IK22

Praktikum Polymorphism dan Inheritance

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PROGRAM STUDI PENDIDIKAN ILMU KOMPUTER

FAKULTAS PENDIDIKAN MATEMATIKA DAN ILMU PENGETAHUAN ALAM

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Implementasi dan Hasil

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1. **Latihan 1**

   - UML Diagram class GeometricObject

GeometricObject
- color : String - filled : boolean
GeometricObject() GeometricObject(color: String, filled: boolean) + getColor : String + setColor (Color: String) : void + isFilled : boolean + setFilled (filled: boolean) : void + toString : String + getArea : double + getPerimeter : double

   - Sourcecode GeometricObject

```
package Pertemuan9.Latihan1;

public abstract class GeometricObject {
    private String color = "white";
    private boolean filled;

    protected GeometricObject() {
    }

    protected GeometricObject(String color, boolean filled) {
        this.color = color;
        this.filled = filled;
    }

    public String getColor() {
        return color;
    }

    public void setColor(String color) {
        this.color = color;
```

```
    }

    public boolean isFilled() {
        return filled;
    }

    public void setFilled(boolean filled) {
        this.filled = filled;
    }

    @Override
    public String toString() {
        return "\nWarna: " + color +
            "\nfilled: " + filled;
    }

    public abstract double getArea();
    public abstract double getPerimeter();

}
```

- UML Triangle

Triangle
- side1 : double - side2 : double - side3 : double
+Triangle() +Triangle(side1: double, side2: double, side3: double) +Triangle(side1: double, side2: double, side3: double, color: Strig, filled: boolean) + getSide1 : double + getSide2 : double + getSide3 : double + setSide1(side1: double) : void + setSide2(side2: double) : void

+ setSide3(side3: double) : void + getArea : double + getPerimeter : double + toString : String

- Sourcecode Triangle

```
package Pertemuan9.Latihan1;

public class Triangle extends GeometricObject{
    private double side1;
    private double side2;
    private double side3;

    public Triangle(){
    }

    public Triangle(double side1, double side2, double side3) {
        this.side1 = side1;
        this.side2 = side2;
        this.side3 = side3;
    }

    public Triangle(double side1, double side2, double side3,
        String color, boolean filled) {
        this(side1, side2, side3);
        setColor(color);
        setFilled(filled);
    }

    public double getSide1() {
        return side1;
    }

    public void setSide1(double side1) {
        this.side1 = side1;
    }

    public double getSide2() {
        return side2;
    }


    public void setSide2(double side2) {
        this.side2 = side2;
    }
```

```
    public double getSide3() {
        return side3;
    }

    public void setSide3(double side3) {
        this.side3 = side3;
    }

    @Override
    public double getArea() {
        double s = (side1 + side2 + side3) / 2;
        return Math.sqrt(s * (s - side1) * (s - side2) * (s -
side3));
    }

    @Override
    public double getPerimeter() {
        return side1 + side2 + side3;
    }

    @Override
    public String toString() {
        return super.toString() + "\nSisi1: "+getSide1()+
"\nSisi2: "+getSide2()+ "\nSisi3: "+getSide3()+
        "\nArea: " + getArea() + "\nPerimeter: " +
getPerimeter();
    }
}
```

- Sourcecode main.jav

```
package Pertemuan9.Latihan1;
import java.util.Scanner;

public class main {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);

        System.out.print("Masukkan sisi-sisi Segitiga: ");
        double side1 = input.nextDouble();
        double side2 = input.nextDouble();
        double side3 = input.nextDouble();
```

```
        System.out.print("Berikan warna: ");
        String color = input.next();

        System.out.print("Apakah Segitiga terisi (true / false)?
");
        boolean filled = input.nextBoolean();

        // Create a Triangle
        Triangle triangle = new Triangle(side1, side2, side3,
color, filled);

        System.out.println(triangle);
    }
}
```

2. **Latihan 2**

- UML Diagram Employee

GeometricObject
- Kantor : int - Gaji : double - TanggalKerja : Mydate
Employee() Employee(nama: String, alamat: String, nomorTelepon: String, email: String, Gaji: double) + getKantor() : int + setKantor(Kantor: int): void + getGaji(): double + setGaji(Gaji: double): void + getTanggalKerja(): String + setTanggalKerja(TanggalKerja: Mydate): void

