

PEMROGRAMAN BERBASIS OBJEK (Inheritance)



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**PROGRAM STUDI S-1 TEKNIK INFORMATIKA
FAKULTAS MATEMATIKA DAN ILMU PENGETAHUAN ALAM
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1. Java

a. Source Code:

```
/*
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 * Kelas    : A
 * Tanggal   : 11 November 2022
 * Nama Program : Inheritance.java
 * Deskripsi  : UTS SOAL 4 dengan turunan
 */

import java.util.Scanner;

class Waktu{
    private int jam, menit, detik;

    Waktu(int jam, int menit, int detik){
        this.jam = jam;
        this.menit = menit;
        this.detik = detik;
    }

    Waktu(){
        this.jam = 0;
        this.menit = 0;
        this.detik = 0;
    }

    //Input
    public void setJam(int jam){
        this.jam = jam;
    }

    public void setMenit(int menit){
        this.menit = menit;
    }

    public void setDetik(int detik){
        this.detik = detik;
    }

    public void inputJam(){
        Scanner input = new Scanner(System.in);
        System.out.print("Masukkan jam : ");
    }
}
```

```

        this.jam = input.nextInt();
        System.out.print("Masukkan menit : ");
        this.menit = input.nextInt();
        System.out.print("Masukkan detik : ");
        this.detik = input.nextInt();
    }

    //Output
    public int getJam(){
        return this.jam;
    }
    public int getMenit(){
        return this.menit;
    }
    public int getDetik(){
        return this.detik;
    }

    public String getWaktu(){
        String nolJam="", nolMenit="", nolDetik="";
        if(this.jam < 10){
            nolJam = "0";
        }
        if(this.menit < 10){
            nolMenit = "0";
        }
        if(this.detik < 10){
            nolDetik = "0";
        }

        return nolJam + this.jam + ":" + nolMenit + this.menit + ":" + nolDetik +
this.detik;
    }

    //Proses
    public int convertToSecond(){

        int hasil = this.detik + this.menit*60 + this.jam*3600;
        return hasil;
    }

    public void secondToClock(int second){
        this.menit = second / 60;
        this.detik = second % 60;
        this.jam = this.menit / 60;
    }

```

```

        this.menit=this.menit % 60;
    }

    public Waktu cariDurasi(Waktu akhir){
        Waktu temp = new Waktu();

        int detikAwal = this.convertToSecond();
        int detikAkhir = akhir.convertToSecond();
        if(detikAkhir < detikAwal){
            detikAkhir += 86400;
        }
        int detikHasil = detikAkhir - detikAwal;

        temp.secondToClock(detikHasil);
        return temp;
    }
}

abstract class Kendaraan{
    protected String no;
    protected String jenis;
    protected Waktu datang = new Waktu();
    protected Waktu pulang = new Waktu();

    Kendaraan(){
        this.no = " ";
        this.jenis= " ";
    }

    //Input
    public void setNoKendaraan(String no){
        this.no=no;
    }
    public void setJenis(String jenis){
        this.jenis=jenis;
    }

    public void setWaktudatang(Waktu datang){
        this.datang=datang;
    }
}

```

```

    }

    public void setWaktuPulang(Waktu pulang){
        this.pulang=pulang;
    }

    public void inputKendaraan(){

        Scanner input=new Scanner(System.in);

        System.out.println("\n--- INPUT KENDARAAN ---");
        System.out.print("No Kendaraan : ");
        this.no = input.nextLine();

        System.out.println("\n-- Jam Masuk Kendaraan --");
        this.datang.inputJam();

        System.out.println("\n-- Jam Keluar Kendaraan --");
        pulang.inputJam();

    }

    //Output
    public String getNoKendaraan(){
        return this.no;
    }

    public String getJenis(){
        return this.jenis;
    }

    public Waktu getWaktudatang(){
        return this.datang;
    }

    public Waktu getWaktuPulang(){
        return this.pulang;
    }

    //Proses
    public Waktu getLamaParkir(){
        return this.datang.cariDurasi(this.pulang);
    }

    public int getLamaJam(){

