软件工程-作业一

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1.

等价类划分：

输入条件	有效等价类	编号	无效等价类	编号
接种号	首位是"A","B"或"C"	1	首位是字母但不为"A","B"或"C"	2
接种号			首位不是字母	3
接种号	2-3位是01,02,03,04,05,06,07,08,09,10,11或12	4	2-3位均是数字但不是01,02,03,04,05,06,07,08,09,10,11或12	5
接种号			2-3位不都是数字	6
接种号	4-5位是07,13或23	7	4-5位均是数字但不是07,13或23	8
接种号			4-5位不都是数字	9
接种号	6-10位均是数字	10	6-10位不都是数字	11
接种号	输入是10位	12	输入不是10位	13

数据测试：

编号	接种号	覆盖等价类	输入的合法性
1	B0107123456	1 4 7 10 13	非法
2	A0107ABCDE	1 4 7 11 12	非法
3	A01A854321	1 4 9 10 12	非法
4	A010854321	1 4 8 10 13	非法
5	ABB0754321	1 6 7 10 12	非法
6	A130754321	1 5 7 10 12	非法
7	1010754321	3 4 7 10 12	非法
8	P010754321	2 4 7 10 12	非法
9	A010754321	1 4 7 10 12	合法

2.

代码一:

结点	行数
1	1-4
2	5
3	7
4	8
5	10
6	12
7	14-16
8	17
9	18-19
10	21
11	23
12	25

独立路径	测试数据	结果
1,2,3,4,5,6,7,8,9,10,11,12	i=1,j_initial=1,a[]="AB",b[]="ACB"	2
1,2,3,4,5,7,9,10,11,12	i=1,j_initial=1,a[]="A",b[]="B"	0
1,2,3,4,5,6,10,11,12	i=1,j_initial=1,a[]="A",b[]="A"	1
1,2,3,4,11,12	i=1,j_initial=2,a[]="A",b[]="A"	0
1,2,12	i=2,j_initial=1,a[]="A",b[]="A"	0

环路复杂度 = 15-12+2 = 5

代码二：

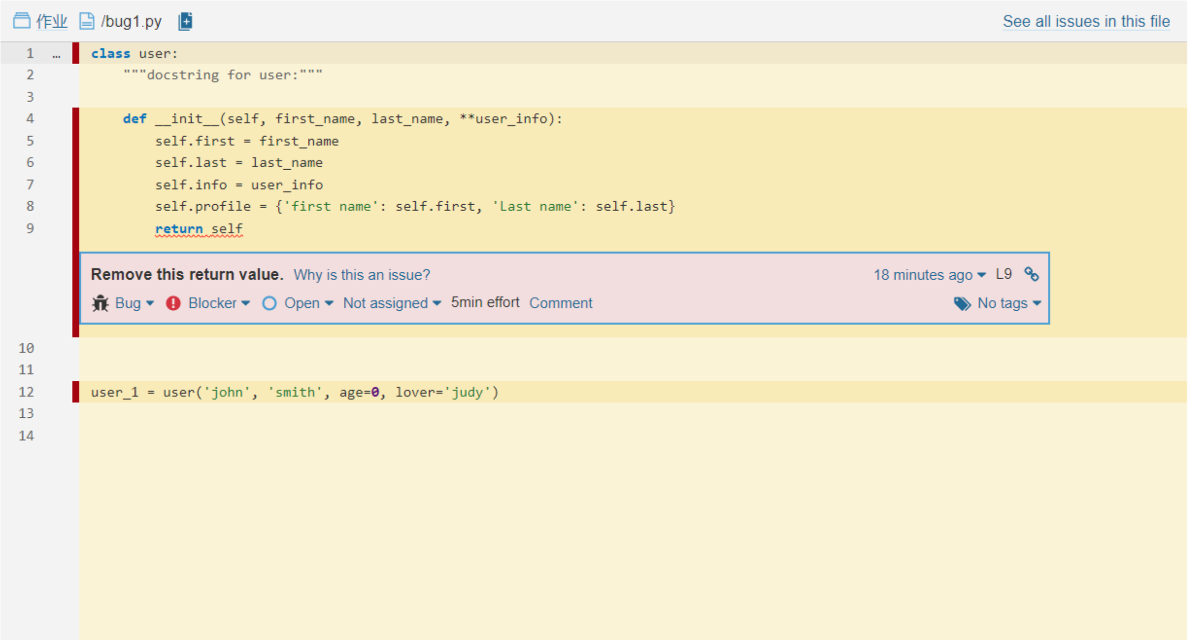
结点	行数
1	1-3
2	4
3	5-6
4	7
5	8
6	10
7	11
8	13-14
9	16

独立路径	测试数据	结果
1,3,6,7,9	2是素数，该路径不存在	
1,3,4,6,8,9	n=3	3是素数
1,3,4,5,6,7,9	n=4	4不是素数
1,3,6,8,9	n=2	2是素数
1,2,9	n=1	1不是素数

环路复杂度 = 12-9+2 = 5

3.

