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Program: Calculate area and moment of inertia of rectangle and triangle of same width and height

Python3

```
#program to calculate moment of inertia and area

# of rectangle and triangle

# take height and width as input

# use class inheritance for rectangle and

# module for triangle calculation

# python Jupyter notebook editor

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#input of height and width

height = input('height = ')

height = int(height)

width = input('width = ')

width = int(width)

# rectangle class

class rec:

    # constructor

    def __init__(self,h,b):

        self.h = h

        self.b = b

class cal1:

    def __init__(self,h,b):

# cal1 is inheritance of rec

    pass
```

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```
def area1(b,h):  
# area of rectangle calculation in area1 method  
    area = b*h  
    return area  
  
class cal2:  
    def __init__(self,h,b):  
# cal2 is inheritance of rec  
        pass  
    def moi1(b,h):  
# moment of inertia of rectangle calculation in moi1 method  
        moi = b*(h**3)/12  
        return moi  
  
# call methods with specified class  
a = cal1.area1(height,width)  
b = cal2.moi1(height,width)  
print('Area of rectangle = ',a)  
print('MOI of rectangle = ',b)  
  
#import triangle calculation properties from traig module  
from triag2 import area2, moi2  
# call methods of imported module  
c = area2(height,width)  
d = moi2(height,width)  
print('Area of triangle = ',c)  
print('MOI of triangle = ',d)  
  
Module  
  
def area2(height,width):  
# area of triangle calculation
```

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```
area = 0.5*height*width

return area

def moi2(height,width):

# moment of inertia of triangle calculation

    moi = width*(height**3)/36

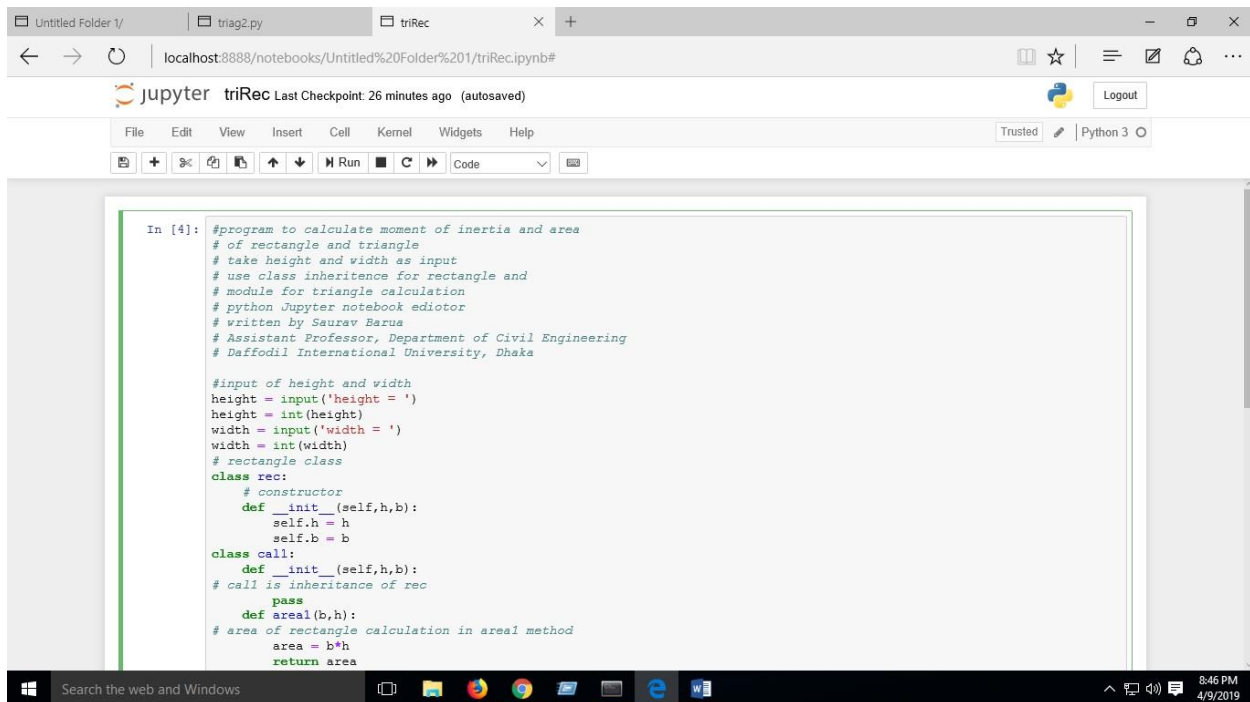
    return moi
```

