Practical no. 3

FS19CO042

Aim:

3.1 Define the following classes/ interfaces with the help of above shortcuts:

1. Person(id, name, dateOfBirth, age, street, city, pin : default and parameterized constructors and setters and getters)

2. Department(id, name, dateOfEstablishment, headOfficeLocation, headId, numberOfEmployees : default and parameterized constructors and setters and getters)

3. Point(x, y, z : default and parameterized constructors and setters and getters)

4. Vehicle(registrationNumber, rcBookNumber, manufacturer, numberOfWheels, vehicleType, model, numberOfSeats : default and parameterized constructors and setters and getters)

5. Laptop(imeiNumber, processorName, processorSpeed, primaryMemoryType, primaryMemoryCapacity, secondaryStorageType, secondaryStorageCapaciry, screenResolution, screenType, isLED, listOfPorts, osInstalled : default and parameterized constructors and setters and getters)

6. interface Taxable(public int cost(), public intpercentGST())

3.2 Check whether feature of Encapsulation has been followed in 3.1. If not make necessary changes.

3.3 Define classes Car, Train and Truck with necessary member fields, constructors and methods. Make them extend class Vehicle.

3.4 Define a class Gadget with necessary member fields, constrictors and methods. Modify the class Laptop to extend the class Gadget.

3.5 In main method, declare a reference variable vehicle of class Vehicle and create an object of class Car which will be referenced by vehicle. Call getName() method on the object. (Hint: Reference Variable Casting)

3.6 Modify the classes Vehicle and Gadget implement the interface Taxable. Hence override respective methods.

3.7 Modify the classes Car and Laptop to override the implemented methods in 3.6.

3.8 Modify the class Gadget to add a data member gadgetCount such that its value will incremented as soon as a new object is initialized. Create 5 objects of the class Print its value after initializing each object.

Tool used: Editor (Notepad/Intellij IDE), JDK and JRE

Code:

3.1 Define the following classes/ interfaces with the help of above shortcuts

1. Person(id, name, dateOfBirth, age, street, city, pin : default and parameterized constructors and setters and getters)

Code :

```
class Person {

    int dateOfBirth, age, id, pin;
```

```
    String name, street, city;

    Person() {

    }

    Person(int a, int b, int c, int d, String s, String s2, String s3) {
        this.dateOfBirth = c;
        this.age = b;
        this.id = a;
        this.pin = d;
        this.name = s;
        this.street = s2;
        this.city = s3;
    }

    public int getDateOfBirth() {
        return dateOfBirth;
    }

    public void setDateOfBirth(int dateOfBirth) {
        this.dateOfBirth = dateOfBirth;
    }

    public String getCity() {
        return city;
    }

    public void setCity(String city) {
        this.city = city;
    }

    public String getStreet() {
        return street;
    }

    public void setStreet(String street) {
        this.street = street;
    }

    public int getPin() {
        return pin;
    }

    public void setPin(int pin) {
        this.pin = pin;
    }

    public String getName() {
        return name;
    }

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

    public int getId() {
        return id;
    }

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

    public int getAge() {
        return age;
    }

    void setAge(int a) {
        age = a;
    }

}
```

2. Department(id, name, dateOfEstablishment, headOfficeLocation, headId, numberOfEmployees : default and parameterized constructors and setters and getters)

```
class Department {
    int id, headId, numberOfEmployees, dateOfEstablishment;
    String headOfficeLocation;
    String name;

    Department() {

    }

    public Department(int id, int headId, int numberOfEmployees, int dateOfEstablishment, String headOfficeLocation, String
name) {
        this.id = id;
        this.headId = headId;
        this.numberOfEmployees = numberOfEmployees;
        this.dateOfEstablishment = dateOfEstablishment;
        this.headOfficeLocation = headOfficeLocation;
        this.name = name;
    }
```

```
public int getId() {
    return id;
}

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

public int getHeadId() {
    return headId;
}

public void setHeadId(int headId) {
    this.headId = headId;
}

public int getNumberOfEmployees() {
    return numberOfEmployees;
}

public void setNumberOfEmployees(int numberOfEmployees) {
    this.numberOfEmployees = numberOfEmployees;
}

public int getDateOfEstablishment() {
    return dateOfEstablishment;
}

public void setDateOfEstablishment(int dateOfEstablishment) {
    this.dateOfEstablishment = dateOfEstablishment;
}
    public String getHeadOfficeLocation() {
        return headOfficeLocation;
    }

    public void setHeadOfficeLocation(String headOfficeLocation) {
        this.headOfficeLocation = headOfficeLocation;
    }

    public String getName() {
        return name;
    }

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


}
```

Point(x, y, z : default and parameterized constructors and setters and getters)

