Hierachical Inheritance

Contoh 1

class AkunBank:

    def \_\_init\_\_(self, nomor\_akun, saldo):

        self.nomor\_akun = nomor\_akun

        self.saldo = saldo

    def get\_nomor\_akun(self):

        return self.nomor\_akun

    def get\_saldo(self):

        return self.saldo

class AkunTabungan(AkunBank):

    def \_\_init\_\_(self, nomor\_akun, saldo, persentase\_bunga):

        super().\_\_init\_\_(nomor\_akun, saldo)

        self.persentase\_bunga = persentase\_bunga

    def get\_persentase\_bunga(self):

        return self.persentase\_bunga

class CekAkun(AkunBank):

    def \_\_init\_\_(self, nomor\_akun, saldo, overdraft\_limit):

        super().\_\_init\_\_(nomor\_akun, saldo)

        self.overdraft\_limit = overdraft\_limit

    def get\_overdraft\_limit(self):

        return self.overdraft\_limit

# Hierarchical Inheritance

class JointAccount(AkunTabungan):

    def \_\_init\_\_(self, nomor\_akun, saldo, persentase\_bunga, owners):

        super().\_\_init\_\_(nomor\_akun, saldo, persentase\_bunga)

        self.owners = owners

    def get\_owners(self):

        return self.owners

contoh 2:

class Animal:

    def \_\_init\_\_(self, name, color):

        self.name = name

        self.color = color

    def get\_name(self):

        return self.name

    def get\_color(self):

        return self.color

class Mammal(Animal):

    def \_\_init\_\_(self, name, color, fur):

        super().\_\_init\_\_(name, color)

        self.fur = fur

    def get\_fur(self):

        return self.fur

class Bird(Animal):

    def \_\_init\_\_(self, name, color, wingspan):

        super().\_\_init\_\_(name, color)

        self.wingspan = wingspan

    def get\_wingspan(self):

        return self.wingspan

# Hierarchical Inheritance

class Reptile(Mammal):

    def \_\_init\_\_(self, name, color, fur, scale):

        super().\_\_init\_\_(name, color, fur)

        self.scale = scale

    def get\_scale(self):

        return self.scale

contoh 3

class Employee:

    def \_\_init\_\_(self, name, age, salary):

        self.name = name

        self.age = age

        self.salary = salary

    def get\_name(self):

        return self.name

    def get\_age(self):

        return self.age

    def get\_salary(self):

        return self.salary

class Manager(Employee):

    def \_\_init\_\_(self, name, age, salary, department):

        super().\_\_init\_\_(name, age, salary)

        self.department = department

    def get\_department(self):

        return self.department

class Programmer(Employee):

    def \_\_init\_\_(self, name, age, salary, language):

        super().\_\_init\_\_(name, age, salary)

        self.language = language

    def get\_language(self):

        return self.language

# Hierarchical Inheritance

class SeniorProgrammer(Programmer):

    def \_\_init\_\_(self, name, age, salary, language, level):

        super().\_\_init\_\_(name, age, salary, language)

        self.level = level

    def get\_level(self):

        return self.level

contoh 4

class Kendaraan:

    def \_\_init\_\_(self, nama):

        self.nama = nama

    def get\_nama(self):

        return self.nama

class Mobil(Kendaraan):

    def \_\_init\_\_(self, nama, merek):

        super().\_\_init\_\_(nama)

        self.merek = merek

    def get\_merek(self):

        return self.merek

class SepedaMotor(Kendaraan):

    def \_\_init\_\_(self, nama, tipe):

        super().\_\_init\_\_(nama)

        self.tipe = tipe

    def get\_tipe(self):

        return self.tipe

# turunan Hierarchical Inheritance

class Truk(Mobil):

    def \_\_init\_\_(self, nama, merek, kapasitas):

        super().\_\_init\_\_(nama, merek)

        self.kapasitas = kapasitas

    def get\_kapasitas(self):

        return self.kapasitas

# turunan Hierarchical Inheritance

class MotorListrik(SepedaMotor):

    def \_\_init\_\_(self, nama, tipe, daya):

        super().\_\_init\_\_(nama, tipe)

        self.daya = daya

    def get\_daya(self):

        return self.daya

contoh 5

class Shape:

    def \_\_init\_\_(self, name, color):

        self.name = name

        self.color = color

    def get\_name(self):

        return self.name

    def get\_color(self):

        return self.color

class TwoDimensional(Shape):

    def \_\_init\_\_(self, name, color, sides):

        super().\_\_init\_\_(name, color)

        self.sides = sides

    def get\_sides(self):

