Multi-dimensional View of Python

Python面面观

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用Python玩转数据

异常

异常（Exception）

Source

```
>>> 1 / 0
```

```
Traceback (most recent call last):
  File "<pyshell#9>", line 1, in <module>
    1/0
ZeroDivisionError: division by zero
```

Source

```
>>> y = x + 1
```

```
Traceback (most recent call last):
  File "<pyshell#12>", line 1, in
<module>
    y = x + 1
NameError: name 'x' is not defined
```

用异常对象（exception object）表示异常情况

异常

- 查看异常类

```
>>> dir(__builtins__)
```

类　名	描　述
BaseException	所有异常的基类
Exception	常规异常的基类
AttributeError	对象不存在此属性
IndexError	序列中无此索引
IOError	输入/输出操作失败
KeyboardInterrupt	用户中断执行(通常输入Ctr-C)
KeyError	映射中不存在此键
NameError	找不到名字（变量）
SyntaxError	Python 语法错误
TypeError	对类型无效的操作
ValueError	传入无效的参数
ZeroDivisionError	除(或取模)运算的第二个参数为0

异常处理


```
if y != 0:
        print(x / y)
else:
        print('division by zero')
```

try-except

异常

File

```
# Filename: exception1.py
num1 = int(input('Enter the first number: '))
num2 = int(input('Enter the second number: '))
print(num1 / num2)
```

```
Enter the first number: a
Traceback (most recent call last):
  File "C:\Python\programs\exception1.py", line 1, in <module>
    num1 = int(input('Enter the first number: '))
ValueError: invalid literal for int() with base 10: 'a'
```

try-except语句

File

```
# Filename: exception2.py
try:
    num1 = int(input('Enter the first number: '))
    num2 = int(input('Enter the second number: '))
    print(num1 / num2)
except ValueError:
    print('Please input a digit!')
```

```
try:
    raise
except Exception as err:
    print(err)
```

File

```
# Filename: exception3.py
try:
    num1 = int(input('Enter the first number: '))
    num2 = int(input('Enter the second number: '))
    print(num1 / num2)
except ZeroDivisionError as err:
    print('The second number cannot be zero!')
    print(err)
```

多个except子句和一个except块捕捉多个异常

File

```
# Filename: exception4.py
try:
    num1 = int(input('Enter the first number: '))
    num2 = int(input('Enter the second number: '))
    print(num1 / num2)
except ValueError:
    print('Please input a digit!')
except ZeroDivisionError:
    print('The second number cannot be zero!')
```

File

```
# Filename: exception5.py
try:
    num1 = int(input('Enter the first number: '))
    num2 = int(input('Enter the second number: '))
    print(num1 / num2)
except (ValueError, ZeroDivisionError):
    print('Invalid input!')
```

空except子句和as

File

```
# Filename: exception6.py
try:
    num1 = int(input('Enter the first number: '))
    num2 = int(input('Enter the second number: '))
    print(num1 / num2)
except:
    print('Something went wrong!')
```

File

```
# Filename: exception7.py
try:
    num1 = int(input('Enter the first number: '))
    num2 = int(input('Enter the second number: '))
    print(num1 / num2)
except Exception as err:
    print('Something went wrong!')
    print(err)
```

一了百了：except:

else子句


```
# Filename: exception8.py
try:
    num1 = int(input('Enter the first number: '))
    num2 = int(input('Enter the second number: '))
    print(num1 / num2)
except(ValueError, ZeroDivisionError):
    print('Invalid input!')
else:
    print('Aha, everything is OK.')
```

```
Enter the first number: 3
Enter the second number: 5
0.6
Aha, everything is OK.
```

循环

File

```
# Filename: exception9.py
while True:
    try:
        num1 = int(input('Enter the first number: '))
        num2 = int(input('Enter the second number: '))
        print(num1 / num2)
        break
    except ValueError:
        print('Please input a digit!')
    except ZeroDivisionError:
        print('The second number cannot be zero!')
```

```
Enter the first number: a
Please input a digit!
Enter the first number: 3
Enter the second number: 0
The second number cannot be zero!
Enter the first number: 3
Enter the second number: 5
0.6
```

break的位置

File

```
# Filename: exception10.py
while True:
    try:
        num1 = int(input('Enter the first number: '))
        num2 = int(input('Enter the second number: '))
        print(num1 / num2)
    except Exception as err:
        print(err)
    else:
        break
```

File

```
# Filename: exception11.py
aList = [1, 2, 3, 4, 5]
i = 0
while True:
    try:
        print(aList[i])
    except IndexError:
        print('index error')
        break
    else:
        i += 1
```

finally子句

File

```
# Filename: exception12.py
def finallyTest():
    try:
        x = int(input('Enter the first number: '))
        y = int(input('Enter the second number: '))
        print(x / y)
        return 1
    except Exception as err:
        print(err)
        return 0
    finally:
        print('It is a finally clause.')
result = finallyTest()
print(result)
```

```
Enter the first number: 3
Enter the second number: 5
0.6
It is a finally clause.
1
```

```
Enter the first number: 3
Enter the second number: 0
division by zero
It is a finally clause.
0
```

上下文管理器（Context Manager）和with语句


```
# Filename: exception13.py
try:
    f = open('data.txt')
    for line in f:
        print(line, end = '')
except IOError:
    print('Cannot open the file!')
finally:
    f.close()
```


```
# Filename: exception14.py
with open('data.txt') as f:
    for line in f:
        print(line, end='')
```

定义和控制代码块执行前的准备动作及执行后的收尾动作