Assignment 1

Human class:

```java
package Assignments.Week3.Assignment1;

public class Human {
    private String first_name;
    private String last_name;

    public Human() {
    }

    public Human(String first_name, String last_name) {
        this.first_name = first_name;
        this.last_name = last_name;
    }

    public String getFirst_name() {
        return first_name;
    }

    public void setFirst_name(String first_name) {
        this.first_name = first_name;
    }

    public String getLast_name() {
        return last_name;
    }

    public void setLast_name(String last_name) {
        this.last_name = last_name;
    }
    public void printdata(){
        System.out.println("First name: "+first_name+"\n"+"Second name: "+last_name);
    }
}
```

Student class:

```java
package                                          Assignments.Week3.Assignment1;

public          class          Student          extends          Human          {
    private                          String                          faculty_number;
    public                                                           Student(){}
    public   Student(String   first_name,   String   last_name,   String   faculty_number){
        super(first_name,last_name);
        this.faculty_number=faculty_number;
    }

    public                   String                   getFaculty_number()                   {
        return                                                       faculty_number;
    }

    public          void          setFaculty_number(String          faculty_number)          {
        this.faculty_number                          =                          faculty_number;
    }
```

```java
    @Override
    public void printdata(){
        super.printdata();
        System.out.println("Faculty number: "+faculty_number);
    }
}
```

Worker class:

```java
package Assignments.Week3.Assignment1;

public class Worker extends Human {
    private double weekSalary;
    private int workHoursPerDay;
    public Worker(){}
    public Worker(String fname, String lname, double wekSalary, int workhours){
        super(fname,lname);
        this.weekSalary=wekSalary;
        this.workHoursPerDay=workhours;
    }

    public double getWeekSalary() {
        return weekSalary;
    }

    public void setWeekSalary(double weekSalary) {
        this.weekSalary = weekSalary;
    }

    public int getWorkHoursPerDay() {
        return workHoursPerDay;
    }

    public void setWorkHoursPerDay(int workHoursPerDay) {
        this.workHoursPerDay = workHoursPerDay;
    }

    public double moneyPerHour(){
        int weekhours=workHoursPerDay*5;
        return weekSalary/weekhours;
    }
    @Override
    public void printdata(){
        super.printdata();
        System.out.println("Work hours per day: "+workHoursPerDay+"\n"+"Money per hour: "+moneyPerHour()+"\n"+"Weekly salary: "+weekSalary);
    }
}
```

Main class:

```java
package Assignments.Week3.Assignment1;
import java.util.Scanner;
public class Main {
    public static void main(String[] args) {
```

```java
        Scanner                         in=new                          Scanner(System.in);
        Student[]                   stdy=new                        Student[10];
        Worker[]                    wkr=new                         Worker[10];
        for(int                                         i=0;i<10;i++){
            stdy[i]=new                                 Student();
            wkr[i]=new                                  Worker();
        }
        for(int                                         i=0;i<3;i++){
            System.out.println("Enter    first    name    of    "+(i+1)+"    student:    ");
            stdy[i].setFirst_name(in.nextLine());
            System.out.println("Enter    second    name    of    "+(i+1)+"    student:    ");
            stdy[i].setLast_name(in.nextLine());
            System.out.println("Enter    faculty    number    of    "+(i+1)+"    student:    ");
            stdy[i].setFaculty_number(in.nextLine());
        }
        for(int                                         i=0;i<3;i++){
            System.out.println("Enter    first    name    of    "+(i+1)+"    worker:    ");
            wkr[i].setFirst_name(in.nextLine());
            System.out.println("Enter    second    name    of    "+(i+1)+"    worker:    ");
            wkr[i].setLast_name(in.nextLine());
            System.out.println("Enter week  salary (double) of "+(i+1)+" worker: ");
            wkr[i].setWeekSalary(in.nextDouble());
            System.out.println("Enter work hours per day (int) of "+(i+1)+" worker: ");
            wkr[i].setWorkHoursPerDay(in.nextInt());
            in.nextLine();
        }
        for                             (int                     i=0;i<10;i++){
            System.out.println("Data        about        "+(i+1)+"        student:        ");
            stdy[i].printdata();
            System.out.println("\n");
        }
        for                             (int                     i=0;i<10;i++){
            System.out.println("Data        about        "+(i+1)+"        worker:        ");
            wkr[i].printdata();
            System.out.println("\n");
        }
    }
}
```