BUG1：

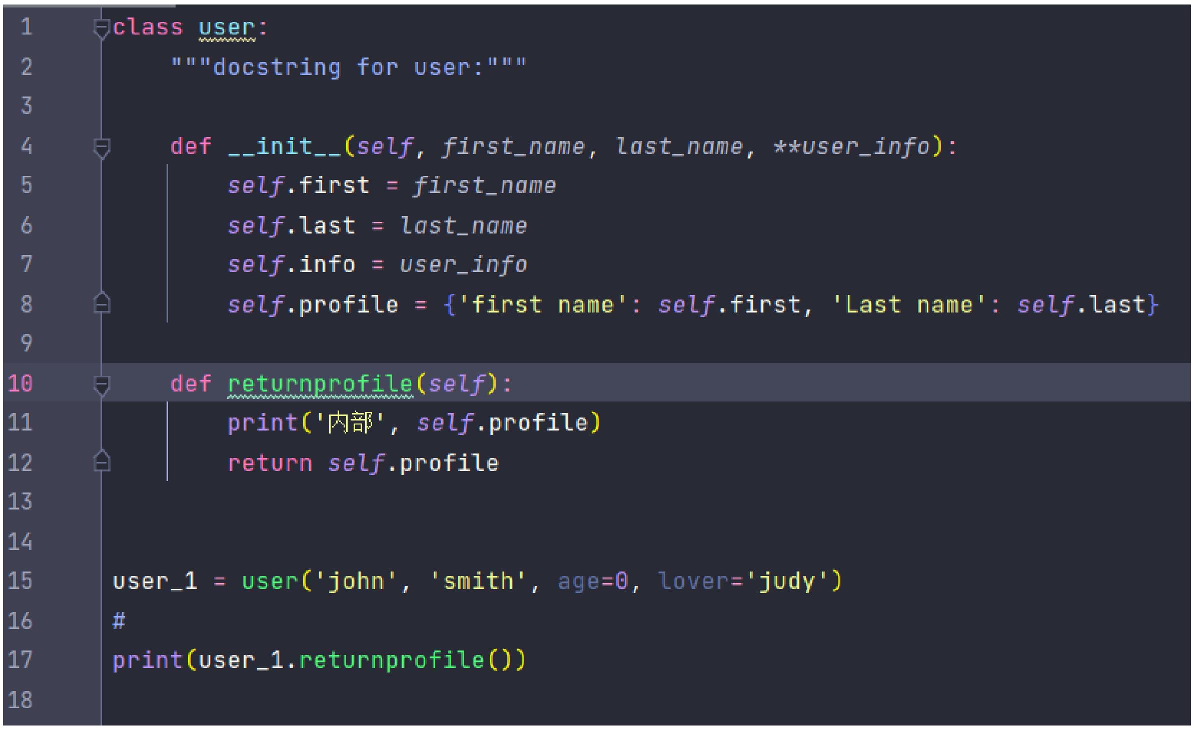


```
class user:
    """docstring for user:"""

    def __init__(self, first_name, last_name, **user_info):
        self.first = first_name
        self.last = last_name
        self.info = user_info
        self.profile = {'first name': self.first, 'Last name': self.last}
        return self
```

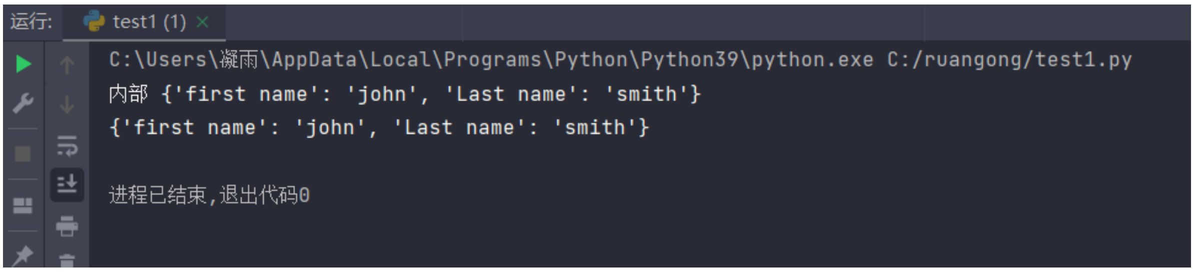
Remove this return value.

```


user_1 = user('john', 'smith', age=0, lover='judy')


```

该BUG类型为Blocker，具体原因是python中**init**方法需要返回 None。 如果 **init** 方法产生或返回 None 以外的任何表达式，则会引发 TypeError。 即使返回一些计算结果为 None 的表达式不会引发错误，但会引发警告。修改方法是重新定义一个类方法来进行输出，如下图所示，修改后可正常运行。

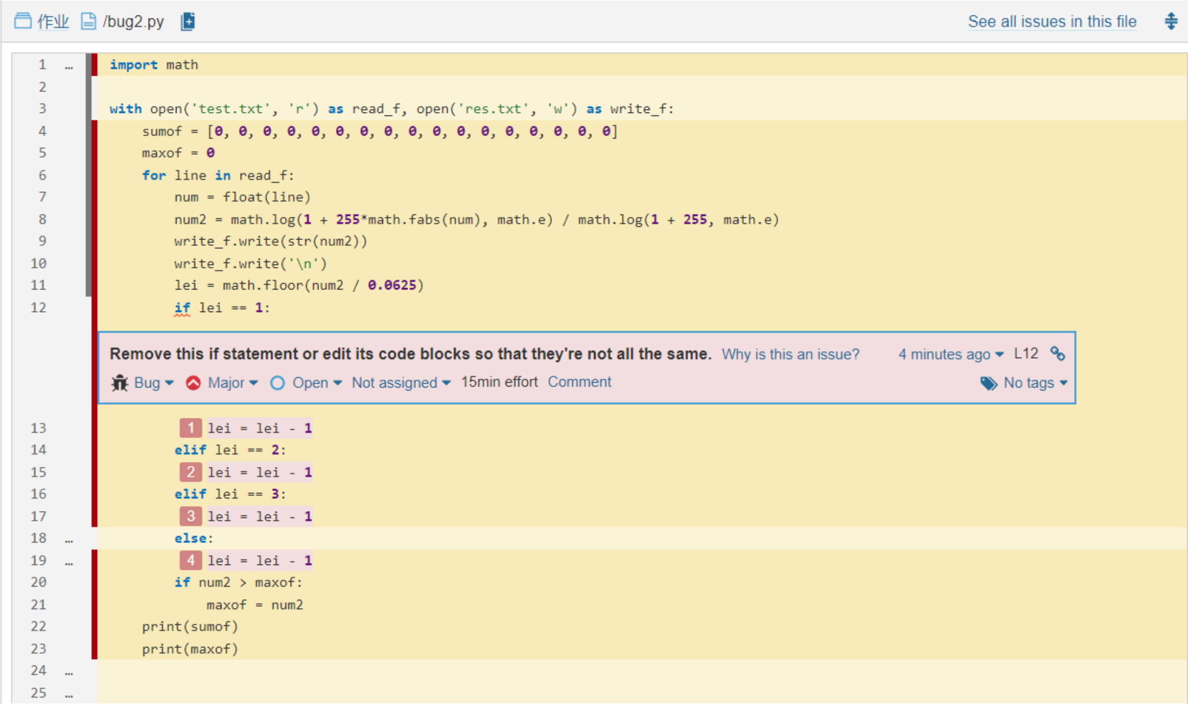


```
class user:
    """docstring for user:"""

    def __init__(self, first_name, last_name, **user_info):
        self.first = first_name
        self.last = last_name
        self.info = user_info
        self.profile = {'first name': self.first, 'Last name': self.last}

    def returnprofile(self):
        print('内部', self.profile)
        return self.profile


user_1 = user('john', 'smith', age=0, lover='judy')
#
print(user_1.returnprofile())

