: 《三国演义》 分析人物

<https://python123.io/resources/pye/threekingdoms.txt>



# "Hamlet英文词频统计"实例讲解

```
#CalHamletV1.py
```

```
def getText():
```

```
    txt = open("hamlet.txt", "r").read()
```

```
    txt = txt.lower()
```

```
    for ch in '!"#$%&()*+,-./:;<=>?@[\\]^_`{|}~':
```

```
        txt = txt.replace(ch, " ")
```

```
    return txt
```

```
hamletTxt = getText()
```

```
words = hamletTxt.split()
```

```
counts = {}
```

```
for word in words:
```

```
    counts[word] = counts.get(word,0) + 1
```

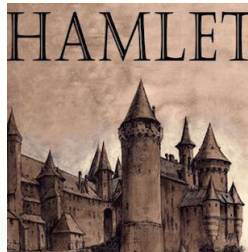
```
items = list(counts.items())
```

```
items.sort(key=lambda x:x[1], reverse=True)
```

```
for i in range(10):
```

```
    word, count = items[i]
```

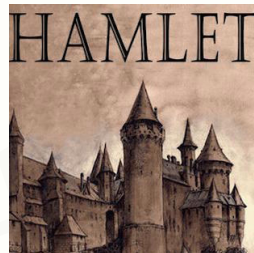
```
    print("{0:<10}{1:>5}".format(word, count))
```



- 文本去噪及归一化
- 使用字典表达词频

>>>

the	1138
and	965
to	754
of	669
you	550
i	542
a	542
my	514
hamlet	462
in	436



- 运行结果由大到小排序
- 观察单词出现次数



**准备好电脑，与老师一起编码吧！**



# "《三国演义》人物出场统计"实例讲解(上)

```
#CalThreeKingdomsV1.py
```

```
import jieba
```

```
txt = open("threekingdoms.txt", "r", encoding="utf-8").read()
```

```
words = jieba.lcut(txt)
```

```
counts = {}
```

```
for word in words:
```

```
    if len(word) == 1:
```

```
        continue
```

```
    else:
```

```
        counts[word] = counts.get(word,0) + 1
```

```
items = list(counts.items())
```

```
items.sort(key=lambda x:x[1], reverse=True)
```

```
for i in range(15):
```

```
    word, count = items[i]
```

```
    print("{0:<10}{1:>5}".format(word, count))
```



- 中文文本分词

- 使用字典表达词频

>>>

曹操 953

孔明 836

将军 772

却说 656

玄德 585

关公 510

丞相 491

二人 469

不可 440

荆州 425

玄德曰 390

孔明曰 390

不能 384

如此 378

张飞 358



- 中文文本分词
- 使用字典表达词频

**准备好电脑，与老师一起编码吧！**



# "《三国演义》人物出场统计"实例讲解(下)

# 《三国演义》人物出场统计

将词频与人物相关联，面向问题

词频统计



人物统计

```
#CalThreeKingdomsV2.py
import jieba
txt = open("threekingdoms.txt", "r", encoding="utf-8").read()
excludes = {"将军", "却说", "荆州", "二人", "不可", "不能", "如此"}
words = jieba.lcut(txt)
counts = {}
for word in words:
    if len(word) == 1:
        continue
    elif word == "诸葛亮" or word == "孔明":
        rword = "孔明"
    elif word == "关公" or word == "云长":
        rword = "关羽"
    elif word == "玄德" or word == "玄德曰":
        rword = "刘备"
    elif word == "孟德" or word == "丞相":
        rword = "曹操"
    else:
        rword = word
    counts[rword] = counts.get(rword, 0) + 1
for word in excludes:
    del counts[word]
items = list(counts.items())
items.sort(key=lambda x: x[1], reverse=True)
for i in range(10):
    word, count = items[i]
    print("{0:<10}{1:>5}".format(word, count))
```



- 中文文本分词
- 使用字典表达词频
- 扩展程序解决问题



>>>

曹操	1451
孔明	1383
刘备	1252
关羽	784
张飞	358
商议	344
如何	338
主公	331
军士	317
吕布	300



## - 根据结果进一步优化

隆重发布《三国演义》人物出场顺序前20:

曹操、孔明、刘备、关羽、张飞、吕布、赵云、孙权、  
司马懿、周瑜、袁绍、马超、魏延、黄忠、姜维、马岱、  
庞德、孟获、刘表、夏侯惇

**准备好电脑，与老师一起编码吧！**



# "文本词频统计"举一反三

```
#CalThreeKingdomsV2.py
import jieba
txt = open("threekingdoms.txt", "r", encoding="utf-8").read()
excludes = {"将军", "却说", "荆州", "二人", "不可", "不能", "如此"}
words = jieba.lcut(txt)
counts = {}
for word in words:
    if len(word) == 1:
        continue
    elif word == "诸葛亮" or word == "孔明":
        rword = "孔明"
    elif word == "关公" or word == "云长":
        rword = "关羽"
    elif word == "玄德" or word == "玄德曰":
        rword = "刘备"
    elif word == "孟德" or word == "丞相":
        rword = "曹操"
    else:
        rword = word
    counts[rword] = counts.get(rword, 0) + 1
for word in excludes:
    del counts[word]
items = list(counts.items())
items.sort(key=lambda x: x[1], reverse=True)
for i in range(10):
    word, count = items[i]
    print("{0:<10}{1:>5}".format(word, count))
```



- 中文文本分词
- 使用字典表达词频
- 扩展程序解决问题

# 举一反三

## 应用问题的扩展

- 《红楼梦》、《西游记》、《水浒传》 ...
- 政府工作报告、科研论文、新闻报道 ...
- 进一步呢？ 未来还有词云...



# 小花絮



# 全国计算机等级考试二级 Python科目

<http://ncre.neea.edu.cn>

全国计算机等级考试（简称NCRE）是教育部批准，由教育部考试中心主办，面向社会，用于考查应试人员计算机应用知识与技能的全国性计算机水平考试体系。

二级Python语言科目在 **2018年9月** 首考，异常火爆，快去报名试试吧！



