

Python - 上机 2

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Contents

1. 实验六

1-3 题



```
work.py - solution

work.py
15 lst_who = ["小马", "小羊", "小白"]
16 lst_where = ["基地上", "电影院", "家里"]
17 lst_what = ["看电影", "听故事", "吃饭饭"]
18 x1, x2, x3 = rd.randint(0, 2), rd.randint(0, 2), rd.randint(0, 2)
19 print(lst_who[x1], "在", lst_where[x2], lst_what[x3], sep=' ')
20 print("\n")
21
22 print("第1题")
23 months = [31, 28, 31, 30, 31, 30, 31, 31, 30, 31, 30, 31]
24 while True:
25     x = int(input())
26     if x == 0:
27         break
28     else:
29         print(months[x-1])
30
31 print("第2题")
32 num = [1, 1]
33 for i in range(2, 30):
34     num.append(num[i-1]+num[i-2])
35 print(len(num), "\n", num)
36
37
```

4-5 题

The screenshot shows a Mac OS X desktop environment. In the center is a terminal window titled "work.py - solution". The terminal output shows the execution of a Python script named "main.py" and its results. Below the terminal is a code editor window showing the source code for "work.py".

```
work.py -- solution
+ Python ☐ 08
work.py
work.py
22 print("第4题")
21 busstop = {"龙江新城市": 1, "阳光广场": 2, "汉江路": 3, "嫩江路": 4,
20     "清源山公园": 5, "拉萨路": 6, "五台山": 7, "莫愁路": 8}
19 print("请输入起点站")
18 st = input()
17 print("请输入终点站")
16 ed = input()
15 if (busstop[ed]-busstop[st] > 0):
14     print("从",st,"站前往",ed,"站需要",busstop[ed]-busstop[st],"站路",sep="")
13 else:
12     print("您需要乘坐反方向路线")
11 print('\n')
10
9 lst_student = ["001", "李梅", 19, "002", "刘祥", 20, "003", "张武", 18]
8 lst_student+=[004, "刘宁", 20, "006", "荣峰", 19]
7 print(lst_student)
6 for i in range(0,len(lst_student)):
5     tem = ["005", "林歌", 20]
4     if lst_student[i] == "004":
3         for j in range(i + 2, i + 4):
2             lst_student.insert(j, tem[j-i-2])
1         break
23 print(lst_student)
```

Terminal Output:

```
+ /opt/homebrew/bin/python3 /Users/syh/solution/work.py
+ ./solution.py main +1
第4题
请输入起点站
龙江新城市
请输入终点站
五台山
从龙江新城市站前往五台山站需要6站路
[ '001', '李梅', 19, '002', '刘祥', 20, '003', '张武', 18,
'004', '刘宁', 20, '006', '荣峰', 19 ]
[ '001', '李梅', 19, '002', '刘祥', 20, '003', '张武', 18,
'004', '刘宁', 20, '005', '林歌', 20, '006', '荣峰', 19 ]
```

6 题

The screenshot shows a Mac OS X desktop environment. In the center is a terminal window titled "work.py - solution" with the command "python3 /Users/syh/solution/work.py". The output of the script is displayed, showing a list of student records. To the left of the terminal is a code editor window for "work.py" containing Python code. The code defines a list of students and performs various operations like inserting new students and printing specific information.

```
work.py -- solution
work.py
17 lst_student = [['001', "李梅", 19], ['002', "刘祥", 20], ['003', "张武", 18]]
18 lst_student+=[['004', "刘宁", 20], ['006', "梁峰", 19]]
19 # print(lst_student)
20 for i in range(0, len(lst_student)):
21     if lst_student[i][0] == "004":
22         lst_student.insert(i+1,['005',"林歌",20])
23     break
24 # print(lst_student)
25 for i in lst_student:
26     if i[0] == "003":
27         print(i)
28         break
29 for i in lst_student:
30     print(i[1], end=' ')
31 print('')
32 for i in lst_student:
33     if i[2] > 19:
34         print(i)
```

```
[003]: '张武', 18]
[002]: '刘祥', 20]
[004]: '刘宁', 20]
[004]: '刘宁', 20]
[005]: '林歌', 20]
```