Output

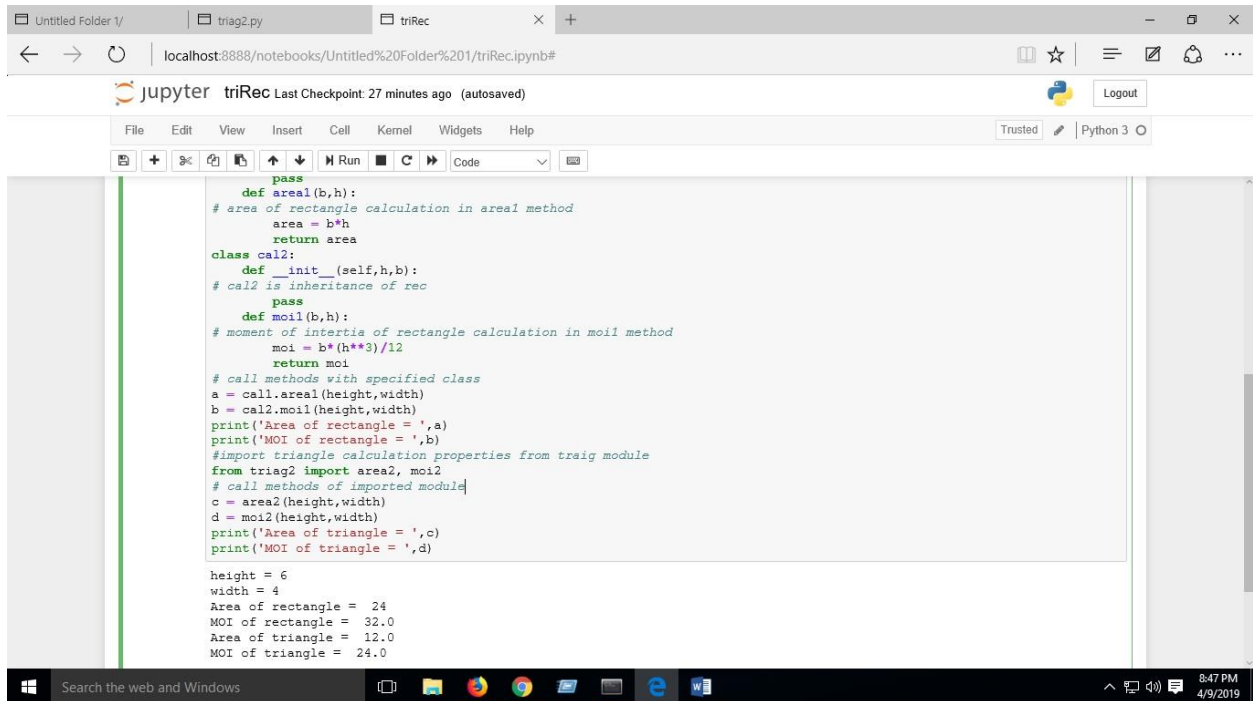
```
height = 6
width = 4
Area of rectangle = 24
MOI of rectangle = 32.0
Area of triangle = 12.0
MOI of triangle = 24.0
```

In []:

