

Laporan Algoritma Dan Struktur Data



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1. Praktikum

1.1 Praktikum Pemilihan

1.1.1 Kode Program

```

import java.util.Scanner;
public class Pemilihan {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        System.out.println("Program Menghitung Nilai Akhir");
        System.out.println("=====");

        System.out.print("Masukkan Nilai Tugas: ");
        byte tugas = sc.nextByte();

        System.out.print("Masukkan Nilai Kuis: ");
        byte kuis = sc.nextByte();

        System.out.print("Masukkan Nilai UTS: ");
        byte uts = sc.nextByte();

        System.out.print("Masukkan Nilai UAS: ");
        byte uas = sc.nextByte();

        sc.close();
        System.out.println("=====");
        System.out.println("=====");
        boolean isValid;
        if (tugas >= 0 && tugas <= 100 && kuis >= 0 && kuis <= 100 && uts
>= 0 && uts <= 100 && uas >= 0 && uas <= 100)
            isValid = true;
        else isValid = false;
        if (isValid) {
            float rataRata = (tugas * 0.2f) + (kuis * 0.2f) + (uts * 0.3f)
+ (uas * 0.3f);
            String nilaiHuruf;
            if (rataRata <= 100 && rataRata > 80) nilaiHuruf = "A";
            else if (rataRata <= 80 && rataRata > 73) nilaiHuruf = "B+";
            else if (rataRata <= 73 && rataRata > 65) nilaiHuruf = "B";
            else if (rataRata <= 65 && rataRata > 60) nilaiHuruf = "C+";
            else if (rataRata <= 60 && rataRata > 50) nilaiHuruf = "C";
            else if (rataRata <= 50 && rataRata > 39) nilaiHuruf = "D";
            else if (rataRata <= 39 && rataRata >= 0) nilaiHuruf = "E";
            else nilaiHuruf = "nilai tidak valid";
            System.out.printf("Nilai Akhir: %.1f\n", rataRata);
            System.out.printf("Nilai Huruf: %s\n", nilaiHuruf);
            System.out.println("=====");
            System.out.println("=====");
            boolean isLulus;
            if (nilaiHuruf.equalsIgnoreCase("D") ||
nilaiHuruf.equalsIgnoreCase("E")) {
                isLulus = false;
            } else isLulus = true;
            if (isLulus)
                System.out.println("SELAMAT ANDA LULUS");
            else
                System.out.println("ANDA TIDAK LULUS");
        } else {
            System.out.println("Nilai Tidak Valid");
            System.out.println("=====");
            System.out.println("=====");
        }
    }
}

```

1.1.2 Output Kode Program

Program Menghitung Nilai Akhir	Program Menghitung Nilai Akhir	Program Menghitung Nilai Akhir
=====	=====	=====
Masukkan Nilai Tugas: 85	Masukkan Nilai Tugas: 90	Masukkan Nilai Tugas: 10
Masukkan Nilai Kuis: 90	Masukkan Nilai Kuis: 40	Masukkan Nilai Kuis: 12
Masukkan Nilai UTS: 120	Masukkan Nilai UTS: 75	Masukkan Nilai UTS: 12
Masukkan Nilai UAS: 70	Masukkan Nilai UAS: 85	Masukkan Nilai UAS: 12
=====	=====	=====
Nilai Tidak Valid	Nilai Akhir: 74.0	Nilai Akhir: 11.6
=====	Nilai Huruf: B+	Nilai Huruf: E
=====	=====	=====
=====	SELAMAT ANDA LULUS	ANDA TIDAK LULUS

1.1.3 Push Github

```
PS C:\Code\Java\sem2\Praktikum-ASD> git add .
PS C:\Code\Java\sem2\Praktikum-ASD> git commit -m "Jobsheet 1 Pemilihan"
[main (root-commit) a1bb41b] Jobsheet 1 Pemilihan
1 file changed, 60 insertions(+)
 create mode 100644 Jobsheet1/Pemilihan.java
PS C:\Code\Java\sem2\Praktikum-ASD> git push -u origin main
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (4/4), 900 bytes | 450.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/ghazwanz/Praktikum-ASD.git
 * [new branch]      main -> main
branch 'main' set up to track 'origin/main'.
```

1.2 Praktikum Perulangan

1.2.1 Kode Program

```

import java.util.Scanner;

public class Perulangan {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Input NIM: ");
        String nim = sc.nextLine();
        System.out.println("=====");

        String digitNim = nim.substring(nim.length()-2);

        int n = Integer.parseInt(digitNim);
        if (n < 10) n+=10;
        System.out.printf("n=%s\n",n);
        for (int i = 1; i <= n; i++) {
            if (i == 6 || i == 10) continue;
            if (i % 2 != 0) System.out.print("* ");
            else System.out.print(i+" ");
        }
    }
}

