PRAKTIKUM POLIMORPHISM

LAPORAN

Diajukan untuk memenuhi Tugas Mata Kuliah Pemrograman Berorientasi Objek

Disusun Oleh

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211511047

PROGRAM DIPLOMA III TEKNIK INFORMATIKA

POLITEKNIK NEGERI BANDUNG

BANDUNG

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PERSOALAN

Link Repository : https://github.com/HafizhAuliansyah/211511047_M-Hafizh-A_PraktikumPBO.git

1.1. Studi Kasus 1

 # NOTE : Screenshot code yang dimasukkan hanya yang sesuai perintah soal saja, code selengkapnya dapat dilihat pada github

Jawaban Soal :

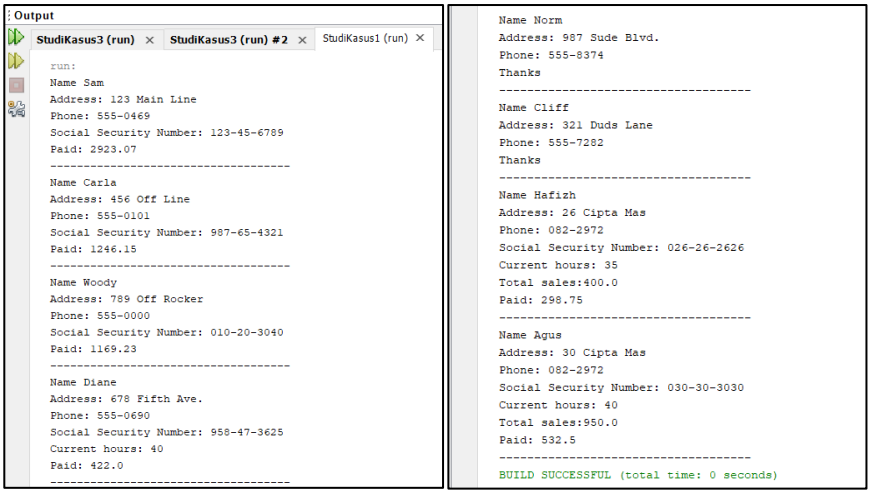
- Menulis class Commission.java sesuai kriteria

```
package studikasus1;
public class Commission extends Hourly{
    double total_sales;
    double commission_rate;
    public Commission(String eName, String eAddress, String ePhone,
            String soSecNumber, double rate, double commission_rate) {
        super(eName, eAddress, ePhone, soSecNumber, rate);
        this.commission_rate = commission_rate;
        this.total_sales = 0;
    }
    public void addSales(double totalSales){
        this.total_sales = totalSales;
    }
    @Override
    public double pay() {
        double payment =  super.pay() + (total_sales*commission_rate);
        total_sales = 0;
        return payment;
    }
    @Override
    public String toString() {
        String result = super.toString();
        result += "\nTotal sales:"+total_sales;
        return result;
    }
}
```

- Mengubah class Staff.java sesuai kriteria

```java
package studikasus1;
public class Staff {
    StaffMember[] staffList;
    public Staff(){
        staffList = new StaffMember[8];
        staffList[0] = new Executive("Sam", "123 Main Line", "555-0469", "123-45-6789", 2423.07);
        staffList[1] = new Employee("Carla", "456 Off Line", "555-0101", "987-65-4321", 1246.15);
        staffList[2] = new Employee("Woody", "789 Off Rocker", "555-0000", "010-20-3040", 1169.23);
        staffList[3] = new Hourly("Diane", "678 Fifth Ave.", "555-0690", "958-47-3625", 10.55);
        staffList[4] = new Volunteer("Norm", "987 Sude Blvd.", "555-8374");
        staffList[5] = new Volunteer("Cliff", "321 Duds Lane", "555-7282");
        staffList[6] = new Commission("Hafizh", "26 Cipta Mas", "082-2972", "026-26-2626", 6.25, 0.2);
        staffList[7] = new Commission("Agus", "30 Cipta Mas", "082-2972", "030-30-3030", 9.75, 0.15);
        ((Executive) staffList[0]).awardBonus(500.00);
        ((Hourly)staffList[3]).addHours(40);
        ((Hourly)staffList[6]).addHours(35);
        ((Commission)staffList[6]).addSales(400);
        ((Hourly)staffList[7]).addHours(40);
        ((Commission)staffList[7]).addSales(950);
    }
    public void payday(){
        double amount;
        for(int count=0; count<staffList.length; count++){
            System.out.println(staffList[count]);
            amount = staffList[count].pay();
            if(amount == 0.0){
                System.out.println("Thanks");
            }else{
                System.out.println("Paid: "+amount);
            }
            System.out.println("-----------------------------------");
        }
    }
}
```

