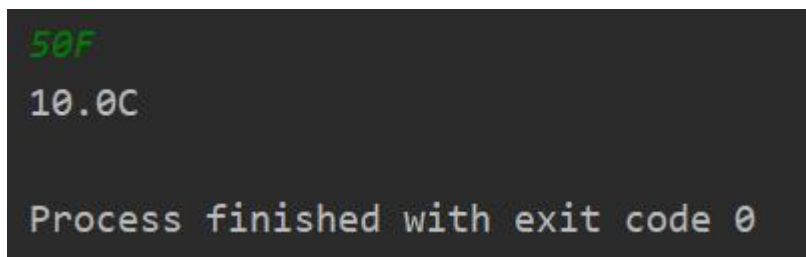# 第一次上机作业

18029100040

吴程锴

一、作业 1：温度转换：

1.1 代码

```python
1.    Temperature=input()
2.  Unit=Temperature[-1]
3.  Num=eval(Temperature[0:-1])
4.  if Unit=='C':
5.      T=str(Num*1.8+32)
6.      T=T+'F'
7.  elif Unit=='F':
8.      T=str((Num-32)/1.8)
9.      T = T+'C'
10. else:
11.     print('输入格式错误')
12.     print(T)
```

1.2 结果

二、作业 2："蟒蛇"绘制

2.1 代码

```python
1.    import turtle
2.  turtle.setup(650,350,200,200)
3.  turtle.penup()
4.  turtle.fd(-250)
```
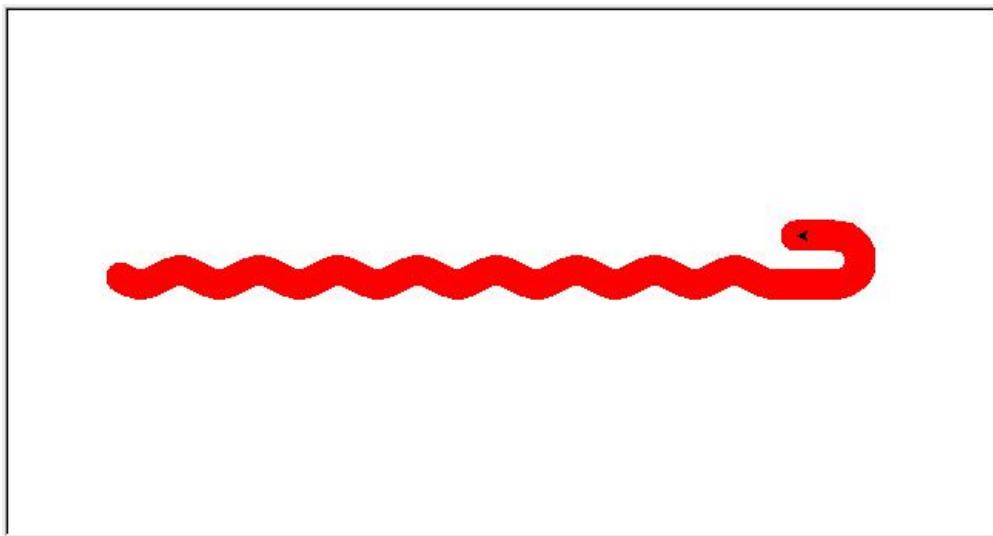
```
5.   turtle.pensize(20)
6.   turtle.pendown()
7.   turtle.pencolor("red")
8.   turtle.seth(-40)
9.   for i in range(8):
10.      turtle.circle(20,80)
11.      turtle.circle(-20,80)
12.  turtle.circle(20,80/2)
13.  turtle.fd(40)
14.  turtle.circle(16,180)
15.  turtle.fd(40*2/3)
16.      turtle.done()
```