        return self.sides

class ThreeDimensional(Shape):

    def \_\_init\_\_(self, name, color, faces):

        super().\_\_init\_\_(name, color)

        self.faces = faces

    def get\_faces(self):

        return self.faces

# Hierarchical Inheritance

class Sphere(ThreeDimensional):

    def \_\_init\_\_(self, name, color, faces, radius):

        super().\_\_init\_\_(name, color, faces)

        self.radius = radius

    def get\_radius(self):

        return self.radius

Hybrid Inheritance

Contoh 1

# Single Inheritance

class GameObject:

    def \_\_init\_\_(self, x, y):

        self.x = x

        self.y = y

# Single Inheritance

class Drawable:

    def draw(self):

        print("Drawing object at: ", self.x, self.y)

# Single Inheritance

class Moveable:

    def move(self, dx, dy):

        self.x += dx

        self.y += dy

# Multiple Inheritance

class Player(GameObject, Drawable, Moveable):

    def \_\_init\_\_(self, x, y):

        super().\_\_init\_\_(x, y)

    def update(self):

        self.move(1, 1)

        self.draw()

contoh 2

class Seseorang:

    def \_\_init\_\_(self, name, age, address):

        self.name = name

        self.age = age

        self.address = address

    def get\_info(self):

        print("Name:", self.name)

        print("Age:", self.age)

        print("Address:", self.address)

# Single Inheritance

class Mahasiswa(Seseorang):

    def \_\_init\_\_(self, name, age, address, student\_id):

        super().\_\_init\_\_(name, age, address)

        self.student\_id = student\_id

    def get\_info(self):

        super().get\_info()

        print("Student ID:", self.student\_id)

# Single Inheritance

class Employee(Seseorang):

    def \_\_init\_\_(self, name, age, address, employee\_id, salary):

        super().\_\_init\_\_(name, age, address)

        self.employee\_id = employee\_id

        self.salary = salary

    def get\_info(self):

        super().get\_info()

        print("Employee ID:", self.employee\_id)

        print("Salary:", self.salary)

# Multiple Inheritance

class Penulis(Employee, Mahasiswa):

    def \_\_init\_\_(self, name, age, address, employee\_id, salary, student\_id,

published\_books):

        Employee.\_\_init\_\_(self, name, age, address, employee\_id, salary)

        Mahasiswa.\_\_init\_\_(self, name, age, address, student\_id)

        self.published\_books = published\_books

    def get\_info(self):

        super().get\_info()

        print("Student ID:", self.student\_id)

        print("Published Books:", self.published\_books)

Multi Inheritance

Contoh 1

class Hewan:

    def \_\_init\_\_(self, nama, umur):

        self.nama = nama

        self.umur = umur

    def display\_info(self):

        print(f"Nama: {self.nama}")

        print(f"Umur: {self.umur}")

class Reptil:

    def \_\_init\_\_(self, jenis, habitat):

        self.jenis = jenis

        self.habitat = habitat

    def display\_info(self):

        print(f"Jenis: {self.jenis}")

        print(f"Habitat: {self.habitat}")

class Amphibi:

    def \_\_init\_\_(self, metamorfosis, habitat):

        self.metamorfosis = metamorfosis

        self.habitat = habitat

    def display\_info(self):

        print(f"Metamorfosis: {self.metamorfosis}")

        print(f"Habitat: {self.habitat}")

class Katak(Reptil, Amphibi):

    def \_\_init\_\_(self, nama, umur, jenis, habitat, metamorfosis):

        Hewan.\_\_init\_\_(self, nama, umur)

        Reptil.\_\_init\_\_(self, jenis, habitat)

        Amphibi.\_\_init\_\_(self, metamorfosis, habitat)

    def display\_info(self):

        super().display\_info()

        print(f"Nama: {self.nama}")

        print(f"Umur: {self.umur}")

        print(f"Jenis: {self.jenis}")

        print(f"Habitat: {self.habitat}")

        print(f"Metamorfosis: {self.metamorfosis}")

# contoh penggunaan

katakA = Katak("Katak Hijau", 2, "Reptil-Amphibi", "Air", "Telur")

katakA.display\_info()

contoh 2

class Hewan:

    def \_\_init\_\_(self, jenis):

        self.jenis = jenis

    def display\_info(self):

        print(f"Jenis hewan: {self.jenis}")

class Mamalia(Hewan):

    def \_\_init\_\_(self, jenis, nama):

        super().\_\_init\_\_(jenis)

        self.nama = nama

    def display\_info(self):

        super().display\_info()

        print(f"Nama mamalia: {self.nama}")

class Karnivora(Hewan):

    def \_\_init\_\_(self, jenis, makanan):

        super().\_\_init\_\_(jenis)

        self.makanan = makanan

    def display\_info(self):

        super().display\_info()

        print(f"Jenis makanan: {self.makanan}")

class Harimau(Mamalia, Karnivora):

    def \_\_init\_\_(self, jenis, nama, makanan):