Code :

```
class Point {
    int x, y, z;

    Point() {

    }

    public Point(int x, int y, int z) {
        this.x = x;
        this.y = y;
        this.z = z;
    }

    public int getX() {
        return x;
    }

    public void setX(int x) {
        this.x = x;
    }

    public int getY() {
        return y;
    }

    public void setY(int y) {
        this.y = y;
    }

    public int getZ() {
        return z;
    }

    public void setZ(int z) {
        this.z = z;
    }

}
```

4. Vehicle(registrationNumber, rcBookNumber, manufacturer, numberOfWheels, vehicleType, model, numberOfSeats : default and parameterized constructors and setters and getters)

Code :

```
class Vehicle implements Taxable {
    int registrationNumber, rcBookNumber, manufacturer, numberOfWheels, numberOfSeats;
    String vehicleType, model, name;
    int cost;

    Vehicle() {

    }

    public Vehicle(int registrationNumber, int rcBookNumber, int manufacturer, int numberOfWheels, int numberOfSeats, String
vehicleType, String model) {
        this.registrationNumber = registrationNumber;
        this.rcBookNumber = rcBookNumber;
        this.manufacturer = manufacturer;
        this.numberOfWheels = numberOfWheels;
        this.numberOfSeats = numberOfSeats;
        this.vehicleType = vehicleType;
        this.model = model;
    }

    public int getCost() {
        return cost;
    }

    public void setCost(int cost) {
        this.cost = cost;
    }

    public String getName() {
        return name;
    }

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

    public int getRegistrationNumber() {
        return registrationNumber;
    }

    public void setRegistrationNumber(int registrationNumber) {
        this.registrationNumber = registrationNumber;
    }

    public int getRcBookNumber() {
        return rcBookNumber;
    }

    public void setRcBookNumber(int rcBookNumber) {
        this.rcBookNumber = rcBookNumber;
    }

    public int getManufacturer() {
        return manufacturer;
    }

    public void setManufacturer(int manufacturer) {
        this.manufacturer = manufacturer;
    }

    public int getNumberOfWheels() {
        return numberOfWheels;
    }

    public void setNumberOfWheels(int numberOfWheels) {
        this.numberOfWheels = numberOfWheels;
    }

    public int getNumberOfSeats() {
        return numberOfSeats;
    }

    public void setNumberOfSeats(int numberOfSeats) {
        this.numberOfSeats = numberOfSeats;
    }

    public String getVehicleType() {
        return vehicleType;
    }

    public void setVehicleType(String vehicleType) {
        this.vehicleType = vehicleType;
    }

    public String getModel() {
        return model;
    }

    public void setModel(String model) {
        this.model = model;
    }
```

```
    public int cost() {
        int cost = getCost();
        return cost;
    }

    public int percentGST() {
        float a = 0.18f;
        int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
    }


}
```

5. Laptop(imeiNumber, processorName, processorSpeed, primaryMemoryType, primaryMemoryCapacity, secondaryStorageType, secondaryStorageCapaciry, screenResolution, screenType, isLED, listOfPorts, osInstalled : default and parameterized constructors and setters and getters)