2.2 结果

三、作业 3：天天向上的力量

3.1 代码

```
1.    ability=1
2.  change=0.01
3.  for day in range(365):
4.      if day%7==6 | day%7==0:
5.          ability=ability*(1-change)
6.      else:
7.          ability=ability*(1+change)
8.  print('一年后结果：',ability)
9.
10.
11. def dayUp(df):
```

```
12.     dayup=1
13.     for i in range(365):
14.         if i%7 in [6,0]:
15.             dayup=dayup*(1-0.01)
16.         else:
17.             dayup=dayup*(1+df)
18.     return dayup
19.
20. dayfactor=0.01
21. while(dayUp(dayfactor)<ability):
22.     dayfactor+=0.001
23.
24.     print('每天要努力：',dayfactor)
```

3.2 结果

一年后结果：   37.783434332887275
每天要努力：   0.0190000000000000006

四、作业 4：文本进度条

4.1 代码

```
1.      import time
2.  scale=50
3.  print("执行开始".center(scale//2,"-"))
4.  t=time.process_time()
5.  for i in range(scale+1):
6.      a='*'*i
7.      b='.'*(scale-i)
8.      c=(i/scale)*100
9.      t-=time.process_time()
10.     print("\r{:^3.0f}%[{}->{}]{:.2f}s".format(c,a,b,-t),end='')
11.     time.sleep(0.05)
12.
13.     print("\n"+"执行结束".center(scale//2,'-'))
```

4.2 结果

五、作业 5：身体质量指数 BMI

5.1 代码

```python
1.    Weight=eval(input('体重(kg)='))
2.  Height=eval(input('身高(m)='))
3.  BMI=Weight/Height/Height
4.
5.  def Int(BMI):
6.      if BMI<18.5:
7.          return '国际偏瘦'
8.      elif BMI<25:
9.          return '国际正常'
10.     elif BMI<30:
11.         return '国际偏胖'
12.     else:
13.         return '国际肥胖'
14.
15. def Dom(BMI):
16.     if BMI<18.5:
17.         return '国内偏瘦'
18.     elif BMI<24:
19.         return '国内正常'
20.     elif BMI<28:
21.         return '国内偏胖'
22.     else:
23.         return '国内肥胖'
24.
25.     print(Int(BMI)+' '+Dom(BMI))
```

5.2 结果

六、作业 6：圆周率的计算

6.1 代码

```python
from random import random
pi1=0
for k in range(0,99):
    pi1=pi1+(4/(8*k+1)-2/(8*k+4)-1/(8*k+5)-1/(8*k+6))/pow(16,k)
print(pi1)

#MC
hits=0
all=99999
for i in range(all):
    x, y = random(), random()
    dist= pow(x ** 2 + y ** 2, 0.5)

    if dist<= 1.0:
        hits = hits + 1
pi2=hits/all
print(pi2*4)
```

6.2 结果

```
3.141592653589793
3.1332713327133273


Process finished with exit code 0
```