```

1.2.2 Hasil Run Program

```

Input NIM: 244107020151
=====
n=51
* 2 * 4 * 8 * 12 * 14 * 16 * 18 * 20 * 22 * 24 * 26 * 28 * 30 * 32 * 34 * 36 * 38 * 40 * 42 * 44 * 46 * 48 * 50 *

```

1.3 Praktikum Array

1.3.1 Kode Program

```

import java.util.Scanner;
public class Array {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        String[] mataKuliah = new String[8];
        float[] nilaiAngka = new float[8];
        String[] nilaiHuruf = new String[8];
        float[] bobotNilai = new float[8];
        byte[] sks = new byte[8];
        float ip=0;
        byte totalSks=0;
        System.out.println("=====");
        System.out.println("Program Menghitung IP Semester");
        System.out.println("=====");
        for (int i = 0; i < mataKuliah.length; i++) {
            System.out.print("Masukkan Nama Mata Kuliah: ");
            mataKuliah[i] = sc.nextLine();
        }
        System.out.println("=====");
        for (int i = 0; i < sks.length; i++) {
            while (true) {
                System.out.printf("Masukkan Bobot SKS untuk MK %s: ",
mataKuliah[i]);
                sks[i] = sc.nextByte();
                if (sks[i] < 0 || sks[i] > 3) {
                    System.out.println("Input SKS Tidak Valid Input Ulang
SKS!");
                } else break;
            }
            totalSks += sks[i];
        }
        System.out.println("=====");
        for (int i = 0; i < nilaiAngka.length; i++) {
            while (true) {
                System.out.printf("Masukkan Nilai Angka untuk MK %s: ",
mataKuliah[i]);
                nilaiAngka[i] = sc.nextFloat();
                if (nilaiAngka[i] < 0 || nilaiAngka[i] > 100) {
                    System.out.println("Input Nilai Tidak Valid Input
Ulang Nilai!");
                } else break;
            }
            if (nilaiAngka[i] <= 100 && nilaiAngka[i] > 80) {
                nilaiHuruf[i] = "A";
                bobotNilai[i] = 4;
            } else if (nilaiAngka[i] <= 80 && nilaiAngka[i] > 73){
                nilaiHuruf[i] = "B+";
                bobotNilai[i] = 3.5f;
            }
            else if (nilaiAngka[i] <= 73 && nilaiAngka[i] > 65){
                nilaiHuruf[i] = "B";
                bobotNilai[i] = 3;
            }
            else if (nilaiAngka[i] <= 65 && nilaiAngka[i] > 60){
                nilaiHuruf[i] = "C+";
                bobotNilai[i] = 2.5f;
            }
            else if (nilaiAngka[i] <= 60 && nilaiAngka[i] > 50){
                nilaiHuruf[i] = "C";
                bobotNilai[i] = 2;
            }
        }
    }
}

```

```

else if (nilaiAngka[i] <= 50 && nilaiAngka[i] > 39){
    nilaiHuruf[i] = "D";
    bobotNilai[i] = 1;
}
else if (nilaiAngka[i] <= 39 && nilaiAngka[i] >= 0){
    nilaiHuruf[i] = "E";
    bobotNilai[i] = 0;
}
}
System.out.println("=====");
System.out.println("Hasil Konversi Nilai");
System.out.println("=====");
System.out.println("MK\t\t\t\t\tNilai Angka\t Nilai Huruf\tBobot
Nilai");
for (int i = 0; i < mataKuliah.length; i++) {
    System.out.printf("%-45s %-15.2f %-15s
%.2f\n",mataKuliah[i],nilaiAngka[i],nilaiHuruf[i],bobotNilai[i]);

}
System.out.println("=====");
for (int i = 0; i < mataKuliah.length; i++) {
    ip += (bobotNilai[i] * sks[i]);
}
ip = ip / totalSks;
System.out.println("IP: "+ip);
}
}

