

PRAKTIKUM ALGORITMA DAN STRUKTUR DATA
UJIAN AKHIR SEMESTER



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PROGRAM STUDI TEKNIK INFORMATIKA
JURUSAN TEKNOLOGI INFORMASI
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UAS

Diagram Class :

Kendaraan
noTNKB : String
nama : String
jenis : String
cc : int
tahun: int
bulanHarusBayar : int
Kendaraan(noTNKB, nama, jenis, cc, bulanHarusBayar)

TransaksiPajak
kode : int
nominalBayar : long
denda : long
bulanBayar : int
kendaraan : Kendaraan
TransaksiPajak(kode, nominalBayar, denda, bulanBayar, kendaraan)

Kode :

Kendaraan26

```
package uas;

public class Kendaraan26 {
    String noTNKB, nama, jenis;
    int cc, tahun, bulanHarusBayar;
    Kendaraan26 prev, next;

    Kendaraan26() {

    }

    Kendaraan26(Kendaraan26 prev, String noTNKB, String nama, String jenis,
int cc, int tahun, int bulanHarusBayar,
        Kendaraan26 next) {
        this.noTNKB = noTNKB;
        this.nama = nama;
        this.jenis = jenis;
        this.cc = cc;
        this.tahun = tahun;
        this.bulanHarusBayar = bulanHarusBayar;
    }
}
```

TransaksiPajak26

```
package uas;

public class TransaksiPajak26 {
    int kode, bulanBayar;
    long nominalBayar, denda;
    Kendaraan26 kendaraan;
    TransaksiPajak26 next;

    TransaksiPajak26() {

    }

    TransaksiPajak26(int kode, long nominalBayar, long denda, int
bulanBayar, Kendaraan26 kendaraan) {
        this.kode = kode;
        this.nominalBayar = nominalBayar;
        this.denda = denda;
        this.bulanBayar = bulanBayar;
        this.kendaraan = kendaraan;
        this.next = null;
    }
}
```

KendaraanDLL26

```
package uas;

public class KendaraanDLL26 {
    Kendaraan26 head;
    int size;

    KendaraanDLL26() {
        head = null;
        size = 0;
    }

    boolean isEmpty() {
```

```

        return head == null;
    }

    void addFirst(String noTNKB, String nama, String jenis, int cc, int
tahun, int bulanHarusBayar) {
        if (isEmpty()) {
            head = new Kendaraan26(null, noTNKB, nama, jenis, cc, tahun,
bulanHarusBayar, null);
        } else {
            Kendaraan26 node = new Kendaraan26(null, noTNKB, nama, jenis,
cc, tahun, bulanHarusBayar, head);
            head.prev = node;
            head = node;
        }
        size++;
    }

    void add(String noTNKB, String nama, String jenis, int cc, int tahun,
int bulanHarusBayar) {
        if (isEmpty()) {
            addFirst(noTNKB, nama, jenis, cc, tahun, bulanHarusBayar);
        } else {
            Kendaraan26 current = head;
            while (current.next != null) {
                current = current.next;
            }
            Kendaraan26 node = new Kendaraan26(current, noTNKB, nama,
jenis, cc, tahun, bulanHarusBayar, null);
            current.next = node;
            size++;
        }
    }

    void print() {
        if (!isEmpty()) {
            Kendaraan26 tmp = head;

            System.out.println("|Nomor TNKB\t|Nama Pemilik\t|Jenis\t|CC
Kendaraan\t|Tahun\t|Bulan harus Bayar");
            while (tmp != null) {

