LAPORAN PRAKTIKUM

PEMROGRAMAN BERORIENTASI OBJEK LANJUT

2023

Prepared By:

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Tugas Praktikum 7 :

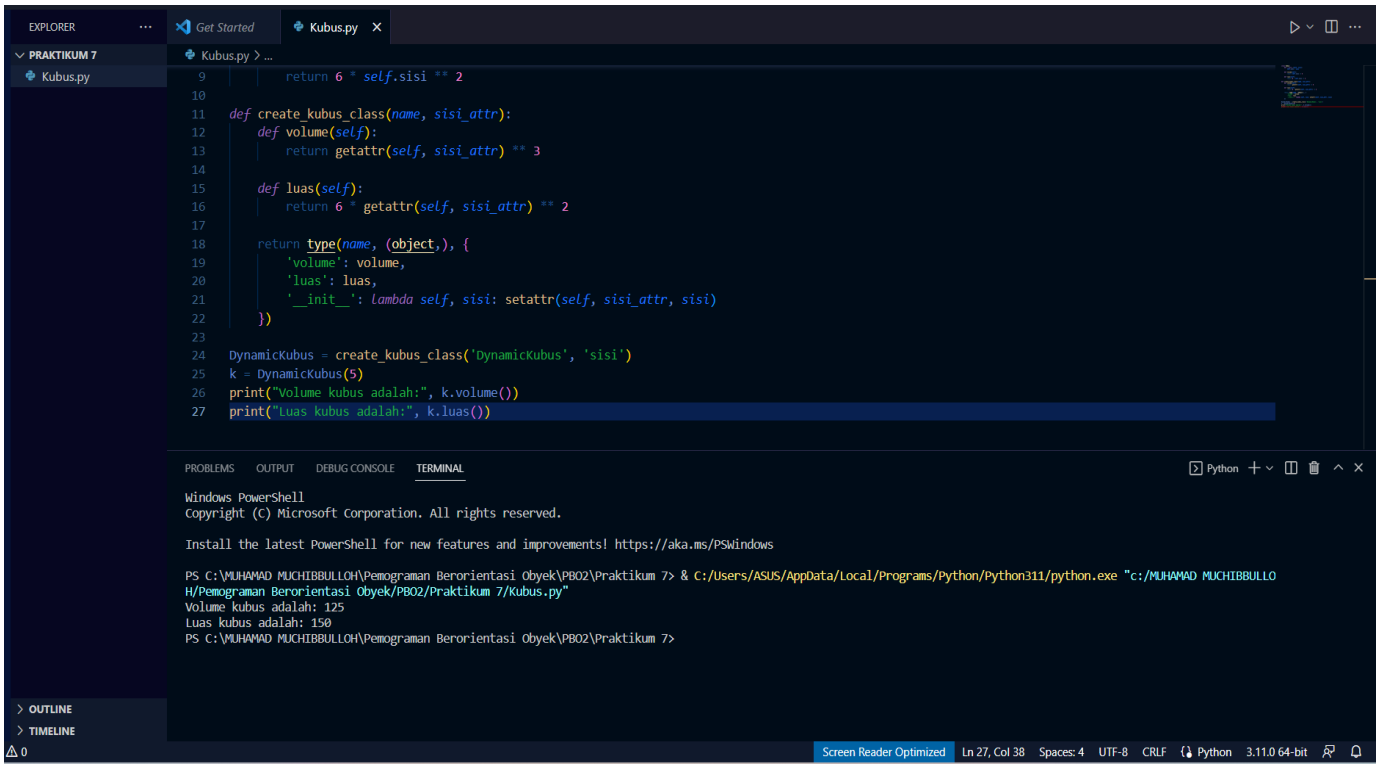
Buatlah 3 aplikasi untuk menghitung volume dan luas permukaan selain dari contoh diatasmenggunakan teknik Metaprogramming. Hasilnya diupload ke github masing-masing.

Jawaban :

1. Kubus

```
class Kubus:
    def __init__(self, sisi):
        self.sisi = sisi

    def volume(self):
        return self.sisi ** 3

    def luas(self):
        return 6 * self.sisi ** 2

def create_kubus_class(name, sisi_attr):
    def volume(self):
        return getattr(self, sisi_attr) ** 3

    def luas(self):
        return 6 * getattr(self, sisi_attr) ** 2

    return type(name, (object,), {
        'volume': volume,
        'luas': luas,
        '__init__': lambda self, sisi: setattr(self, sisi_attr, sisi)
    })

DynamicKubus = create_kubus_class('DynamicKubus', 'sisi')
k = DynamicKubus(5)
print("Volume kubus adalah:", k.volume())
print("Luas kubus adalah:", k.luas())
```

Output :


