

LAPORAN PRAKTIKUM

PEMROGRAMAN BERORIENTASI OBJEK LANJUT

2023



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hierarchical 1 :

```
# Tugas Praktikum
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# Kelas    : TIF21B (R2)

# 1. Buatlah Class yang mengimplementasikan Prosedural, beri nama: celcius_pro.py

class KonversiSuhu:
    @staticmethod
    def celsius1_to_fahrenheit(celsius):
        return (9/5) * celsius1 + 32

    @staticmethod
    def celsius2_to_reamur(celsius):
        return (4/5) * celsius2

    @staticmethod
    def celsius3_to_kelvin(celsius):
        return celsius3 + 273.15

celsius1 = 75
celsius2 = 30
celsius3 = 60

fahrenheit = KonversiSuhu.celsius1_to_fahrenheit(celsius1)
reamur = KonversiSuhu.celsius2_to_reamur(celsius2)
kelvin = KonversiSuhu.celsius3_to_kelvin(celsius3)

print("konversi",celsius1, "derajat celcius adalah ",fahrenheit, "derajat fahrenheit")
print("konversi",celsius2, "derajat celcius adalah ",reamur, "derajat Reamur")
print("konversi",celsius3, "derajat celcius adalah ",kelvin, "derajat Kelvin")
```

Output :



The screenshot shows a Jupyter Notebook with a file named 'Hierarchical1.py'. The code defines a 'Parent' class with a 'func1' method, and two child classes, 'Child1' and 'Child2', each with their own methods. The driver code creates instances of these classes and calls their methods. The terminal output shows the execution results, confirming that the parent class method is called for both child instances, and the child-specific methods are called for each instance.

```
1 class Parent:
2     def func1(self):
3         print("This function is in parent class.")
4
5
6
7
8 class Child1(Parent):
9     def func2(self):
10        print("This function is in child 1.")
11
12
13
14 class Child2(Parent):
15     def func3(self):
16        print("This function is in child 2.")
17
18
19 # Driver's code
20 object1 = Child1()
21 object2 = Child2()
22 object1.func1()
23 object1.func2()
24 object2.func1()
25 object2.func3()
26
```

PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:/Users/AXIOO/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO 2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Hierarchical1.py"

This function is in parent class.
This function is in child 1.
This function is in parent class.
This function is in child 2.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main>

hierarchical 2 :

```
class Animal:
    def __init__(self, name):
        self.name = name

    def speak(self):
        print(f"{self.name} speaks.")

class Dog(Animal):
    def __init__(self, name):
        super().__init__(name)

    def speak(self):
        print(f"{self.name} barks.")

class Cat(Animal):
    def __init__(self, name):
        super().__init__(name)

    def speak(self):
        print(f"{self.name} meows.")

my_dog = Dog("Fido")
my_cat = Cat("Whiskers")

my_dog.speak()
my_cat.speak()
```

Output

```
celcius_oop.py | celcius_pro.py | Hierarchical2.py x
PERTEMUAN-2 > Praktikum > Hierarchical2.py > Dog > speak
1 class Animal:
2     def __init__(self, name):
3         self.name = name
4
5     def speak(self):
6         print(f"{self.name} speaks.")
7
8 class Dog(Animal):
9     def __init__(self, name):
10         super().__init__(name)
11
12     def speak(self):
13         print(f"{self.name} barks.")
14
15 class Cat(Animal):
16     def __init__(self, name):
17         super().__init__(name)
18
19     def speak(self):
20         print(f"{self.name} meows.")
21
22 my_dog = Dog("Fido")
23 my_cat = Cat("Whiskers")
24
25 my_dog.speak()
26 my_cat.speak()
27
PROBLEMS | OUTPUT | DEBUG CONSOLE | TERMINAL | JUPYTER
Python + - [ ] [x]
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:/Users/AXIOO/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO
2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Hierarchical1.py"
This function is in parent class.
This function is in child 1.
This function is in parent class.
This function is in child 2.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:/Users/AXIOO/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO
2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Hierarchical2.py"
Fido barks.
Whiskers meows.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> |
```