Output :



```
Output
StudiKasus3 (run) | StudiKasus3 (run) #2 | StudiKasus1 (run)
run:
Name Sam
Address: 123 Main Line
Phone: 555-0469
Social Security Number: 123-45-6789
Paid: 2923.07
-----------------------------------
Name Carla
Address: 456 Off Line
Phone: 555-0101
Social Security Number: 987-65-4321
Paid: 1246.15
-----------------------------------
Name Woody
Address: 789 Off Rocker
Phone: 555-0000
Social Security Number: 010-20-3040
Paid: 1169.23
-----------------------------------
Name Diane
Address: 678 Fifth Ave.
Phone: 555-0690
Social Security Number: 958-47-3625
Current hours: 40
Paid: 422.0
-----------------------------------
Name Norm
Address: 987 Sude Blvd.
Phone: 555-8374
Thanks
-----------------------------------
Name Cliff
Address: 321 Duds Lane
Phone: 555-7282
Thanks
-----------------------------------
Name Hafizh
Address: 26 Cipta Mas
Phone: 082-2972
Social Security Number: 026-26-2626
Current hours: 35
Total sales:400.0
Paid: 298.75
-----------------------------------
Name Agus
Address: 30 Cipta Mas
Phone: 082-2972
Social Security Number: 030-30-3030
Current hours: 40
Total sales:950.0
Paid: 532.5
-----------------------------------
BUILD SUCCESSFUL (total time: 0 seconds)
```

Permasalahan yang dihadapi : Tidak bisa copy paste code yang ada di pdf
Solusi : Menyalin secara manual
Teman yang mambantu : -

1.2. Studi Kasus 2

 # NOTE : Screenshot code yang dimasukkan hanya yang sesuai perintah soal saja, code selengkapnya dapat dilihat pada github

Jawaban Soal :

- Membuat abstract class Shape.java

```java
package studikasus2;
abstract public class Shape {
    protected String shapeName;
    abstract double area();
    public Shape(String name) {
        this.shapeName = name;
    }
    @Override
    public String toString() {
        return this.shapeName;
    }
}
```

- Membuat class Rectange.java dan Cylinder.java

Rectangle.java

```java
package studikasus2;
public class Rectangle extends Shape{
    private double length;
    private double width;
    public Rectangle(double length, double width) {
        super("Rectangle");
        this.length = length;
        this.width = width;
    }
    @Override
    public double area() {
        return length * width;
    }
    @Override
    public String toString() {
        return super.toString()
                + " of width "+this.width+" and length "+this.length;
    }
}
```

Cylinder.java

```java
package studikasus2;
public class Cylinder extends Shape{
    private double radius;
    private double height;
    public Cylinder(double radius, double height) {
        super("Cylinder");
        this.radius = radius;
        this.height = height;
    }
    @Override
    public double area() {
        return Math.PI*radius*radius*height;
    }
    @Override
    public String toString() {
        return super.toString()
                + " of radius "+this.radius+" and height "+this.height;
    }
}
```

- Modifikasi amount method dalam Paint.java

```java
package studikasus2;
public class Paint {
    private double coverage;
    public Paint(double c){
        coverage = c;
    }
    public double amount(Shape s){
        // SOAL 3
        System.out.println("Counting amount for "+s.toString());
        return s.area() / coverage;
    }
}
```