Code :

```
class Laptop extends Gadget {
    int imeiNumber;
    String processorName, primaryMemoryType, secondaryStorageType, screenType;
    boolean isLED, osInstalled;
    float processorSpeed, primaryMemoryCapacity, secondaryStorageCapaciry, screenResolution;
    String listOfPorts;
    int cost;

    Laptop() {

    }

    public Laptop(int imeiNumber, String processorName, String primaryMemoryType, String secondaryStorageType, String
screenType, boolean isLED, boolean osInstalled, float processorSpeed, float primaryMemoryCapacity, float
secondaryStorageCapaciry, float screenResolution, String listOfPorts) {
        this.imeiNumber = imeiNumber;
        this.processorName = processorName;
        this.primaryMemoryType = primaryMemoryType;
        this.secondaryStorageType = secondaryStorageType;
        this.screenType = screenType;
        this.isLED = isLED;
        this.osInstalled = osInstalled;
        this.processorSpeed = processorSpeed;
        this.primaryMemoryCapacity = primaryMemoryCapacity;
        this.secondaryStorageCapaciry = secondaryStorageCapaciry;
        this.screenResolution = screenResolution;
        this.listOfPorts = listOfPorts;

    }

    public boolean isLED() {
        return isLED;
    }

    public void setLED(boolean LED) {
        isLED = LED;
    }

    public boolean isOsInstalled() {
        return osInstalled;
    }

public int getCost() {
    return cost;
}

public void setCost(int cost) {
    this.cost = cost;
}

public int getImeiNumber() {
    return imeiNumber;
}

public void setImeiNumber(int imeiNumber) {
    this.imeiNumber = imeiNumber;
}

public String getProcessorName() {
    return processorName;
}

public void setProcessorName(String processorName) {
    this.processorName = processorName;
}

public String getPrimaryMemoryType() {
    return primaryMemoryType;
}

public void setPrimaryMemoryType(String primaryMemoryType) {
```

```
    this.primaryMemoryType = primaryMemoryType;
}

public String getSecondaryStorageType() {
    return secondaryStorageType;
}

public void setSecondaryStorageType(String secondaryStorageType) {
    this.secondaryStorageType = secondaryStorageType;
}

public String getScreenType() {
    return screenType;
}

public void setScreenType(String screenType) {
    this.screenType = screenType;
}

public boolean getIsLED() {
    return isLED;
}

public void setIsLED(Boolean isLED) {
    this.isLED = isLED;
}

public boolean getOsInstalled() {
    return osInstalled;
}

public void setOsInstalled(boolean osInstalled) {
    this.osInstalled = osInstalled;
}

public void setOsInstalled(Boolean osInstalled) {
    this.osInstalled = osInstalled;
}

public float getProcessorSpeed() {
    return processorSpeed;
}

public void setProcessorSpeed(float processorSpeed) {
    this.processorSpeed = processorSpeed;
}

public float getPrimaryMemoryCapacity() {
    return primaryMemoryCapacity;
}

public void setPrimaryMemoryCapacity(float primaryMemoryCapacity) {
    this.primaryMemoryCapacity = primaryMemoryCapacity;
}

public float getSecondaryStorageCapaciry() {
    return secondaryStorageCapaciry;
}

public void setSecondaryStorageCapaciry(float secondaryStorageCapaciry) {
    this.secondaryStorageCapaciry = secondaryStorageCapaciry;
}

public float getScreenResolution() {
    return screenResolution;
}

    public void setScreenResolution(float screenResolution) {
        this.screenResolution = screenResolution;
    }

    public String getListOfPorts() {
        return listOfPorts;
    }

    public void setListOfPorts(String listOfPorts) {
        this.listOfPorts = listOfPorts;
    }

    void print() {
        System.out.println("emi no is " + getImeiNumber() + "\n Processor name is: " + getProcessorName() + "\n led :" +
getIsLED() + "\n Ports are :" + getListOfPorts() + "\n OS :" + getOsInstalled() + "\n Meomory Capacity :" +
getPrimaryMemoryCapacity());
    }

    public int cost() {
        int cost = getCost();
        return cost;
    }

    public int percentGST() {
        float a = 0.18f;
        int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
    }

}
```

6. interface Taxable(public int cost(), public intpercentGST())

Code :

```
interface Taxable {
    int cost();

    int percentGST();
}
```

3.2 Check whether feature of Encapsulation has been followed in 3.1. If not make necessary changes.

Code :

```
public class Main {
    public static void main(String[] args) {
        Person person = new Person();
        person.setAge(45);
        person.setId(01);
        person.setName("Max");
        person.setDateOfBirth(19);
        person.setStreet("Mira road");
        person.setCity("Mumbai");
        person.setPin(409614);
        System.out.println(" id " + person.getId() + "\n name " + person.getName() + "\n age " + person.getAge() + "\n date of
birth " + person.getDateOfBirth() + "\n street name " + person.getStreet() + "\n city name " + person.getCity() + "\n pincode "
+ person.getPin());
    }
}
```

Output :

3.3 Define classes Car, Train and Truck with necessary member fields, constructors and methods. Make them extend class Vehicle.

Code :