hybrid1:

```
class A:
    def method_a(self):
        print("Method A")

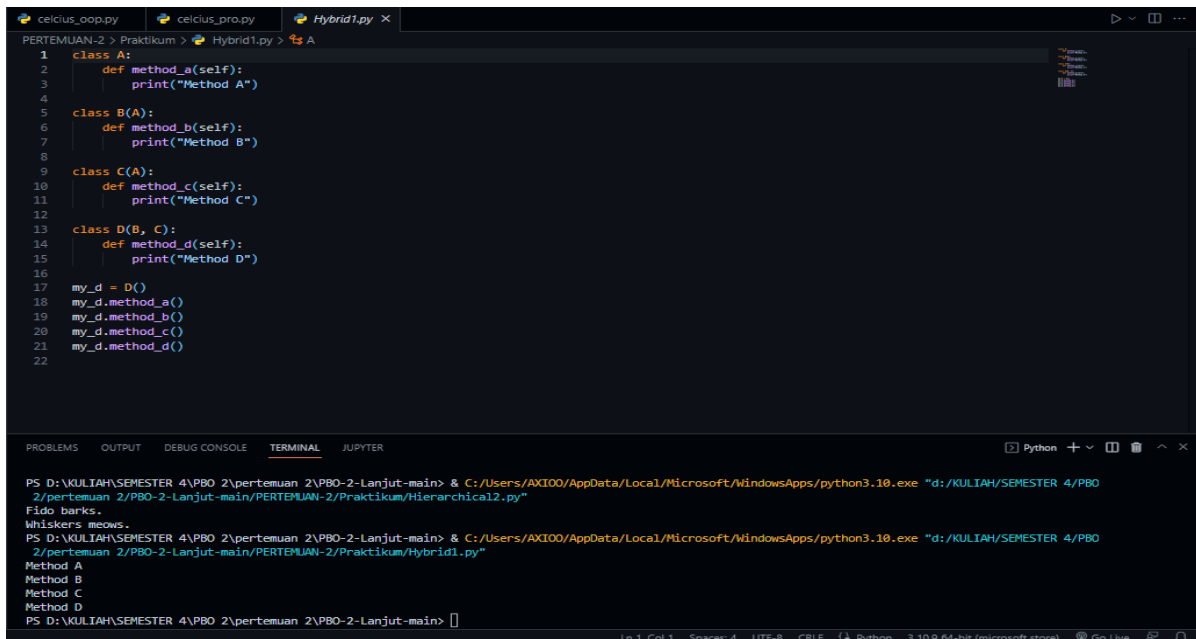
class B(A):
    def method_b(self):
        print("Method B")

class C(A):
    def method_c(self):
        print("Method C")

class D(B, C):
    def method_d(self):
        print("Method D")

my_d = D()
my_d.method_a()
my_d.method_b()
my_d.method_c()
my_d.method_d()
```

Output



The screenshot displays a Jupyter Notebook environment with a dark theme. The top pane shows a Python script named 'Hybrid1.py' with the following code:

```
1 class A:
2     def method_a(self):
3         print("Method A")
4
5 class B(A):
6     def method_b(self):
7         print("Method B")
8
9 class C(A):
10    def method_c(self):
11        print("Method C")
12
13 class D(B, C):
14    def method_d(self):
15        print("Method D")
16
17 my_d = D()
18 my_d.method_a()
19 my_d.method_b()
20 my_d.method_c()
21 my_d.method_d()
22
```

The bottom pane shows the terminal output of the script:

```
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:/Users/AXI00/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO
2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Hierarchical2.py"
Fido barks.
Whiskers meows.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:/Users/AXI00/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO
2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Hybrid1.py"
Method A
Method B
Method C
Method D
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main>
```

The interface includes tabs for 'celcius_oop.py', 'celcius_pro.py', and 'Hybrid1.py'. The bottom status bar indicates the file is 'Hybrid1.py' and the kernel is 'Python 3.10.9 (64-bit (microsoft store))'.