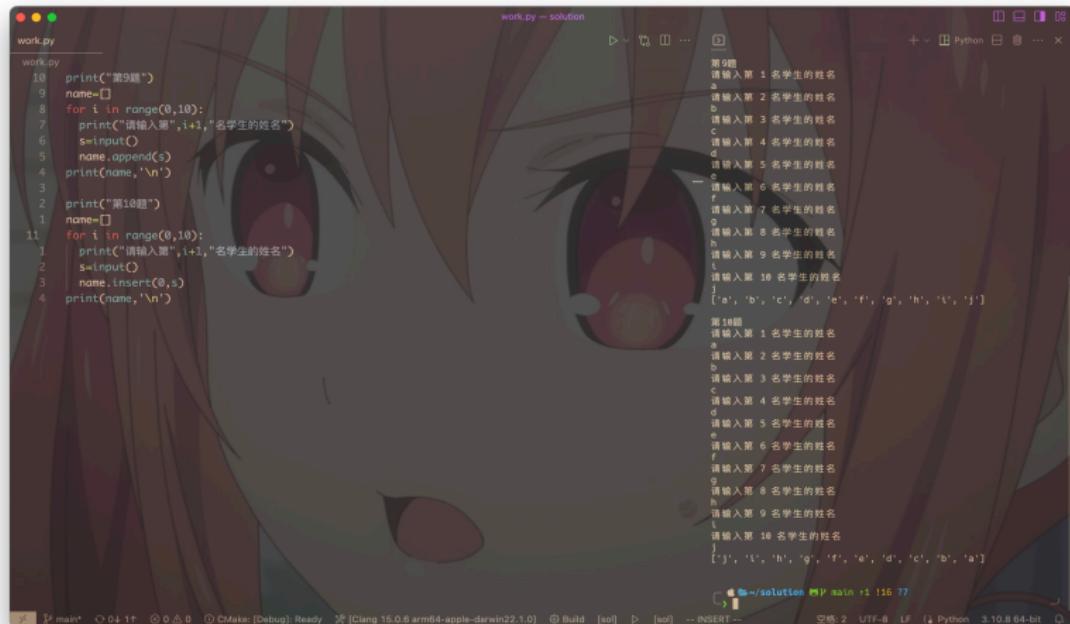
7-8 题

The screenshot shows a Mac OS X desktop environment. In the center is a terminal window titled "work.py - solution" with the command "Python main.py". The terminal output shows the result of the program execution: "第7题 丙" and "第8题 ('E', 'C', 'B', 'A', 'D')". Below the terminal is a code editor window for "work.py" containing Python code. The code uses permutations from the itertools module to find specific sequences of characters.

```
work.py -- solution
+ ~ /solution 5P main.py  base system ⑧ 10:55:20
↳ /opt/homebrew/bin/python3 /Users/syh/solution/work.py
第7题 丙
第8题 ('E', 'C', 'B', 'A', 'D')

work.py
1  import itertools
2
3  lst=["甲","乙","丙","丁"]
4  for x in lst:
5      if ((x!="甲")+(x=="丙")+(x=="丁")+(x!="丁"))==3:
6          print("第7题",x)
7          break
8  print("\n")
9
10 lst=['A','B','C','D','E']
11 for i in itertools.permutations(lst):
12     # print(i)
13     flag=True
14     if(not((i[1]=='D')+(i[2]=='B')==1)):flag=False
15     if(not((i[1]=='C')+(i[3]=='E')==1)):flag=False
16     if(not((i[0]=='E')+(i[4]=='A')==1)):flag=False
17     if(not((i[2]=='C')+(i[3]=='A')==1)):flag=False
18     if(not((i[1]=='B')+(i[4]=='D')==1)):flag=False
19     if(flag):
20         print("第8题",i)
21         break
22 print('\n')
```

9-10 题



work.py

```
print("第9题")
name=[]
for i in range(0,10):
    print("请输入第",i+1,"名学生的姓名")
    s=input()
    name.append(s)
print(name,'\\n')

print("第10题")
for i in range(0,10):
    print("请输入第",i+1,"名学生的姓名")
    s=input()
    name.insert(i,s)
print(name,'\\n')
```

work.py — solution

```
第9题
请输入第 1 名学生的姓名
a
请输入第 2 名学生的姓名
b
请输入第 3 名学生的姓名
c
请输入第 4 名学生的姓名
d
请输入第 5 名学生的姓名
e
请输入第 6 名学生的姓名
f
请输入第 7 名学生的姓名
g
请输入第 8 名学生的姓名
h
请输入第 9 名学生的姓名
i
请输入第 10 名学生的姓名
j
['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j']

第10题
请输入第 1 名学生的姓名
a
请输入第 2 名学生的姓名
b
请输入第 3 名学生的姓名
c
请输入第 4 名学生的姓名
d
请输入第 5 名学生的姓名
e
请输入第 6 名学生的姓名
f
请输入第 7 名学生的姓名
g
请输入第 8 名学生的姓名
h
请输入第 9 名学生的姓名
i
请输入第 10 名学生的姓名
j
['j', 'i', 'h', 'g', 'f', 'e', 'd', 'c', 'b', 'a']
```