        Mamalia.\_\_init\_\_(self, jenis, nama)

        Karnivora.\_\_init\_\_(self, jenis, makanan)

    def display\_info(self):

        super().display\_info()

        print(f"Jenis hewan: {self.jenis}")

# contoh penggunaan

harimauA = Harimau ("Mamalia", "Harimau Sumatera", "Daging")

harimauA.display\_info()

contoh 3

class Mahasiswa:

    def \_\_init\_\_(self, nama, nim):

        self.nama = nama

        self.nim = nim

    def belajar(self):

        print(self.nama, "sedang belajar")

class Pekerja:

    def \_\_init\_\_(self, nama, pekerjaan):

        self.nama = nama

        self.pekerjaan = pekerjaan

    def bekerja(self):

        print(self.nama, "sedang bekerja")

class MahasiswaPekerja(Mahasiswa, Pekerja):

    def \_\_init\_\_(self, nama, nim, pekerjaan):

        Mahasiswa.\_\_init\_\_(self, nama, nim)

        Pekerja.\_\_init\_\_(self, nama, pekerjaan)

    def bersosialisasi(self):

        print(self.nama, "sedang bersosialisasi")

mhs\_pekerja = MahasiswaPekerja("Rahma", "190001", "Programmer")

mhs\_pekerja.belajar() # output: Rahma sedang belajar

mhs\_pekerja.bekerja() # output: Rahma sedang bekerja

mhs\_pekerja.bersosialisasi() # output: Rahma sedang bersosialisasi

contoh 4

class Orang:

    def \_\_init\_\_(self, nama, umur):

        self.nama = nama

        self.umur = umur

    def display\_info(self):

        print(f"Nama: {self.nama}")

        print(f"Umur: {self.umur}")

class Pekerja:

    def \_\_init\_\_(self, pekerjaan, gaji):

        self.pekerjaan = pekerjaan

        self.gaji = gaji

    def display\_info(self):

        print(f"Pekerjaan: {self.pekerjaan}")

        print(f"Gaji: {self.gaji}")

class Penulis:

    def \_\_init\_\_(self, buku, genre):

        self.buku = buku

        self.genre = genre

    def display\_info(self):

        print(f"Buku: {self.buku}")

        print(f"Genre: {self.genre}")

class PenulisPekerja(Orang, Pekerja, Penulis):

    def \_\_init\_\_(self, nama, umur, pekerjaan, gaji, buku, genre):

        Orang.\_\_init\_\_(self, nama, umur)

        Pekerja.\_\_init\_\_(self, pekerjaan, gaji)

        Penulis.\_\_init\_\_(self, buku, genre)

    def display\_info(self):

        super().display\_info()

        print(f"Pekerjaan: {self.pekerjaan}")

        print(f"Gaji: {self.gaji}")

        print(f"Buku: {self.buku}")

        print(f"Genre: {self.genre}")

# contoh penggunaan

penulis\_pekerjaC = PenulisPekerja("Jane Doe", 30, "Penulis", "$5000", "TheBook", "Fiksi")

penulis\_pekerjaC.display\_info()

contoh 5

class Person:

    def \_\_init\_\_(self, nama, umur):

        self.nama = nama

        self.umur = umur

    def display\_info(self):

        print(f"Nama: {self.nama}")

        print(f"Umur: {self.umur}")

class Mahasiswa(Person):

    def \_\_init\_\_(self, nama, umur, jurusan):

        super().\_\_init\_\_(nama, umur)

        self.jurusan = jurusan

    def display\_info(self):

        super().display\_info()

        print(f"Jurusan: {self.jurusan}")

class Alumni(Person):

    def \_\_init\_\_(self, nama, umur, tahun\_lulus):

        super().\_\_init\_\_(nama, umur)

        self.tahun\_lulus = tahun\_lulus

    def display\_info(self):

        super().display\_info()

        print(f"Tahun lulus: {self.tahun\_lulus}")

class MahasiswaAlumni(Mahasiswa, Alumni):

    def \_\_init\_\_(self, nama, umur, jurusan, tahun\_lulus):

        Mahasiswa.\_\_init\_\_(self, nama, umur, jurusan)

