Tugas Relasi Kelas Pertemuan 7
Pemrograman Berorientasi Objek

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Link Github : https://github.com/Riss27/PBO_223040126.git

Latihan 1

Kelas Mahasiswa

```java
package Pertemuan7;

public class Mahasiswa {
    private String NRP;
    private String nama;
    public char[] display;

    public Mahasiswa(String NRP, String nama){
        super();
        this.NRP = NRP;
        this.nama = nama;
    }

    public void setNRP(String NRP){
        this.NRP = NRP;
    }

    public String getNRP(){
        return NRP;
    }

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

    public String getNama(){
        return nama;
    }

    public String display(){
        return "NRP : " + NRP + ", Nama : " + nama;
    }
}
```

Latihan 2

Kelas KartuHasilStudi

```java
package Pertemuan7;

import java.util.ArrayList;
import java.util.List;

public class KartuHasilStudi {
   private String semester;
    private double ips;
    private List<MataKuliah> daftarMataKuliah;

    public KartuHasilStudi(String semester){
        this.semester = semester;
        this.daftarMataKuliah = new ArrayList<>();
    }

    public void addMataKuliah(MataKuliah matakuliah){
        daftarMataKuliah.add(matakuliah);
    }

    public String display(){
        StringBuilder sb = new StringBuilder();
        for(MataKuliah mk : daftarMataKuliah){
            sb.append(mk.display());
            sb.append("\n");
        }
        return sb.toString();
    }

    public void hitungIPS(){
        double totalSKS = 0;
        double totalNilai = 0;

        for(MataKuliah mataKuliah : daftarMataKuliah){
            totalSKS += mataKuliah.getSKS();
            totalNilai += mataKuliah.getSKS() * mataKuliah.nilaiIndex();
        }
        this.ips = totalSKS > 0 ? totalNilai / totalSKS : 0; // Menghitung IPK dari data yang ada dalam objek kartuHasilStudi
    }

    // Setter dan Getter
    public String getSemester() {
        return semester;
    }
```

```java

    public void setSemester(String semester) {
        this.semester = semester;
    }

    public void setIPS(double ips){
        this.ips = ips;
    }

    public double getIPS() {
        return ips;
    }

    public List<MataKuliah> getDaftarMataKuliah() {
        return daftarMataKuliah;
    }
}
```

Latihan 3

Kelas TranskripNilai

```java
package Pertemuan7;

import java.util.ArrayList;
import java.util.Date;
import java.util.List;

public class TranskripNilai {
    private Date tglCetak;
    private double ipk = 0.0;
    private List<KartuHasilStudi> kartuhasilstudi;
    private Mahasiswa mahasiswa;

    public TranskripNilai(Mahasiswa mahasiswa){
        super();
        this.mahasiswa = mahasiswa;

        kartuhasilstudi = new ArrayList<KartuHasilStudi>();
        tglCetak = new Date();
    }

    public void hitungIPK(){
        double totalNilai = 0.0;
        double totalSKS = 0.0;

        for (KartuHasilStudi khs : kartuhasilstudi) {
            List<MataKuliah> daftarMataKuliah = khs.getDaftarMataKuliah();
            for (MataKuliah mk : daftarMataKuliah) {
                totalNilai += mk.nilaiIndex() * mk.getSKS();
                totalSKS += mk.getSKS();
            }
        }

        // Jika totalSKS tidak sama dengan nol, maka hitung IPK
        if (totalSKS != 0) {
            ipk = totalNilai / totalSKS;
        } else {
            // Jika totalSKS sama dengan nol, maka IPK = 0
            ipk = 0.0;
        }
    }

    public void addKHS(KartuHasilStudi khs){
        kartuhasilstudi.add(khs);
```

```
44          }
45
46          public void display(){
47              System.out.println("NRP: " + mahasiswa.getNRP() + ", Nama: " + mahasiswa.getNama());
48              System.out.println("Tanggal Cetak: " + tglCetak);
49              System.out.println("IPK: " + ipk);
50              for (KartuHasilStudi khs : kartuhasilstudi) {
51                  System.out.println(khs.display());
52              }
53          }
54
55          //setter dan getter
56          public Mahasiswa getMahasiswa() {
57              return mahasiswa;
58          }
59
60          public void setMahasiswa(Mahasiswa mahasiswa) {
61              this.mahasiswa = mahasiswa;
62          }
63
64          public Date getTglCetak() {
65              return tglCetak;
66          }
67
68          public double getIpk() {
69              return ipk;
70          }
71
72      }
```