Result:

Enter first name of 1 student:

max

Enter second name of 1 student:

sad

Enter faculty number of 1 student:

1340023

Enter first name of 2 student:

qer

Enter second name of 2 student:

Enter faculty number of 2 student:

000123

Enter first name of 1 worker:

lador

Enter second name of 1 worker:

dasom

Enter week salary (double) of 1 worker:

24000

Enter work hours per day (int) of 1 worker:

4

Enter first name of 2 worker:

jack

Enter second name of 2 worker:

peter

Enter week salary (double) of 2 worker:

13000

Enter work hours per day (int) of 2 worker:

7

Data about 1 student:

First name: max

Second name: sad

Faculty number: 1340023

Data about 2 student:

First name: qer

Second name:

Faculty number: 000123

Data about 3 student:

First name: null

Second name: null

Faculty number: null

Data about 4 student:

First name: null

Second name: null

Faculty number: null

Data about 5 student:

First name: null

Second name: null

Faculty number: null

Data about 6 student:

First name: null

Second name: null

Faculty number: null

Data about 7 student:

First name: null

Second name: null

Faculty number: null

Data about 8 student:

First name: null

Second name: null

Faculty number: null

Data about 9 student:

First name: null

Second name: null

Faculty number: null

Data about 10 student:

First name: null

Second name: null

Faculty number: null

Data about 1 worker:

First name: lador

Second name: dasom

Work hours per day: 4

Money per hour: 1200.0

Weekly salary: 24000.0

Data about 2 worker:

First name: jack

Second name: peter

Work hours per day: 7

Money per hour: 371.42857142857144

Weekly salary: 13000.0

Data about 3 worker:

First name: null

Second name: null

Work hours per day: 0

Money per hour: NaN

Weekly salary: 0.0

Data about 4 worker:

First name: null

Second name: null

Work hours per day: 0

Money per hour: NaN

Weekly salary: 0.0

Data about 5 worker:

First name: null

Second name: null

Work hours per day: 0

Money per hour: NaN

Weekly salary: 0.0

Data about 6 worker:

First name: null

Second name: null

Work hours per day: 0

Money per hour: NaN

Weekly salary: 0.0

Data about 7 worker:

First name: null

Second name: null

Work hours per day: 0

Money per hour: NaN

Weekly salary: 0.0

Data about 8 worker:

First name: null

Second name: null

Work hours per day: 0

Money per hour: NaN

Weekly salary: 0.0

Data about 9 worker:

First name: null

Second name: null

Work hours per day: 0

Money per hour: NaN

Weekly salary: 0.0

Data about 10 worker:

First name: null

Second name: null

Work hours per day: 0

Money per hour: NaN

Weekly salary: 0.0
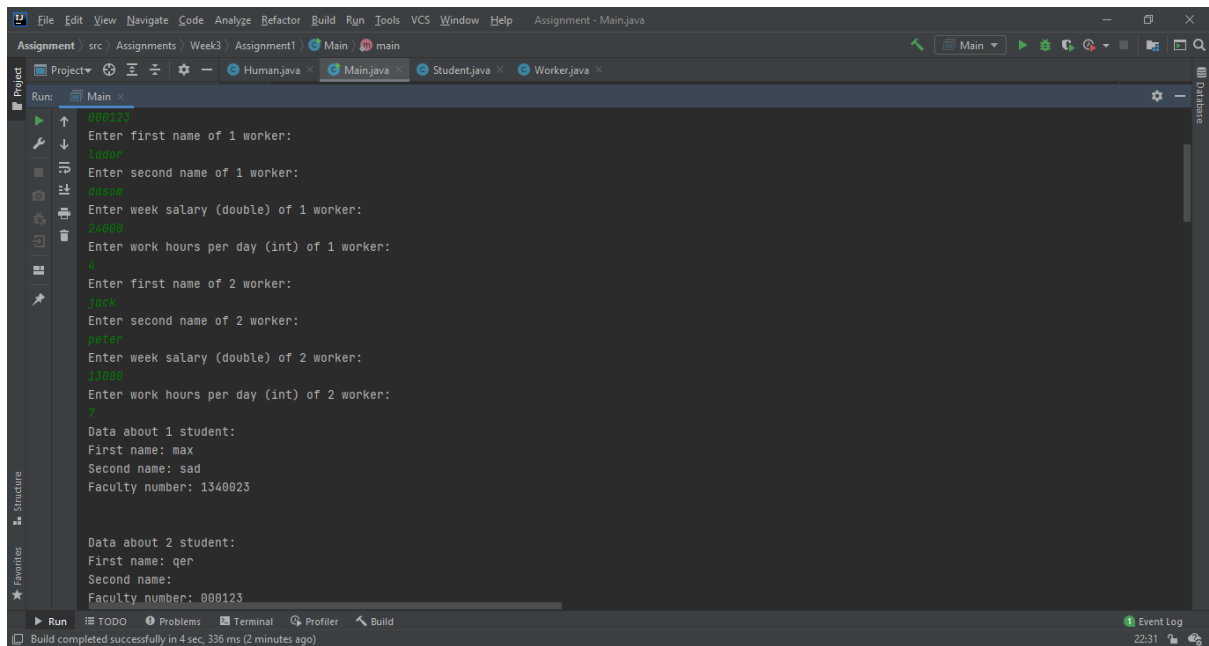
Assignment2

Animal:

```java
package Assignments.Week3.Assignment2;

public class Animal {
    private String name;
    private int age;
    private String gender;

    public Animal(String name, String gender, int age) {
        this.name = name;
        this.age = age;
        this.gender = gender;
    }

    public String getName() {
        return name;
    }

    public void setName(String name) {
        this.name = name;
    }

    public int getAge() {
        return age;
    }

    public void setAge(int age) {
        this.age = age;
    }

    public String getGender() {
```

```java
        return gender;
    }

    public void setGender(String gender) {
        this.gender = gender;
    }
    public void eat(){
        System.out.println("Animal have been fed!");
    }
    public void sleep(){
        System.out.println("Z z z...");
    }
    public void produceSound(){
        System.out.println("sound of animal");
    }
    public void printing(){
        System.out.println("Name: "+getName()+"\nAge: "+getAge()+"\nGender: "+getGender());
    }
}
```

Dog:

```java
package Assignments.Week3.Assignment2;

public class Dog extends Animal{
    public Dog(String nam, String ag, int gen) {
        super(nam,ag,gen);
    }
    @Override
    public void eat(){
        System.out.println("Dog "+super.getName()+" ate some meat!");
    }
    public void sleep(){
        System.out.println("Dog "+super.getName()+" is sleeping! Hrrrh Frruuh...");
    }
    public void produceSound(){
        System.out.println("Bark!");
    }
    public void printing(){
        System.out.println("Data about dog:");
        super.printing();
    }
}
```

Cat:

```java
package Assignments.Week3.Assignment2;

public class Cat extends Animal{
    public Cat(String nam, String ag, int gen) {
        super(nam,ag,gen);
    }
    @Override
    public void eat(){
        System.out.println("Cat "+super.getName()+" ate some fish!");
```

```java
    }
    public void sleep(){
        System.out.println("Cat "+super.getName()+" is sleeping! Mrrr ...");
    }
    public void produceSound(){
        System.out.println("Nyaa!");
    }
    public void printing(){
        System.out.println("Data about cat:");
        super.printing();
    }
}
```