- Modifikasi PaintThings.java

```java
package studikasus2;
import java.text.DecimalFormat;
public class PaintThings {
    public static void main(String[] args) {
        final double COVERAGE = 350;
        Paint paint = new Paint(COVERAGE);
        Rectangle deck;
        Sphere bigBall;
        Cylinder tank;
        double deckAmt, ballAmt, tankAmt;
        // SOAL 4
        deck = new Rectangle(20, 35);
        bigBall = new Sphere(15);
        tank = new Cylinder(10, 30);
        deckAmt = paint.amount(deck);
        ballAmt = paint.amount(bigBall);
        tankAmt = paint.amount(tank);

        DecimalFormat fmt = new DecimalFormat("0.#");
        System.out.println("\nNumber of gallons of paint needed...");
        System.out.println("Deck "+fmt.format(deckAmt));
        System.out.println("Big Ball "+fmt.format(ballAmt));
        System.out.println("Tank "+fmt.format(tankAmt));
    }
}
```

Output :

```
Output - StudiKasus2 (run)
run:
Counting amount for Rectangle of width 35.0 and length 20.0
Counting amount for Sphere of radius 15.0
Counting amount for Cylinder of radius 10.0 and height 30.0

Number of gallons of paint needed...
Deck 2
Big Ball 8.1
Tank 26.9
BUILD SUCCESSFUL (total time: 0 seconds)
```

Permasalahan yang dihadapi : -

Solusi : -

Teman yang membantu : -

1.3. Studi Kasus 3

Jawaban Soal :

- Membuat Numbers.java dan Sorting.java

  Number.java

```java
package studikasus3;
import java.util.Scanner;
public class Number {
    public static void main(String[] args) {
        // SOAL 1
        int[] intList;
        int size;
        Scanner scan = new Scanner(System.in);
        System.out.print("\nHow many integers do you want to sort ? ");
        size = scan.nextInt();
        intList = new int[size];
        System.out.println("\nEnter the numbers....");
        for(int i=0; i<size; i++){
            intList[i] = scan.nextInt();
        }
        // SOAL 4
        Sorting.selectionSort(intList);
        System.out.println("\nYour numbers in sorted order...");
        for(int i=0;i<size; i++){
            System.out.println(intList[i] + " ");
        }
        System.out.println("");
    }
}
```

Sorting.java

```java
package studikasus3;
public class Sorting {
    public static void selectionSort(Comparable[] list){
        int min;
        Comparable temp;
        for(int index=0; index<list.length-1; index++){
            min = index;
            for(int scan = index+1; scan<list.length; scan++){
                if(list[scan].compareTo(list[min]) < 0)
                    min = scan;
                temp = list[min];
                list[min] = list[index];
                list[index] = temp;
            }
        }
    }
    public static void insertionSort(Comparable[] list){
        for(int index=1; index<list.length; index++){
            Comparable key = list[index];
            int position = index;
            while(position > 0 && key.compareTo(list[position-1]) < 0){
                list[position] = list[position-1];
                position--;
            }
            list[position] = key;
        }
    }
}
```

- Modifikasi Numbers.java sehingga dapat di run

```java
package studikasus3;
import java.util.Scanner;
public class Number {
    public static void main(String[] args) {
        // SOAL 1
        Integer[] intList;
        int size;
        Scanner scan = new Scanner(System.in);
        System.out.print("\nHow many integers do you want to sort ? ");
        size = scan.nextInt();
        intList = new Integer[size];
        System.out.println("\nEnter the numbers....");
        for(int i=0; i<size; i++){
            intList[i] = scan.nextInt();
        }
        Sorting.selectionSort(intList);
        System.out.println("\nYour numbers in sorted order...");
        for(int i=0;i<size; i++){
            System.out.println(intList[i] + " ");
        }
        System.out.println("");
    }
}
```

- Membuat Strings.java

```java
package studikasus3;
import java.util.Scanner;
// SOAL 3
public class Strings {
    public static void main(String[] args) {
        String[] strList;
        int size;
        Scanner scan = new Scanner(System.in);
        System.out.print("\nHow many strings do you want to sort ? ");
        size = scan.nextInt();
        scan.nextLine();
        strList = new String[size];
        System.out.println("\nEnter the string....");
        for(int i=0; i<size; i++){
            strList[i] = scan.nextLine();
        }
        Sorting.selectionSort(strList);
        System.out.println("\nYour numbers in sorted order...");
        for(int i=0;i<size; i++){
            System.out.println(strList[i] + " ");
        }
        System.out.println("");
    }
}
```