hybrid2:

```
class Animal:
    def __init__(self, name):
        self.name = name

    def speak(self):
        pass

class Dog(Animal):
    def speak(self):
        return "Woof!"

class Cat(Animal):
    def speak(self):
        return "Meow"

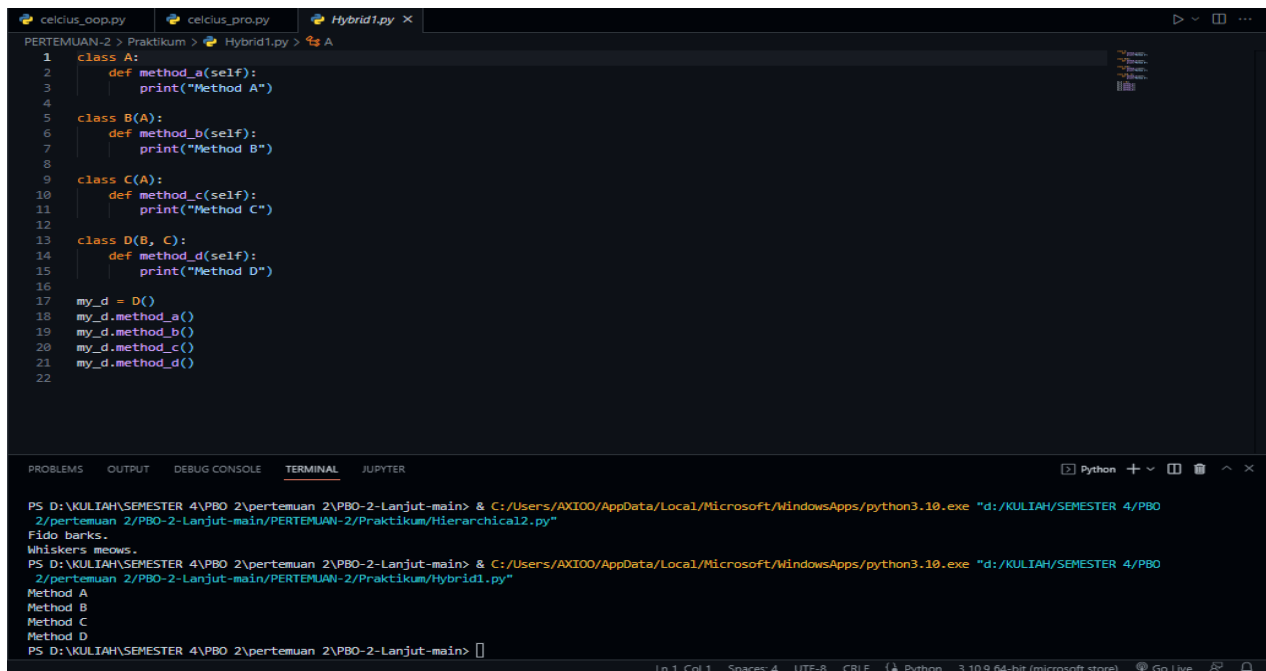
class Bird(Animal):
    def speak(self):
        return "Tweet tweet!"

def main():
    dog = Dog("Buddy")
    cat = Cat("Mittens")
    bird = Bird("Polly")

    print(dog.name + ": " + dog.speak())
    print(cat.name + ": " + cat.speak())
    print(bird.name + ": " + bird.speak())

if __name__ == "__main__":
    main()
```

Output



The image shows a Visual Studio Code editor window with three tabs: `celcius_oop.py`, `celcius_pro.py`, and `Hybrid1.py`. The active tab is `Hybrid1.py`, which contains the following Python code:

```
1 class A:
2     def method_a(self):
3         print("Method A")
4
5 class B(A):
6     def method_b(self):
7         print("Method B")
8
9 class C(A):
10    def method_c(self):
11        print("Method C")
12
13 class D(B, C):
14    def method_d(self):
15        print("Method D")
16
17 my_d = D()
18 my_d.method_a()
19 my_d.method_b()
20 my_d.method_c()
21 my_d.method_d()
22
```

Below the editor, the **TERMINAL** panel is active, showing the execution of the script. The output is as follows:

```
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:/Users/AX100/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO
2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Hierarchica12.py"
Fido barks.
Whiskers meows.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:/Users/AX100/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO
2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Hybrid1.py"
Method A
Method B
Method C
Method D
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main>
```

The status bar at the bottom indicates the file encoding is UTF-8, the editor is in Code 1, and the Python interpreter is 3.10.9 64-bit (microsoft store).