Bird:

```java
package Assignments.Week3.Assignment2;

public class Bird extends Animal{

    public Bird(String nam, String ag, int gen) {
        super(nam,ag,gen);
    }

    @Override
    public void eat(){
        System.out.println("Bird "+super.getName()+" ate some warms!");
    }
    public void sleep(){
        System.out.println("Bird "+super.getName()+" is sleeping!");
    }
    public void produceSound(){
        System.out.println("Chirp chirp ...");
    }
    public void printing(){
        System.out.println("Data about bird:");
        super.printing();
    }
}
```

Main:

```java
package Assignments.Week3.Assignment2;
import java.util.Scanner;
public class Main {
    public static void main(String[] args) {
        Scanner in=new Scanner(System.in);
        Animal[] an=new Animal[3];
        System.out.println("Enter name, gender and age of the bird:");
        an[0]=new Bird(in.nextLine(),in.nextLine(),in.nextInt());
        in.nextLine();
        System.out.println("Enter name, gender and age of the dog:");
        an[1]=new Dog(in.nextLine(),in.nextLine(),in.nextInt());
        in.nextLine();
        System.out.println("Enter name, gender and age of the cat:");
        an[2]=new Cat(in.nextLine(),in.nextLine(),in.nextInt());
        for(int i=0;i<3;i++){
```

```
            an[i].printing();
            an[i].eat();
            an[i].sleep();
            an[i].produceSound();
            System.out.println("\n");
        }
        int sum=0;
        int num=0;
        for(int i=0;i<3;i++){
            sum+=an[i].getAge();
            ++num;
        }
        System.out.println("The average age of animals is: "+(sum/num));
    }
}
```

Result:

Enter name, gender and age of the bird:

chick

male

3

Enter name, gender and age of the dog:

hup

female

7

Enter name, gender and age of the cat:

murmur

female

5

Data about bird:

Name: chick

Age: 3

Gender: male

Bird chick ate some warms!

Bird chick is sleeping!

Chirp chirp ...

Data about dog:

Name: hup

Age: 7

Gender: female

Dog hup ate some meat!

Dog hup is sleeping! Hrrrh Frruuh...

Bark!

Data about cat:

Name: murmur

Age: 5
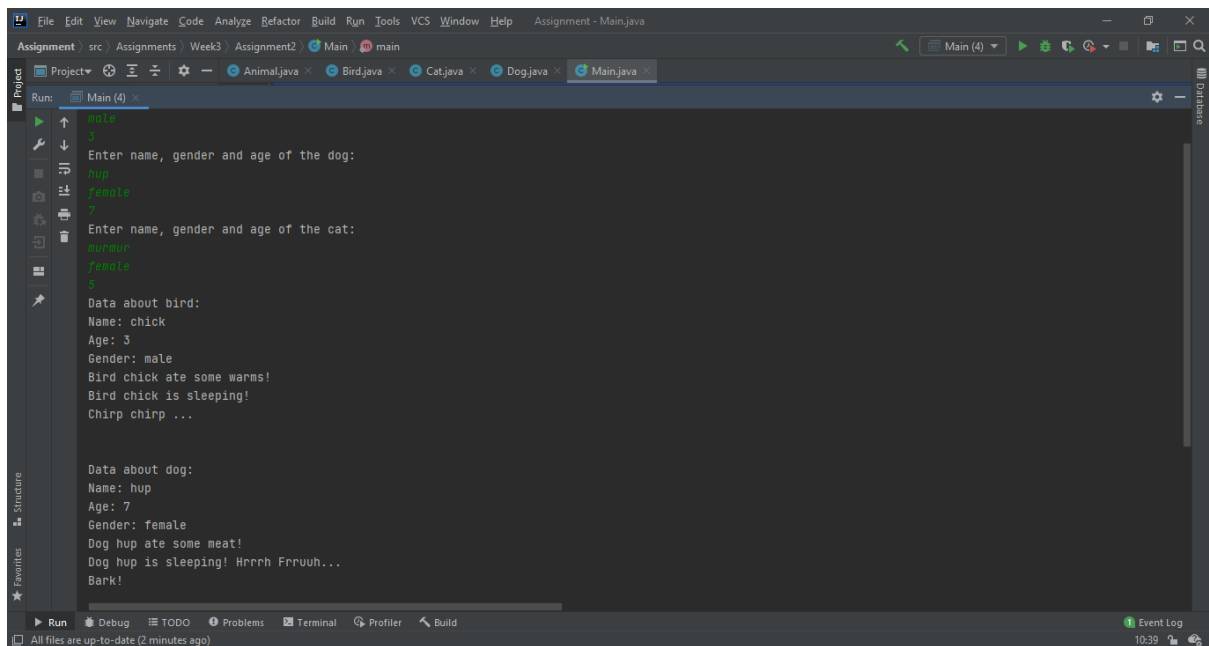
Gender: female

Cat murmur ate some fish!

Cat murmur is sleeping! Mrrr ...

Nyaa!

The average age of animals is: 5

Assignment3

Person:

```java
package Assignments.Week3.Assignment3;

public class Person {
    private int id;
    private int id_auto=0;
    private String first_name;
    private String last_name;
    public Person(){}
    public Person(String fn,String ln){
        this.id=id_auto++;
        this.first_name=fn;
        this.last_name=ln;
    }

    public int getId() {
        return id;
    }

    public void setId(int id) {
        this.id = id;
    }

    public String getFirst_name() {
        return first_name;
    }

    public void setFirst_name(String first_name) {
        this.first_name = first_name;
    }

    public String getLast_name() {
        return last_name;
    }

    public void setLast_name(String last_name) {
        this.last_name = last_name;
    }
    public String toString(){
        return "First name: "+getFirst_name()+"\nLast name: "+getLast_name()+
                "\nId: "+getId();
    }
}
```

Employee:

```java
package Assignments.Week3.Assignment3;
import java.util.Scanner;
public class Employee extends Person{
    private double salary;
    private double bonus;
    private String department;
    public Employee(){}
    public Employee(String fn, String ln,double sl,double bn,String dpt){
        super(fn, ln);
        this.salary=sl;
        this.bonus=bn;
```

```java
        this.department=dpt;
    }

    public double getSalary() {
        return salary+bonus;
    }

    public void setSalary(double salary) {
        this.salary = salary;
    }

    public void setBonus(double bonus) {
        this.bonus = bonus;
    }

    public String getDepartment() {
        return department;
    }

    public void setDepartment(String department) {
        this.department = department;
    }
    public void checkdep(){

if(this.getDepartment().equals("Production")||this.getDepartment().equals("Accounting"
)||this.getDepartment().equals("Sales")||this.getDepartment().equals("Marketing")){
            System.out.println("Checked!");
        }else{
            Scanner in=new Scanner(System.in);
            boolean check=true;
            do {
                System.out.println("You have entered wrong department! Please, enter
nothing other than 'Production, Accounting, Sales, Marketing'");
                this.setDepartment(in.nextLine());
                if (this.getDepartment().equals("Production") ||
this.getDepartment().equals("Accounting") || this.getDepartment().equals("Sales") ||
this.getDepartment().equals("Marketing")) {
                    check = false;
                } else {
                    System.out.println("You have entered wrong department! Please,
enter nothing other than 'Production, Accounting, Sales, Marketing'");
                }
            }while (check);
            System.out.println("Checked!");
            }
        }
}
```

Manager:

```java
package Assignments.Week3.Assignment3;

public class Manager extends Employee{
    private int team_mem_num;
    public Manager(String fn, String ln, double sl, double bn, String dpt,int tmn) {
        super(fn, ln, sl, bn, dpt);
```

```java
            this.team_mem_num=tmn;
    }
    public Manager(double sl){
        super.setSalary(sl);
    }

    public int getTeam_mem_num() {
        return team_mem_num;
    }

    public void setTeam_mem_num(int team_mem_num) {
        this.team_mem_num = team_mem_num;
    }

    @Override
    public String toString(){
        return "Data about manager:\n"+super.toString()+"\nSalary:
"+getSalary()+"\nDepartment: "+getDepartment()+"\nTeam members number:
"+getTeam_mem_num();
    }
}
```

