数据结构与算法 (Python)
作业二: Python 语言基础掌握

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输入下列程序，保存为 hw2/guess.py，并运行通过：

```python
# 猜数字游戏
import random

secret = random.randint(1, 100)
print('''猜数游戏!
我想了一个1-100的整数，你最多可以猜6次,
看看能猜出来吗？''')
tries = 1
while tries <= 6:
    guess = int(input("1-100的整数，第%d次猜，请输入: " % (tries,)))
    if guess == secret:
        print("恭喜答对了! 你只猜了%d次! \n就是这个: %d! " % (tries, secret))
        break
    elif guess > secret:
        print("不好意思，你的数大了一点儿! ")
    else:
        print("不好意思，你的数小了一点儿! ")
    tries += 1
else:
    print("哎呀! 怎么也没猜中! 再见! ")
```

输入下列程序，保存为 hw2/merge_sort.py，并运行通过:

```python
# merge sort
# 归并排序
import random


def merge_sort(data_list):
    if len(data_list) <= 1:
        return data_list
    middle = int(len(data_list) / 2)
    left = merge_sort(data_list[:middle])
    right = merge_sort(data_list[middle:])
    merged = []
    while left and right:
        merged.append(left.pop(0) if left[0] <= right[0] else right.pop(0))
    merged.extend(right if right else left)
    return merged


data_list = [random.randint(1, 100) for _ in range(50)]
print(merge_sort(data_list))
```

输入下列程序, 保存为 hw2/date.py, 并运行通过:

```python
# 输入某年某月某日，判断这一天是这一年的第几天？
import datetime

dtstr = input('Enter the datetime:(20170228):')
dt = datetime.datetime.strptime(dtstr, "%Y%m%d")
another_dtstr = dtstr[:4] + '0101'
another_dt = datetime.datetime.strptime(another_dtstr, "%Y%m%d")
print(int((dt - another_dt).days) + 1)
```

输入下列程序，保存为 hw2/count.py，并运行通过:

```
1   #输入一行字符，分别统计出其中英文字母、空格、数字和其它字符的个数。
2   import string
3
4   s = input('input a string:')
5   letter = 0
6   space = 0
7   digit = 0
8   other = 0
9   for c in s:
10      if c.isalpha():
11          letter+=1
12      elif c.isspace():
13          space+=1
14      elif c.isdigit():
15          digit+=1
16      else:
17          other+=1
18  print('There are %d letters,%d spaces,%d digits \
19  and %d other characters in your string.'\
20      %(letter,space,digit,other))
```

特别要求

- 把上面四个程序中，原来的字符串格式化语法
  - "I have %d books and %d pens" % (3,4)
- 替换成
  - "I have {0} books and {1} pens".format(3,4)
- 作业截止时间：3 月 23 日 24 时