- Modifikasi insertionSort sehingga menjadi Descending

Sorting.java

```java
public static void insertionSort(Comparable[] list){
    for(int index=1; index<list.length; index++){
        Comparable key = list[index];
        int position = index;
        // SOAL 4
        while(position > 0 && key.compareTo(list[position-1]) > 0){
            list[position] = list[position-1];
            position--;
        }
        list[position] = key;
    }
}
```

Number.java

```java
// SOAL 4
Sorting.insertionSort(intList);
```

```
Output - StudiKasus3 (run) #3
run:

How many integers do you want to sort ? 3

Enter the numbers....
5
1
3

Your numbers in sorted order...
5
3
1

BUILD SUCCESSFUL (total time: 11 seconds)
```

Strings.java

```java
// SOAL 4
Sorting.insertionSort(strList);
```

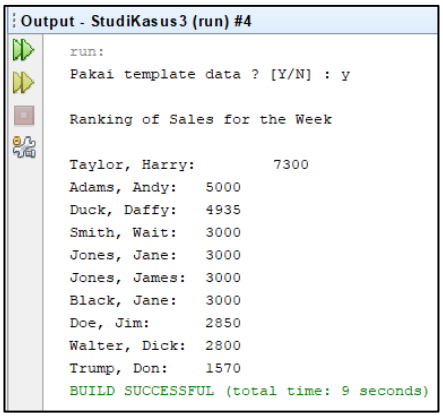
```
Output - StudiKasus3 (run) #3
run:

How many strings do you want to sort ? 3

Enter the string....
saya
adalah
hafizh

Your numbers in sorted order...
saya
hafizh
adalah

BUILD SUCCESSFUL (total time: 10 seconds)
```

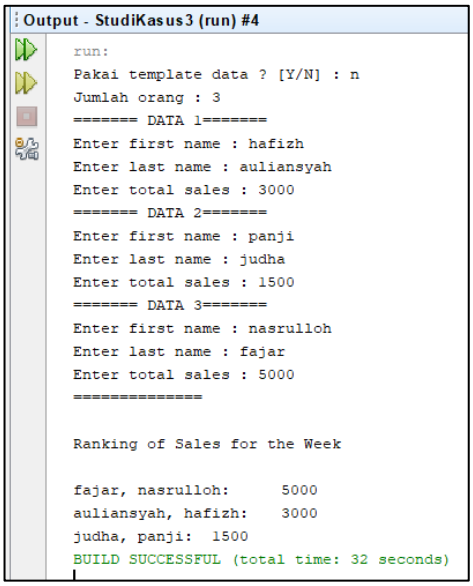
- Modifikasi fungsi compareTo() Salesperson.java

```
@Override
public int compareTo(Object other) {
    int result = 0;
    Salesperson person2 = (Salesperson)other;
    if(this.totalSales < person2.getTotalSales()){
        result = -1;
    }else if(this.totalSales > person2.getTotalSales()){
        result = 1;
    }else{
        String name1 = this.lastName + " " +this.firstName;
        String name2 =  person2.getLastName() + " " +person2.getFirstName();
        result = name1.compareTo(name2);
    }
    return result;
}
```

- Compile hasil WeeklySales.java dan Modifikasi untuk input data SalesPerson.java secara manual

