UNIVERSITI
TEKNOLOGI
MARA

CSC186 – OBJECT ORIENTED PROGRAMMING

LAB ASSIGNMENT 5

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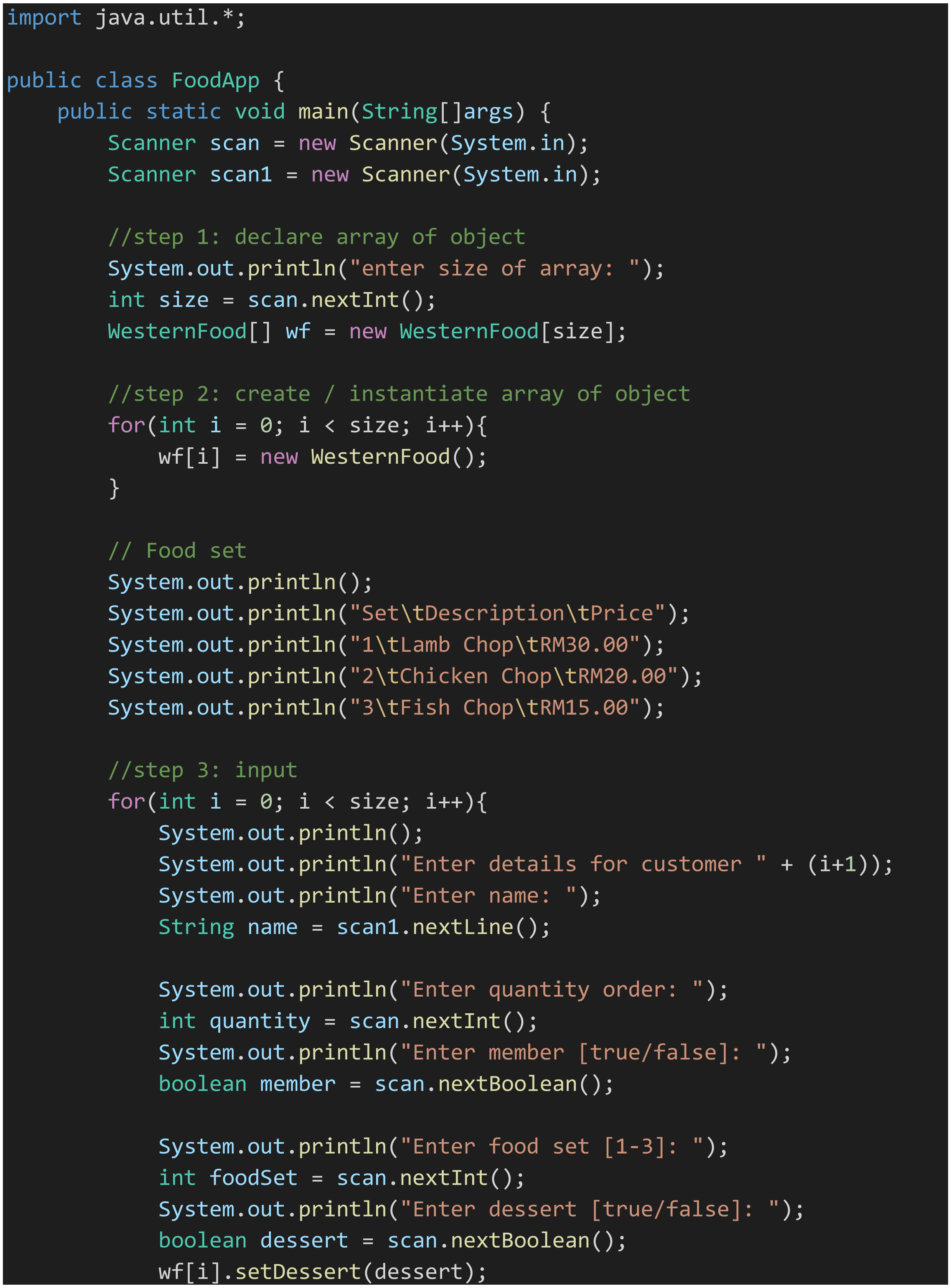
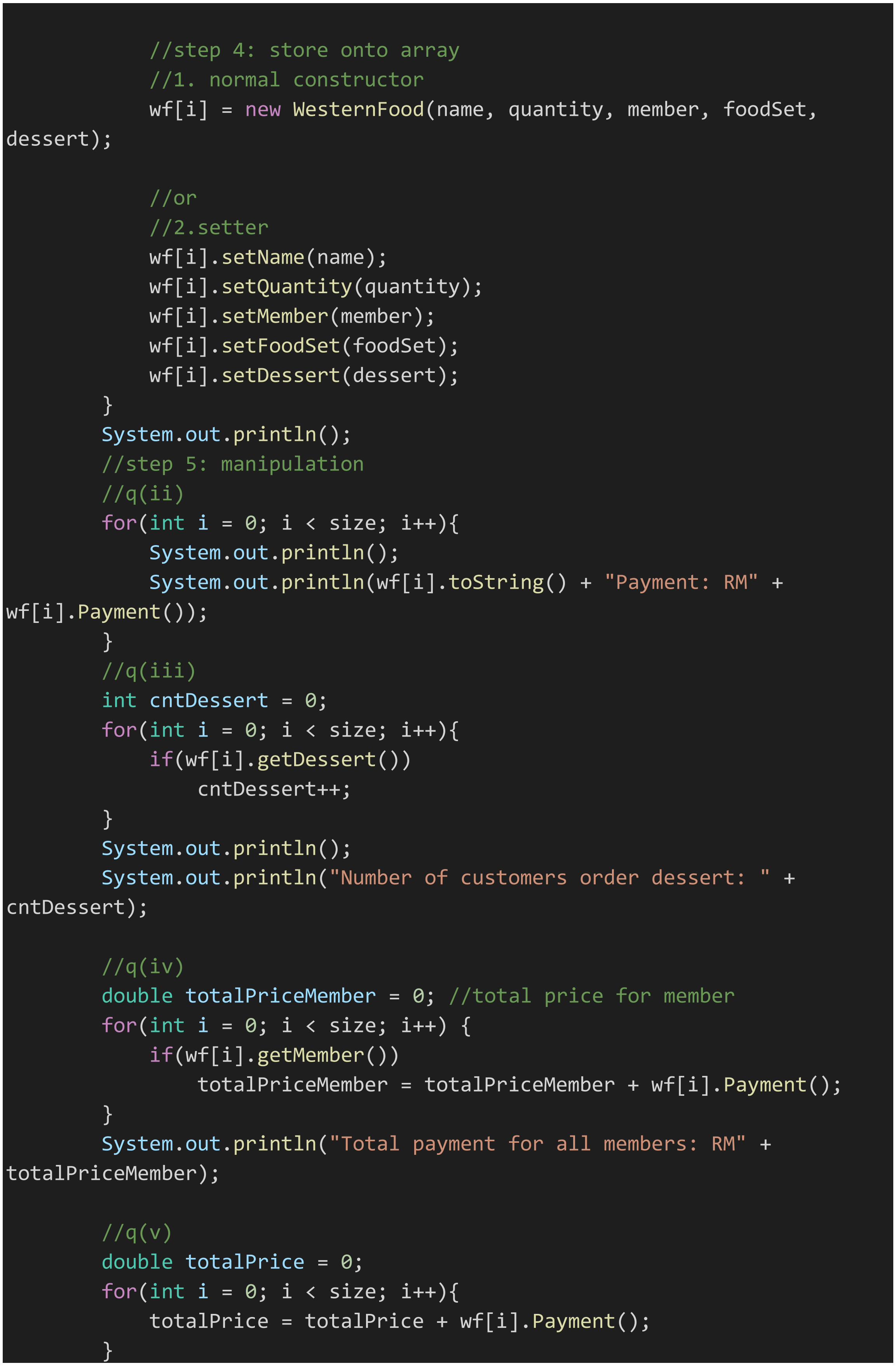
QUESTION 6.1

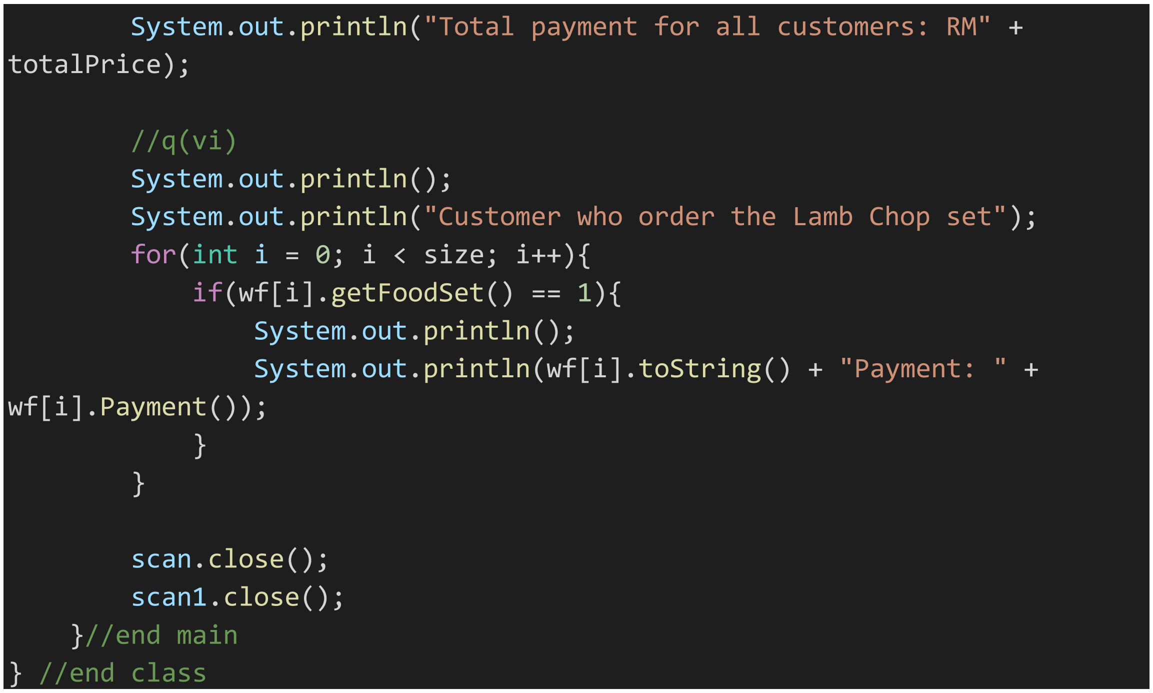
SOURCE CODE 1.1 : FoodApp Class



```
import java.util.*;

public class FoodApp {
    public static void main(String[]args) {
        Scanner scan = new Scanner(System.in);
        Scanner scan1 = new Scanner(System.in);

        //step 1: declare array of object
        System.out.println("enter size of array: ");
        int size = scan.nextInt();
        WesternFood[] wf = new WesternFood[size];

        //step 2: create / instantiate array of object
        for(int i = 0; i < size; i++){