```

1.3.2 Hasil Run Program

```

=====
Program Menghitung IP Semester
=====
Masukkan Nama Mata Kuliah: Pancasila
Masukkan Nama Mata Kuliah: Konsep Teknologi Informasi
Masukkan Nama Mata Kuliah: Critical Thinking dan Problem Solving
Masukkan Nama Mata Kuliah: Matematika Dasar
Masukkan Nama Mata Kuliah: Bahasa Inggris
Masukkan Nama Mata Kuliah: Dasar Pemrograman
Masukkan Nama Mata Kuliah: Praktikum Dasar Pemrograman
Masukkan Nama Mata Kuliah: Keselamatan dan Kesehatan Kerja
=====
Masukkan Bobot SKS untuk MK Pancasila: 75
Input SKS Tidak Valid Input Ulang SKS!
Masukkan Bobot SKS untuk MK Pancasila: 2
Masukkan Bobot SKS untuk MK Konsep Teknologi Informasi: 2
Masukkan Bobot SKS untuk MK Critical Thinking dan Problem Solving: 2
Masukkan Bobot SKS untuk MK Matematika Dasar: 3
Masukkan Bobot SKS untuk MK Bahasa Inggris: 2
Masukkan Bobot SKS untuk MK Dasar Pemrograman: 2
Masukkan Bobot SKS untuk MK Praktikum Dasar Pemrograman: 3
Masukkan Bobot SKS untuk MK Keselamatan dan Kesehatan Kerja: 2
=====
Masukkan Nilai Angka untuk MK Pancasila: 75
Masukkan Nilai Angka untuk MK Konsep Teknologi Informasi: 85
Masukkan Nilai Angka untuk MK Critical Thinking dan Problem Solving: 70
Masukkan Nilai Angka untuk MK Matematika Dasar: 85
Masukkan Nilai Angka untuk MK Bahasa Inggris: 85
Masukkan Nilai Angka untuk MK Dasar Pemrograman: 62
Masukkan Nilai Angka untuk MK Praktikum Dasar Pemrograman: 62
Masukkan Nilai Angka untuk MK Keselamatan dan Kesehatan Kerja: 85
=====

```

Hasil Konversi Nilai

```

=====

```

MK	Nilai Angka	Nilai Huruf	Bobot Nilai
Pancasila	75.00	B+	3.50
Konsep Teknologi Informasi	85.00	A	4.00
Critical Thinking dan Problem Solving	70.00	B	3.00
Matematika Dasar	85.00	A	4.00
Bahasa Inggris	85.00	A	4.00
Dasar Pemrograman	62.00	C+	2.50
Praktikum Dasar Pemrograman	62.00	C+	2.50
Keselamatan dan Kesehatan Kerja	85.00	A	4.00

```

=====
IP: 3.416667

```


1.3.3 Push Github

```
PS C:\Code\Java\sem2\Praktikum-ASD> git add .
PS C:\Code\Java\sem2\Praktikum-ASD> git commit -m "Jobsheet 1 Array"
[main 26be99e] Jobsheet 1 Array
 2 files changed, 84 insertions(+), 1 deletion(-)
 create mode 100644 Jobsheet1/Array.java
PS C:\Code\Java\sem2\Praktikum-ASD> git push -u origin main
Enumerating objects: 8, done.
Counting objects: 100% (8/8), done.
Delta compression using up to 4 threads
Compressing objects: 100% (4/4), done.
Writing objects: 100% (5/5), 1.12 KiB | 573.00 KiB/s, done.
Total 5 (delta 1), reused 0 (delta 0), pack-reused 0 (from 0)
remote: Resolving deltas: 100% (1/1), completed with 1 local object.
To https://github.com/ghazwanz/Praktikum-ASD.git
   b4fb0a0..26be99e  main -> main
branch 'main' set up to track 'origin/main'.
```

1.4 Praktikum Fungsi

1.4.1 Kode Program

```

import java.util.Scanner;
public class Fungsi {
    static Scanner sc = new Scanner(System.in);
    static void pendapatan(int[][] cabang) {
        for (int i = 0; i < cabang.length; i++) {
            int total = 0;
            for (int j = 0; j < cabang[i].length; j++) {
                int totalHarga=0;
                switch (j) {
                    case 0:
                        totalHarga = cabang[i][j] * 75000;
                        break;
                    case 1:
                        totalHarga = cabang[i][j] * 50000;
                        break;
                    case 2:
                        totalHarga = cabang[i][j] * 60000;
                        break;
                    case 3:
                        totalHarga = cabang[i][j] * 10000;
                        break;
                }
                total+= totalHarga;
            }
            System.out.printf("Total Pendapatan Royal Garden %s = %s\n",i+1,total);
            System.out.println("=====");
        }
    }
    static void stok(int[][] cabang) {
        boolean isPengurangan = false;
        while (true) {
            System.out.print("Apakah Terdapat Pengurangan Pada Cabang ke-4? (ya/tidak): ");
            String pengurangan = sc.nextLine();
            if (pengurangan.equalsIgnoreCase("tidak")) isPengurangan = false;
            else if (pengurangan.equalsIgnoreCase("ya")) isPengurangan =true;
            if (pengurangan.equalsIgnoreCase("ya") || pengurangan.equalsIgnoreCase("tidak")) {
                break;
            } else System.out.println("Input Tidak Valid");
        }
    }
}