Regular employee:

```java
package Assignments.Week3.Assignment3;

public class RegularEmployee extends Employee{
    private String type;
    public RegularEmployee(){}
    public RegularEmployee(String fn, String ln, double sl, double bn, String
dpt,String tp) {
        super(fn, ln, sl, bn, dpt);
        this.type=tp;
    }
}
```

Sales employee:

```java
package Assignments.Week3.Assignment3;

public class SalesEmployee extends RegularEmployee{
    private String prod_name;
    private double price;
    public SalesEmployee(double sl){super.setSalary(sl);}
    public SalesEmployee(String fn, String ln,String tp, double sl, double bn, String
dpt,String pn,double pr) {
        super(fn, ln, sl, bn, dpt,tp);
        this.prod_name=pn;
        this.price=pr;
    }

    public String getProd_name() {
        return prod_name;
    }
```

```java
    public void setProd_name(String prod_name) {
        this.prod_name = prod_name;
    }


    public double getPrice() {
        return price;
    }


    public void setPrice(double price) {
        this.price = price;
    }
    @Override
    public String toString(){
        return "Data about sales employee:\n"+super.toString()+"\nProduct name:
"+getProd_name()+"\nPrice: "+getPrice();
    }
}
```

Developer:

```java
package Assignments.Week3.Assignment3;

public class Developer extends RegularEmployee{
    private String proj_name;
    private String details;
    private String state;
    public Developer(double sl){super.setSalary(sl);}
    public Developer(String fn, String ln,String tp, double sl, double bn, String
dpt,String pn,String dt,String st) {
        super(fn, ln, sl, bn, dpt,tp);
        this.proj_name=pn;
        this.details=dt;
        this.state=st;
    }


    public void closeProject(){
        this.state="closed";
    }


    public String getProj_name() {
        return proj_name;
    }


    public void setProj_name(String proj_name) {
        this.proj_name = proj_name;
    }


    public String getDetails() {
        return details;
    }


    public void setDetails(String details) {
        this.details = details;
    }
```

```java
    public String getState() {
        return state;
    }

    public void setState(String state) {
        this.state = state;
    }
    @Override
    public String toString(){
        return "Data about sales employee:\n"+super.toString()+"Project of developer: "+getProj_name()+"\nDetails: "+getDetails()+"\nState of project: "+getState();
    }
}
```

Customer:

```java
package Assignments.Week3.Assignment3;

public class Customer extends Person{
    private double total_expenses;


    public Customer(String fn, String ln) {
        super(fn, ln);
    }

    public double getTotal_expenses() {
        return total_expenses;
    }

    public void setTotal_expenses(double total_expenses) {
        this.total_expenses = total_expenses;
    }


    @Override
    public String toString(){
        return super.toString()+"\nClass: Customer\nNet purchase amount: "+getTotal_expenses();
    }
}
```