            wf[i] = new WesternFood();
        }

        // Food set
        System.out.println();
        System.out.println("Set\tDescription\tPrice");
        System.out.println("1\tLamb Chop\tRM30.00");
        System.out.println("2\tChicken Chop\tRM20.00");
        System.out.println("3\tFish Chop\tRM15.00");

        //step 3: input
        for(int i = 0; i < size; i++){
            System.out.println();
            System.out.println("Enter details for customer " + (i+1));
            System.out.println("Enter name: ");
            String name = scan1.nextLine();

            System.out.println("Enter quantity order: ");
            int quantity = scan.nextInt();
            System.out.println("Enter member [true/false]: ");
            boolean member = scan.nextBoolean();

            System.out.println("Enter food set [1-3]: ");
            int foodSet = scan.nextInt();
            System.out.println("Enter dessert [true/false]: ");
            boolean dessert = scan.nextBoolean();
            wf[i].setDessert(dessert);
```

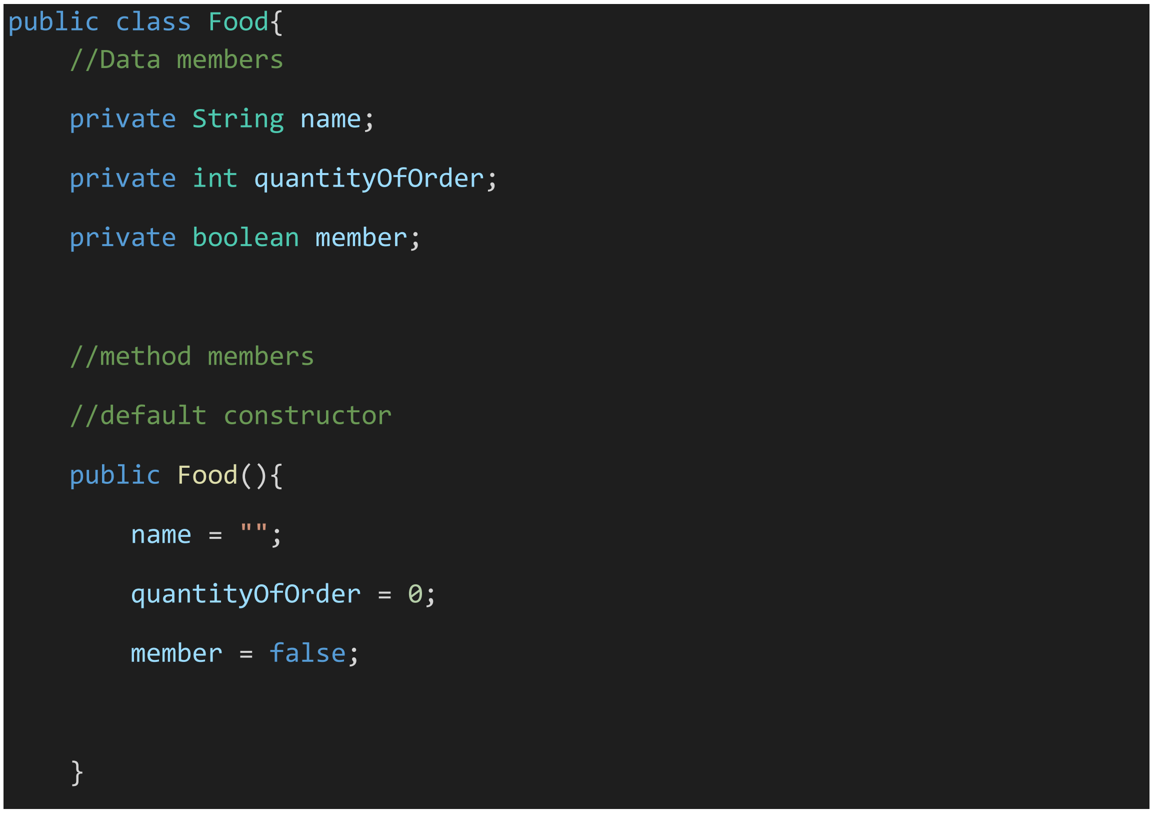


```
            //step 4: store onto array
            //1. normal constructor
            wf[i] = new WesternFood(name, quantity, member, foodSet, 
dessert);

            //or
            //2.setter
            wf[i].setName(name);
            wf[i].setQuantity(quantity);
            wf[i].setMember(member);
            wf[i].setFoodSet(foodSet);
            wf[i].setDessert(dessert);
        }
        System.out.println();