Kelas TranskripNilaiMain

```java
package Pertemuan7;

public class TranskripNilaiMain {
    public static void main(String[] args) {
        //create objek matakuliah
    MataKuliah mk1 = new MataKuliah("001", "Algoritma Pemorgraman 1", "A", 3);
    MataKuliah mk2 = new MataKuliah("002", "Algoritma Pemorgraman 2", "BC", 3);
    MataKuliah mk3 = new MataKuliah("003", "Pemrograman Berorientasi Objek", "B", 3);

    //membuat objek KHS
    KartuHasilStudi khs = new KartuHasilStudi("20222");
    khs.addMataKuliah(mk1);
    khs.addMataKuliah(mk2);
    khs.addMataKuliah(mk3);

    //membuat objek mahasiswa
    Mahasiswa mhs = new Mahasiswa("303040001", "John");

    //membuat objek transkrip nilai
    TranskripNilai transkrip = new TranskripNilai(mhs);
    transkrip.addKHS(khs);
    transkrip.hitungIPK();
    transkrip.display();
    }
}
```

Output

```
$  cd d:\\UNPAS\\SEMESTER\ 4\\PEMROGRAMAN\ BERO
Faris\\AppData\\Roaming\\Code\\User\\workspaceS
NRP: 303040001, Nama: John
Tanggal Cetak: Fri Mar 29 03:40:54 WIB 2024
IPK: 2.3333333333333335
001 - Algoritma Pemorgraman 1 - A - 3
002 - Algoritma Pemorgraman 2 - BC - 3
003 - Pemrograman Berorientasi Objek - B - 3
```

Latihan 2

Kelas MataKuliah.java

```java
package Pertemuan5;

public class MataKuliah {
    public static Object mk3;
    public static Object mk2;
    public static Object mk1;
    private String kode;
    private String nama;
    private String index;
    private int sks;

    public MataKuliah(String kode, String nama, String index, int sks)
    {
        this.kode = kode;
        this.nama = nama;
        this.index = index;
        this.sks = sks;
    }

    public double nilaiIndex()
    {
        switch (index) {
            case "A":
                return 4.0;
            case "AB":
                return 3.5;
            case "B":
                return 3.0;
            case "BC":
                return 2.5;
            case "C":
                return 2.0;
            case "D":
                return 1.0;
            case "E":
                return 0.0;
            default:
                return 0;

                //menghitung nilai index mata kuliah dari data yang ada dalam objek mata kuliah berdasarkan index

    }
}
```

Latihan 3

```
public double nilaiIndex()
{
    switch (index) {
        case "A":
            return 4.0;
        case "AB":
            return 3.5;
        case "B":
            return 3.0;
        case "BC":
            return 2.5;
        case "C":
            return 2.0;
        case "D":
            return 1.0;
        case "E":
            return 0.0;
        default:
            return 0;

            //menghitung nilai index mata kuliah dari data yang ada dalam objek mata kuliah berdasarkan index

    }
}
```

```
--- DAFTAR MATAKULIAH ---
001 - Algoritma Pemrograman 1  - A
002 - Algoritma Pemrograman 2 - BC
003 - Pemrograman Berorientasi Objek - B
--- NILAI IPK ---
IPK : 3.1666666666666665
```