```



```
C:\Users\凝雨\AppData\Local\Programs\Python\Python39\python.exe C:/ruangong/test1.py
内部 {'first name': 'john', 'Last name': 'smith'}
{'first name': 'john', 'Last name': 'smith'}

进程已结束,退出代码0
```

BUG2:



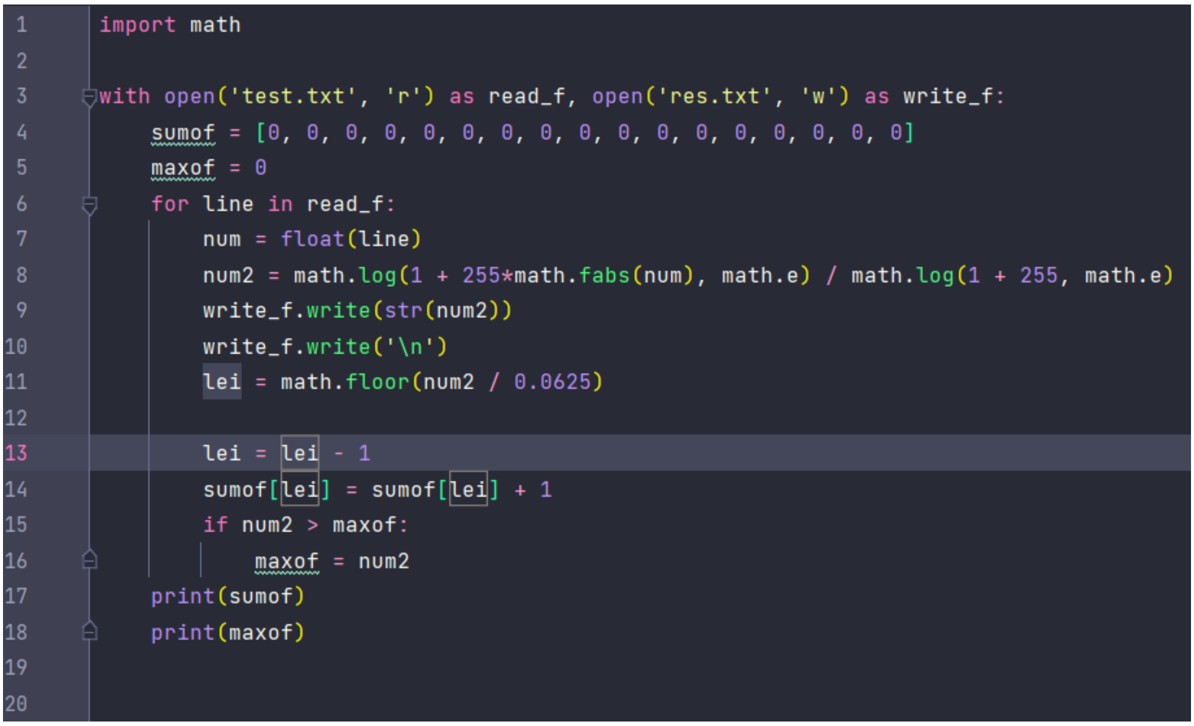
```python
import math

with open('test.txt', 'r') as read_f, open('res.txt', 'w') as write_f:
    sumof = [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
    maxof = 0
    for line in read_f:
        num = float(line)
        num2 = math.log(1 + 255*math.fabs(num), math.e) / math.log(1 + 255, math.e)
        write_f.write(str(num2))
        write_f.write('\n')
        lei = math.floor(num2 / 0.0625)
        if lei == 1:
```

Remove this if statement or edit its code blocks so that they're not all the same. Why is this an issue? 4 minutes ago L12

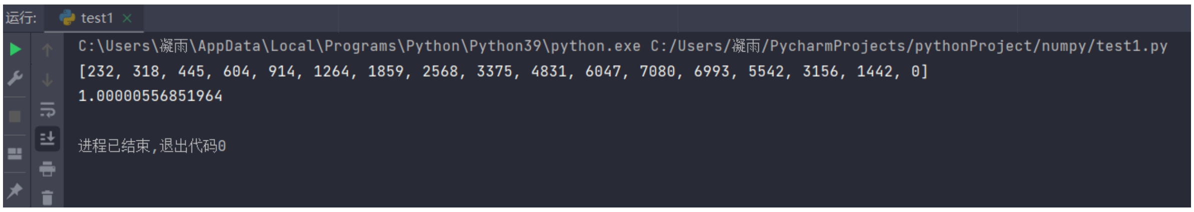
Bug Major Open Not assigned 15min effort Comment No tags

```python
            lei = lei - 1
        elif lei == 2:
            lei = lei - 1
        elif lei == 3:
            lei = lei - 1
        else:
            lei = lei - 1
        if num2 > maxof:
            maxof = num2
    print(sumof)
    print(maxof)
```

该BUG类型为Major，具体原因是在 if 链的每个分支中都有相同的操作是错误的。一般来说要么发生了复制粘贴错误，应该执行不同的操作，要么根本不应该有 if 链。修改方法是取消if 链，按顺序继续执行，如下图所示，修改后可正常运行。