```

```

        int hasil = 0;
        if(this.getLamaParkir().getMenit()>=10 || this.getLamaParkir().getJam()>=1){
            hasil = this.getLamaParkir().getJam();

            if( this.getLamaParkir().getMenit()>0 || this.getLamaParkir().getDetik()>0
){
                hasil +=1;
            }

        }
        return hasil;
    }

    public abstract int getBiayaParkir();
    // hasil = getLamaJam() * 2000;
}

class Motor extends Kendaraan{
    public Motor(){
        super();
        this.jenis="Motor";
    }

    @Override
    public int getBiayaParkir() {
        return getLamaJam() * 2000;
    }
}

class Mobil extends Kendaraan{
    Mobil(){
        super();
        this.jenis = "Mobil";
    }

    @Override
    public int getBiayaParkir() {
        return getLamaJam() * 3000;
    }
}

class Truck extends Kendaraan{
    Truck(){
        super();

```

```

        this.jenis="Truck";
    }

    @Override
    public int getBiayaParkir() {
        return getLamaJam() * 10000;
    }
}

class LarikKendaraan{
    private int ukuran;
    private Kendaraan p[] = new Kendaraan[100];

    LarikKendaraan(int ukuran){
        this.ukuran = ukuran;
    }

    public void inputLarikParkir(){
        Scanner input = new Scanner(System.in);
        int num;
        for(int i=0;i<this.ukuran;i++){
            System.out.print("\033[H\033[2J");
            System.out.flush();

            System.out.println("Kendaraan ke - " + (i+1));
            System.out.println("Jenis Kendaraan : ");
            System.out.println("1 . Mobil");
            System.out.println("2 . Motor");
            System.out.println("3 . Truck");
            System.out.print("Input...");
            num = input.nextInt();

            switch(num){
                case 1:
                    p[i] = new Mobil();
                    break;

                case 2:
                    p[i] = new Motor();
                    break;

                case 3:
                    p[i] = new Truck();
                    break;
            }
        }
    }
}

```

```

    }

    this.p[i].inputKendaraan();

    System.out.print("\033[H\033[2J");
    System.out.flush();
}
}

public void cetakTabelParkir(){
    System.out.println("\t\t\t\t\tRekapitulasi Biaya parkir PT Parkir Jaya");
    if(this.p[0].getNoKendaraan()==" "){
        System.out.println("Larik kosong ! ");
    }
    else{
        int no = 1;
        System.out.println("=====
=====");
        System.out.println("No\tNo Kendaraan\t\tJenis\tJam Masuk\tJam Pulang\tLama
Parkir\tLama jam\tBiaya");
        System.out.println("=====
=====");

        for(int i=0;i<this.ukuran;i++){
            if(this.p[i].getNoKendaraan() == " "){
                break;
            }
            else{
                System.out.println(
                    no + "\t" +
                    this.p[i].getNoKendaraan() + "\t\t" +
                    this.p[i].getJenis()+ "\t" +
                    this.p[i].getWaktudatang().getWaktu() + "\t" +
                    this.p[i].getWaktuPulang().getWaktu() + "\t" +
                    this.p[i].getLamaParkir().getWaktu() + "\t " +
                    this.p[i].getLamaJam() + "\t\t" +
                    this.p[i].getBiayaParkir() + "\t "
                );
                no++;
            }
        }

        System.out.println("=====
=====");
    }
}
}

```



```

    public float totalBiaya(){
        float hasil = 0;
        for(int i=0;i<this.ukuran;i++){
            hasil +=this.p[i].getBiayaParkir();
        }
        return hasil;
    }
}

public class Inheritance{
    public static void main(String[] args) {
        Scanner input=new Scanner(System.in);
        int uk;
        System.out.print("Masukkan banyak kendaraan : ");
        uk = input.nextInt();

        System.out.print("\n033[H\033[2J");
        System.out.flush();

        LarikKendaraan lp = new LarikKendaraan(uk);

        lp.inputLarikParkir();
        System.out.print("\n033[H\033[2J");
        System.out.flush();
        lp.cetakTabelParkir();

        System.out.println("Total Biaya Parkir adalah = "+ lp.totalBiaya());
    }
}