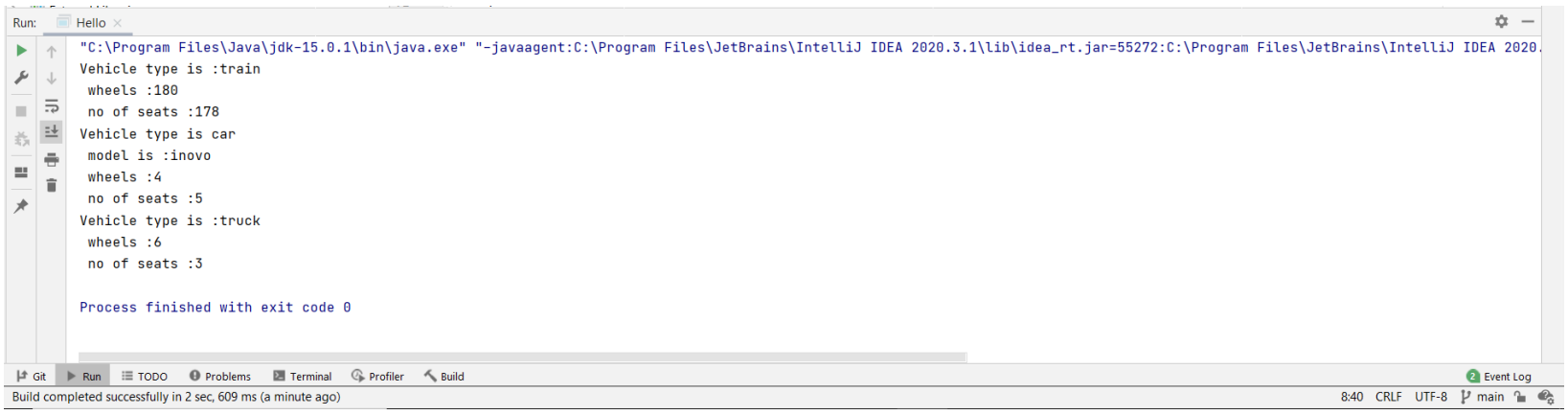
```
class Car extends Vehicle {
    int cost;

    @Override
    public int getCost() {
        return cost;
    }

    @Override
    public void setCost(int cost) {
        this.cost = cost;
    }

    void show() {
        System.out.println("vehicle type is " + getVehicleType() + "\n model is :" + getModel() + "\n wheels :" +
getNumberOfWheels()
                + "\n no of seats :" + getNumberOfSeats() + "");
    }

    void disp() {
        System.out.println("name is :" + getName());
    }

    public int cost() {
        int cost = getCost();
        return cost;
    }

    public int percentGST() {
        float a = 0.18f;
        int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
```

```
    }
}



class Train extends Vehicle {
    void show() {
        System.out.println("vehicle type is :" + getVehicleType() + "\n wheels :" + getNumberOfWheels()
                + "\n no of seats :" + getNumberOfSeats() + "");
    }


}



class Truck extends Vehicle {


    void show() {
        System.out.println("vehicle type is :" + getVehicleType() + "\n wheels :" + getNumberOfWheels()
                + "\n no of seats :" + getNumberOfSeats() + "");
    }
}
```

Main method :

```
public static void main(String[] args) {

    Train h = new Train();
    h.setVehicleType("train");
    h.setNumberOfSeats(178);
    h.setNumberOfWheels(180);
    h.setRegistrationNumber(90764);
    h.show();

    Car c = new Car();
    c.setVehicleType("car");
    c.setModel("inovo");
    c.setNumberOfSeats(5);
    c.setNumberOfWheels(4);
    c.setRegistrationNumber(90671);
    c.show();

    Truck t = new Truck();
    t.setVehicleType("truck");
    t.setNumberOfSeats(3);
    t.setNumberOfWheels(6);
    t.show();
}
```

Output :



3.4 Define a class Gadget with necessary member fields, constrictors and methods. Modify the class Laptop to extend the class Gadget.

Code :

```
public class Gadget implements Taxable {
    static int gadgetcount = 0;
    String gadgetName;
    int cost;

    {
        gadgetcount += 1;
    }

    Gadget() {

    }

    public Gadget(String gadgetName) {
        this.gadgetName = gadgetName;
    }

    void disp() {
        System.out.println("The object of a class Gadget is initialized " + gadgetcount + " times");
```

```
}

public String getGadgetName() {
    return gadgetName;
}

public void setGadgetName(String gadgetName) {
    this.gadgetName = gadgetName;
}

public int getCost() {
    return cost;
}

public void setCost(int cost) {
    this.cost = cost;
}

void Show() {
    System.out.println("This is gadget :" + getGadgetName());

}


public int cost() {
    int cost = getCost();
    return cost;
}

public int percentGST() {
    float a = 0.18f;
    int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
    }

}
```

Main method :

```
public static void main(String args[]) {
    Laptop l = new Laptop();
    l.setGadgetName("Laptop");
    l.setImeiNumber(2345);
    l.setIsLED(true);
    l.setListOfPorts("2 USB Port,1 Charging port,1 Pendrive Port");
    l.setOsInstalled(true);
    l.setPrimaryMemoryCapacity(1500);
    l.setProcessorName("intel core i5");
    l.Show();
    l.print();
}
```

Output :

3.5 In main method, declare a reference variable vehicle of class Vehicle and create an object of class Car which will be referenced by vehicle. Call getName() method on the object. (Hint: Reference Variable Casting)

Code :

```
class Vehicle implements Taxable {
    int registrationNumber, rcBookNumber, manufacturer, numberOfWheels, numberOfSeats;
    String vehicleType, model, name;
    int cost;

    Vehicle() {

    }

    public Vehicle(int registrationNumber, int rcBookNumber, int manufacturer, int numberOfWheels, int numberOfSeats, String
vehicleType, String model) {
        this.registrationNumber = registrationNumber;
        this.rcBookNumber = rcBookNumber;
        this.manufacturer = manufacturer;
        this.numberOfWheels = numberOfWheels;
        this.numberOfSeats = numberOfSeats;
```