        //step 5: manipulation
        //q(ii)
        for(int i = 0; i < size; i++){
            System.out.println();
            System.out.println(wf[i].toString() + "Payment: RM" + 
wf[i].Payment());
        }
        //q(iii)
        int cntDessert = 0;
        for(int i = 0; i < size; i++){
            if(wf[i].getDessert())
                cntDessert++;
        }
        System.out.println();
        System.out.println("Number of customers order dessert: " + 
cntDessert);

        //q(iv)
        double totalPriceMember = 0; //total price for member
        for(int i = 0; i < size; i++) {
            if(wf[i].getMember())
                totalPriceMember = totalPriceMember + wf[i].Payment();
        }
        System.out.println("Total payment for all members: RM" + 
totalPriceMember);

        //q(v)
        double totalPrice = 0;
        for(int i = 0; i < size; i++){
            totalPrice = totalPrice + wf[i].Payment();
        }
```

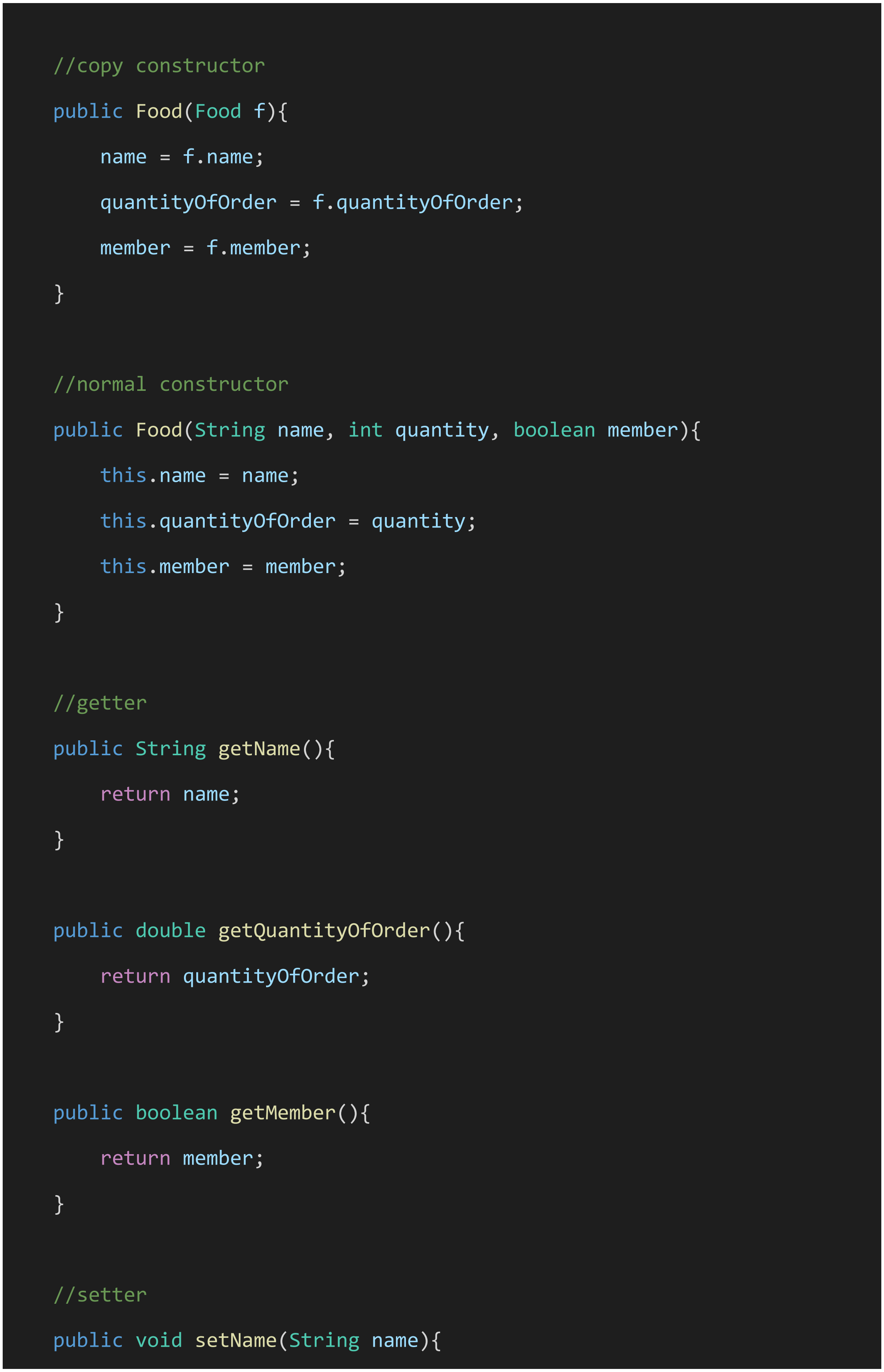


```
        System.out.println("Total payment for all customers: RM" +
totalPrice);

        //q(vi)
        System.out.println();
        System.out.println("Customer who order the Lamb Chop set");
        for(int i = 0; i < size; i++){
            if(wf[i].getFoodSet() == 1){
                System.out.println();
                System.out.println(wf[i].toString() + "Payment: " +
wf[i].Payment());
            }
        }

        scan.close();
        scan1.close();
    }//end main
} //end class
```