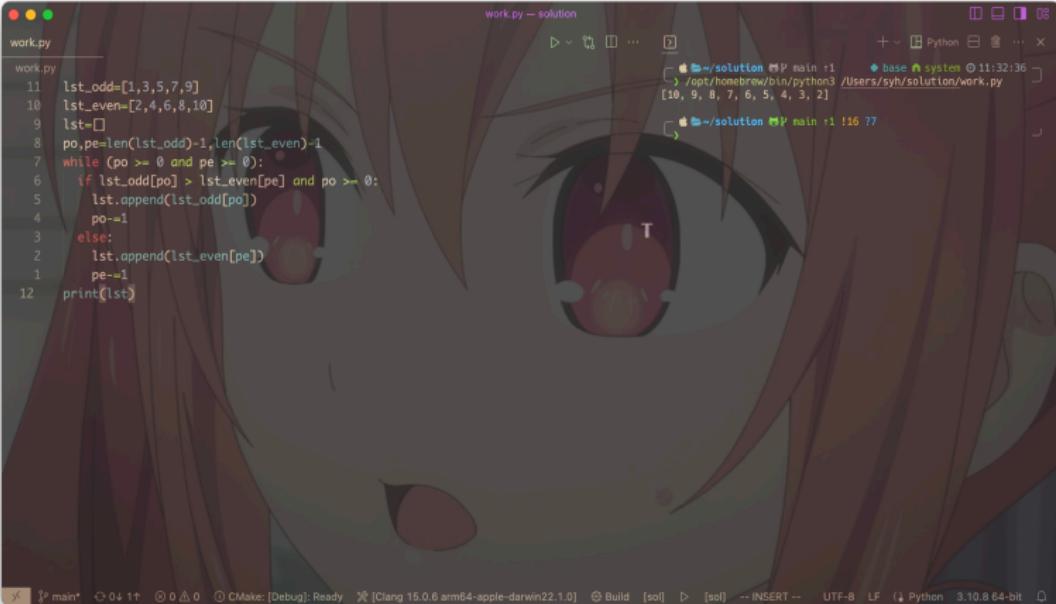
11 题

```
work.py -- solution
work.py -- solution
> /opt/homebrew/bin/python3 /Users/syh/solution/work.py
+ Python ⌂ 08
work.py -- solution
work.py -- solution
> ~/solution main +1 !16 ???
Input your name
李玉
[['金忠', '男', 23], ['刘研', '女', 21], ['莫心', '女', 24], ['沈冲', '男', 28]]
Input your name
金钟
员工不存在
[['金忠', '男', 23], ['刘研', '女', 21], ['莫心', '女', 24], ['沈冲', '男', 28]]
Input your name
莫忠
[[刘研, '女', 21], ['莫心', '女', 24], ['沈冲', '男', 28]]
Input your name
8
> ~/solution main +1 !16 ???
```

work.py

```
13 lst = [["李玉", "男", 25], ["金忠", "男", 23], [
12     "刘研", "女", 21], ["莫心", "女", 24], ["沈冲", "男", 28]]
11 while True:
10     print("input your name")
9         name = input()
8         if (name == '0'):break
7             pos = -1
6         for i in range(0,len(lst)):
5             if(lst[i][0]==name):
4                 pos = i
3                 break
2         if (pos == -1): print("员工不存在")
1         else:del lst[pos]
print(lst)
14
```

