错误和异常

一个异常例子

```
In : def div(a, b):
...:     return a / b
...:

In : div(1, 0)
---------------------------------------------------------------------------
ZeroDivisionError                         Traceback (most recent call last)
<ipython-input-17-7b96263abbfa> in <module>()
----> 1 div(1, 0)

<ipython-input-16-7c96b92e6f3f> in div(a, b)
      1 def div(a, b):
----> 2     return a / b
      3

ZeroDivisionError: division by zero
```

try-except

```
In : try:
...:     div(1, 0)
...: except ZeroDivisionError:
...:     print('Oops!')
...:
Oops!
```

except多个异常

```
In : l = []

In : try:
...:     l[1]
...: except (IndexError, ValueError):
...:     print('Oops!')
...:
Oops!
```

多个except

```
In : try:
...:     l[1]
...: except IndexError:
...:     print('index error')
...: except ValueError:
...:     print('value error')
...:
index error
```

try-except-else

```
In : try:
...:     div(1, 0)
...: except ZeroDivisionError:
...:     pass
...: else:
...:     print('done')
...:

In : try:
...:     div(1, 2)
...: except ZeroDivisionError:
...:     pass
...: else:
...:     print('done')
...:
done
```

try-finally

```
In : try:
...:     div(1, 0)
...: finally:
...:     print('finally')
...:
finally
---------------------------------------------------------------------------
ZeroDivisionError                         Traceback (most recent call last)
<ipython-input-29-b0a8a917c990> in <module>()
      1 try:
----> 2     div(1, 0)
      3 finally:
      4     print('finally')
      5

<ipython-input-16-7c96b92e6f3f> in div(a, b)
      1 def div(a, b):
----> 2     return a / b
      3

ZeroDivisionError: division by zero
```

组合try语法

```
In : def div(a, b):
...:     try:
...:         result = a / b
...:     except ZeroDivisionError as e:
...:         print(e)
...:     else:
...:         print('result is', result)
...:     finally:
...:         print('executing finally clause')
...:
```

```
In : div(2, 1)
result is 2.0
executing finally clause

In : div(2, 0)
division by zero
executing finally clause
```

不能捕获没有except的异常

```
In : div('2', 1)
executing finally clause
---------------------------------------------------------------------------
TypeError                                 Traceback (most recent call last)
<ipython-input-5-33341985be38> in <module>()
----> 1 div('2', 1)

<ipython-input-1-73563ef42b73> in div(a, b)
      1 def div(a, b):
      2     try:
----> 3         result = a / b
      4     except ZeroDivisionError as e:
      5         print(e)

TypeError: unsupported operand type(s) for /: 'str' and 'int'
```

使用except而不带任何异常类型

```
In : try:
...:     div(1, 0)
...: except:
...:     print('Oops')
...:
Oops
```

用户自定义异常

```
class NetworkError(Exception):
    pass


In : raise NetworkError('network error')
---------------------------------------------------------------------------
NetworkError                              Traceback (most recent call last)
<ipython-input-63-f80f21bf6d61> in <module>()
----> 1 raise NetworkError('network error')




In : try:
...:     raise NetworkError('network error')
...: except NetworkError:
...:     print('Catch!')
...:
Catch!
```

内置异常多以Error结尾，自定义异常建议

1. 以Exception后缀表示可修复异常
2. Error后缀表示不可修复异常

```python
class RequestException(Exception):
    pass


class RequestError(Exception):
    pass
```

延伸阅读

1. https://docs.python.org/3/tutorial/errors.html