```

b. Screenshot:

Rekapitulasi Biaya parkir PT Parkir Jaya							
No	No Kendaraan	Jenis	Jam Masuk	Jam Pulang	Lama Parkir	Lama jam	Biaya
1	B 1234 ABC	Mobil	08:00:00	09:00:00	01:00:00	1	3000
2	B 1234 BCA	Motor	08:00:00	09:00:00	01:00:00	1	2000
3	B 1234 CBA	Truck	08:00:00	09:00:00	01:00:00	1	10000
Total Biaya Parkir adalah = 15000.0							

2. C++

a. Source Code:

```
/*
```

```
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* Kelas     : A
* Tanggal   : 11 November 2022
* Nama Program : Inheritance.cpp
* Deskripsi  : UTS SOAL 4 dengan Inheritance
*/
```

```
#include<iostream>
```

```
#include<string>
```

```
class Waktu{
    private:
        int jam,menit,detik;

    public:
        Waktu(int jam,int menit,int detik){
            this->jam = jam;
            this->menit = menit;
            this->detik = detik;
        }
        Waktu(){
            this->jam = 0;
            this->menit =0;
            this->detik=0;
        }
        void setJam(int jam){
            this->jam = jam;
        }
        void setMenit(int menit){
            this->menit = menit;
        }
        void setDetik(int detik){
            this->detik = detik;
        }
        void inputWaktu(){
            std::cout<<"Masukkan jam : ";
            std::cin>>this->jam;

            std::cout<<"Masukkan menit : ";
            std::cin>>this->menit;

            std::cout<<"Masukkan detik : ";
```

```

        std::cin>>this->detik;
    }
    int getJam(){
        return this->jam;
    }
    int getMenit(){
        return this->menit;
    }
    int getDetik(){
        return this->detik;
    }
    std::string getWaktu(){
        std::string nolJam = "";
        std::string nolMenit="";
        std::string nolDetik="";

        if(this->jam<10){
            nolJam="0";
        }
        if(this->menit<10){
            nolMenit="0";
        }
        if(this->detik<10){
            nolDetik="0";
        }

        return nolJam + std::to_string(this->jam) + ":" + nolMenit+
std::to_string(this->menit) + ":" +nolDetik+ std::to_string(this->detik);
    }
    int convertToSecond(){
        int hasil = this->detik + this->menit*60 + this->jam*3600;
        return hasil;
    }
    void secondToClock(int second){
        this->menit=second/60;
        this->detik=second%60;
        this->jam=this->menit/60;
        this->menit=this->menit%60;
    }
    Waktu cariDurasi(Waktu akhir){
        Waktu temp;

        int detikAwal = this->convertToSecond();
        int detikAkhir = akhir.convertToSecond();
    }

```

```

        if(detikAkhir<detikAwal){
            detikAkhir+=86400;
        }
        int detikHasil = detikAkhir - detikAwal;

        temp.secondToClock(detikHasil);
        return temp;
    }
};

class Kendaraan{
protected:
    std::string no;
    std::string jenis;
    Waktu datang;
    Waktu pulang;

public:
    Kendaraan(){
        this->no = " ";

    }

    //Input
    void setNoKendaraan(std::string no){
        this->no = no;
    }

    void setJenis(std::string jenis){
        this->jenis = jenis;
    }

    void setWaktuDatang(Waktu datang){
        this->datang = datang;
    }

    void setWaktuPulang(Waktu pulang){
        this->pulang=pulang;
    }

    void inputKendaraan(){
        std::cout<<"\n--- INPUT KENDARAAN ---\n";
    }
};

