Lesson 9 Python Exception Handling

1. Exception and Error

Program error refers to syntax error (wrong command) and logic error (wrong result of program execution), while program exception is an accidence taking place during program execution and affecting the normal execution of the program. For example, the file to be opened doesn't exist, dividend is 0, wrong data type of the operation, storage error, internet request error.

In normal case, exception occurs when the program cannot be processed normally in Python. Exception is the Python object representing a error. When there is exception in Python script, we need to catch and handle it, otherwise the program will stop execution.

2. Common Types of Exception

1) NameError：Try to access a variable without statement
2) ZeroDivisionError：The dividend is 0
3) SyntaxError：Wrong syntax
4) IndexError：Index exceed the range of sequence
5) KeyError：Request a dictionary keyword that does not exist
6) IOError：Input and output error
7) AttributeError：Attempt to access unknown object property
8) ValueError：The parameter type passed to the function is correct

3. Exception Handling

Exceptions may be thrown while the code is being interpreted and executed, and exceptions can be handled in a **try....except...** way. If an exception occurs in the code in **try**, it will jump to **except** to catch and handle the exception.

```
try:
    print('try...')
    r = 10 / int('2')
    print('result:', r)
except ValueError as e:
    print('ValueError:', e)
except ZeroDivisionError as e:
    print('ZeroDivisionError:', e)
else:
    print('no error!')
finally:
    print('finally...')
print('END')
```

```
try...
result: 5.0
no error!
finally...
END
```

1) The try code block is the code where an exception may occur

2) Behind except are the exception type may occur and the handling content.

3) except has several branches. If the exception occurs in and matches the first except, it will exit. If the exception class has a child class and a parent class, and the parent class exception is in front, the subsequent child class exceptions will not be matched.

4) else statement will be executed when there is no exception.

5) finally statement will be executed no matter there is exception or not.