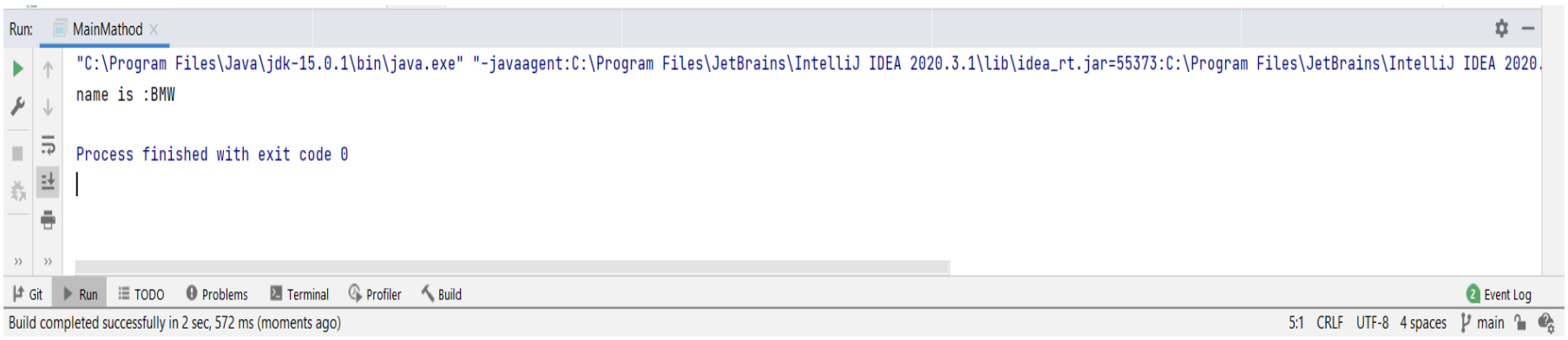
```
        this.vehicleType = vehicleType;
        this.model = model;
    }

    public int getCost() {
        return cost;
    }

    public void setCost(int cost) {
        this.cost = cost;
    }

    public String getName() {
        return name;
    }

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

    public int getRegistrationNumber() {
        return registrationNumber;
    }

    public void setRegistrationNumber(int registrationNumber) {
        this.registrationNumber = registrationNumber;
    }

    public int getRcBookNumber() {
        return rcBookNumber;
    }

    public void setRcBookNumber(int rcBookNumber) {
        this.rcBookNumber = rcBookNumber;
    }

    public int getManufacturer() {
        return manufacturer;
    }

    public void setManufacturer(int manufacturer) {
        this.manufacturer = manufacturer;
    }

    public int getNumberOfWheels() {
        return numberOfWheels;
    }

    public void setNumberOfWheels(int numberOfWheels) {
        this.numberOfWheels = numberOfWheels;
    }

    public int getNumberOfSeats() {
        return numberOfSeats;
    }

    public void setNumberOfSeats(int numberOfSeats) {
        this.numberOfSeats = numberOfSeats;
    }

    public String getVehicleType() {
        return vehicleType;
    }

    public void setVehicleType(String vehicleType) {
        this.vehicleType = vehicleType;
    }

        public String getModel() {
            return model;
        }

        public void setModel(String model) {
            this.model = model;
        }


        public int cost() {
            int cost = getCost();
            return cost;
        }

        public int percentGST() {
            float a = 0.18f;
            int percentGST = (int) (getCost() + (getCost() * a));
            return percentGST;
        }


}


class Car extends Vehicle {
    int cost;

    @Override
    public int getCost() {
        return cost;
```

```
    }

    @Override
    public void setCost(int cost) {
        this.cost = cost;
    }

    void show() {
        System.out.println("Vehicle type is " + getVehicleType() + "\n model is :" + getModel() + "\n wheels :" +
getNumberOfWheels()
                + "\n no of seats :" + getNumberOfSeats() + "");
    }

    void disp() {
        System.out.println("name is :" + getName());
    }

    public int cost() {
        int cost = getCost();
        return cost;
    }

    public int percentGST() {
        float a = 0.18f;
        int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
    }
}
```

Main method :

```
public static void main(String [] args)
{
    Vehicle vehicle;
    Car c1=new Car();
    c1.setName("BMW");
    c1.disp();

}
```

Output :