```

```

        System.out.println("|" + tmp.noTNKB + "\t" + "|" + tmp.nama
+ "\t\t" + "|" + tmp.jenis + "\t" + "|"
        + tmp.cc + "\t\t" + "|" + tmp.tahun + "\t" + "|" +
tmp.bulanHarusBayar);

        tmp = tmp.next;
    }
    } else {
        System.out.println("Kendaraan kosong");
    }
}

void bayarPajak(String noTNKB, int bulanBayar, PajakDLL26 pajak) {
    if (!isEmpty()) {
        Kendaraan26 current = head;
        int kode = 1;
        System.out.println("|Kode\t|TNKB\t\t|Nama\t|Nominal\t|Denda");
        while (current != null) {
            if (current.noTNKB.equals(noTNKB)) {
                long tarifPajak = 0;
                if (current.jenis.equalsIgnoreCase("motor")) {
                    if (current.cc < 100) {
                        tarifPajak = 100000;
                    } else if (current.cc >= 100 && current.cc <= 250)
{
                        tarifPajak = 250000;
                    } else {
                        tarifPajak = 500000;
                    }
                } else if (current.jenis.equalsIgnoreCase("mobil")) {
                    if (current.cc < 1000) {
                        tarifPajak = 750000;
                    } else if (current.cc >= 1000 && current.cc <=
2500) {
                        tarifPajak = 1000000;
                    } else {
                        tarifPajak = 1500000;
                    }
                }
            }
        }
    }
}

```

```

        long denda = 0;
        int bulanSelisih = bulanBayar -
current.bulanHarusBayar;
        if (bulanSelisih > 0) {
            if (bulanSelisih <= 3) {
                denda = bulanSelisih * 50000;
            } else {
                denda = 150000 + (bulanSelisih - 3) * 50000;
            }
        }
        long totalBayar = tarifPajak + denda;
        pajak.add(0, tarifPajak, denda, bulanBayar, current);
        System.out.println("|" + kode + "\t" + "|" +
current.noTNKB + "\t" + "|" + current.nama + "\t" + "|"
                + totalBayar + "\t\t" + "|" + denda + "\t");
    }
    current = current.next;
    kode++;
}
} else {
    System.out.println("Data kendaraan kosong");
}
}
}

```

PajakDLL26

```

package uas;

public class PajakDLL26 {
    TransaksiPajak26 head;
    int size;
    int totalPendapatan;

    PajakDLL26() {
        head = null;
        size = 0;
        totalPendapatan = 0;
    }
}

```

```

    }

    boolean isEmpty() {
        return head == null;
    }

    void add(int kode, long nominalBayar, long denda, int bulanBayar,
Kendaraan26 kendaraan) {
        TransaksiPajak26 newTransaksi = new TransaksiPajak26(kode,
nominalBayar, denda, bulanBayar, kendaraan);
        if (isEmpty()) {
            head = newTransaksi;
        } else {
            TransaksiPajak26 current = head;
            while (current.next != null) {
                current = current.next;
            }
            current.next = newTransaksi;
        }
        size++;
        totalPendapatan += nominalBayar + denda;
    }

    void print() {
        if (!isEmpty()) {
            TransaksiPajak26 current = head;
            System.out.println("|Kode\t|TNKB\t\t|Nama\t|Nominal\t|Denda");
            int kode = 1;
            while (current != null) {
                Kendaraan26 kendaraan = current.kendaraan;
                System.out.println("|" + kode + "\t|" + kendaraan.noTNKB +
"\t|" + kendaraan.nama + "\t|" +
                (current.nominalBayar + current.denda) + "\t\t|" +
current.denda);
                current = current.next;
                kode++;
            }
            System.out.println("Total Pendapatan: " + totalPendapatan);

```

```

        } else {
            System.out.println("Belum ada transaksi pajak yang dicatat.");
        }
    }

    void sort() {
        if (isEmpty() || size == 1) {
            return;
        }

        TransaksiPajak26 sorted = null;
        TransaksiPajak26 current = head;
        while (current != null) {
            TransaksiPajak26 next = current.next;

            if (sorted == null ||
sorted.kendaraan.nama.compareTo(current.kendaraan.nama) > 0) {
                current.next = sorted;
                sorted = current;
            } else {
                TransaksiPajak26 temp = sorted;

                while (temp.next != null &&
temp.next.kendaraan.nama.compareTo(current.kendaraan.nama) < 0) {
                    temp = temp.next;
                }

                current.next = temp.next;
                temp.next = current;
            }

            current = next;
        }

        head = sorted;
    }
}