Multilevel1 :

```
class Animal:
    def __init__(self, species):
        self.species = species

    def eat(self):
        print("The animal is eating.")

class Pet(Animal):
    def __init__(self, name, species):
        super().__init__(species)
        self.name = name

    def play(self):
        print("The pet is playing.")

class cat(Pet):
    def __init__(self, name, breed):
        super().__init__(name, "Canine")
        self.breed = breed

    def bark(self):
        print("Meow! Meow!")

my_cat = cat("Ane", "Golden Retriever")
print("Species:", my_cat.species)
print("Name:", my_cat.name)
my_cat.eat()
my_cat.play()
my_cat.bark()
```

Output


```
celcius_to_fah.py  celcius_to_fah.py  Multilevel.py x
PERTEMUAN-2 > Praktikum > Multilevel1.py > Animal
1 class Animal:
2     def __init__(self, species):
3         self.species = species
4
5     def eat(self):
6         print("The animal is eating.")
7
8 class Pet(Animal):
9     def __init__(self, name, species):
10         super().__init__(species)
11         self.name = name
12
13     def play(self):
14         print("The pet is playing.")
15
16 class cat(Pet):
17     def __init__(self, name, breed):
18         super().__init__(name, "Canine")
19         self.breed = breed
20
21     def bark(self):
22         print("Meow! Meow!")
23
24 my_cat = cat("Ane", "Golden Retriever")
25 print("Species:", my_cat.species)
26 print("Name:", my_cat.name)
27 my_cat.eat()

PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  JUPYTER
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:\Users\AXI00\AppData\Local\Microsoft\WindowsApps\python3.10.exe "d:/KULIAH/SEMESTER 4/PBO
2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Hybrid2.py"
Buddy: Woof!
Mittens: Meow
Polly: Tweet tweet!
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> |
```

Multilevel 2:

```
class Vehicle:
    def __init__(self, color, wheels):
        self.color = color
        self.wheels = wheels

class Car(Vehicle):
    def __init__(self, color, wheels, speed):
        super().__init__(color, wheels)
        self.speed = speed

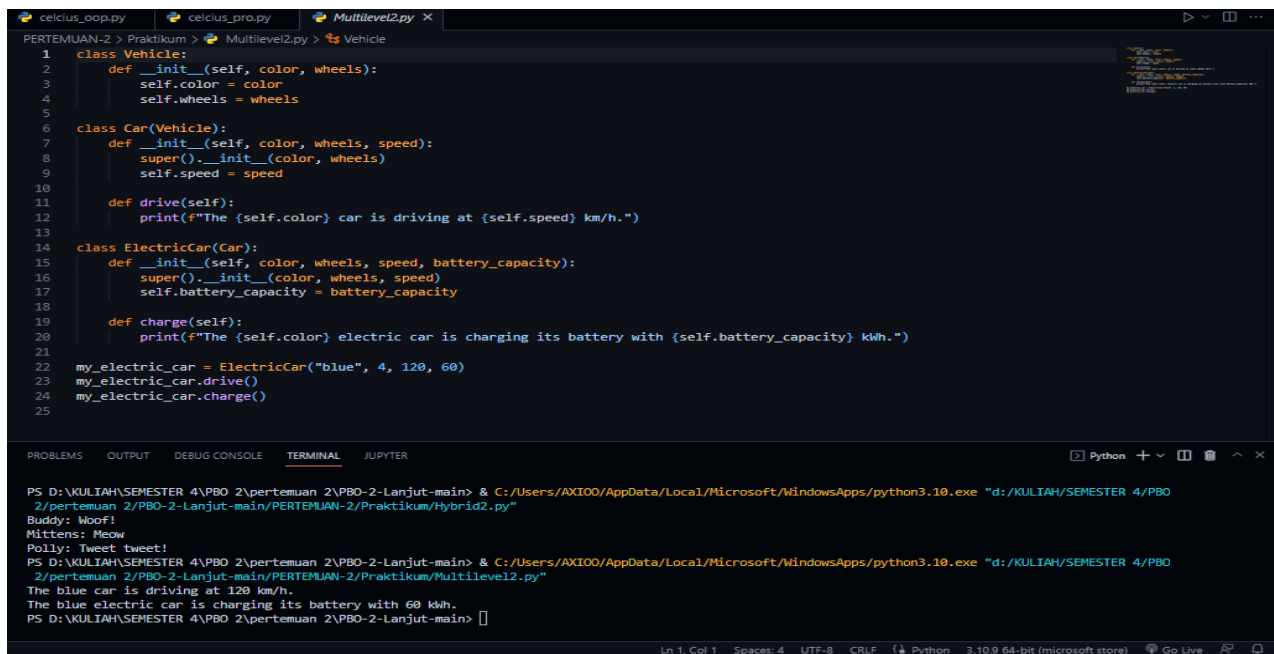
    def drive(self):
        print(f"The {self.color} car is driving at {self.speed} km/h.")

class ElectricCar(Car):
    def __init__(self, color, wheels, speed, battery_capacity):
        super().__init__(color, wheels, speed)
        self.battery_capacity = battery_capacity

    def charge(self):
        print(f"The {self.color} electric car is charging its battery with {self.battery_capacity} kWh.")

my_electric_car = ElectricCar("blue", 4, 120, 60)
my_electric_car.drive()
my_electric_car.charge()
```