3.6 Modify the classes Vehicle and Gadget implement the interface Taxable. Hence override respective methods.

Code :

```
interface Taxable {
    int cost();

    int percentGST();
}

public class Gadget implements Taxable {
    static int gadgetcount = 0;
    String gadgetName;
    int cost;

    {
        gadgetcount += 1;
    }

    Gadget() {

    }

    public Gadget(String gadgetName) {
        this.gadgetName = gadgetName;
    }

    void disp() {
        System.out.println("The object of a class Gadget is initialized " + gadgetcount + " times");
    }

    public String getGadgetName() {
        return gadgetName;
    }

    public void setGadgetName(String gadgetName) {
```

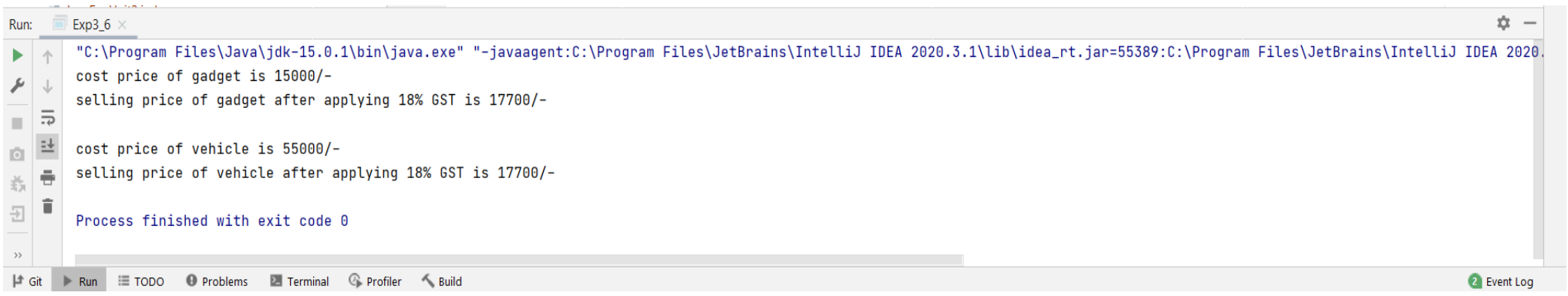
```
        this.gadgetName = gadgetName;
    }

    public int getCost() {
        return cost;
    }

    public void setCost(int cost) {
        this.cost = cost;
    }

    void Show() {
        System.out.println("This is gadget :" + getGadgetName());

    }


    public int cost() {
        int cost = getCost();
        return cost;
    }

    public int percentGST() {
        float a = 0.18f;
        int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
    }

}
class Vehicle implements Taxable {
    int registrationNumber, rcBookNumber, manufacturer, numberOfWheels, numberOfSeats;
    String vehicleType, model, name;
    int cost;

    Vehicle() {

    }

    public Vehicle(int registrationNumber, int rcBookNumber, int manufacturer, int numberOfWheels, int numberOfSeats, String
vehicleType, String model) {
        this.registrationNumber = registrationNumber;
        this.rcBookNumber = rcBookNumber;
        this.manufacturer = manufacturer;
        this.numberOfWheels = numberOfWheels;
        this.numberOfSeats = numberOfSeats;
        this.vehicleType = vehicleType;
        this.model = model;
    }

    public int getCost() {
        return cost;
    }

    public void setCost(int cost) {
        this.cost = cost;
    }

    public String getName() {
        return name;
    }

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

public int getRegistrationNumber() {
    return registrationNumber;
}

public void setRegistrationNumber(int registrationNumber) {
    this.registrationNumber = registrationNumber;
}

public int getRcBookNumber() {
    return rcBookNumber;
}

public void setRcBookNumber(int rcBookNumber) {
    this.rcBookNumber = rcBookNumber;
}

public int getManufacturer() {
    return manufacturer;
}

public void setManufacturer(int manufacturer) {
    this.manufacturer = manufacturer;
}

public int getNumberOfWheels() {
    return numberOfWheels;
}

public void setNumberOfWheels(int numberOfWheels) {
    this.numberOfWheels = numberOfWheels;
}
```

```
public int getNumberOfSeats() {
    return numberOfSeats;
}

public void setNumberOfSeats(int numberOfSeats) {
    this.numberOfSeats = numberOfSeats;
}

public String getVehicleType() {
    return vehicleType;
}

public void setVehicleType(String vehicleType) {
    this.vehicleType = vehicleType;
}

public String getModel() {
    return model;
}

public void setModel(String model) {
    this.model = model;
}


public int cost() {
    int cost = getCost();
    return cost;
}

public int percentGST() {
        float a = 0.18f;
        int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
    }


}
```

