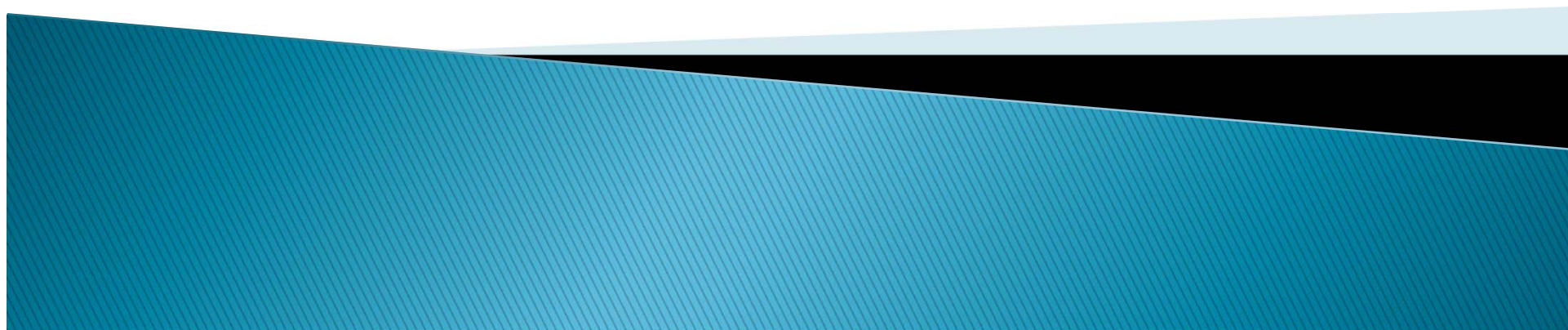
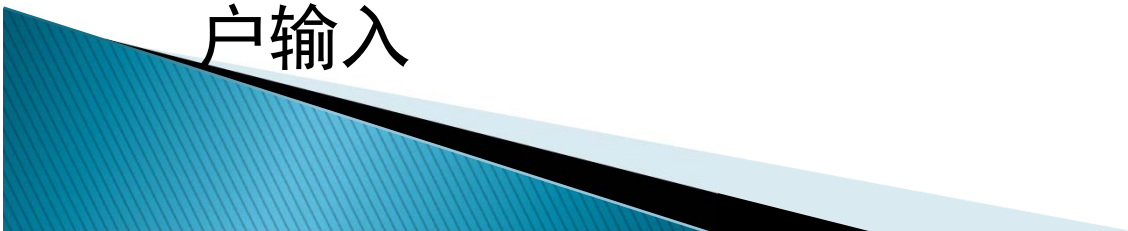


# 第七讲：用户输入和while循环



# 为什么需要用户输入？

- ▶ 绝大多数有实际意义的程序都需要和用户交互
- ▶ Python的函数input()提供了和用户交互的最简单方式
- ▶ 语法：变量名 = input(表示提示信息的字符串)
- ▶ 作用：先输出提示信息，再让用户输入，用户输入的内容作为字符串赋值给变量名指定的变量
- ▶ 提示信息可以为空，此时无提示信息，直接等待用户输入



# 简单例子

```
1 prompt = "If you tell us who you are, we can personalize the messages you see."  
2 prompt += "\nWhat is your first name? "  
3  
4 name = input(prompt)  
5 print("\nHello, " + name + "!" )
```

运行结果：

```
If you tell us who you are, we can personalize the messages you see.  
What is your first name? Alice  
  
Hello, Alice!
```



# 读入数值

- ▶ 函数input()返回字符串类型，如果要读入整数，需要用int做强制类型转换


```
1 height = input("How tall are you, in inches? ")
2 height = int(height)
3
4 if height >= 36:
5     print("\nYou're tall enough to ride!")
6 else:
7     print("\nYou'll be able to ride when you're a little older.")
```