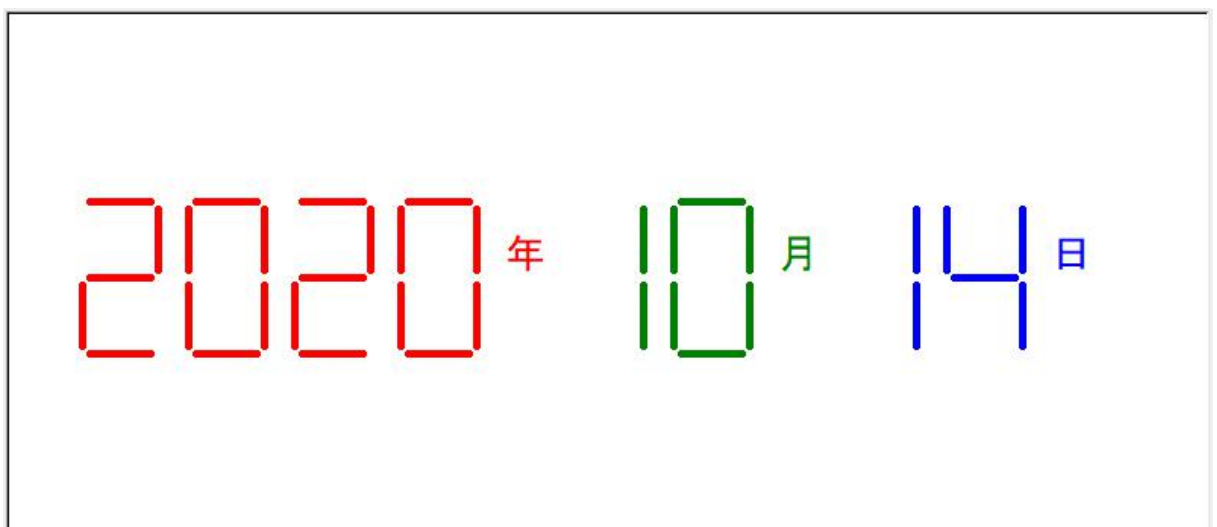# 七、作业 7：七段数码管绘制

7.1 代码

```python
1.      import turtle, datetime
2.
3.
4.  def drawGap():
5.      turtle.penup()
6.      turtle.fd(5)
7.
8.
9.  def drawLine(draw):
10.     drawGap()
11.     turtle.pendown() if draw else turtle.penup()
12.     turtle.fd(40)
13.     drawGap()
14.     turtle.right(90)
15.
16.
17. def drawDigit(digit):
18.     drawLine(True) if digit in [2, 3, 4, 5, 6, 8, 9] else drawLine(False)
19.     drawLine(True) if digit in [0, 1, 3, 4, 5, 6, 7, 8, 9] else drawLine(False)
20.     drawLine(True) if digit in [0, 2, 3, 5, 6, 8, 9] else drawLine(False)
21.     drawLine(True) if digit in [0, 2, 6, 8] else drawLine(False)
22.     turtle.left(90)
23.     drawLine(True) if digit in [0, 4, 5, 6, 8, 9] else drawLine(False)
24.     drawLine(True) if digit in [0, 2, 3, 5, 6, 7, 8, 9] else drawLine(False)
25.     drawLine(True) if digit in [0, 1, 2, 3, 4, 7, 8, 9] else drawLine(False)
26.     turtle.left(180)
27.     turtle.penup()
28.     turtle.fd(20)
29.
30.
```

```
31. def drawDate(date):
32.     turtle.pencolor("red")
33.     for i in date:
34.         if i == '-':
35.             turtle.write('年', font=("Arial", 20, "normal"))
36.             turtle.pencolor("green")
37.             turtle.fd(40)
38.         elif i == '=':
39.             turtle.write('月', font=("Arial", 20, "normal"))
40.             turtle.pencolor("blue")
41.             turtle.fd(40)
42.         elif i == '+':
43.             turtle.write('日', font=("Arial", 20, "normal"))
44.         else:
45.             drawDigit(eval(i))
46.
47.
48. def main():
49.     turtle.setup(800, 350, 200, 200)
50.     turtle.penup()
51.     turtle.fd(-350)
52.     turtle.pensize(5)
53.     drawDate(datetime.datetime.now().strftime('%Y-%m=%d+'))
54.     turtle.hideturtle()
55.
56. main()
57.     turtle.exitonclick()
```
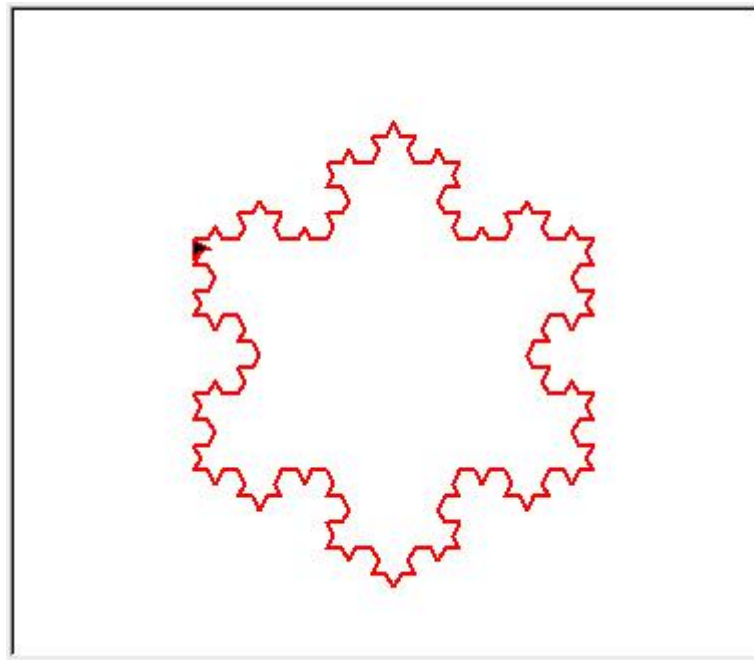
7.2 结果