Main:

```java
package Assignments.Week3.Assignment3;
import java.util.Scanner;
public class Main {
    public static void main(String[] args) {
        Scanner in=new Scanner(System.in);
        Manager[] man=new Manager[2];
        man[0]=new Manager("Jasper","Karnel",25000.25,1500,"Production",45);
//      man[1].checkdep(); man[0].checkdep();
        man[1]=new Manager("Janper","Karnel",22000.25,150,"Sales",100);
        SalesEmployee[] se=new SalesEmployee[2];
        se[0]=new SalesEmployee("Jeron","Karnel","Office worker",20000.25,15000,"Marketing","car",100000.50);
```

```java
        se[1]=new SalesEmployee("Jack","Adam","Office
worker",27000.25,160,"Sales","paper",50.20);
        Developer[] dv=new Developer[2];
        dv[0]=new Developer("Cruis","Novel","Office
worker",20000,500,"Accounting","Macintosh","New computer","open");
        dv[1]=new Developer("Karter","Packson","Office
worker",24000,5000,"Accounting","Aqua+","Alternative energy","open");
        dv[0].closeProject();
        for(int i=0;i<1;i++){
            System.out.println(man[i].toString()+"\n");
            System.out.println(se[i].toString()+"\n");
            System.out.println(dv[i].toString()+"\n");
        }
//      Employee[][] em=new Employee[2][2];
//        em[0]=new Manager("Jasper","Karnel",25000.25,1500,"Production");
//        em[0].checkdep();
//        em[1]=new Manager("Jeron","Karnel",20000.25,15000,"Marketing");
//        em[1].checkdep();
//        em[2].new SalesEmployee()
    }
}
```

Result:

Data about manager:

First name: Jasper

Last name: Karnel

Id: 0

Salary: 26500.25

Department: Production

Team members number: 45

Data about sales employee:

First name: Jeron

Last name: Karnel

Id: 0

Product name: car
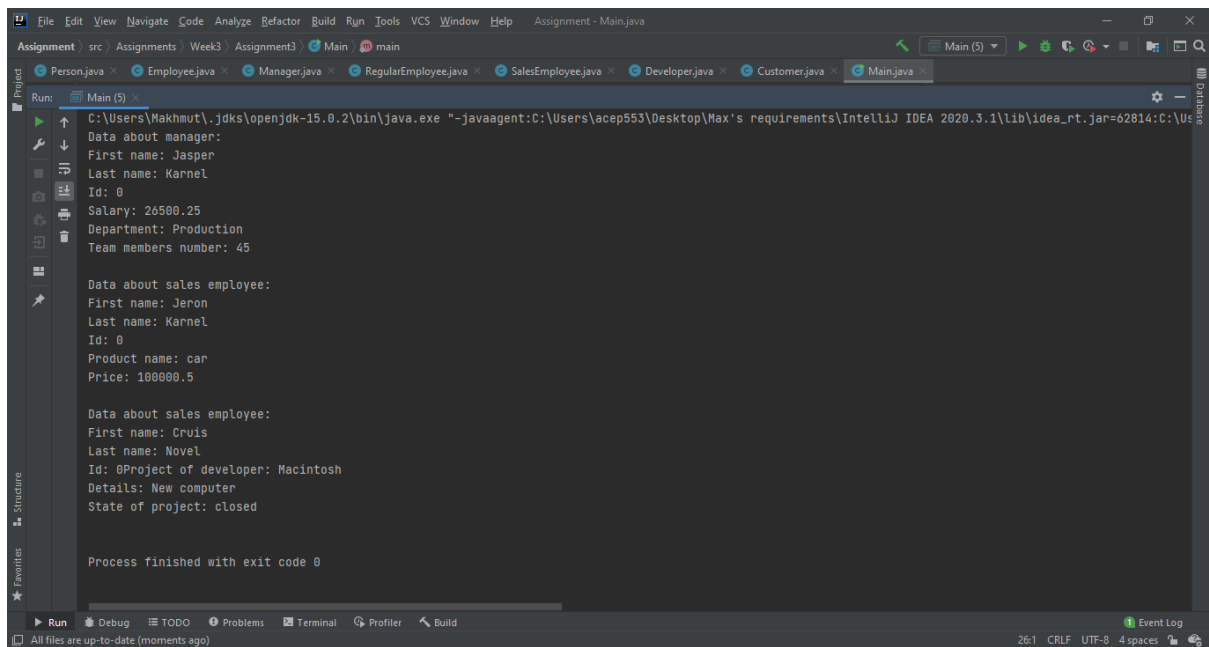
Price: 100000.5

Data about sales employee:

First name: Cruis

Last name: Novel

Id: 0Project of developer: Macintosh

Details: New computer

State of project: closed