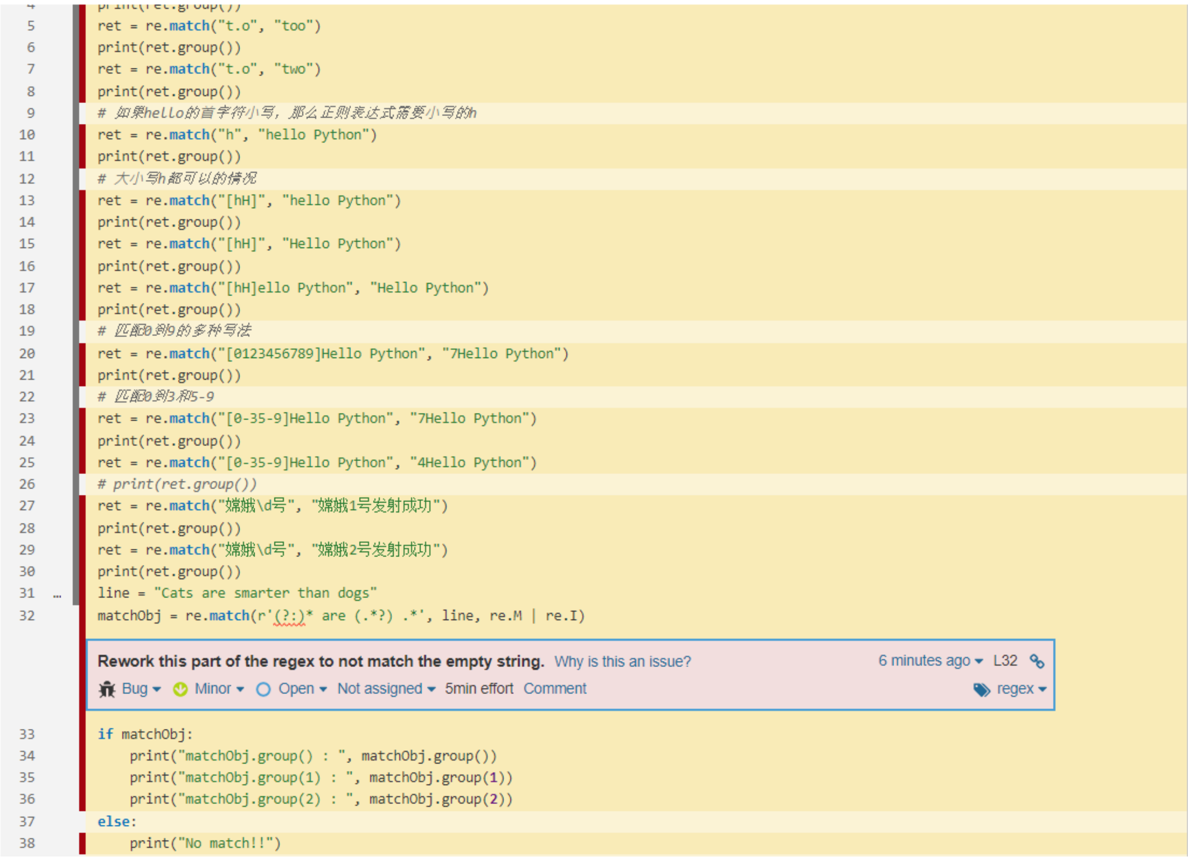


```python
import math

with open('test.txt', 'r') as read_f, open('res.txt', 'w') as write_f:
    sumof = [0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0]
    maxof = 0
    for line in read_f:
        num = float(line)
        num2 = math.log(1 + 255*math.fabs(num), math.e) / math.log(1 + 255, math.e)
        write_f.write(str(num2))
        write_f.write('\n')
        lei = math.floor(num2 / 0.0625)

        lei = lei - 1
        sumof[lei] = sumof[lei] + 1
        if num2 > maxof:
            maxof = num2
    print(sumof)
    print(maxof)
```



```
C:\Users\凝雨\AppData\Local\Programs\Python\Python39\python.exe C:/Users/凝雨/PycharmProjects/pythonProject/numpy/test1.py
[232, 318, 445, 604, 914, 1264, 1859, 2568, 3375, 4831, 6047, 7080, 6993, 5542, 3156, 1442, 0]
1.00000556851964

进程已结束,退出代码0
```

BUG3：



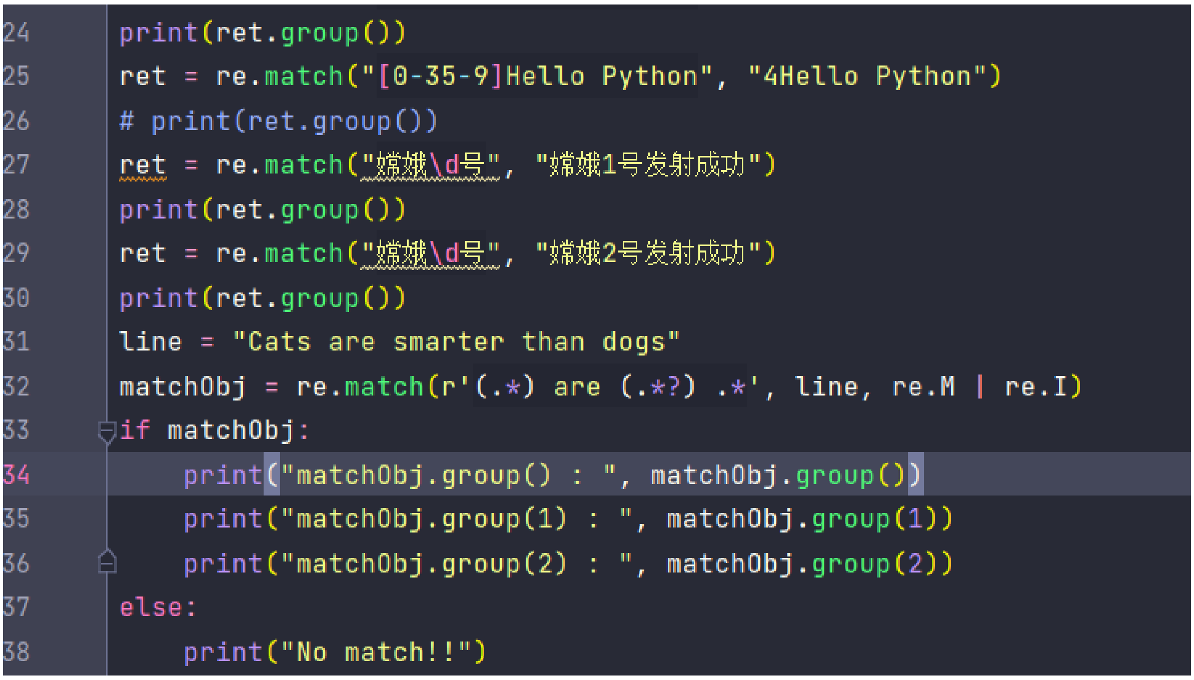
```
print(ret.group())
ret = re.match("t.o", "too")
print(ret.group())
ret = re.match("t.o", "two")
print(ret.group())
# 如果hello的首字符小写，那么正则表达式需要小写的h
ret = re.match("h", "hello Python")
print(ret.group())
# 大小写h都可以的情况
ret = re.match("[hH]", "hello Python")
print(ret.group())
ret = re.match("[hH]", "Hello Python")
print(ret.group())
ret = re.match("[hH]ello Python", "Hello Python")
print(ret.group())
# 匹配0到9的多种写法
ret = re.match("[0123456789]Hello Python", "7Hello Python")
print(ret.group())
# 匹配0到3和5-9
ret = re.match("[0-35-9]Hello Python", "7Hello Python")
print(ret.group())
ret = re.match("[0-35-9]Hello Python", "4Hello Python")
# print(ret.group())
ret = re.match("嫦娥\d号", "嫦娥1号发射成功")
print(ret.group())
ret = re.match("嫦娥\d号", "嫦娥2号发射成功")
print(ret.group())
line = "Cats are smarter than dogs"
matchObj = re.match(r'(?:)* are (.*?) .*', line, re.M | re.I)
```