运行结果:

```
How tall are you, in inches? 50
You're tall enough to ride!
```

- ▶ 类似地，可以通过用float做类型转换来读入实数值

# 用split来分割读入的内容

- ▶ input()会将读入的整行作为一个字符串赋给变量，如果希望读入的内容用空格分割为多部分，可以用字符串的split方法
  - ▶ 用法：字符串.split(分隔符, k)
  - ▶ 功能：将字符串的内容按照分隔符划分成多部分，根据分隔符提取前k部分和剩下的部分组成列表，返回这个列表
  - ▶ 分隔符的缺省值为空格，k缺省时取出所有
- 

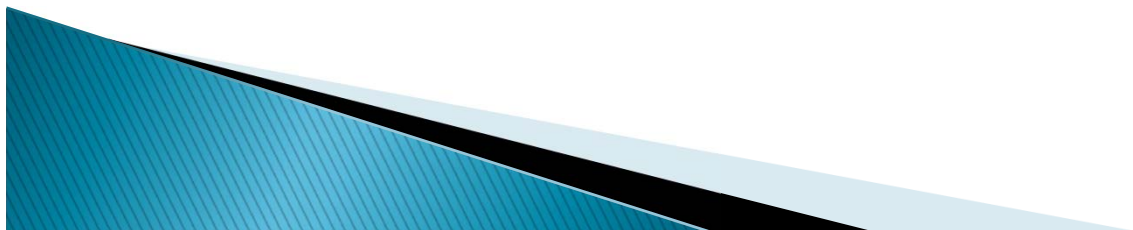
# 例题

- ▶ 在一行中输入两个整数a和b，求a+b

```
1 L = input().split()
2 a = int(L[0])
3 b = int(L[1])
4 print(a + b)
```

运行结果:

```
3 5
8
```



# while循环

- ▶ 语法：

while 条件：

语句1

语句2

...

- ▶ 语义：当条件成立时，重复执行语句1，语句2，...



# while循环示例

```
1 current_number = 1
2 while current_number <= 5:
3     print(current_number)
4     current_number += 1
```

运行结果:

```
1
2
3
4
5
```





# while循环示例

```
1 prompt = "\nTell me something, and I will repeat it back to you:"
2 prompt += "\nEnter 'quit' to end the program. "
3
4 active = True
5 while active:
6     message = input(prompt)
7
8     if message == 'quit':
9         active = False
10    else:
11        print(message)
```

运行结果:

```
Tell me something, and I will repeat it back to you:
Enter 'quit' to end the program. Alice
Alice
```

```
Tell me something, and I will repeat it back to you:
Enter 'quit' to end the program. Bob
Bob
```

```
Tell me something, and I will repeat it back to you:
Enter 'quit' to end the program. quit
```

# 在循环中使用break语句

- 在循环中执行break语句，会跳出当前循环

```
1 prompt = "\nPlease tell me a city you have visited:"
2 prompt += "\n(Enter 'quit' when you are finished.) "
3
4 while True:
5     city = input(prompt)
6
7     if city == 'quit':
8         break
9     else:
10        print("I'd love to go to " + city.title() + "!")
```

运行结果：

```
Please tell me a city you have visited:
(Enter 'quit' when you are finished.) Paris
I'd love to go to Paris!

Please tell me a city you have visited:
(Enter 'quit' when you are finished.) London
I'd love to go to London!

Please tell me a city you have visited:
(Enter 'quit' when you are finished.) quit
```

# 在循环中使用continue语句

- 在循环中执行continue语句，会直接跳到当前循环头

```
1 current_number = 0
2 while current_number < 10:
3     current_number += 1
4     if current_number % 2 == 0:
5         continue
6     print(current_number)
```