12 题



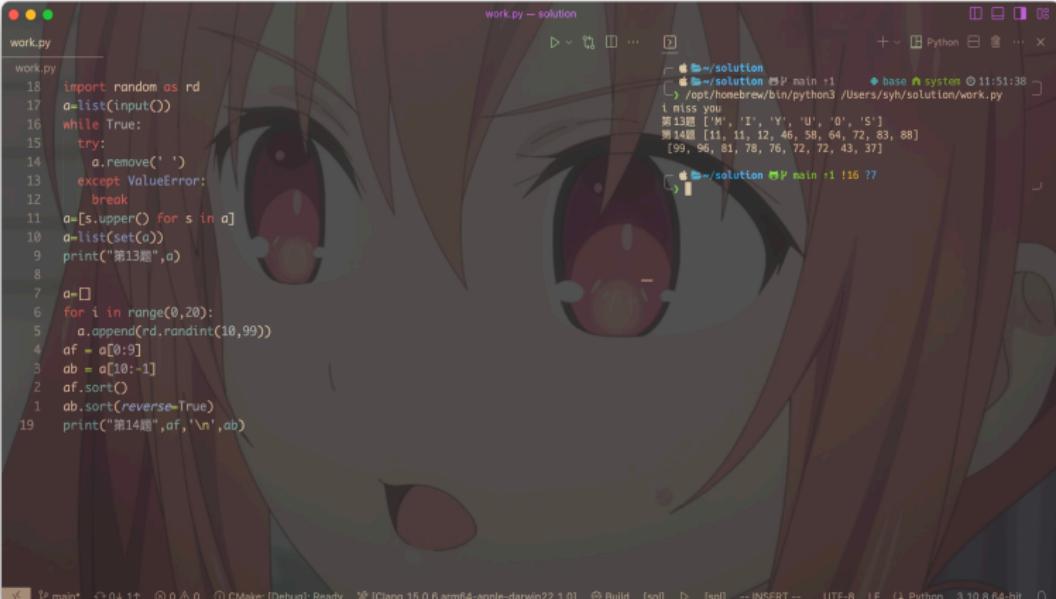
work.py — solution

```
work.py — solution
+ - Python 窗 ... ×
+ ~/.solution MP main :1 base system ① 11:32:36
> /opt/homebrew/bin/python3 /Users/syh/solution/work.py
[10, 9, 8, 7, 6, 5, 4, 3, 2]
+ ~/.solution MP main :1 !16 ??
```

work.py

```
work.py
1  lst_odd=[1,3,5,7,9]
2  lst_even=[2,4,6,8,10]
3  lst=[]
4  po,pe=len(lst_odd)-1,len(lst_even)-1
5  while(po >= 0 and pe >= 0):
6      if lst_odd[po] > lst_even[pe] and po >= 0:
7          lst.append(lst_odd[po])
8          po-=1
9      else:
10         lst.append(lst_even[pe])
11         pe-=1
12 print(lst)
```

13-14 题



work.py — solution

```
work.py
1 import random as rd
2 a=list(input())
3 while True:
4     try:
5         a.remove(' ')
6     except ValueError:
7         break
8 a=[s.upper() for s in a]
9 a=list(set(a))
10 print("第13题",a)
11
12 a=[]
13 for i in range(0,20):
14     a.append(rd.randint(10,99))
15 af = a[0:9]
16 ab = a[10:-1]
17 af.sort()
18 ab.sort(reverse=True)
19 print("第14题",af,' ',ab)
```

main.py

base system 11:51:38

i miss you

第13题 [M, 'I', 'Y', 'U', 'O', 'S']

第14题 [11, 11, 12, 46, 58, 64, 72, 83, 88]

[99, 96, 81, 78, 76, 72, 72, 43, 37]

main.py 11:56 ??

Clang 15.0.6 arm64-apple-darwin22.1.0

Build [sol] [sol] ... INSERT -- UTF-8 LF Python 3.10.8 64-bit

15-16 题

17-19 题

The screenshot shows a Mac OS X desktop environment. In the foreground, a terminal window titled "work.py — solution" is open, displaying Python code for three problems (17, 18, and 19). The terminal output shows the results for each problem. In the background, a code editor window titled "work.py" is visible, containing the same code. The desktop has a colorful, abstract wallpaper.

```
work.py — solution
+ - T ⌂ ... ⌂ ...
~/solution
└── main +1   base system 20:36:31
> /opt/homebrew/bin/python3 /Users/syh/solution/work.py
第17题
6.0
15.588457268119896
5.562148865321747

第18题 505 84.1666666666666666667
第19题 [('red', 'color'), ('green', 'color'), ('yellow', 'color'), 'square', 'shape'],
        [('triangle', 'shape'), ('circle', 'shape')]

~/solution
└── main +1 !16 ??
```

```
work.py
work.py
1 import math
2 import re
3
4 print("第17题")
5 lst = [3, 4, 5, 6, 6, 6, 4, 4, 3]
6 for i in range(0, len(lst)//3):
7     a, b, c = lst[i*3], lst[i*3+1], lst[i*3+2]
8     p = (a+b+c)/2
9     print(math.sqrt(p*(p-a)*(p-b)*(p-c)))
10 print("\n")
11
12 s = "语文:80, 数学:82,英语:90,物理:85,化学:88,美术:80"
13 ls = re.split(':', s)
14 sum = 0
15 for i in range(1, len(ls), 2):
16     sum += int(ls[i])
17 print("第18题", sum, sum/len(ls)*2, "\n")
18
19 lst = [("triangle", "shape"), ("red", "color"), ("square", "shape"),
20        ("yellow", "color"), ("green", "color"), ("circle", "shape")]
21 lst.sort(key=lambda x : x[1])
22 print("第19题", lst)
```