Rework this part of the regex to not match the empty string. Why is this an issue? 6 minutes ago ▾ L32

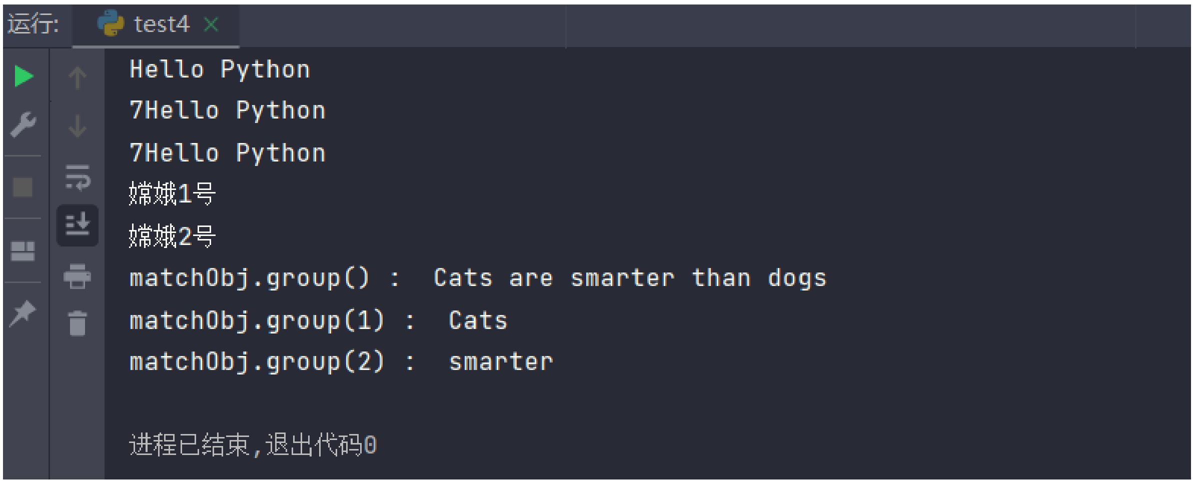
Bug ▾ Minor ▾ ○ Open ▾ Not assigned ▾ 5min effort Comment regex ▾

```
if matchObj:
    print("matchObj.group() : ", matchObj.group())
    print("matchObj.group(1) : ", matchObj.group(1))
    print("matchObj.group(2) : ", matchObj.group(2))
else:
    print("No match!!")
```

该BUG类型为Minor，具体原因是正则表达式不应包含正文与空字符串匹配的重复模式， 通常可能是正则表达式的一部分是多余的。修改方法是修改正则表达式，使得匹配出非空字符串，如下图所示，修改后可正常运行。