Output



The screenshot shows a Jupyter Notebook with a file explorer at the top displaying 'Multilevel2.py'. The code editor contains the following Python code:

```
1 class Vehicle:
2     def __init__(self, color, wheels):
3         self.color = color
4         self.wheels = wheels
5
6 class Car(Vehicle):
7     def __init__(self, color, wheels, speed):
8         super().__init__(color, wheels)
9         self.speed = speed
10
11     def drive(self):
12         print(f"The {self.color} car is driving at {self.speed} km/h.")
13
14 class ElectricCar(Car):
15     def __init__(self, color, wheels, speed, battery_capacity):
16         super().__init__(color, wheels, speed)
17         self.battery_capacity = battery_capacity
18
19     def charge(self):
20         print(f"The {self.color} electric car is charging its battery with {self.battery_capacity} kWh.")
21
22 my_electric_car = ElectricCar("blue", 4, 120, 60)
23 my_electric_car.drive()
24 my_electric_car.charge()
25
```

The terminal output at the bottom shows the execution results:

```
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> C:\Users\AXI00\AppData\Local\Microsoft\WindowsApps\python3.10.exe "d:/KULIAH/SEMESTER 4/PBO 2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Hybrid2.py"
Buddy: Woof!
Mittens: Meow
Polly: Tweet tweet!
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> C:\Users\AXI00\AppData\Local\Microsoft\WindowsApps\python3.10.exe "d:/KULIAH/SEMESTER 4/PBO 2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Multilevel2.py"
The blue car is driving at 120 km/h.
The blue electric car is charging its battery with 60 kWh.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main>
```

Multiple 1 :

```
class Tenaga :
    def setTenaga (self,tenaga):
        self.tenaga = tenaga

    def showTenaga(self):
        print(self.tenaga)

class Kelompok :
    def setKelompok(self,kelompok):
        self.kelompok = kelompok

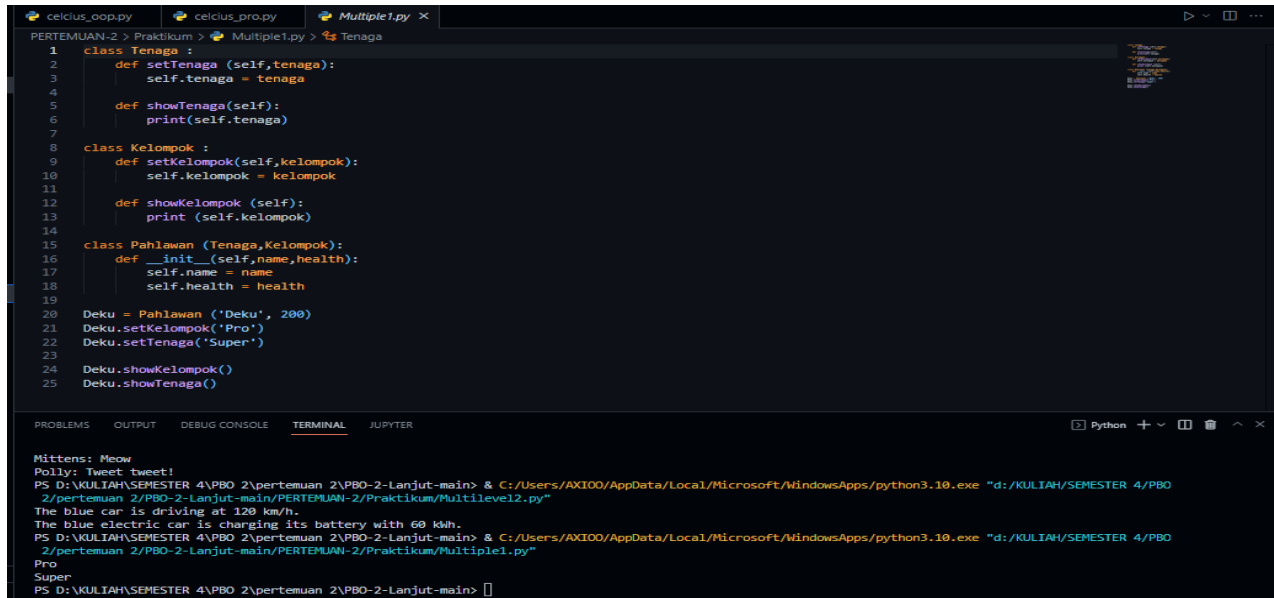
    def showKelompok (self):
        print (self.kelompok)

class Pahlawan (Tenaga,Kelompok):
    def __init__(self,name,health):
        self.name = name
        self.health = health

Deku = Pahlawan ('Deku', 200)
Deku.setKelompok('Pro')
Deku.setTenaga('Super')

Deku.showKelompok()
Deku.showTenaga()
```