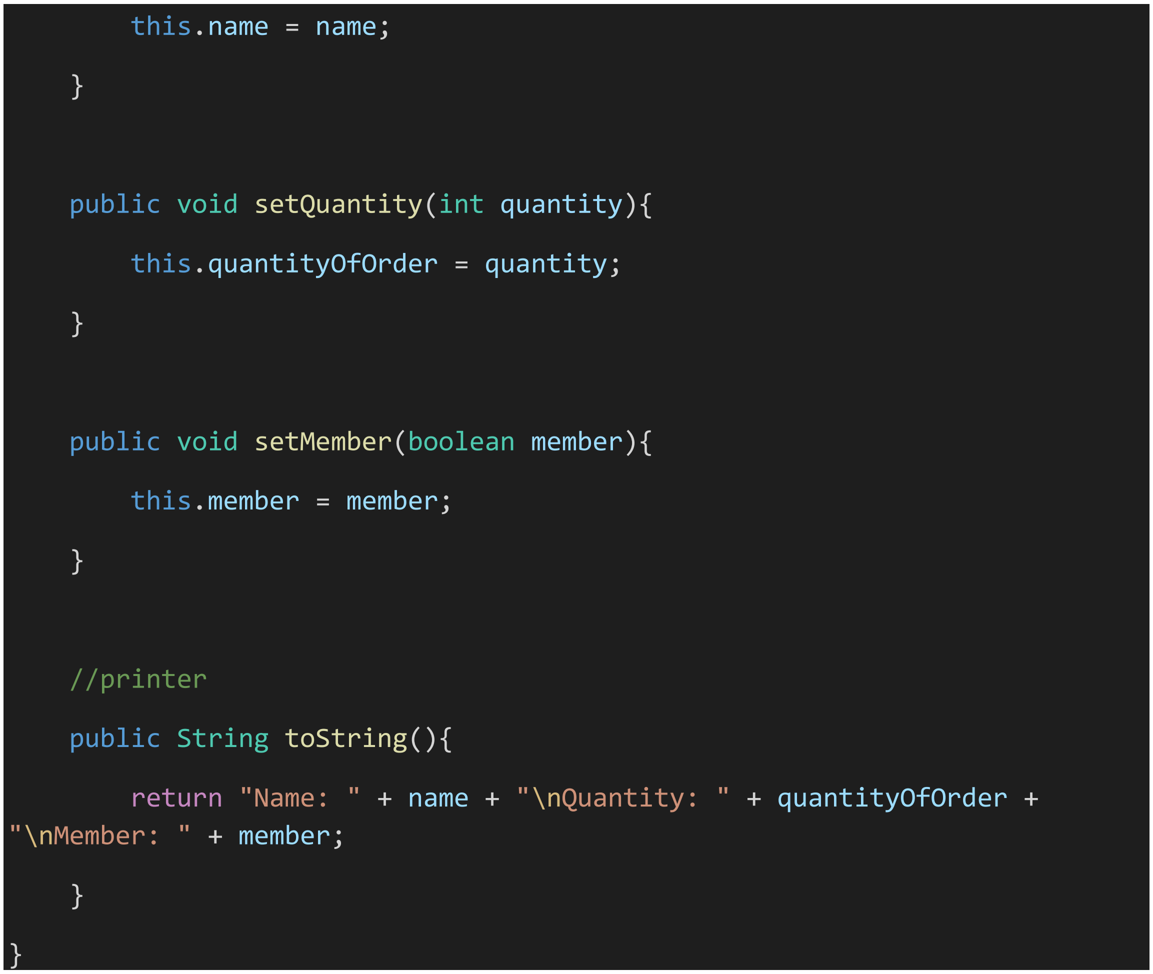
SOURCE CODE 1.2 : Food Class



```
public class Food{
    //Data members

    private String name;

    private int quantityOfOrder;

    private boolean member;


    //method members

    //default constructor

    public Food(){

        name = "";

        quantityOfOrder = 0;

        member = false;


    }
```

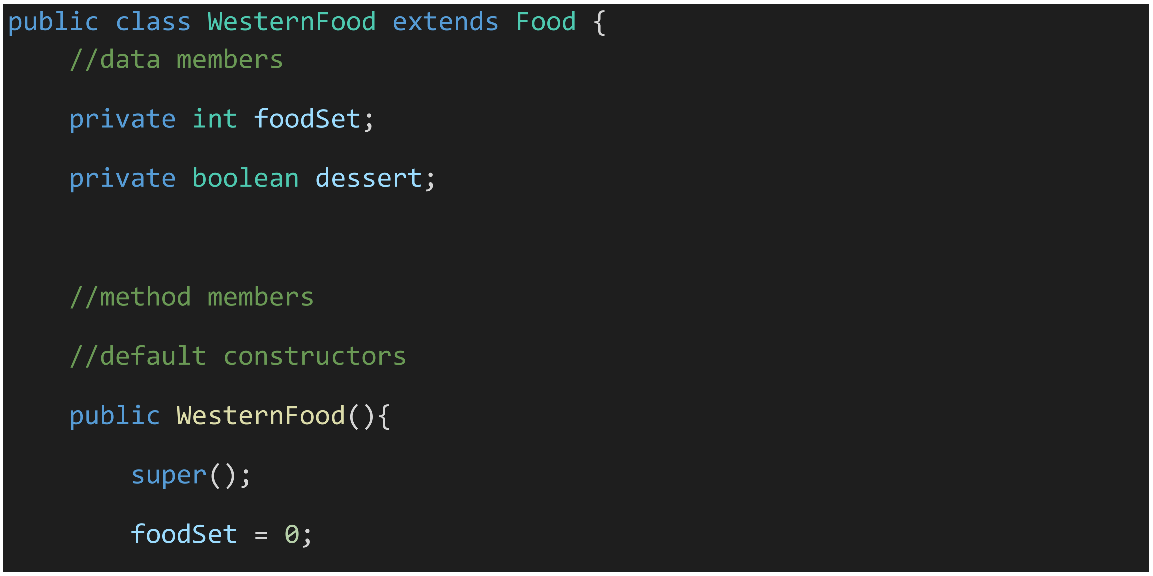


```java
//copy constructor
public Food(Food f){
    name = f.name;
    quantityOfOrder = f.quantityOfOrder;
    member = f.member;
}

//normal constructor
public Food(String name, int quantity, boolean member){
    this.name = name;
    this.quantityOfOrder = quantity;
    this.member = member;
}

//getter
public String getName(){
    return name;
}