Main method :

```
public static void main(String args[]) {
    Gadget g = new Gadget();
    g.setCost(15000);
    Vehicle v = new Vehicle();
    v.setCost(55000);
    System.out.println("cost price of gadget is " + g.cost() + "/-");
    System.out.println("selling price of gadget after applying 18% GST is " + g.percentGST() + "/-");
    System.out.println();
    System.out.println("cost price of vehicle is " + v.cost() + "/-");
    System.out.println("selling price of vehicle after applying 18% GST is " + g.percentGST() + "/-");

}
```

Output :



3.7 Modify the classes Car and Laptop to override the implemented methods in 3.6.

Code :

```
class Laptop extends Gadget {
    int imeiNumber;
    String processorName, primaryMemoryType, secondaryStorageType, screenType;
    boolean isLED, osInstalled;
    float processorSpeed, primaryMemoryCapacity, secondaryStorageCapaciry, screenResolution;
    String listOfPorts;
    int cost;

    Laptop() {

    }

    public Laptop(int imeiNumber, String processorName, String primaryMemoryType, String secondaryStorageType, String
screenType, boolean isLED, boolean osInstalled, float processorSpeed, float primaryMemoryCapacity, float
secondaryStorageCapaciry, float screenResolution, String listOfPorts) {
        this.imeiNumber = imeiNumber;
        this.processorName = processorName;
        this.primaryMemoryType = primaryMemoryType;
        this.secondaryStorageType = secondaryStorageType;
```

```
        this.screenType = screenType;
        this.isLED = isLED;
        this.osInstalled = osInstalled;
        this.processorSpeed = processorSpeed;
        this.primaryMemoryCapacity = primaryMemoryCapacity;
        this.secondaryStorageCapaciry = secondaryStorageCapaciry;
        this.screenResolution = screenResolution;
        this.listOfPorts = listOfPorts;

    }

    public boolean isLED() {
        return isLED;
    }

    public void setLED(boolean LED) {
        isLED = LED;
    }

    public boolean isOsInstalled() {
        return osInstalled;
    }

    public int getCost() {
        return cost;
    }

    public void setCost(int cost) {
        this.cost = cost;
    }

    public int getImeiNumber() {
        return imeiNumber;
    }

    public void setImeiNumber(int imeiNumber) {
        this.imeiNumber = imeiNumber;
    }

    public String getProcessorName() {
        return processorName;
    }

    public void setProcessorName(String processorName) {
        this.processorName = processorName;
    }

    public String getPrimaryMemoryType() {
        return primaryMemoryType;
    }

    public void setPrimaryMemoryType(String primaryMemoryType) {
        this.primaryMemoryType = primaryMemoryType;
    }

    public String getSecondaryStorageType() {
        return secondaryStorageType;
    }

    public void setSecondaryStorageType(String secondaryStorageType) {
        this.secondaryStorageType = secondaryStorageType;
    }

    public String getScreenType() {
        return screenType;
    }

    public void setScreenType(String screenType) {
        this.screenType = screenType;
    }

    public boolean getIsLED() {
        return isLED;
    }

    public void setIsLED(Boolean isLED) {
        this.isLED = isLED;
    }

    public boolean getOsInstalled() {
        return osInstalled;
    }

    public void setOsInstalled(boolean osInstalled) {
        this.osInstalled = osInstalled;
    }

    public void setOsInstalled(Boolean osInstalled) {
        this.osInstalled = osInstalled;
    }

    public float getProcessorSpeed() {
        return processorSpeed;
    }

    public void setProcessorSpeed(float processorSpeed) {
        this.processorSpeed = processorSpeed;
    }
```

```
public float getPrimaryMemoryCapacity() {
    return primaryMemoryCapacity;
}

public void setPrimaryMemoryCapacity(float primaryMemoryCapacity) {
    this.primaryMemoryCapacity = primaryMemoryCapacity;
}

public float getSecondaryStorageCapaciry() {
    return secondaryStorageCapaciry;
}

public void setSecondaryStorageCapaciry(float secondaryStorageCapaciry) {
    this.secondaryStorageCapaciry = secondaryStorageCapaciry;
}

public float getScreenResolution() {
    return screenResolution;
}

public void setScreenResolution(float screenResolution) {
    this.screenResolution = screenResolution;
}

public String getListOfPorts() {
    return listOfPorts;
}

public void setListOfPorts(String listOfPorts) {
    this.listOfPorts = listOfPorts;
}
    void print() {
        System.out.println("emi no is " + getImeiNumber() + "\n Processor name is: " + getProcessorName() + "\n led :" +
getIsLED() + "\n Ports are :" + getListOfPorts() + "\n OS :" + getOsInstalled() + "\n Meomory Capacity :" +
getPrimaryMemoryCapacity());
    }

    public int cost() {
        int cost = getCost();
        return cost;
    }

    public int percentGST() {
        float a = 0.18f;
        int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
    }

}


class Car extends Vehicle {
    int cost;

    @Override
    public int getCost() {
        return cost;
    }

    @Override
    public void setCost(int cost) {
        this.cost = cost;
    }
    void show() {
        System.out.println("Vehicle type is " + getVehicleType() + "\n model is :" + getModel() + "\n wheels :" +
getNumberOfWheels()
                + "\n no of seats :" + getNumberOfSeats() + "");
    }

    void disp() {
        System.out.println("name is :" + getName());
    }

    public int cost() {
        int cost = getCost();
        return cost;
    }

    public int percentGST() {
        float a = 0.18f;
        int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
    }
}
```