```

```

        std::cout<<"No Kendaraan : ";
        std::cin.ignore();
        std::getline(std::cin,this->no);

        std::cout<<"\n-- Jam Masuk Kendaraan --\n";
        this->datang.inputWaktu();

        std::cout<<"\n-- Jam Keluar Kendaraan --\n";
        this->pulang.inputWaktu();
    }

    //Output
    std::string getNoKendaraan(){
        return this->no;
    }

    std::string getJenis(){
        return this->jenis;
    }

    Waktu getWaktudatang(){
        return this->datang;
    }

    Waktu getWaktuPulang(){
        return this->pulang;
    }

    //Proses

    Waktu getLamaParkir(){
        return this->datang.cariDurasi(this->pulang);
    }

    int getLamaJam(){
        int hasil = 0;
        if(this->getLamaParkir().getMenit()>=10 || this->getLamaParkir().getJam()>=1){
            hasil = this->getLamaParkir().getJam();

            if( this->getLamaParkir().getMenit()>0 || this->getLamaParkir().getDetik()>0 ){
                hasil +=1;
            }
        }
    }

```

```

        }
        return hasil;
    }

    virtual int getBiayaParkir(){return 0;}

};

class Mobil : public Kendaraan{
public:
    Mobil():Kendaraan(){
        this->jenis = "Mobil";
    }

    int getBiayaParkir(){
        return this->getLamaJam()*3000;
    }
};

class Motor : public Kendaraan{
public:
    Motor():Kendaraan(){
        this->jenis="Motor";
    }

    int getBiayaParkir(){
        return this->getLamaJam()*2000;
    }
};

class Truck : public Kendaraan{
public:
    Truck():Kendaraan(){
        this->jenis="Truck";
    }

    int getBiayaParkir(){
        return this->getLamaJam()*10000;
    }
};

```

```

class LarikKendaraan{
    private:
        int ukuran;
        Kendaraan *p[100];

    public:
        LarikKendaraan(int ukuran){
            this->ukuran = ukuran;
        }
        void inputLarikParkir(){
            int num;
            for(int i=0;i<this->ukuran;i++){
                system("cls");
                std::cout<<"Kendaraan ke - " <<(i+1)<<"\n";
                std::cout<<"Jenis Kendaraan : \n";
                std::cout<<"1 . Mobil\n";
                std::cout<<"2 . Motor\n";
                std::cout<<"3 . Truck\n";
                std::cout<<"Input....";
                std::cin>>num;

                switch (num)
                {
                    case 1:
                        this->p[i] = new Mobil();
                        break;

                    case 2:
                        this->p[i] = new Motor();
                        break;

                    case 3:
                        this->p[i] = new Truck();
                        break;

                }

                this->p[i]->inputKendaraan();
                system("cls");
            }
        }
        void cetakTabelParkir(){
            std::cout<<"\t\t\t\t\tRekapitulasi Biaya parkir PT Parkir Jaya\n";

```

```

        if(this->p[0]->getNoKendaraan()== " "){
            std::cout<<"Larik Kosong !\n";
        }

        else{
            int no = 1;
            std::cout<<"=====
=====
\n";

            std::cout<<"No\tNo Kendaraan\t\tJenis\tJam Masuk\tJam Pulang\tLama
Parkir\tLama jam\tBiaya\n";
            std::cout<<"=====
=====
\n";

            for(int i=0;i<this->ukuran;i++){
                if(this->p[i]->getNoKendaraan() == " "){
                    break;
                }

                else{
                    std::cout<<no<<"\t"<<
                    this->p[i]->getNoKendaraan() << "\t\t" <<
                    this->p[i]->getJenis() << "\t" <<
                    this->p[i]->getWaktudatang().getWaktu() << "\t" <<
                    this->p[i]->getWaktuPulang().getWaktu() << "\t" <<
                    this->p[i]->getLamaParkir().getWaktu() << "\t " <<
                    this->p[i]->getLamaJam() << "\t\t" <<
                    this->p[i]->getBiayaParkir() << "\t \n";

                }
                no++;
            }
            std::cout<<"=====
=====
\n";

        }
    }
    float totalBiaya(){
        float hasil = 0;
        for(int i=0;i<this->ukuran;i++){
            hasil+=this->p[i]->getBiayaParkir();
        }

        return hasil;
    }
};