public double getQuantityOfOrder(){
    return quantityOfOrder;
}

public boolean getMember(){
    return member;
}

//setter
public void setName(String name){
```



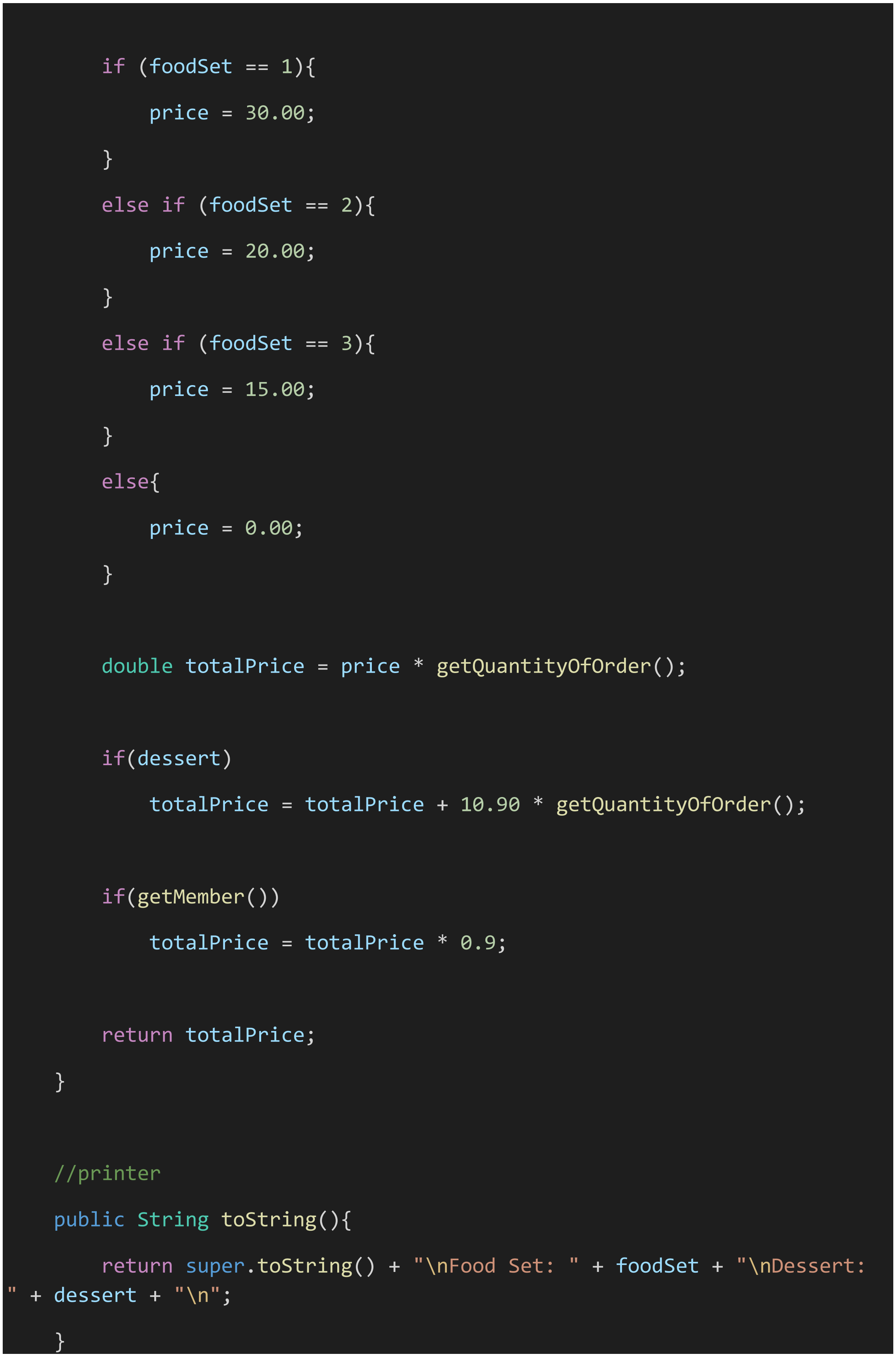
```
        this.name = name;
    }

    public void setQuantity(int quantity){
        this.quantityOfOrder = quantity;
    }

    public void setMember(boolean member){
        this.member = member;
    }

    //printer
    public String toString(){
        return "Name: " + name + "\nQuantity: " + quantityOfOrder +
"\nMember: " + member;
    }
}
```

SOURCE CODE 1.3 : WesternFood Class



```
public class WesternFood extends Food {
    //data members
    private int foodSet;
    private boolean dessert;

    //method members
    //default constructors