Main method :

```
public static void main(String args[])
{
    Car c=new Car();
    c.setName("Odi");
    c.setCost(105000);
    c.setRegistrationNumber(07456);
    Laptop l=new Laptop();
    l.setCost(45300);
```

```
    l.setProcessorName("intel core i5");
    l.setImeiNumber(2678);
    l.setListOfPorts("2 USB Ports ,1 Charging Port ,1 Pendrive port ");
    System.out.println("Registration No of car is "+c.getRegistrationNumber()+"\nName of car is "+ c.getName()+"\ncost price of
car is "+c.cost()+"/-");
    System.out.println("selling price of car after applying 18% GST is "+c.percentGST()+"/-");
    System.out.println();
    System.out.println("cost price of vehicle is "+l.cost()+"/-");
    System.out.println("Imei number of laptop is "+l.getImeiNumber()+"\nProcessor is "+l.getProcessorName()+"\nList of ports are
"+l.getListOfPorts()+"\nselling price laptop after applying 18% GST is "+l.percentGST()+"/-");


}
```

Output :

3.8 Modify the class Gadget to add a data member gadgetCount such that its value will incremented as soon as a new object is initialized. Create 5 objects of the class Print its value after initializing each object.

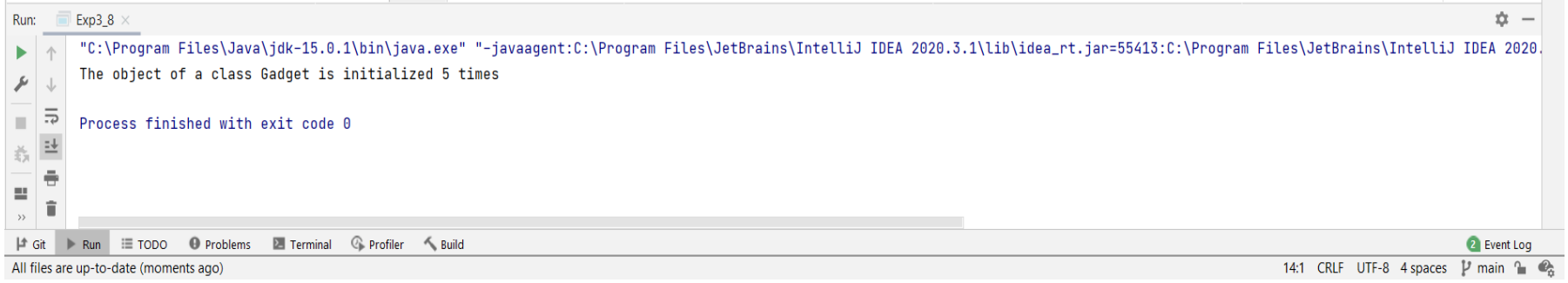
Code :

```
public class Gadget implements Taxable {
    static int gadgetcount = 0;
    String gadgetName;
    int cost;

    {
        gadgetcount += 1;
    }

    Gadget() {

    }

    public Gadget(String gadgetName) {
        this.gadgetName = gadgetName;
    }

    void disp() {
        System.out.println("The object of a class Gadget is initialized " + gadgetcount + " times");
    }

    public String getGadgetName() {
        return gadgetName;
    }

    public void setGadgetName(String gadgetName) {
        this.gadgetName = gadgetName;
    }

    public int getCost() {
        return cost;
    }

    public void setCost(int cost) {
        this.cost = cost;
    }

    void Show() {
        System.out.println("This is gadget :" + getGadgetName());

    }


    public int cost() {
        int cost = getCost();
        return cost;
    }

    public int percentGST() {
        float a = 0.18f;
        int percentGST = (int) (getCost() + (getCost() * a));
        return percentGST;
    }

}
```

Main method :

```
    public static void main(String args[])
     {
          Gadget g=new Gadget();
          Gadget g1=new Gadget();
          Gadget g2=new Gadget();
          Gadget g3=new Gadget();
          Gadget g4=new Gadget();
          g.disp();
     }
}
```

Output :



Conclusion: Thus, we understood and executed various programs using classes, interfaces, etc. and explored various concepts related to these topics.