```

```

        for (int i = 0; i < cabang.length; i++) {

            int stok = 0;
            for (int j = 0; j < cabang[0].length; j++) {
                stok += cabang[j][i];
                if (isPengurangan) {
                    if (j == cabang.length - 1) {
                        switch (i) {
                            case 0:
                                stok -= 1;
                                break;
                            case 1:
                                stok -= 2;
                                break;
                            case 2:
                                stok -= 1;
                                break;
                            case 3:
                                stok -= 5;
                                break;
                        }
                    }
                }
            }

            switch (i) {
                case 0:
                    System.out.printf("Total Stok Bunga Aglonema = %s\n", stok);
                    break;
                case 1:
                    System.out.printf("Total Stok Bunga Keladi = %s\n", stok);
                    break;
                case 2:
                    System.out.printf("Total Stok Bunga Alocasia = %s\n", stok);
                    break;
                case 3:
                    System.out.printf("Total Stok Bunga Mawar = %s\n", stok);
                    break;
            }
        }
    }
}

```

```

public static void main(String[] args) {

    int[][] royalGarden =
    {{10,5,15,7},{6,11,9,12},{2,10,10,5},{5,7,12,9}};
    byte menu;
    do{
        System.out.println("=====");
        System.out.println("Pendataan Royal Garden");
        System.out.println("=====");
        System.out.println("1. Data Pendapatan Tiap Cabang");
        System.out.println("2. Data Stok Tiap Jenis Bunga");
        System.out.println("3. Keluar");
        System.out.print("Masukkan Menu: ");
        menu = sc.nextByte();
        sc.nextLine();
        switch (menu) {
            case 1:
                pendapatan(royalGarden);
                break;
            case 2:
                stok(royalGarden);
                break;
            case 3:
                System.out.println("Program Selesai.");
                break;
            default:
                System.out.println("Menu Tidak Valid!");
                break;
        }
    } while (menu !=3);
}

```

1.4.2 Hasil Run kode Program

```

=====
1. Data Pendapatan Tiap Cabang
2. Data Stok Tiap Jenis Bunga
3. Keluar
Masukkan Menu: 2
Apakah Terdapat Pengurangan Pada Cabang ke-4? (ya/tidak): tidak
Total Stok Bunga Aglonema = 23
Total Stok Bunga Keladi = 33
Total Stok Bunga Alocasia = 46
Total Stok Bunga Mawar = 33
=====
Pendataan Royal Garden
=====
1. Data Pendapatan Tiap Cabang
2. Data Stok Tiap Jenis Bunga
3. Keluar
Masukkan Menu: 2
Apakah Terdapat Pengurangan Pada Cabang ke-4? (ya/tidak): ya
Total Stok Bunga Aglonema = 22
Total Stok Bunga Keladi = 31
Total Stok Bunga Alocasia = 45
Total Stok Bunga Mawar = 28
=====
Pendataan Royal Garden
=====
1. Data Pendapatan Tiap Cabang
2. Data Stok Tiap Jenis Bunga
3. Keluar
Masukkan Menu: 3
Program Selesai.

```

```

=====
Pendataan Royal Garden
=====
1. Data Pendapatan Tiap Cabang
2. Data Stok Tiap Jenis Bunga
3. Keluar
Masukkan Menu: 1
Total Pendapatan Royal Garden 1 = 1970000
=====
Total Pendapatan Royal Garden 2 = 1660000
=====
Total Pendapatan Royal Garden 3 = 1300000
=====
Total Pendapatan Royal Garden 4 = 1535000
=====
Pendataan Royal Garden
=====
1. Data Pendapatan Tiap Cabang
2. Data Stok Tiap Jenis Bunga
3. Keluar

```

1.4.3 Push Github

```
PS C:\Code\Java\sem2\Praktikum-ASD> git add .
PS C:\Code\Java\sem2\Praktikum-ASD> git commit -m "Jobsheet 1 Fungsi"
[main 1cc2aa9] Jobsheet 1 Fungsi
 1 file changed, 109 insertions(+)
   create mode 100644 Jobsheet1/Fungsi.java
PS C:\Code\Java\sem2\Praktikum-ASD> git push -u origin main
Enumerating objects: 6, done.
Counting objects: 100% (6/6), done.
Delta compression using up to 4 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (4/4), 1.28 KiB | 328.00 KiB/s, done.
Total 4 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
To https://github.com/ghazwanz/Praktikum-ASD.git
   26be99e..1cc2aa9  main -> main
branch 'main' set up to track 'origin/main'.
```

2. Tugas