EXPLORER
PRAKTIKUM 7
Kubus.py
Get Started
Kubus.py
Kubus.py > ...
return 6 * self.sisi ** 2
def create_kubus_class(name, sisi_attr):
def volume(self):
return getattr(self, sisi_attr) ** 3
def luas(self):
return 6 * getattr(self, sisi_attr) ** 2
return type(name, (object,), {
'volume': volume,
'luas': luas,
'__init__': lambda self, sisi: setattr(self, sisi_attr, sisi)
})
DynamicKubus = create_kubus_class('DynamicKubus', 'sisi')
k = DynamicKubus(5)
print("Volume kubus adalah:", k.volume())
print("Luas kubus adalah:", k.luas())
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Python
Windows PowerShell
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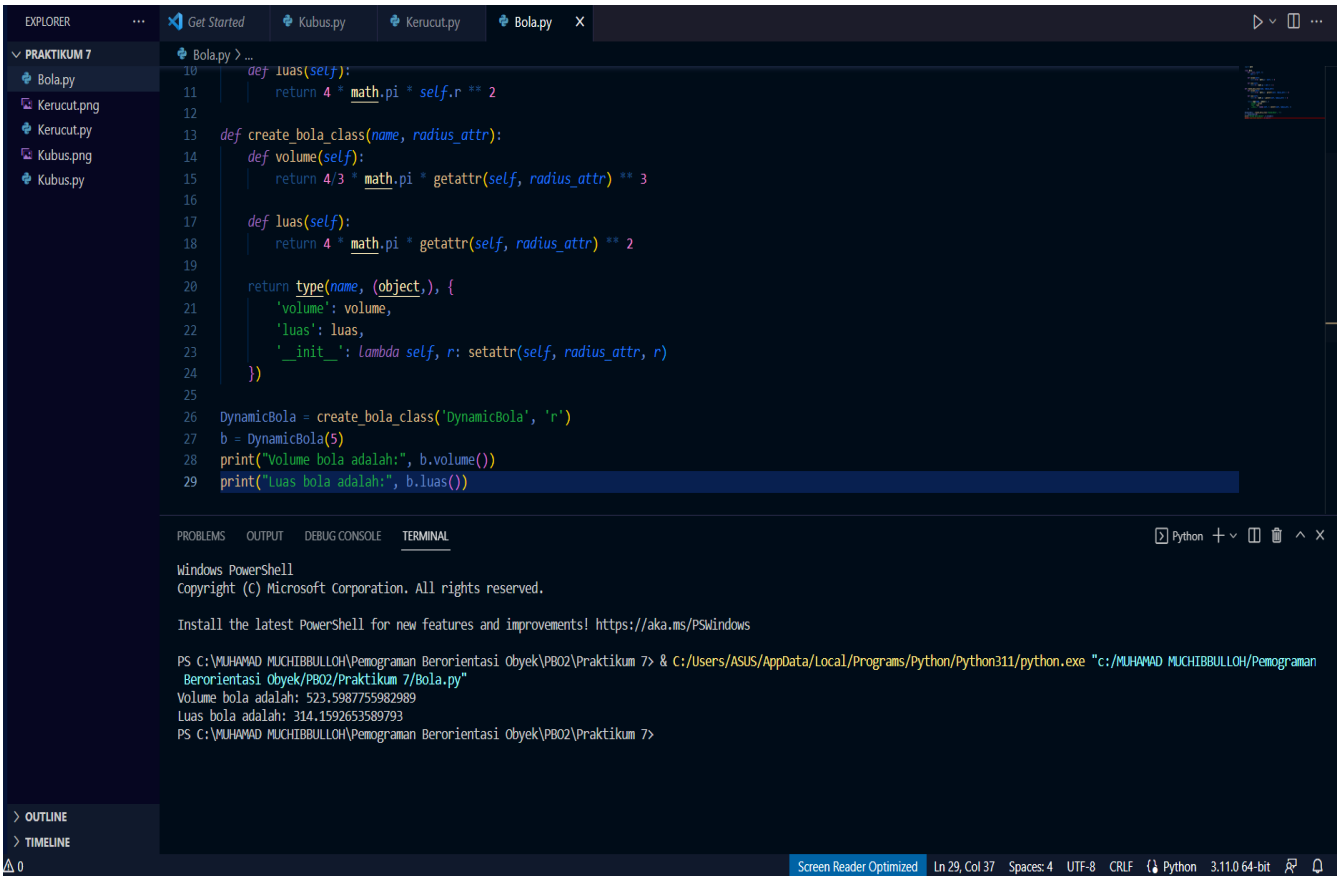
PS C:\MUHAMAD MUCHIBBULLOH\Pemograman Berorientasi Obyek\PBO2\Praktikum 7> & C:/Users/ASUS/AppData/Local/Programs/Python/Python311/python.exe "c:/MUHAMAD MUCHIBBULLOH/Pemograman Berorientasi Obyek/PBO2/Praktikum 7/Kubus.py"
Volume kubus adalah: 125
Luas kubus adalah: 150
PS C:\MUHAMAD MUCHIBBULLOH\Pemograman Berorientasi Obyek\PBO2\Praktikum 7>
OUTLINE
TIMELINE
Screen Reader Optimized
Ln 27, Col 38
Spaces: 4
UTF-8
CRLF
Python
3.11.0 64-bit

