2018年8月2日 星期四

数据结构第一次实验报告

1-1.py

'''先求出每分钟，每小时，每天等于多少秒，再从天开始对输入的秒数整除取余'''

```
time = eval(input())
# 计量单位
oneday = 24 * 60 * 60
onehour = oneday // 24
oneminute = onehour // 60
# 整除取余
resultday = time // oneday
time %= oneday
resulthour = time // onehour
time %= onehour
resultminute = time // oneminute
time %= oneminute
print(str(resultday) + ":" + str(resulthour) + ":" + str(resultminute) + ":" + str(time))
```

```
In [31]: runfile('/Users/zhujun/Downloads/USTC/专业补课/DS/DS-experiment/1-1.py', wdir='/Users/
zhujun/Downloads/USTC/专业补课/DS/DS-experiment')

2400
0:0:40:0

In [32]: runfile('/Users/zhujun/Downloads/USTC/专业补课/DS/DS-experiment/1-1.py', wdir='/Users/
zhujun/Downloads/USTC/专业补课/DS/DS-experiment')

3600
0:1:0:0
```

2018年8月2日 星期四

1-2.py

'''将26个字母用列表存储，可以观察到相互替换的字母索引之和相等'''

```
table = [
        'a', 'b', 'c', 'd', 'e', 'f', 'g',
        'h', 'i', 'j', 'k', 'l', 'm', 'n',
        'o', 'p', 'q', 'r', 's', 't',
        'u', 'v', 'w', 'x', 'y', 'z'
        ]
length = len(table)
s = input()
index = table.index(s)
print(table[length-1-index])
```

```
In [33]: runfile('/Users/zhujun/Downloads/USTC/专业补课/DS/DS-experiment/1-2.py', wdir='/Users/
zhujun/Downloads/USTC/专业补课/DS/DS-experiment')

a
z
```

1-3.py

'''首先判断是否闰年'''

```
days = [31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31]
rflag = False
flag = False
string = input()
slist = string.split()
year = eval(slist[0])
month = eval(slist[1])
day = eval(slist[2])
# rflag=True表示闰年
```

2

```
if year%4==0 and year%100!=0:
    rflag = True
elif year%400==0:
    rflag = True
else:
    rflag = False
# 先排出明显出错的情况
if year<=0 or month<=0 or month>12 or day<=0 or day>366:
    flag = False
else:
    # 然后看年份是闰年的时候是否出错
    if rflag:
        days[1] = 29
    if day>days[month-1]:
        flag = False
    else:
        flag = True
# 输出结果
if flag:
    print("正确")
else:
    print(“不正确")
```

```
In [35]: runfile('/Users/zhujun/Downloads/USTC/专业补课/DS/DS-experiment/1-3.py', wdir='/Users/
zhujun/Downloads/USTC/专业补课/DS/DS-experiment')

2018 2 29
不正确

In [36]: runfile('/Users/zhujun/Downloads/USTC/专业补课/DS/DS-experiment/1-3.py', wdir='/Users/
zhujun/Downloads/USTC/专业补课/DS/DS-experiment')

2000 2 29
正确
```

1-4.py

```
'''先将各个位数上的数字求出来，再+7取模数为10，最后进行交换'''
def encode(number):
    nlist = []
    base = 1000
    for i in range(4):
        nlist.append(number // base)
        number %= base
        base //= 10
        nlist[i] = (nlist[i] + 7) % 10
    nlist[0], nlist[2] = nlist[2], nlist[0]
    nlist[1], nlist[3] = nlist[3], nlist[1]
    print(nlist)

'''先将位数进行交换，再根据数字的大小分别处理'''
def decode(nlist):
    nlist[1], nlist[3] = nlist[3], nlist[1]
    nlist[0], nlist[2] = nlist[2], nlist[0]
    for i in range(4):
        # 原先的数+7 < 10
        if nlist[i]>=7:
            nlist[i] -= 7
        else: # 原先的数+7 > 10
            nlist[i] = 10 + nlist[i] - 7
    # 组装成四位数
    number = 0
    for i in range(4):
```

```
        number = 10 * number + nlist[i]
    print(number)


number = eval(input())
string = input()
nlist = string.split(",")
for i in range(4):
    nlist[i] = eval(nlist[i])
encode(number)
decode(nlist)
```

```
In [44]: runfile('/Users/zhujun/Downloads/USTC/专业补课/DS/DS-experiment/1-4.py', wdir='/Users/
zhujun/Downloads/USTC/专业补课/DS/DS-experiment')

1234

0,1,8,9
[0, 1, 8, 9]
1234

In [45]: runfile('/Users/zhujun/Downloads/USTC/专业补课/DS/DS-experiment/1-4.py', wdir='/Users/
zhujun/Downloads/USTC/专业补课/DS/DS-experiment')

6745

1,2,3,4
[1, 2, 3, 4]
6745
```