- Sourcecode Employee

```
package Pertemuan9.Latihan2;

public class Employee extends Person {
    private int Kantor;
    private double Gaji;
    private Mydate TanggalKerja;

    public Employee() {
    }

    public Employee(String Nama, String Alamat, String
NomorTelepon, String Email, int Kantor, double Gaji) {
        super(Nama, Alamat, NomorTelepon, Email);
        this.Kantor = Kantor;
        this.Gaji = Gaji;
        this.TanggalKerja = new Mydate();
    }

    public int getKantor() {
        return Kantor;
    }

    public void setKantor(int Kantor) {
        this.Kantor = Kantor;
    }

    public double getGaji() {
        return Gaji;
    }

    public void setGaji(double Gaji) {
        this.Gaji = Gaji;
    }

    public String getTanggalKerja() {
        return TanggalKerja.getMonth() + "/" +
TanggalKerja.getDay() + "/" + TanggalKerja.getYear();
    }

    public void setTanggalKerja(Mydate TanggalKerja) {
        this.TanggalKerja = TanggalKerja;
    }

    public String toString() {
        return super.toString() + "\nKantor: " + Kantor +
"\nGaji: " + Gaji + "\nTanggal Kerja: " + getTanggalKerja();
    }
```

```
}
```

- UML Faculty

Faculty
- JamKerja : String - Pangkat : String
+ Faculty() +Faculty(Nama: String, Alamat: String, NomorTelepon: String, Email: String, Kantor: int, Gaji: double, JamKerja: String, Pangkat: String) + getJamKerja(): String + getPangkat(): String + setJamKerja(JamKerja: String): void + setPangkat(Pangkat: String): void

- Sourcecode Faculty

```
package Pertemuan9.Latihan2;

public class Faculty extends Employee {
    private String JamKerja;
    private String Pangkat;

    public Faculty() {
    }

    public Faculty(String Nama, String Alamat,
String NomorTelepon, String Email, int Kantor,
double Gaji,
            String JamKerja, String Pangkat) {
        super(Nama, Alamat, NomorTelepon, Email,
Kantor, Gaji);
        this.JamKerja = JamKerja;
        this.Pangkat = Pangkat;
    }
```

```
    public String getJamKerja() {
        return JamKerja;
    }

    public String getPangkat() {
        return Pangkat;
    }
    public void setJamKerja(String JamKerja) {
        this.JamKerja = JamKerja;
    }

    public void setPangkat(String Pangkat) {
        this.Pangkat = Pangkat;
    }

    public String toString() {
        return super.toString() + "\nJam Kerja: "
+ JamKerja + "\nPangkat: " + Pangkat;
    }
}
```

- UML Mydate

Mydate
- Day : int - Month : int - Yeat : int
+ Mydate() + Mydate(Day: int, Month: int, Year: int) + setData(elapsedTime: long): void Mydate(elapsedTime: long) + getDay() : int + getMonth() : int + getYear() : year

- Sourcecode Mydate

```
package Pertemuan9.Latihan2;
```

```java
import java.util.GregorianCalendar;

class Mydate {
    private int Day;
    private int Month;
    private int Year;

    Mydate() {
        GregorianCalendar cal = new GregorianCalendar();
        Day = cal.get(GregorianCalendar.DAY_OF_MONTH);
        Month = cal.get(GregorianCalendar.MONTH);
        Year = cal.get(GregorianCalendar.YEAR);
    }

    Mydate(int Day, int Month, int Year) {
        this.Day = Day;
        this.Month = Month;
        this.Year = Year;
    }

    public void setDate(long elapsedTime) {
        GregorianCalendar cal = new GregorianCalendar();
        cal.setTimeInMillis(elapsedTime);
        Day = cal.get(GregorianCalendar.DAY_OF_MONTH);
        Month = cal.get(GregorianCalendar.MONTH);
        Year = cal.get(GregorianCalendar.YEAR);
    }

    Mydate(long elapsedTime) {
        setDate(elapsedTime);
    }

    public int getDay() {
        return Day;
    }

    public int getMonth() {
        return Month;
    }

    public int getYear() {
        return Year;
    }
}
```

- UML Diagram Person

Person
- Nama : String - Alamat : String - NomorTelepon : String - Email : String
+ Person() + Person(Nama: String) + getNama() : String + setNama(Nama: String): void + getAlamat() : String + setAlamat(Alamat: String) : void + getAlamat(): String + setAlamat(Alamat: String) + getNomorTelepon() : String + SetNomorTelepon(NomorTelepon: String) + getEmail(Email: String)