2. Bola :

```
import math

class Bola:
    def __init__(self, r):
        self.r = r

    def volume(self):
        return 4/3 * math.pi * self.r ** 3

    def luas(self):
        return 4 * math.pi * self.r ** 2

def create_bola_class(name, radius_attr):
    def volume(self):
        return 4/3 * math.pi * getattr(self, radius_attr) ** 3

    def luas(self):
        return 4 * math.pi * getattr(self, radius_attr) ** 2

    return type(name, (object,), {
        'volume': volume,
        'luas': luas,
        '__init__': lambda self, r: setattr(self, radius_attr, r)
    })

DynamicBola = create_bola_class('DynamicBola', 'r')
b = DynamicBola(5)
print("Volume bola adalah:", b.volume())
print("Luas bola adalah:", b.luas())
```

Output :


EXPLORER
Get Started
Kubus.py
Kerucut.py
Bola.py
PRAKTIKUM 7
Bola.py
Kerucut.png
Kerucut.py
Kubus.png
Kubus.py
def luas(self):
return 4 * math.pi * self.r ** 2
def create_bola_class(name, radius_attr):
def volume(self):
return 4/3 * math.pi * getattr(self, radius_attr) ** 3
def luas(self):
return 4 * math.pi * getattr(self, radius_attr) ** 2
return type(name, (object,), {
'volume': volume,
'luas': luas,
'__init__': lambda self, r: setattr(self, radius_attr, r)
})
DynamicBola = create_bola_class('DynamicBola', 'r')
b = DynamicBola(5)
print("Volume bola adalah:", b.volume())
print("Luas bola adalah:", b.luas())
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Python
Windows PowerShell
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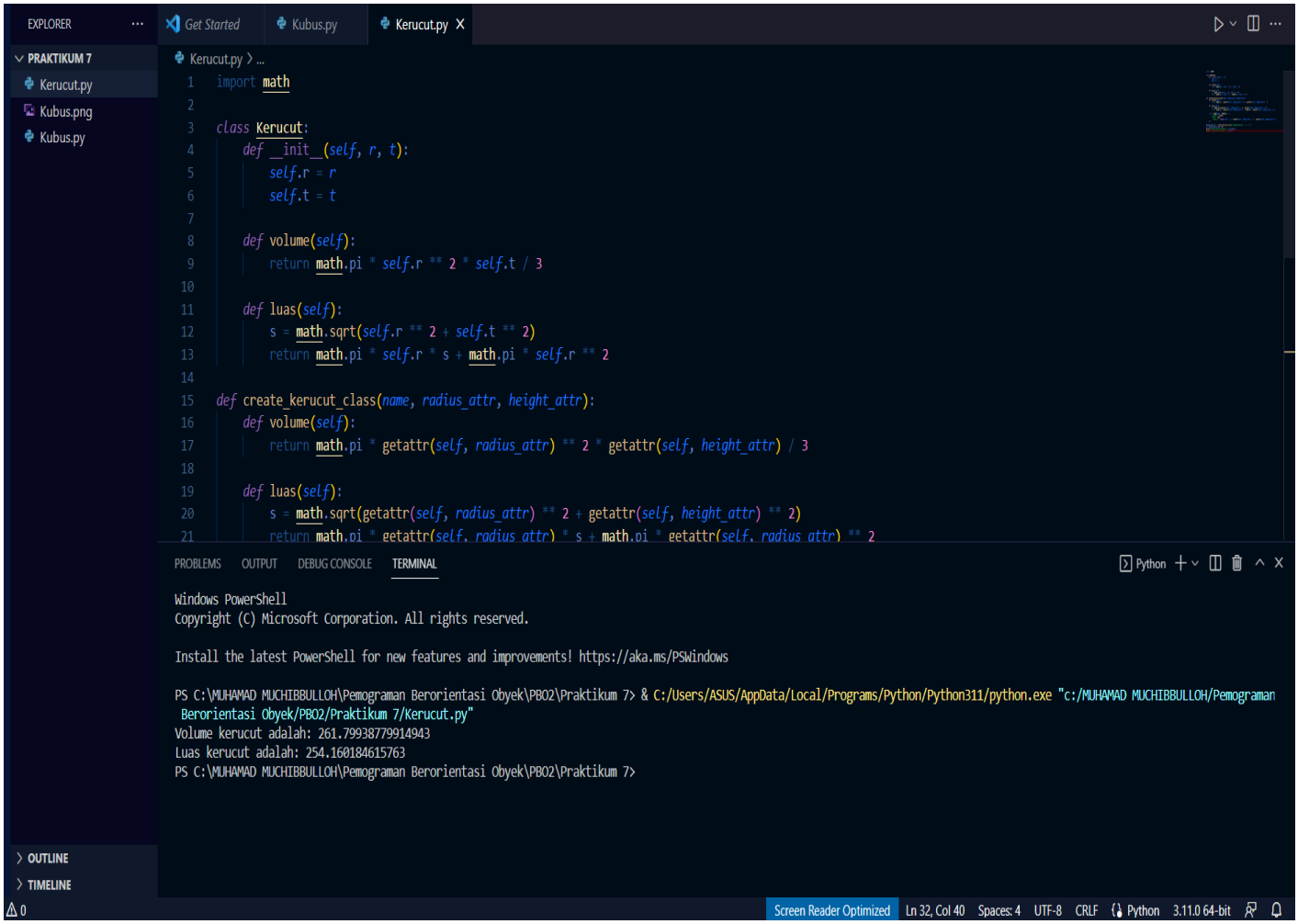
PS C:\MUHAMAD MUCHIBBULLOH\Pemograman Berorientasi Obyek\PBO2\Praktikum 7> & C:/Users/ASUS/AppData/Local/Programs/Python/Python311/python.exe "c:/MUHAMAD MUCHIBBULLOH/Pemograman Berorientasi Obyek/PBO2/Praktikum 7/Bola.py"
Volume bola adalah: 523.5987755982989
Luas bola adalah: 314.1592653589793
PS C:\MUHAMAD MUCHIBBULLOH\Pemograman Berorientasi Obyek\PBO2\Praktikum 7>
OUTLINE
TIMELINE
Screen Reader Optimized
Ln 29, Col 37
Spaces: 4
UTF-8
CRLF
Python
3.11.0 64-bit