```



```

int main()
{
    int ukuran;
    std::cout<<"Masukkan jumlah kendaraan = ";
    std::cin>>ukuran;

    LarikKendaraan lp(ukuran);

    system("cls");

    lp.inputLarikParkir();
    system("cls");
    lp.cetakTabelParkir();

    std::cout<<"Total Biaya adalah = "<<lp.totalBiaya();

    return 0;
}

```

b. Screenshot:

Rekapitulasi Biaya parkir PT Parkir Jaya							
No	No Kendaraan	Jenis	Jam Masuk	Jam Pulang	Lama Parkir	Lama jam	Biaya
1	B 1234 ABC	Mobil	08:00:00	09:00:00	01:00:00	1	3000
2	B 1234 BCA	Motor	08:00:00	09:00:00	01:00:00	1	2000
3	B 1234 CBA	Truck	08:00:00	09:00:00	01:00:00	1	10000
Total Biaya Parkir adalah = 15000.0							

3. Python

a. Source Code:

```

# Nama          : Amir Salim , Andre Nathaniel Adipraja , Prames Ray lapian , Ibrahim
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# NPM           : 140810210015 , 140810200042 , 140810210059 , 140810210039
# Kelas         : A
# Tanggal       : 11 November 2022
# Nama Program  : Inheritance.py
# Deskripsi     : UTS SOAL 4 dengan turunan

from os import system

class Waktu:

    #Attribute
    __jam=0
    __menit=0

```

```

__detik=0

#Constructor
def __init__(self, *args):
    if (len(args) == 3):
        self.__jam = int(args[0])
        self.__menit = int(args[1])
        self.__detik = int(args[2])

    elif(len(args)==0):
        self.__jam = int(0)
        self.__menit = int(0)
        self.__detik = int(0)

    else:
        print("False number of argument in constructor")

#Input Method
def setJam(self,jam):
    self.__jam = int(jam)

def setMenit(self,menit):
    self.__menit = int(menit)

def setDetik(self,detik):
    self.__detik = int(detik)

def inputWaktu(self):

    self.__jam = int(input("Masukkan jam : "))
    self.__menit = int(input("Masukkan menit : "))
    self.__detik = int(input("Masukkan detik : "))

#Output Method
def getJam(self):
    return self.__jam

def getMenit(self):
    return self.__menit

def getDetik(self):
    return self.__detik

def getWaktu(self):
    nolJam = ""

```

```

        nolMenit=""
        nolDetik=""

        if(self.__jam<10):
            nolJam="0"

        if(self.__menit<10):
            nolMenit="0"

        if(self.__detik<10):
            nolDetik="0"

        return nolJam + str(self.__jam) + ":" + str(nolMenit)+ str(self.__menit) + ":"
+nolDetik+ str(self.__detik)

#Proses

def convertToSecond(self):
    hasil = self.__detik + (int(60) * self.__menit) + (int(3600) * self.__jam)
    return hasil

def secondToClock(self,second:int):
    self.__menit = int(second/60)
    self.__detik = int(second%60)
    self.__jam = int(self.__menit/60)
    self.__menit = int(self.__menit%60)

def cariDurasi(self,akhir):
    temp = Waktu()

    detikAwal = self.convertToSecond()
    detikAkhir = akhir.convertToSecond()

    if(detikAkhir<detikAwal):
        detikAkhir+=86400

    detikHasil = detikAkhir - detikAwal
    temp.secondToClock(detikHasil)

    return temp

#-----
#-----

class Kendaraan:

```

```

_no = " "
_jenis= " "
_datang = Waktu()
_pulang = Waktu()

#Constructor
def __init__(self):
    self._no = " "
    self._jenis = " "
    self._datang = Waktu(0,0,0)
    self._pulang = Waktu(0,0,0)

#Input
def setNoKendaraan(self,no):
    self._no = no

def setJenis(self,jenis):
    self._jenis=jenis

def setWaktuDatang(self,datang):
    self._datang = datang

def setWaktuPulang(self,pulang):
    self._pulang = pulang

def inputKendaraan(self):
    print("\n--- INPUT KENDARAAN---")
    self._no = input("No Kendaraan : ")

    print("\n--- Jam Masuk Kendaraan ---")
    self._datang.inputWaktu()

    print("\n--- Jam Keluar Kendaraan ---")
    self._pulang.inputWaktu()

#Output
def getNoKendaraan(self):
    return self._no

def getJenis(self):
    return self._jenis

def getWaktuDatang(self):
    return self._datang

```

```

def getWaktuPulang(self):
    return self._pulang
def getLamaParkir(self):
    return self._datang.cariDurasi(self._pulang)

def getLamaJam(self):
    hasil = int(0)
    if(self.getLamaParkir().getMenit()>=10 or self.getLamaParkir().getJam()>=1):
        hasil = self.getLamaParkir().getJam()

        if(self.getLamaParkir().getMenit()>0 or
self.getLamaParkir().getDetik()>0):
            hasil = hasil + 1

    return hasil

def getBiayaParkir(self):
    ...
#-----
-----

class Motor(Kendaraan):
    def __init__(self):
        super().__init__()
        self._jenis = "Motor"

    def getBiayaParkir(self):
        return self.getLamaJam() * 2000
#-----
-----

class Mobil(Kendaraan):
    def __init__(self):
        super().__init__()
        self._jenis = "Mobil"

    def getBiayaParkir(self):
        return self.getLamaJam() * 3000
#-----
-----

class Truck(Kendaraan):
    def __init__(self):
        super().__init__()

```

```

        self._jenis = "Truck"

    def getBiayaParkir(self):
        return self.getLamaJam() * 10000
#-----
-----

class LarikKendaraan:
    __ukuran=int(0)
    __p = []

    #Constructor
    def __init__(self,ukuran):
        self.__ukuran = ukuran

    #Input
    def inputLarikParkir(self):
        i = int(0)
        num = int(0)
        while(i<self.__ukuran):
            system("cls")
            print("Kendaraan ke - ",(i+1))

            print("Jenis Kendaraan : ")
            print("1 . Mobil")
            print("2 . Motor")
            print("3 . Truck")
            num = int(input("Input...."))

            match num:
                case 1:
                    obj = Motor()

                case 2:
                    obj = Mobil()

                case 3:
                    obj = Truck()

            obj.inputKendaraan()
            self.__p.append(obj)
            system("cls")
            i=i+1

```

```

#Output
def cetakTabelParkir(self):
    print("\t\t\t\t\tRekapitulasi Biaya parkir PT Parkir Jaya\n")
    if(self.__p[0].getNoKendaraan()==" "):
        print("Larik Kosong ! ")

    else:
        no = int(1)
        i = int(0)
        print("=====
=====")

        print("No\tNo Kendaraan\t\tJenis\tJam Masuk\tJam Pulang\tLama Parkir\tLama
jam\tBiaya");
        print("=====
=====")

        while(i<self.__ukuran):
            if(self.__p[i].getNoKendaraan() == " "):
                break

            else:
                print(
                    no,"\t",
                    self.__p[i].getNoKendaraan(),"\t\t",
                    self.__p[i].getJenis(),"\t",
                    self.__p[i].getWaktuDatang().getWaktu(),"\t",
                    self.__p[i].getWaktuPulang().getWaktu(),"\t",
                    self.__p[i].getLamaParkir().getWaktu(),"\t ",
                    self.__p[i].getLamaJam(),"\t\t",
                    self.__p[i].getBiayaParkir(),"\t "
                )
                no = no+1;
                i = i+1
        print("=====
=====")

#Proses
def totalBiaya(self):
    hasil = float(0)
    i = int(0)
    while(i<self.__ukuran):
        hasil = hasil + self.__p[i].getBiayaParkir()
        i = i + 1
    return hasil

```