Output



The screenshot shows a Jupyter Notebook with a file named `Multiple1.py` open. The code defines three classes: `Tenaga`, `Kelompok`, and `Pahlawan`. `Tenaga` has methods `setTenaga` and `showTenaga`. `Kelompok` has methods `setKelompok` and `showKelompok`. `Pahlawan` inherits from both `Tenaga` and `Kelompok` and has an `__init__` method. An instance `Deku` is created with `name='Deku'` and `health=200`, and its `setKelompok` and `setTenaga` methods are called. The output shows the results of these calls.

```
1 class Tenaga :
2     def setTenaga (self,tenaga):
3         self.tenaga = tenaga
4
5     def showTenaga(self):
6         print(self.tenaga)
7
8 class Kelompok :
9     def setKelompok(self,kelompok):
10        self.kelompok = kelompok
11
12    def showKelompok (self):
13        print (self.kelompok)
14
15 class Pahlawan (Tenaga,Kelompok):
16     def __init__(self,name,health):
17         self.name = name
18         self.health = health
19
20 Deku = Pahlawan ('Deku', 200)
21 Deku.setKelompok('Pro')
22 Deku.setTenaga('Super')
23
24 Deku.showKelompok()
25 Deku.showTenaga()
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER

Mittens: Meow
Polly: Tweet tweet!
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> C:/Users/AXI00/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO 2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Multiple1.py"
The blue car is driving at 120 km/h.
The blue electric car is charging its battery with 60 kWh.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> C:/Users/AXI00/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO 2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Multiple1.py"
Pro
Super
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> []

Multiple 2 :

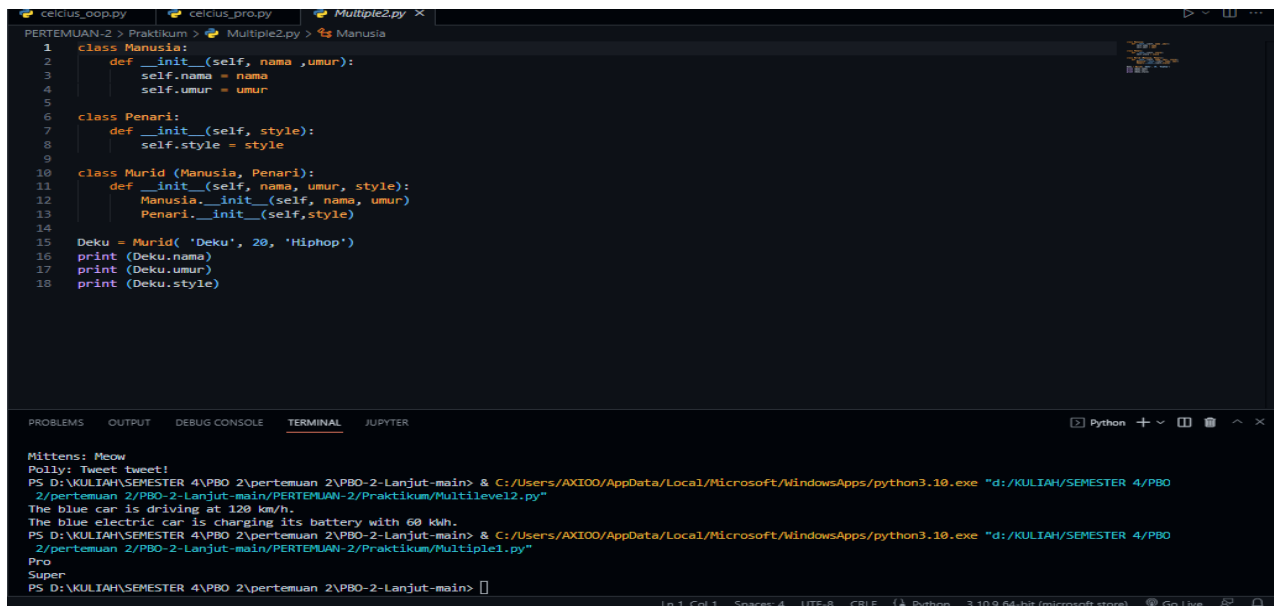
```
class Manusia:
    def __init__(self, nama ,umur):
        self.nama = nama
        self.umur = umur