Screen shot of Program



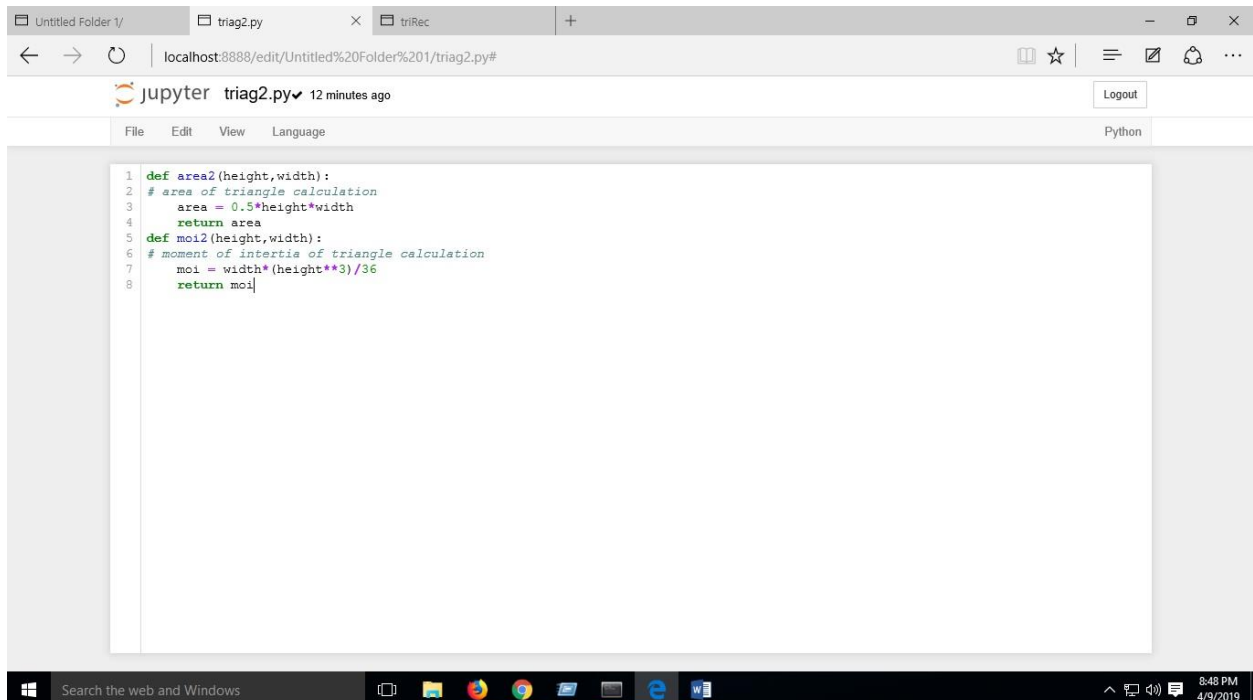
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The screenshot shows a Jupyter Notebook window titled 'triRec' with a last checkpoint of 27 minutes ago. The notebook contains a Python script that defines functions for calculating the area and moment of inertia for a rectangle and a triangle. The script also includes a class 'cal2' that inherits from 'rec' and defines methods for calculating the area and moment of inertia. The script is executed, and the output is displayed in the console.

```
pass
def areal(b,h):
    # area of rectangle calculation in areal method
    area = b*h
    return area
class cal2:
    def __init__(self,h,b):
        # cal2 is inheritance of rec
        pass
    def moi1(b,h):
        # moment of inertia of rectangle calculation in moi1 method
        moi = b*(h**3)/12
        return moi
# call methods with specified class
a = cal1.areal(height,width)
b = cal2.moi1(height,width)
print('Area of rectangle = ',a)
print('MOI of rectangle = ',b)
# import triangle calculation properties from triag module
from triag2 import area2, moi2
# call methods of imported module
c = area2(height,width)
d = moi2(height,width)
print('Area of triangle = ',c)
print('MOI of triangle = ',d)

height = 6
width = 4
Area of rectangle = 24
MOI of rectangle = 32.0
Area of triangle = 12.0
MOI of triangle = 24.0
```



The screenshot shows a Jupyter Notebook window titled 'triag2.py' with a last checkpoint of 12 minutes ago. The notebook contains a Python script that defines functions for calculating the area and moment of inertia for a triangle. The script is executed, and the output is displayed in the console.

```
1 def area2(height,width):
2     # area of triangle calculation
3     area = 0.5*height*width
4     return area
5 def moi2(height,width):
6     # moment of inertia of triangle calculation
7     moi = width*(height**3)/36
8     return moi
```