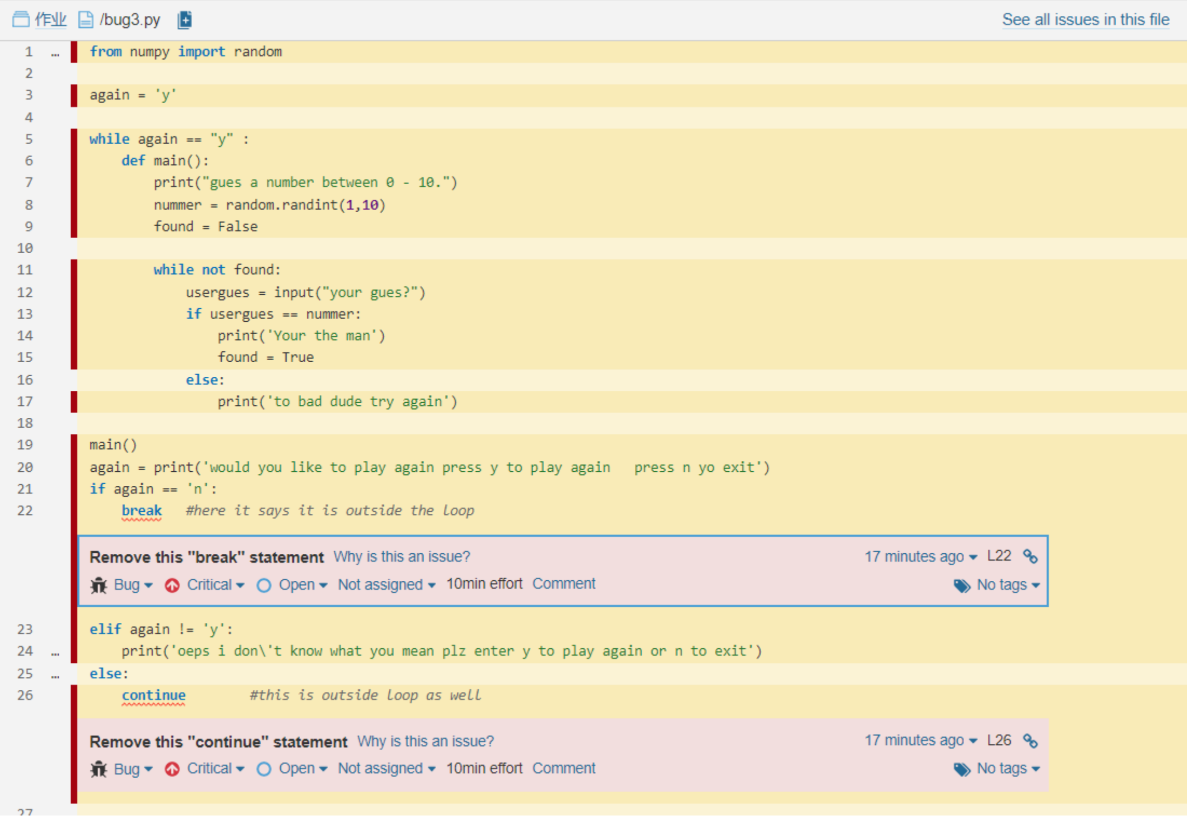


```
print(ret.group())
ret = re.match("[0-35-9]Hello Python", "4Hello Python")
# print(ret.group())
ret = re.match("嫦娥\d号", "嫦娥1号发射成功")
print(ret.group())
ret = re.match("嫦娥\d号", "嫦娥2号发射成功")
print(ret.group())
line = "Cats are smarter than dogs"
matchObj = re.match(r'(.*) are (.*?) .*', line, re.M | re.I)
if matchObj:
    print("matchObj.group() : ", matchObj.group())
    print("matchObj.group(1) : ", matchObj.group(1))
    print("matchObj.group(2) : ", matchObj.group(2))
else:
    print("No match!!")
```



```
Hello Python
7Hello Python
7Hello Python
嫦娥1号
嫦娥2号
matchObj.group() :  Cats are smarter than dogs
matchObj.group(1) :  Cats
matchObj.group(2) :  smarter

进程已结束,退出代码0
```

BUG4:



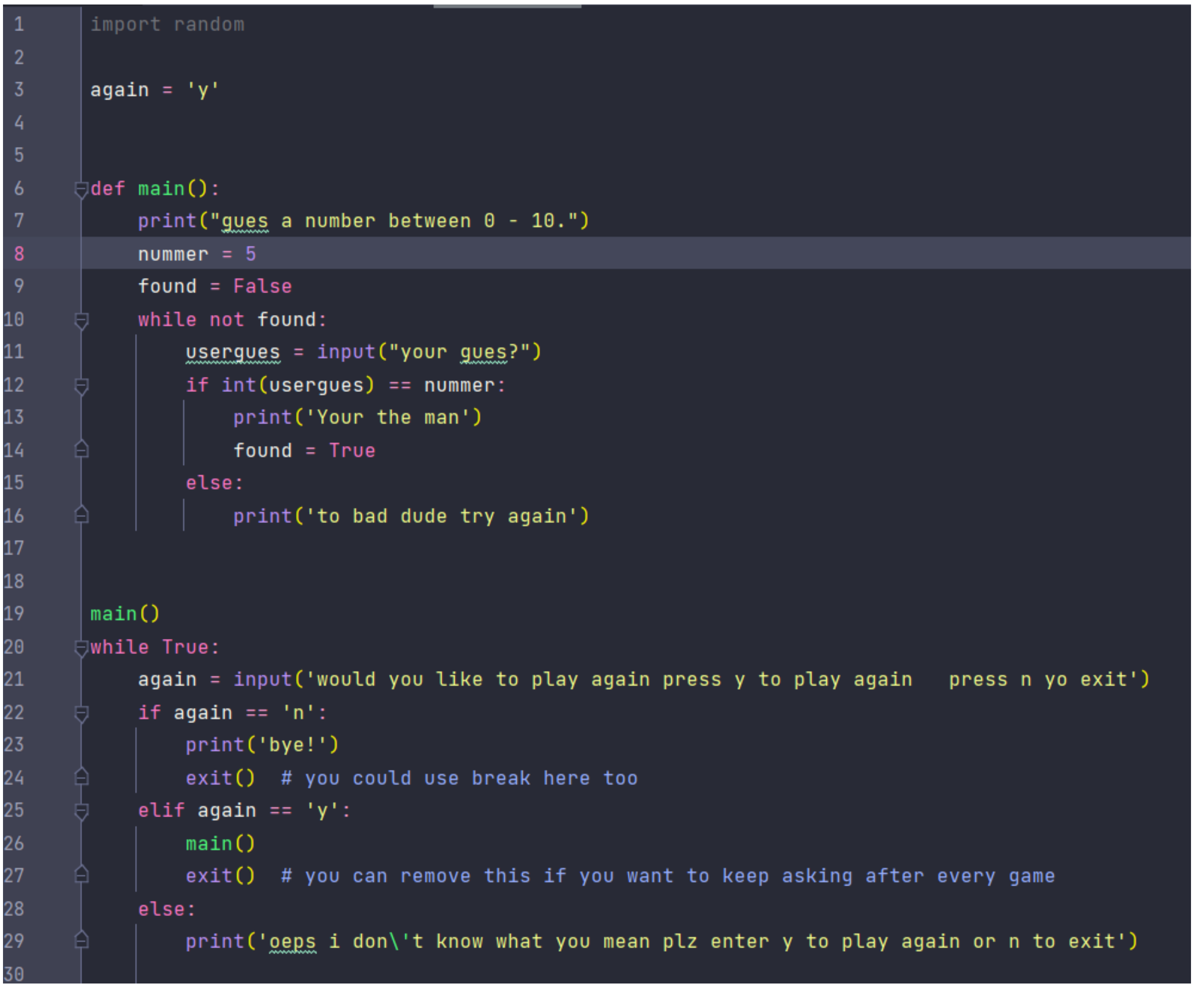
```
from numpy import random

again = 'y'

while again == "y" :
    def main():
        print("gues a number between 0 - 10.")
        nummer = random.randint(1,10)
        found = False

        while not found:
            usergues = input("your gues?")
            if usergues == nummer:
                print('Your the man')
                found = True
            else:
                print('to bad dude try again')

main()
again = print('would you like to play again press y to play again   press n yo exit')
if again == 'n':
    break   #here it says it is outside the loop
```