class Penari:
    def __init__(self, style):
        self.style = style

class Murid (Manusia, Penari):
    def __init__(self, nama, umur, style):
        Manusia.__init__(self, nama, umur)
        Penari.__init__(self,style)

Deku = Murid( 'Deku', 20, 'Hiphop')
print (Deku.nama)
print (Deku.umur)
print (Deku.style)
```

Output



```
1 class Manusia:
2     def __init__(self, nama, umur):
3         self.nama = nama
4         self.umur = umur
5
6     class Penari:
7         def __init__(self, style):
8             self.style = style
9
10    class Murid (Manusia, Penari):
11        def __init__(self, nama, umur, style):
12            Manusia.__init__(self, nama, umur)
13            Penari.__init__(self, style)
14
15    Deku = Murid( 'Deku', 20, 'Hiphop')
16    print (Deku.nama)
17    print (Deku.umur)
18    print (Deku.style)
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER

Mittens: Meow
Polly: Tweet tweet!
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:\Users\AXI00\AppData\Local\Microsoft\WindowsApps\python3.10.exe "d:/KULIAH/SEMESTER 4/PBO 2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Multilevel2.py"
The blue car is driving at 120 km/h.
The blue electric car is charging its battery with 60 kWh.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:\Users\AXI00\AppData\Local\Microsoft\WindowsApps\python3.10.exe "d:/KULIAH/SEMESTER 4/PBO 2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Multiple1.py"
Pro
Super
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> []

Ln 1, Col 1 Spaces: 4 UTF-8 CRLF Python 3.10.9 64-bit (microsoft store) Go Live

Single 1:

```
class Orang:
    def __init__(self, nama, umur):
        self.nama = nama
        self.umur = umur

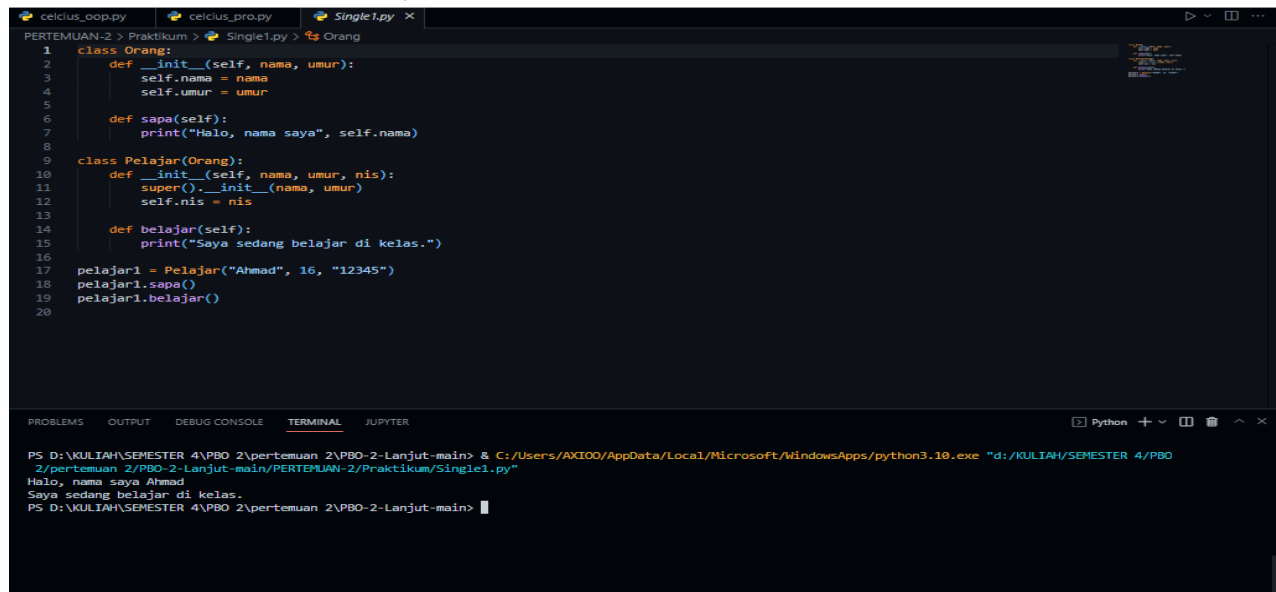
    def sapa(self):
        print("Halo, nama saya", self.nama)

class Pelajar(Orang):
    def __init__(self, nama, umur, nis):
        super().__init__(nama, umur)
        self.nis = nis

    def belajar(self):
        print("Saya sedang belajar di kelas.")

pelajar1 = Pelajar("Ahmad", 16, "12345")
pelajar1.sapa()
pelajar1.belajar()
```