八、作业 8：科赫雪花绘制

8.1 代码

```python
import turtle

def koch(size,n):
    if n==0:
        turtle.fd(size)
    else:
        for angle in [0,60,-120,60]:
            turtle.left(angle)
            koch(size/3,n-1)

turtle.setup(400,350,200,200)
size=200
n=3
turtle.penup()
turtle.fd(-size/2)
turtle.seth(-90)
turtle.fd(-size/2+50)
turtle.seth(0)
turtle.pensize(2)
turtle.pendown()
turtle.pencolor("red")

koch(size,n)
turtle.seth(-120)
koch(size,n)
turtle.seth(-240)
koch(size,n)
turtle.exitonclick()
```

8.2 结果

九、作业 9：基本统计值计算

9.1 代码

```
1.    a=[5,1,2,3,4,3]
2.
3.  def var(data):
4.      datamean=mean(data)
5.      size = len(data)
6.      sig=0;
7.      for i in range(size):
8.          sig=sig+pow(data[i]-datamean,2)
9.      return sig/size
10.
11. def median(data):
12.     data.sort()
13.     size=len(data)
14.     if size%2==0:
15.         index1=int(size/2-1)
16.         index2 = index1+1
17.         return (data[index1]+data[index2])/2
18.     else:
19.         index = int((size-1) / 2)
20.         return data[index]
21.
```

```
22.
23. def mean(data):
24.     datasum=sum(data)
25.     size=len(data)
26.     return datasum/size
27.
28. print('方差=',var(a))
29. print('中位数=',median(a))
30.     print('平均值=',mean(a))
```

9.2 结果


```
方差= 1.66666666666666667
中位数= 3.0
平均值= 3.0

Process finished with exit code 0
```

十、作业 10：文本词频统计

10.1 代码

```
1.    import jieba
2. with open("hamlet.txt", "r") as f:  # 打开文件
3.     data1 = f.read()   # 读取文件
4.     #print(data1)
5. with open("threekingdoms.txt", "r",encoding='utf-8') as f:  # 打开文件
6.     data2 = f.read()   # 读取文件
7.     #print(data2)
8. #
9. words=data1.split()
10. counts={}
11. for word in words:
12.     counts[word]=counts.get(word,0)+1
13. items=list(counts.items())
14. items.sort(key=lambda x:x[1],reverse=True)
15. for i in range(10):
16.     word,count=items[i]
17.     print("{0:<10}{1:>5}".format(word,count))
18. #
19. excludes={'将军','却说','荆州','二人','不可','不能','如此'}
20. words=jieba.lcut(data2)
```

```
21. counts={}
22. for word in words:
23.     if len(word)==1:
24.         continue
25.     elif word=='诸葛亮' or word=="孔明曰":
26.         rword="孔明"
27.     elif word=='关公' or word=='云长':
28.         rword = "关羽"
29.     elif word=='玄德曰' or word=='玄德':
30.         rword = "刘备"
31.     elif word=='孟德' or word=='丞相':
32.         rword = "曹操"
33.     else:
34.         rword=word
35.     counts[word] = counts.get(rword, 0) + 1
36. for word in excludes:
37.     del(counts[word])
38. items=list(counts.items())
39. items.sort(key=lambda x:x[1],reverse=True)
40. for i in range(5):
41.     word,count=items[i]
42.         print("{0:<10}{1:>5}".format(word,count))
```

10.2 结果

曹操	953
丞相	953
孔明	836
诸葛亮	820
孔明曰	812