

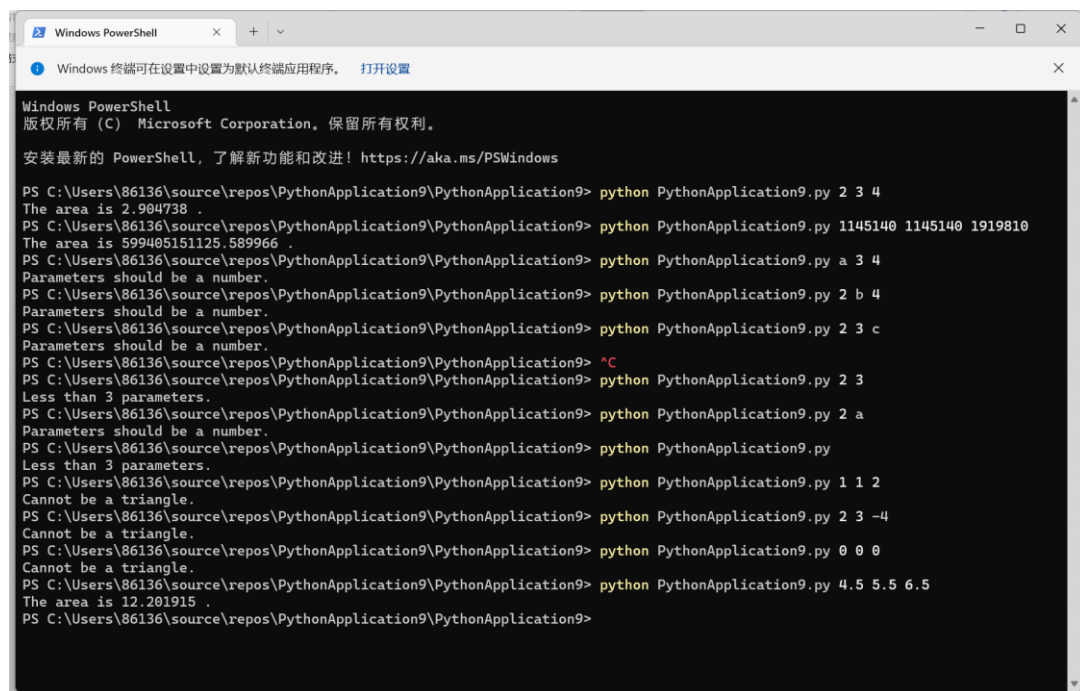
## 实验2

还是在源文件所在处从Terminal打开，输入操作语句

“python PythonApplication9.py 2 3 4”

即可。后三位是三个参数。

```
import math
def area(a,b,c):
    s=float((a+b+c)/2)
    sum_area=math.sqrt(s*(s-a)*(s-b)*(s-c))
    return sum_area
class InvalidTriangleError(Exception):
    def __init__(self,message):
        self.message=message
import sys
try:
    a=float(sys.argv[1])
    b=float(sys.argv[2])
    c=float(sys.argv[3])
    if((a+b-c)<1E-8 or (b+c-a)<1E-8 or (a+c-b)<1E-8 ):
        raise InvalidTriangleError('Cannot be a triangle.')
except IndexError:
    print('Less than 3 parameters.')
except ValueError:
    print('Parameters should be a number.')
except InvalidTriangleError as ex:
    print(ex.message)
else:
    print('The area is %f .'%(area(a,b,c)))
```



```
Windows PowerShell
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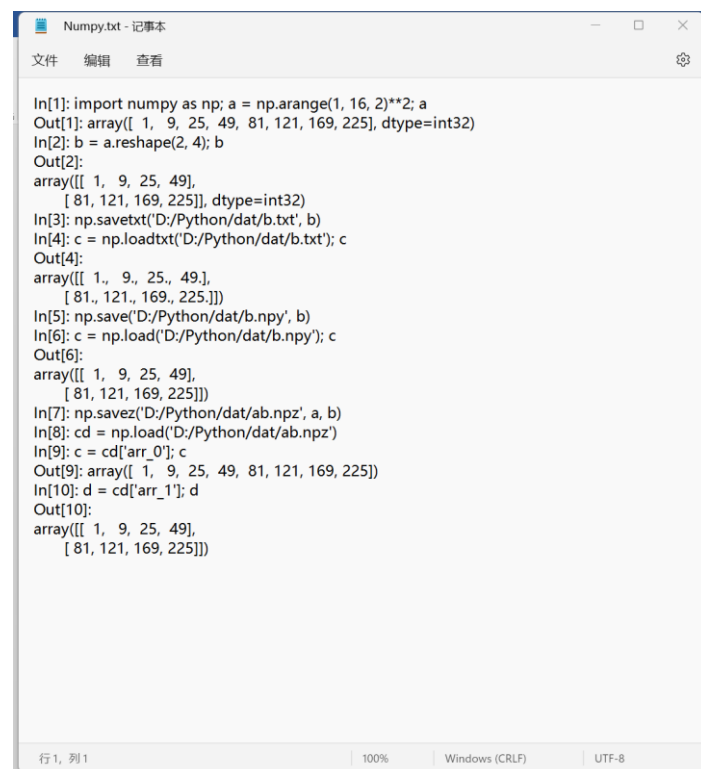
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 2 3 4
The area is 2.904738
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 1145140 1145140 1919810
The area is 599405151125.589966
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py a 3 4
Parameters should be a number.
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 2 b 4
Parameters should be a number.
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 2 3 c
Parameters should be a number.
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> ^C
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 2 3
Less than 3 parameters.
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 2 a
Parameters should be a number.
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py
Less than 3 parameters.
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 1 1 2
Cannot be a triangle.
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 2 3 -4
Cannot be a triangle.
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 0 0 0
Cannot be a triangle.
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9> python PythonApplication9.py 4.5 5.5 6.5
The area is 12.201915
PS C:\Users\86136\source\repos\PythonApplication9\PythonApplication9>
```