        Alumni.\_\_init\_\_(self, nama, umur, tahun\_lulus)

    def display\_info(self):

        super().display\_info()

        print(f"Tahun lulus: {self.tahun\_lulus}")

# contoh penggunaan

mahasiswa\_alumniA = MahasiswaAlumni("Budi", 20, "Informatika", 2022)

mahasiswa\_alumniA.display\_info()

Multi-level inheritance (pewarisan)

Contoh 1

class Animal:

    def \_\_init\_\_(self, name):

        self.name = name

    def speak(self):

        print("The animal speaks")

class Dog(Animal):

    def \_\_init\_\_(self, name, breed):

        super().\_\_init\_\_(name)

        self.breed = breed

    def speak(self):

        print("The dog barks")

class Bulldog(Dog):

    def \_\_init\_\_(self, name, breed, origin):

        super().\_\_init\_\_(name, breed)

        self.origin = origin

    def speak(self):

        print("The bulldog growls")

contoh 2

class Animal:

    def \_\_init\_\_(self, name):

        self.name = name

    def speak(self):

        print(f"{self.name} speaks")

class Bird(Animal):

    def \_\_init\_\_(self, name, wingspan):

        super().\_\_init\_\_(name)

        self.wingspan = wingspan

    def fly(self):

        print(f"{self.name} is flying with a wingspan of {self.wingspan}")

class Parrot(Bird):

    def \_\_init\_\_(self, name, wingspan, color):

        super().\_\_init\_\_(name, wingspan)

        self.color = color

    def speak(self):

        print(f"{self.name} is a {self.color} parrot that talks")

parrot = Parrot("Rio", 12, "blue")

parrot.speak() # Output: Rio is a blue parrot that talks

parrot.fly() # Output: Rio is flying with a wingspan of 12

contoh 3

class Person:

    def \_\_init\_\_(self, name, age):

        self.name = name

        self.age = age

    def get\_details(self):

        print(f"Name: {self.name}, Age: {self.age}")

class Employee(Person):

    def \_\_init\_\_(self, name, age, id, salary):

        super().\_\_init\_\_(name, age)

        self.id = id

        self.salary = salary

    def get\_details(self):

        super().get\_details()

        print(f"ID: {self.id}, Salary: {self.salary}")

class Manager(Employee):

    def \_\_init\_\_(self, name, age, id, salary, department):

        super().\_\_init\_\_(name, age, id, salary)

        self.department = department

    def get\_details(self):

        super().get\_details()

        print(f"Department: {self.department}")

Single Inheritance

Contoh 1

class Hewan:

    def \_\_init\_\_(self, nama, umur):

        self.nama = nama

        self.umur = umur

    def bergerak(self):

        print(self.nama, "bergerak")

class Kucing(Hewan):

    def \_\_init\_\_(self, nama, umur, jenis\_bulu):

        super().\_\_init\_\_(nama, umur)

        self.jenis\_bulu = jenis\_bulu

    def bersuara(self):

     print("Meow!")

kucingA = Kucing("Kitty", 2, "Persia")

kucingA.bergerak() # output: Kitty bergerak

kucingA.bersuara() # output: Meow!

Contoh 2

class Kendaraan:

    def \_\_init\_\_(self, jenis, merk, warna):

        self.jenis = jenis

        self.merk = merk

        self.warna = warna

    def berkendara(self):

        print("Kendaraan ini sedang berjalan.")

class SepedaMotor(Kendaraan):

    def \_\_init\_\_(self, jenis, merk, warna, cc):

        super().\_\_init\_\_(jenis, merk, warna)

        self.cc = cc

    def belok(self):

        print("Sepeda motor ini sedang belok.")

motorA = SepedaMotor("Sepeda Motor", "Honda", "Merah", 150)

motorA.berkendara() # Output: Kendaraan ini sedang berjalan.

motorA.belok() # Output: Sepeda motor ini sedang belok.

Contoh 3

class Manusia:

    def \_\_init\_\_(self, nama, umur):

        self.nama = nama

        self.umur = umur

    def berbicara(self):

        print(f"{self.nama} sedang berbicara.")

class Dosen(Manusia):

    def \_\_init\_\_(self, nama, umur, nip):

        super().\_\_init\_\_(nama, umur)

        self.nip = nip

    def mengajar(self):

        print(f"{self.nama} dengan NIP {self.nip} sedang mengajar.")

dosenA = Dosen("Budi", 35, "123456")

dosenA.berbicara() # Output: Budi sedang berbicara.

dosenA.mengajar() # Output: Budi dengan NIP 123456 sedang mengajar