OOP

QUIZ 2

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Class: 2I

Major: Information Technology

Study Program: D-IV Informatics Engineering

Mahasiswa.java

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

class Mahasiswa {
    private String nama;
    private String nim;
    private List<Integer> nilai;

    public Mahasiswa(String nama, String nim, List<Integer> nilai) {
        this.nama = nama;
        this.nim = nim;
        this.nilai = nilai;
    }

    public String getNama() {
        return nama;
    }

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

    public String getNim() {
        return nim;
    }

    public void setNim(String nim) {
        this.nim = nim;
    }

    public List<Integer> getNilai() {
        return nilai;
    }

    public void setNilai(List<Integer> nilai) {
        this.nilai = nilai;
    }

    public double hitungIpk() {
```

```java
        return nilai.stream().mapToDouble(Integer::doubleValue).average().orElse(0);
    }

    public double hitungIpkDenganBobot(List<Integer> nilaiSks) {
        double totalSks = nilaiSks.stream().mapToInt(Integer::intValue).sum();
        return nilai.stream().mapToDouble(n -> n * nilaiSks.get(nilai.indexOf(n))).sum() /
totalSks;
    }
}
```

Matakuliah.java

```java
class MataKuliah {
    private String namaMataKuliah;
    private int sks;
    private List<Integer> nilaiMahasiswa;

    public MataKuliah(String namaMataKuliah, int sks, List<Integer> nilaiMahasiswa) {
        this.namaMataKuliah = namaMataKuliah;
        this.sks = sks;
        this.nilaiMahasiswa = nilaiMahasiswa;
    }

    public String getNamaMataKuliah() {
        return namaMataKuliah;
    }

    public void setNamaMataKuliah(String namaMataKuliah) {
        this.namaMataKuliah = namaMataKuliah;
    }

    public int getSks() {
        return sks;
    }

    public void setSks(int sks) {
        this.sks = sks;
    }

    public List<Integer> getNilaiMahasiswa() {
        return nilaiMahasiswa;
    }

    public void setNilaiMahasiswa(List<Integer> nilaiMahasiswa) {
        this.nilaiMahasiswa = nilaiMahasiswa;
    }

    public double hitungBobot() {
        return
nilaiMahasiswa.stream().mapToDouble(Integer::doubleValue).average().orElse(0);
    }
```

```java
public double hitungBobotDenganBobotMahasiswa(List<Integer> bobotMahasiswa) {
    double totalBobot = bobotMahasiswa.stream().mapToInt(Integer::intValue).sum();
    return nilaiMahasiswa.stream().mapToDouble(n -> n *
bobotMahasiswa.get(nilaiMahasiswa.indexOf(n))).sum() / totalBobot;
    }
}
```

Perwalian.java

```java
class Perwalian {
    private List<Mahasiswa> mahasiswaList;
    private List<MataKuliah> matakuliahList;

    public Perwalian() {
        mahasiswaList = new ArrayList<>();
        matakuliahList = new ArrayList<>();
    }

    public List<Mahasiswa> getMahasiswaList() {
        return mahasiswaList;
    }

    public void tambahMahasiswa(Mahasiswa mahasiswa) {
        mahasiswaList.add(mahasiswa);
    }

    public List<MataKuliah> getMatakuliahList() {
        return matakuliahList;
    }

    public void tambahMataKuliah(MataKuliah matakuliah) {
        matakuliahList.add(matakuliah);
    }

    public void cetakDataPerwalian() {
        for (Mahasiswa mahasiswa : mahasiswaList) {
            System.out.println("Mahasiswa: " + mahasiswa.getNama() + " (NIM: " +
mahasiswa.getNim() + ")");
            for (MataKuliah matakuliah : matakuliahList) {
                System.out.println("  - Mata Kuliah: " + matakuliah.getNamaMataKuliah() +
                    ", SKS: " + matakuliah.getSks() +
                    ", Nilai: " + matakuliah.getNilaiMahasiswa());
            }
            double ipk = mahasiswa.hitungIpk();
            System.out.println("  IPK: " + String.format("%.2f", ipk) + "\n");
        }
    }
}
```

Main.java

```java
public class Main {
    public static void main(String[] args) {
        // Membuat objek mahasiswa
        Mahasiswa mahasiswa1 = new Mahasiswa("John Doe", "123456", List.of(80, 85, 90));
        Mahasiswa mahasiswa2 = new Mahasiswa("Jane Doe", "654321", List.of(75, 88, 92));

        // Membuat objek mata kuliah
        MataKuliah matakuliah1 = new MataKuliah("Matematika", 3, List.of(70, 75, 80));
        MataKuliah matakuliah2 = new MataKuliah("Fisika", 4, List.of(85, 88, 92));

        // Membuat objek perwalian
        Perwalian perwalian = new Perwalian();

        // Menambahkan mahasiswa dan mata kuliah ke dalam perwalian
        perwalian.tambahMahasiswa(mahasiswa1);
        perwalian.tambahMahasiswa(mahasiswa2);
        perwalian.tambahMataKuliah(matakuliah1);
        perwalian.tambahMataKuliah(matakuliah2);

        // Cetak hasil perwalian
        perwalian.cetakDataPerwalian();
    }
}
```

Output

```
Mahasiswa: John Doe (NIM: 123456)
  - Mata Kuliah: Matematika, SKS: 3, Nilai: [70, 75, 80]
  - Mata Kuliah: Fisika, SKS: 4, Nilai: [85, 88, 92]
  IPK: 85.00

Mahasiswa: Jane Doe (NIM: 654321)
  - Mata Kuliah: Matematika, SKS: 3, Nilai: [70, 75, 80]
  - Mata Kuliah: Fisika, SKS: 4, Nilai: [85, 88, 92]
  IPK: 85.00


CPU Time: 0.18 sec(s)  |  Memory: 47028 kilobyte(s)  |  Compiled and & executed in 1.629 sec(s)
```