### 实验 3

实验 3 并不难，这里可以使用 python 保存标准输入流，然后输出重定向到指定文件，完成函数输出以后再回到保存的 SavedStdout，并在控制台给出输出成功提示。strip() 删掉数据中的换行符。

```
def extract_data(filename):
    with open(filename, 'r') as infile:
        for line in infile :
            if line.find('In')>=0:
                words=line.strip().split(']:')
                print(words[1])

    return
import sys
savedStdout=sys.stdout
with open('out.txt','w+') as file:
    sys.stdout=file
    extract_data('C:/Numpy.txt')
sys.stdout=savedStdout
print("Operation Successful.")
```



```
In[1]: import numpy as np; a = np.arange(1, 16, 2)**2; a
Out[1]: array([ 1,  9, 25, 49, 81, 121, 169, 225], dtype=int32)
In[2]: b = a.reshape(2, 4); b
Out[2]:
array([[ 1,  9, 25, 49],
       [81, 121, 169, 225]], dtype=int32)
In[3]: np.savetxt('D:/Python/dat/b.txt', b)
In[4]: c = np.loadtxt('D:/Python/dat/b.txt'); c
Out[4]:
array([[ 1.,  9., 25., 49.],
       [81., 121., 169., 225.]])
In[5]: np.save('D:/Python/dat/b.npy', b)
In[6]: c = np.load('D:/Python/dat/b.npy'); c
Out[6]:
array([[ 1,  9, 25, 49],
       [81, 121, 169, 225]])
In[7]: np.savez('D:/Python/dat/ab.npz', a, b)
In[8]: cd = np.load('D:/Python/dat/ab.npz')
In[9]: c = cd['arr_0']; c
Out[9]: array([ 1,  9, 25, 49, 81, 121, 169, 225])
In[10]: d = cd['arr_1']; d
Out[10]:
array([[ 1,  9, 25, 49],
       [81, 121, 169, 225]])
```

out.txt - 记事本

文件 编辑 查看

```
import numpy as np; a = np.arange(1, 16, 2)**2; a
b = a.reshape(2, 4); b
np.savetxt('D:/Python/dat/b.txt', b)
c = np.loadtxt('D:/Python/dat/b.txt'); c
np.save('D:/Python/dat/b.npy', b)
c = np.load('D:/Python/dat/b.npy'); c
np.savez('D:/Python/dat/ab.npz', a, b)
cd = np.load('D:/Python/dat/ab.npz')
c = cd['arr_0']; c
d = cd['arr_1']; d
```

行 1, 列 1      100%      Windows (CRLF)      UTF-8

C:\ProgramData\Anaconda3\python.exe

```
Operation Successful.
Press any key to continue . . .
```