3. Kerucut :

```
import math

class Kerucut:
    def __init__(self, r, t):
        self.r = r
        self.t = t

    def volume(self):
        return math.pi * self.r ** 2 * self.t / 3

    def luas(self):
        s = math.sqrt(self.r ** 2 + self.t ** 2)
        return math.pi * self.r * s + math.pi * self.r ** 2

def create_kerucut_class(name, radius_attr, height_attr):
    def volume(self):
        return math.pi * getattr(self, radius_attr) ** 2 * getattr(self,
height_attr) / 3

    def luas(self):
        s = math.sqrt(getattr(self, radius_attr) ** 2 + getattr(self,
height_attr) ** 2)
        return math.pi * getattr(self, radius_attr) * s + math.pi *
getattr(self, radius_attr) ** 2

    return type(name, (object,), {
        'volume': volume,
        'luas': luas,
        '__init__': lambda self, r, t: setattr(self, radius_attr, r) or
setattr(self, height_attr, t)
    })

DynamicKerucut = create_kerucut_class('DynamicKerucut', 'r', 't')
k = DynamicKerucut(5, 10)
print("Volume kerucut adalah:", k.volume())
print("Luas kerucut adalah:", k.luas())
```

Output :


EXPLORER
Get Started
Kubus.py
Kerucut.py
PRAKTIKUM 7
Kerucut.py
Kubus.png
Kubus.py
Kerucut.py > ...
import math
class Kerucut:
def __init__(self, r, t):
self.r = r
self.t = t
def volume(self):
return math.pi * self.r ** 2 * self.t / 3
def luas(self):
s = math.sqrt(self.r ** 2 + self.t ** 2)
return math.pi * self.r * s + math.pi * self.r ** 2
def create_kerucut_class(name, radius_attr, height_attr):
def volume(self):
return math.pi * getattr(self, radius_attr) ** 2 * getattr(self, height_attr) / 3
def luas(self):
s = math.sqrt(getattr(self, radius_attr) ** 2 + getattr(self, height_attr) ** 2)
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
Python
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows
PS C:\MUHAMAD MUCHIBBULLOH\Pemograman Berorientasi Obyek\PBO2\Praktikum 7> & C:/Users/ASUS/AppData/Local/Programs/Python/Python311/python.exe "c:/MUHAMAD MUCHIBBULLOH/Pemograman Berorientasi Obyek/PBO2/Praktikum 7/Kerucut.py"
Volume kerucut adalah: 261.7993779914943
Luas kerucut adalah: 254.160184615763
PS C:\MUHAMAD MUCHIBBULLOH\Pemograman Berorientasi Obyek\PBO2\Praktikum 7>
OUTLINE
TIMELINE
0
Screen Reader Optimized
Ln 32, Col 40
Spaces: 4
UTF-8
CRLF
Python
3.11.0 64-bit