- sourceCode Person

```
package Pertemuan9.Latihan2;

public class Person {
    private String Nama;
    private String Alamat;
    private String NomorTelepon;
    private String Email;

    public Person() {
    }

    public Person(String Nama, String Alamat, String
NomorTelepon, String Email) {
        this.Nama = Nama;
        this.Alamat = Alamat;
        this.NomorTelepon = NomorTelepon;
```

```
        this.Email = Email;
    }

    public String getNama() {
        return Nama;
    }

    public void setNama(String Nama) {
        this.Nama = Nama;
    }

    public String getAlamat() {
        return Alamat;
    }

    public void setAlamat(String Alamat) {
        this.Alamat = Alamat;
    }

    public String getNomorTelepon() {
        return NomorTelepon;
    }

    public void setNomorTelepon(String NomorTelepon) {
        this.NomorTelepon = NomorTelepon;
    }

    public String getEmail() {
        return Email;
    }

    public void setEmail(String Email) {
        this.Email = Email;
    }

    public String toString() {
        return "Nama: " + Nama + "\n" +
                "Alamat: " + Alamat + "\n" +
                "Nomor Telepon: " + NomorTelepon + "\n" +
                "Email: " + Email;
    }
}
```

- UML Diagram Student

Staff
- Gelar : String
+ Staff() + Staff(Nama: String, Alamat: String, NomorTelepon: String, Email: String, Kantor: int, Gaji: double, Gelar: String) + getGelar() : String + setGelar(Gelar: String) : void

- SourceCode staff

```
package Pertemuan9.Latihan2;

public class Staff extends Employee {
    private String Gelar;

    public Staff() {
    }

    public Staff(String Nama, String Alamat, String
NomorTelepon, String Email, int Kantor, double Gaji, String
Gelar) {
        super(Nama, Alamat, NomorTelepon, Email, Kantor, Gaji);
        this.Gelar = Gelar;
    }

    public String getGelar() {
        return Gelar;
    }

    public void setGelar(String Gelar) {
        this.Gelar = Gelar;
    }

    public String toString() {
        return super.toString() + "\nGelar: " + Gelar;
    }
}
```

- UML Diagram Student

Student
+ MahasiswaBaru : int + MahassiswaTahunKedua : int + Junior : int + Senior : int
+ Student() + Student(Nama: String, Alamat: String, NomorTelepon: String, Email: String) + getStatus() : String + setStatus(Status: String) : void

- Sourcecode Student

```
package Pertemuan9.Latihan2;

public class Student extends Person {
    private int Status;
    public static final int MahasiswaBaru = 1;
    public static final int MahasiswaTahunKedua = 2;
    public static final int Junior = 3;
    public static final int Senior = 4;

    public Student() {
    }

    public Student(String Nama, String Alamat, String
NomorTelepon, String Email, int Status) {
        super(Nama, Alamat, NomorTelepon, Email);
        this.Status = Status;
    }

    public String getStatus() {
        if (Status ==1){
            return "Mahasiswa Baru";
        }else if(Status ==2){
            return "Mahasiswa Tahun Kedua";
        }else if(Status ==3){
            return "Mahasiswa Junior";
        }else if(Status ==4){
            return "Mahasiswa Senior";
        }else{
```

```
            return "Status tidak diketahui";
        }
    }

    public void setStatus(int Status) {
        this.Status = Status;
    }

    public String toString() {
        return super.toString() + "\nStatus: " + Status;
    }
}
```

- Sourcecode main.java

```
package Pertemuan9.Latihan2;

public class main {
        public static void main(String[] args) {
                Person p1 = new Person("Iklima", "Tasikmalaya",
"082176542897", "Iklima@gmail.com");

                Student s1 = new Student("Intan", "Bandung",
"089736789276", "Intan@gmail.com", 1);

                Employee e1 = new Employee("Agung", "Cirebon",
"087767875432", "Agung@gmail.com", 01, 12000000);

                Staff s2 = new Staff("Salman", "Bogor",
"082112456783", "Salman@gmail.com", 02, 7500000, "S.Kom");

                Faculty f1 = new Faculty("Fahmi", "Palembang",
"083267839876", "Fahmi@gmail.com", 03, 5000000,
                                "08.00 - 16.00", "Wakil Dekan");

                System.out.println(p1.toString());
                System.out.println(" ");
                System.out.println(s1.toString());
                System.out.println(" ");
                System.out.println(e1.toString());
                System.out.println(" ");
                System.out.println(s2.toString());
                System.out.println(" ");
                System.out.println(f1.toString());
        }
}
```