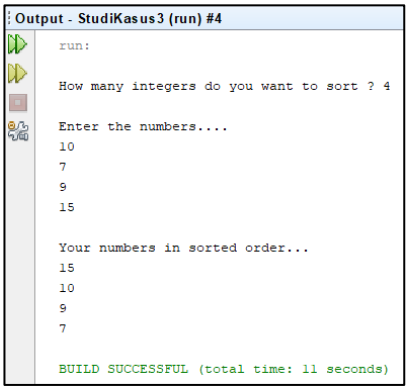
```
package studikasus3;
import java.util.Scanner;
public class WeeklySales {
    public static void main(String[] args){
        // SOAL 7
        Scanner scan = new Scanner(System.in);
        Salesperson[] salesStaff;
        System.out.print("Pakai template data ? [Y/N] : ");
        char use_data = scan.next().charAt(0);
        if(use_data == 'Y' || use_data == 'y'){
            salesStaff = new Salesperson[10];
            salesStaff[0] = new Salesperson("Jane", "Jones", 3000);
            salesStaff[1] = new Salesperson("Daffy", "Duck", 4935);
            salesStaff[2] = new Salesperson("James", "Jones", 3000);
            salesStaff[3] = new Salesperson("Dick", "Walter", 2800);
            salesStaff[4] = new Salesperson("Don", "Trump", 1570);
            salesStaff[5] = new Salesperson("Jane", "Black", 3000);
            salesStaff[6] = new Salesperson("Harry", "Taylor", 7300);
            salesStaff[7] = new Salesperson("Andy", "Adams", 5000);
            salesStaff[8] = new Salesperson("Jim", "Doe", 2850);
            salesStaff[9] = new Salesperson("Wait", "Smith", 3000);
        }else{
            System.out.print("Jumlah orang : ");
            int person_count = scan.nextInt();
            salesStaff = new Salesperson[person_count];
            for(int i=0; i<person_count; i++){
                System.out.println("======= DATA "+(i+1)+"=======");
                System.out.print("Enter first name : ");
                String fn = scan.next();
                System.out.print("Enter last name : ");
                String ln = scan.next();
                System.out.print("Enter total sales : ");
                int tl = scan.nextInt();
                salesStaff[i] = new Salesperson(fn, ln, tl);

            }
            System.out.println("==============");
        }
        Sorting.insertionSort(salesStaff);
        System.out.println("\nRanking of Sales for the Week\n");
        for(Salesperson s: salesStaff)
            System.out.println(s);
    }
}
```



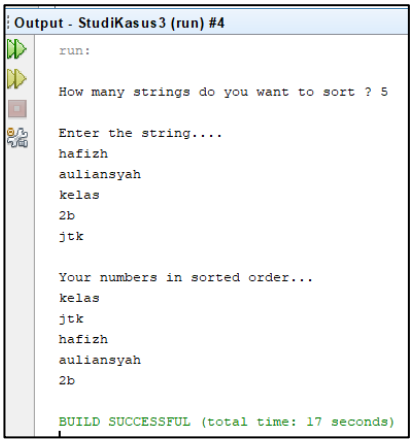


Output :

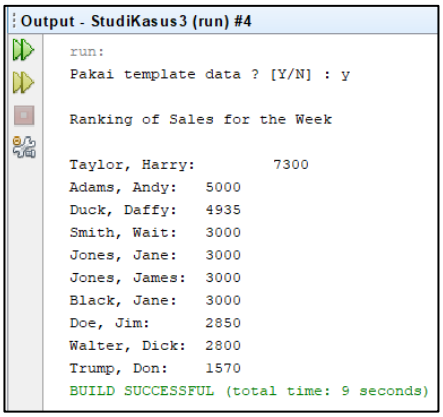
- Output Number.java

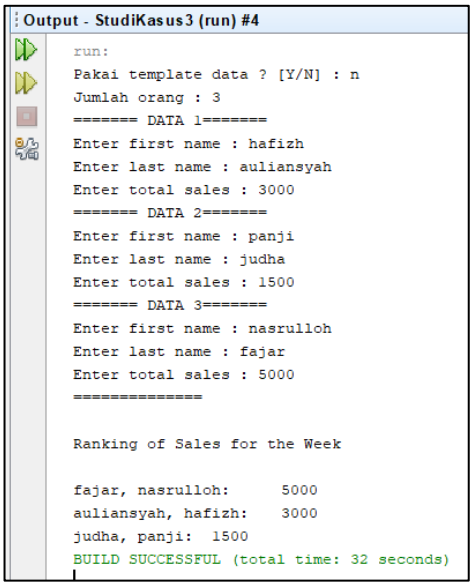


- Output Strings.java



- Output WeeklySales.java





Permasalahan yang dihadapi : Scanner nextLine() pada Strings.java sempat error terlewat 1x saat looping

Solusi : Menambahkan scan.nextLine() sesudah scan.nextInt() untuk menangkap karakter \n yang tersisa setelah input integer

Teman yang membantu : -