main* ⌂ 0 4↑ 0 ⌂ CMake: [Debug]: Ready ⌂ [Clang 15.0.6 arm64-apple-darwin22.1.0] ⌂ Build [sol] ⌂ [sol] ⌂ INSERT -- UTF-8 LF ⌂ Python 3.10.8 64-bit ⌂

20-21 题

work.py — solution

```

work.py
work.py
1 import random as rd
2 suit=['黑桃','红桃','方块','梅花']
3 face=['3','4','5','6','7','8','9','10','J','Q','K','A','2']
4 ans = [x + ' ' + y for x in face for y in suit]
5 print("第20题",'\n',ans)
6
7 rd.shuffle(ans)
8 print("请输入编号")
9 a=int(input())
10 b=rd.randint(0,51)
11 aList=ans[a].split(' ')
12 bList=ans[b].split(' ')
13 print(a,b)
14 a = face.index(a)
15 b = face.index(b)
16 if(a>b):
17     print("恭喜，你赢了")
18 elif(a==b):
19     print("咱们平手了")
20 else:
21     print("很遗憾，你输了")
22
23 score=[9,10,8,9,10,7,6,8,7,8]
24 score.sort()
25 del score[-1]
26 del score[0]
27 print("第21题",sum(score)/8)

```

第20题
['3 黑桃', '3 红桃', '3 方块', '3 梅花', '4 黑桃', '4 红桃', '4 方块', '4 梅花', '5 黑桃', '5 红桃', '5 方块', '5 梅花', '6 黑桃', '6 红桃', '6 方块', '6 梅花', '7 黑桃', '7 红桃', '7 方块', '7 梅花', '8 黑桃', '8 红桃', '8 方块', '8 梅花', '9 黑桃', '9 红桃', '9 方块', '9 梅花', '10 黑桃', '10 红桃', '10 方块', '10 梅花', 'J 黑桃', 'J 红桃', 'J 方块', 'J 梅花', 'Q 黑桃', 'Q 红桃', 'Q 方块', 'Q 梅花', 'K 黑桃', 'K 红桃', 'K 方块', 'K 梅花', 'A 黑桃', 'A 红桃', 'A 方块', 'A 梅花', '2 黑桃', '2 红桃', '2 方块', '2 梅花']
请输入编号
42
8 3
恭喜，你赢了

第21题 8.25

21 题

The screenshot shows a Mac OS X desktop with a terminal window titled "work.py -- solution". The terminal contains the following Python script:

```
work.py -- solution
/work.py
work.py
1 lst_weather = [["周一", "16", "26", "多云", "1", "优"],  # Monday
2     ["周二", "17", "27", "晴", "2", "优"],           # Tuesday
3     ["周三", "16", "28", "晴", "3", "优"],           # Wednesday
4     ["周四", "16", "25", "阴", "2", "良"],           # Thursday
5     ["周五", "15", "24", "阴", "2", "良"],           # Friday
6     ["周六", "15", "25", "晴", "3", "优"],           # Saturday
7     ["周日", "14", "23", "小雨", "3", "良"]]        # Sunday

1 num1 = [x[0] for x in lst_weather if x[5] == "优"]
2 num2 = [x[0] for x in lst_weather if (x[4]<"3") and (x[2] >= "25")]
3 num3 = [x[0] for x in lst_weather if (int(x[1])+int(x[2]))/2 < 20]
4 print("空气质量为优的天数:{}，它们分别是:{}.".format(len(num1), ''.join(num1)))
5 print("风力低于3级且最高气温不超过25°的天数:{}，它们分别是:{}.".format(len(num2), ''.join(num2)))
6 print("平均天气低于20度的天数:{}，它们分别是:{}.".format(len(num3), ''.join(num3)))
```

The terminal also displays the output of the script:

```
~/solution $ python main.py
空气质量为优的天数:4, 它们分别是:周一 周二 周三 周六
风力低于3级且最高气温不超过25°的天数:2, 它们分别是:周四 周五
平均天气低于20度的天数:2, 它们分别是:周五 周日
```