```

Main26

```

package uas;

import java.util.Scanner;

public class Main26 {

```



```

public static void main(String[] args) {
    Scanner scan = new Scanner(System.in);
    KendaraanDLL26 kd = new KendaraanDLL26();
    PajakDLL26 pj = new PajakDLL26();

    kd.add("B 1234 AG", "Sisa", "Motor", 150, 2020, 1);
    kd.add("AB 4321 A", "Wisnu", "Motor", 125, 2010, 2);
    kd.add("N 4511 A", "Arta", "Mobil", 2500, 2015, 3);
    kd.add("S 4567 YV", "Basko", "Mobil", 2000, 2012, 4);

    boolean run = true;
    do {
        System.out.println("\nMenu");
        System.out.println("1. Daftar Kendaraan");
        System.out.println("2. Bayar Pajak");
        System.out.println("3. Tampilkan Seluruh Transaksi");
        System.out.println("4. Urutkan Transaksi berdasar nama
Pemilik");
        System.out.println("5. Keluar");
        System.out.print("Pilih(1-5): ");
        int input = scan.nextInt();
        System.out.println("+++++++");
        switch (input) {
            case 1:
                System.out.println("Daftar Kendaraan");
                System.out.println("+++++++");
                kd.print();
                break;
            case 2:
                System.out.println("Masukkan Data Pembayaran");
                System.out.println("+++++++");
                System.out.print("Masukkan Nomer TNKB: ");
                scan.nextLine();
                String noTNKB = scan.nextLine();
                System.out.print("Bulan Bayar: ");
                int bulanBayar = scan.nextInt();

```

```

        kd.bayarPajak(noTNKB, bulanBayar, pj);

        break;

    case 3:

        System.out.println("Daftar Transaksi Pembayaran
Pajak");

        System.out.println("+++++++");

        pj.print();

        break;

    case 4:

        pj.sort();

        pj.print();

        break;

    case 5:

        System.out.println("Keluar program\nTerimakasih!");

        System.out.println("+++++++");

        run = false;

        break;

    default:

        System.out.println("Pilihan tidak valid!");

        System.out.println("+++++++");

        break;

    }

} while (run);

}

}

```

Output :

Menu Utama					Daftar Kendaraan																																							
<div>Menu</div> <div>1. Daftar Kendaraan</div> <div>2. Bayar Pajak</div> <div>3. Tampilkan Seluruh Transaksi</div> <div>4. Urutkan Transaksi berdasar nama Pemilik</div> <div>5. Keluar</div> <div>Pilih(1-5): <input type="text"/></div>					<div>Pilih(1-5): 1</div> <div>+++++</div> <div>Daftar Kendaraan</div> <div>+++++</div> <table><tr><th>Nomer</th><th>TNKB</th><th>Nama Pemilik</th><th>Jenis</th><th>CC Kendaraan</th><th>Tahun</th><th>Bulan harus Bayar</th></tr><tr><td>1</td><td>B 1234 AG</td><td>Sisa</td><td>Motor</td><td>150</td><td>2020</td><td>1</td></tr><tr><td>2</td><td>AB 4321 A</td><td>Wisnu</td><td>Motor</td><td>125</td><td>2010</td><td>2</td></tr><tr><td>3</td><td>B 4321 A</td><td>Beta</td><td>Motor</td><td>2500</td><td>2015</td><td>3</td></tr><tr><td>4</td><td>S 4567 YV</td><td>Basko</td><td>Motor</td><td>2000</td><td>2012</td><td>4</td></tr></table>					Nomer	TNKB	Nama Pemilik	Jenis	CC Kendaraan	Tahun	Bulan harus Bayar	1	B 1234 AG	Sisa	Motor	150	2020	1	2	AB 4321 A	Wisnu	Motor	125	2010	2	3	B 4321 A	Beta	Motor	2500	2015	3	4	S 4567 YV	Basko	Motor	2000	2012	4
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