运行结果:

```
1
3
5
7
9
```

# 在列表之间移动元素

```
1 unconfirmed_users = ['alice', 'brian', 'candace']
2 confirmed_users = []
3
4 while unconfirmed_users:
5     current_user = unconfirmed_users.pop()
6
7     print("Verifying user: " + current_user.title())
8     confirmed_users.append(current_user)
9
10 print("\nThe following users have been confirmed:")
11 for confirmed_user in confirmed_users:
12     print(confirmed_user.title())
```

运行结果:

```
Verifying user: Candace
Verifying user: Brian
Verifying user: Alice

The following users have been confirmed:
Candace
Brian
Alice
```

# 在列表中删除特定值的所有元素

- ▶ 列表用remove方法删除指定值的元素只能删除一个，如果要删除所有指定值的元素，可以利用while循环，一直删除到指定值在列表中不出现为止

```
1 pets = ['dog', 'cat', 'dog', 'goldfish', 'cat', 'rabbit', 'cat']
2 print(pets)
3
4 while 'cat' in pets:
5     pets.remove('cat')
6
7 print(pets)
```

运行结果:

```
['dog', 'cat', 'dog', 'goldfish', 'cat', 'rabbit', 'cat']
['dog', 'dog', 'goldfish', 'rabbit']
```



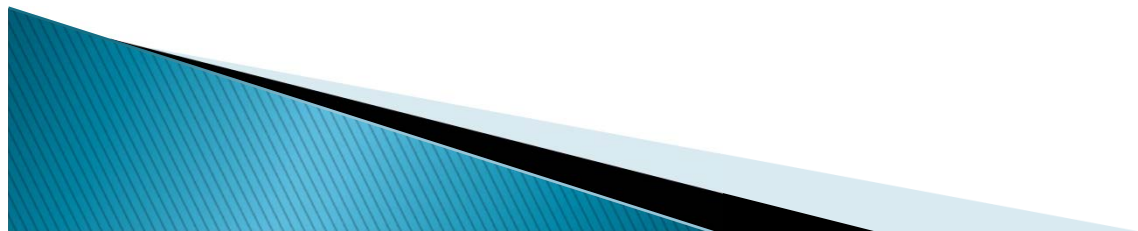
# 由用户输入字典内容

- ▶ 每执行一次循环，提示输入一个键和其对应的值，等用户输入后再添加到字典中

```
1 responses = {}
2
3 polling_active = True
4
5 while polling_active:
6     name = input("\nWhat is your name? ")
7     response = input("Which mountain would you like to climb someday? ")
8
9     responses[name] = response
10
11     repeat = input("Would you like to let another person respond? (yes/ no) ")
12     if repeat == 'no':
13         polling_active = False
14
15 print("\n--- Poll Results ---")
16 for name, response in responses.items():
17     print(name + " would like to climb " + response + ".")
```

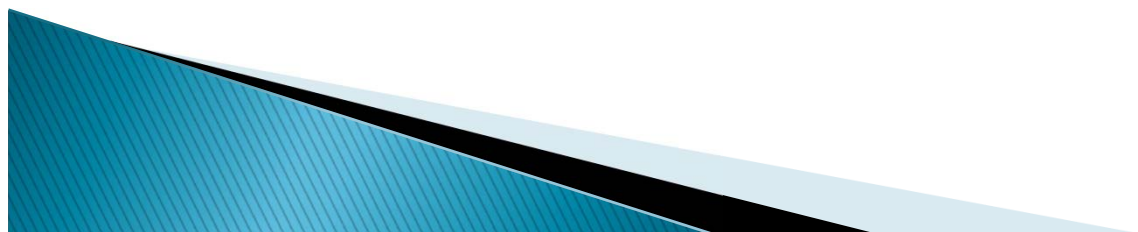
# 总结

- ▶ 用input()获得用户输入
- ▶ 用split()分割输入的字符串
- ▶ while循环
- ▶ break和continue语句
- ▶ 用while语句来处理列表
- ▶ 下一讲的内容是函数



# 作业

- ▶ 教材中第7章课后的练习，选一些写到你的博客上





谢谢！