Output



The screenshot shows a Jupyter Notebook with a code editor and a terminal. The code defines two classes: `Orang` and `Pelajar`. `Orang` has an `__init__` method for name and age, and a `sapa` method. `Pelajar` inherits from `Orang`, adding a `__init__` method for name, age, and NIS, and a `belajar` method. An instance `pelajar1` is created and its methods are called.

```
1 class Orang:
2     def __init__(self, nama, umur):
3         self.nama = nama
4         self.umur = umur
5
6     def sapa(self):
7         print("Halo, nama saya", self.nama)
8
9 class Pelajar(Orang):
10    def __init__(self, nama, umur, nis):
11        super().__init__(nama, umur)
12        self.nis = nis
13
14    def belajar(self):
15        print("Saya sedang belajar di kelas.")
16
17 pelajar1 = Pelajar("Ahmad", 16, "12345")
18 pelajar1.sapa()
19 pelajar1.belajar()
20
```

Terminal output:

```
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> & C:/Users/AX100/AppData/Local/Microsoft/WindowsApps/python3.10.exe "d:/KULIAH/SEMESTER 4/PBO
2/pertemuan 2/PBO-2-Lanjut-main/PERTEMUAN-2/Praktikum/Single1.py"
Halo, nama saya Ahmad
Saya sedang belajar di kelas.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main>
```

Single 2 :

```
class Orangtua:
    def __init__(self, rambut, umur):
        self.rambut = rambut
        self.umur = umur
    def jenisRambut(self):
        print(self.rambut, "Keriting")

class Anak(Orangtua):
    def __init__(self, rambut, umur, warnaMata):
        super().__init__(rambut, umur)
        self.warnaMata = warnaMata

    def JenisKelamin(self):
        print("Laki Laki")

kucingA = Anak("Aldi", 12, "biru")
kucingA.jenisRambut()
kucingA.JenisKelamin()
```

Output

```
celsius_oop.py celsius_pro.py Single2.py x
PERTEMUAN-2 > Praktikum > Single2.py > Orangtua
1 class Orangtua:
2     def __init__(self, rambut, umur):
3         self.rambut = rambut
4         self.umur = umur
5     def jenisRambut(self):
6
7         print(self.rambut, "Keriting")
8
9 class Anak(Orangtua):
10     def __init__(self, rambut, umur, warnaMata):
11         super().__init__(rambut, umur)
12         self.warnaMata = warnaMata
13
14     def JenisKelamin(self):
15         print("Laki Laki")
16
17 kucingA = Anak("Aldi", 12, "biru")
18 kucingA.jenisRambut()
19 kucingA.JenisKelamin()
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL JUPYTER Python + - [] [] [] []

```
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> C:\Users\AXIOO\AppData\Local\Microsoft\WindowsApps\python3.10.exe "d:\KULIAH\SEMESTER 4\PBO
2/pertemuan 2/PBO-2-Lanjut-main\PERTEMUAN-2\Praktikum\Single1.py"
Halo, nama saya Ahmad
Saya sedang belajar di kelas.
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main> C:\Users\AXIOO\AppData\Local\Microsoft\WindowsApps\python3.10.exe "d:\KULIAH\SEMESTER 4\PBO
2/pertemuan 2/PBO-2-Lanjut-main\PERTEMUAN-2\Praktikum\Single2.py"
Aldi Keriting
Laki Laki
PS D:\KULIAH\SEMESTER 4\PBO 2\pertemuan 2\PBO-2-Lanjut-main>
```