Remove this "break" statement Why is this an issue? 17 minutes ago L22
Bug Critical Open Not assigned 10min effort Comment No tags

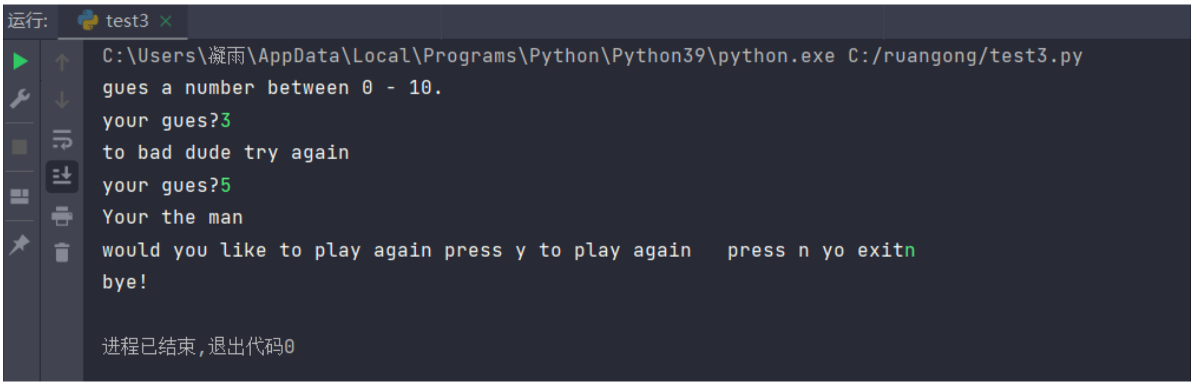
```
elif again != 'y':
    print('oeps i don\'t know what you mean plz enter y to play again or n to exit')
else:
    continue        #this is outside loop as well
```

Remove this "continue" statement Why is this an issue? 17 minutes ago L26
Bug Critical Open Not assigned 10min effort Comment No tags

该BUG类型为Critical，具体原因是break 和 continue 是非结构化的控制流语句，所以当导入循环外的 break 或 continue 的模块时，较新的 Python 版本会引发 SyntaxError。修改方法是在if语句中使用exit()代替break，删除continue，如下图所示，修改后可正常运行。

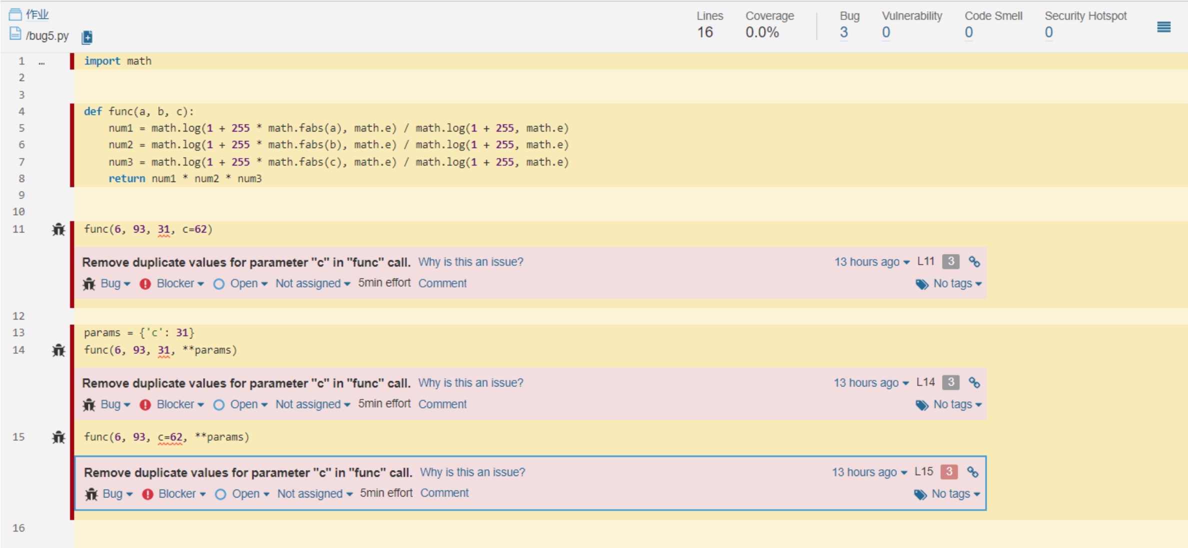


```python
import random

again = 'y'


def main():
    print("gues a number between 0 - 10.")
    nummer = 5
    found = False
    while not found:
        usergues = input("your gues?")
        if int(usergues) == nummer:
            print('Your the man')
            found = True
        else:
            print('to bad dude try again')


main()
while True:
    again = input('would you like to play again press y to play again   press n yo exit')
    if again == 'n':
        print('bye!')
        exit()  # you could use break here too
    elif again == 'y':
        main()
        exit()  # you can remove this if you want to keep asking after every game
    else:
        print('oeps i don\'t know what you mean plz enter y to play again or n to exit')

```



```
C:\Users\凝雨\AppData\Local\Programs\Python\Python39\python.exe C:/ruangong/test3.py
gues a number between 0 - 10.
your gues?3
to bad dude try again
your gues?5
Your the man
would you like to play again press y to play again   press n yo exitn
bye!

进程已结束,退出代码0
```

BUG5:



Lines	Coverage	Bug	Vulnerability	Code Smell	Security Hotspot
16	0.0%	3	0	0	0

```python
1   import math
2
3
4   def func(a, b, c):
5       num1 = math.log(1 + 255 * math.fabs(a), math.e) / math.log(1 + 255, math.e)
6       num2 = math.log(1 + 255 * math.fabs(b), math.e) / math.log(1 + 255, math.e)
7       num3 = math.log(1 + 255 * math.fabs(c), math.e) / math.log(1 + 255, math.e)
8       return num1 * num2 * num3
9
10
11  func(6, 93, 31, c=62)
```

Remove duplicate values for parameter "c" in "func" call. Why is this an issue? 13 hours ago L11 3

Bug Blocker ○ Open Not assigned 5min effort Comment No tags

```python
12
13  params = {'c': 31}
14  func(6, 93, 31, **params)
```

Remove duplicate values for parameter "c" in "func" call. Why is this an issue? 13 hours ago L14 3

Bug Blocker ○ Open Not assigned 5min effort Comment No tags

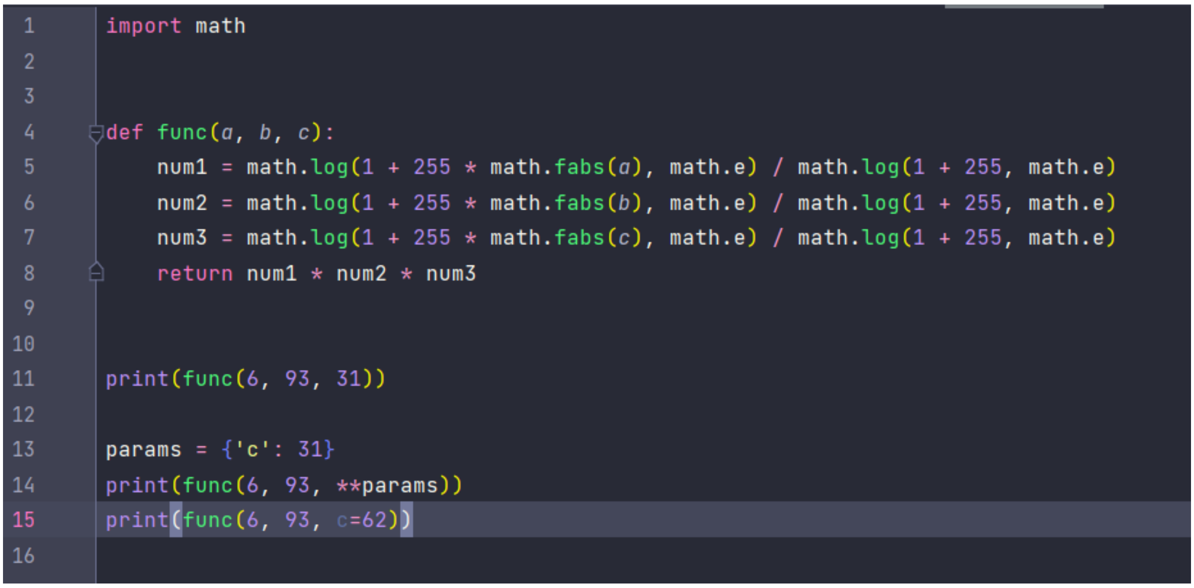
```python
15  func(6, 93, c=62, **params)
```

Remove duplicate values for parameter "c" in "func" call. Why is this an issue? 13 hours ago L15 3

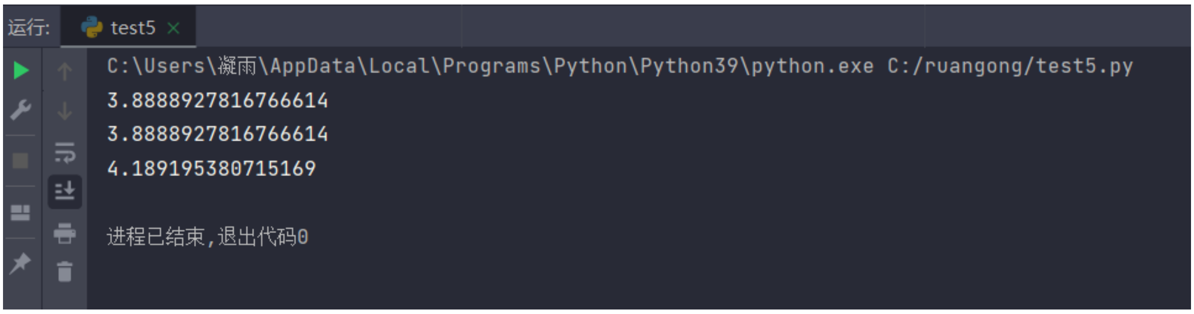
Bug Blocker ○ Open Not assigned 5min effort Comment No tags

```python
16
```

该BUG类型为Blocker，具体原因是调用函数时，每个参数只接受一个值。 Python 解释器对于类似function(a=1, a=2) 的代码时会引发 SyntaxError，还有一些参数是通过解包提供的，并且相同的参数提供了两次。当调用函数同一参数传入多个值时，便会引发问题。修改方法是减少形式参数，确保每个参数只传入一个值，如下图所示，修改后可正常运行。



```python
import math


def func(a, b, c):
    num1 = math.log(1 + 255 * math.fabs(a), math.e) / math.log(1 + 255, math.e)
    num2 = math.log(1 + 255 * math.fabs(b), math.e) / math.log(1 + 255, math.e)
    num3 = math.log(1 + 255 * math.fabs(c), math.e) / math.log(1 + 255, math.e)
    return num1 * num2 * num3


print(func(6, 93, 31))

params = {'c': 31}
print(func(6, 93, **params))
print(func(6, 93, c=62))

```



```
C:\Users\凝雨\AppData\Local\Programs\Python\Python39\python.exe C:/ruangong/test5.py
3.8888927816766614
3.8888927816766614
4.189195380715169

进程已结束,退出代码0
```