    public WesternFood(){
        super();
        foodSet = 0;
```

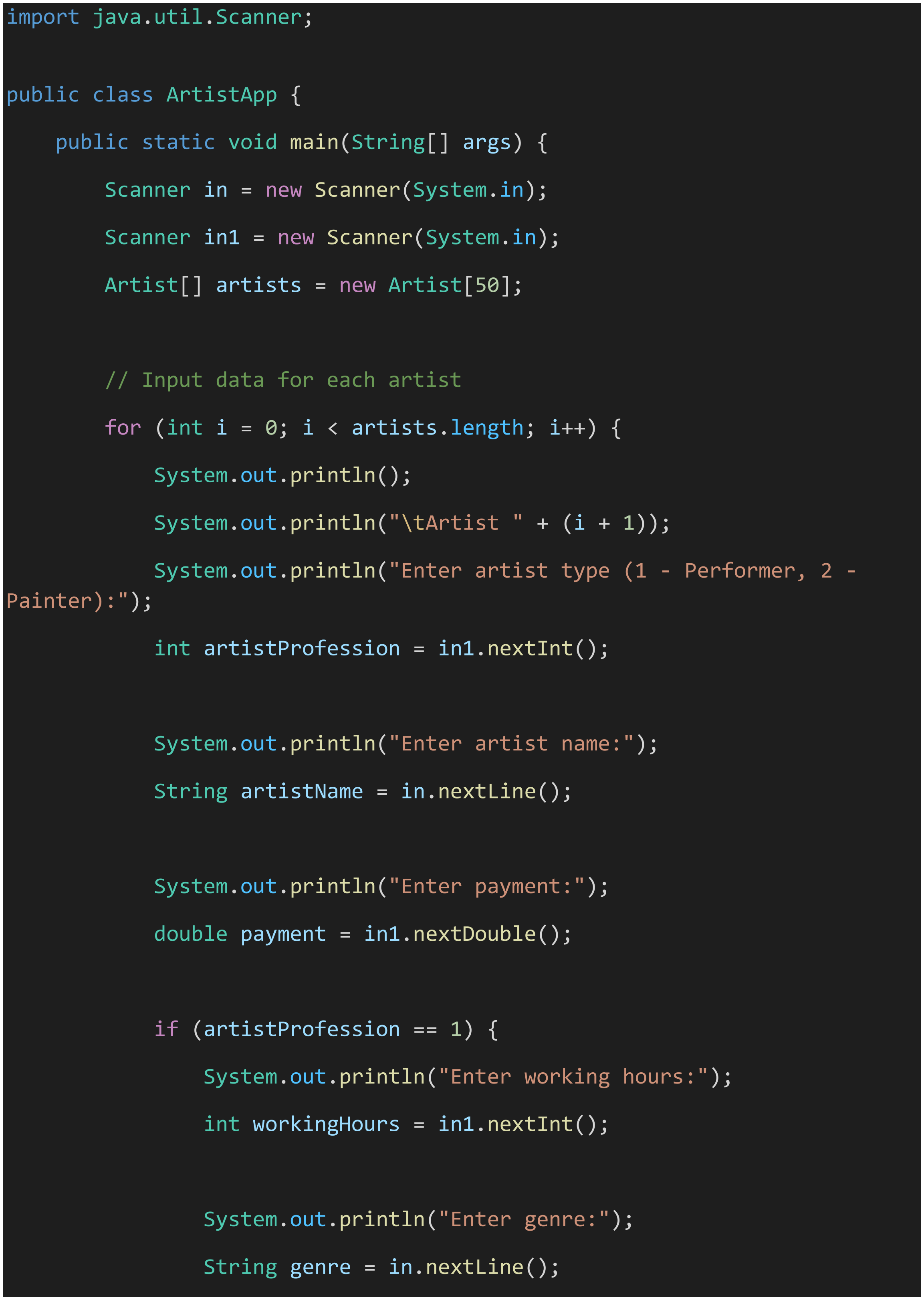
```java
        dessert = false;
    }

    //normal constructor
    public WesternFood(String name, int quantityOfOrder, boolean member, int foodSet, boolean dessert){
        super();
        this.foodSet = foodSet;
        this.dessert = dessert;
    }

    //setter
    public void setFoodSet(int foodSet){
        this.foodSet = foodSet;
    }
    public void setDessert(boolean dessert){
        this.dessert = dessert;
    }

    //getter
    public int getFoodSet(){
        return foodSet;
    }
    public boolean getDessert(){
        return dessert;
    }

    //processor
    public double Payment(){
        double price;
```



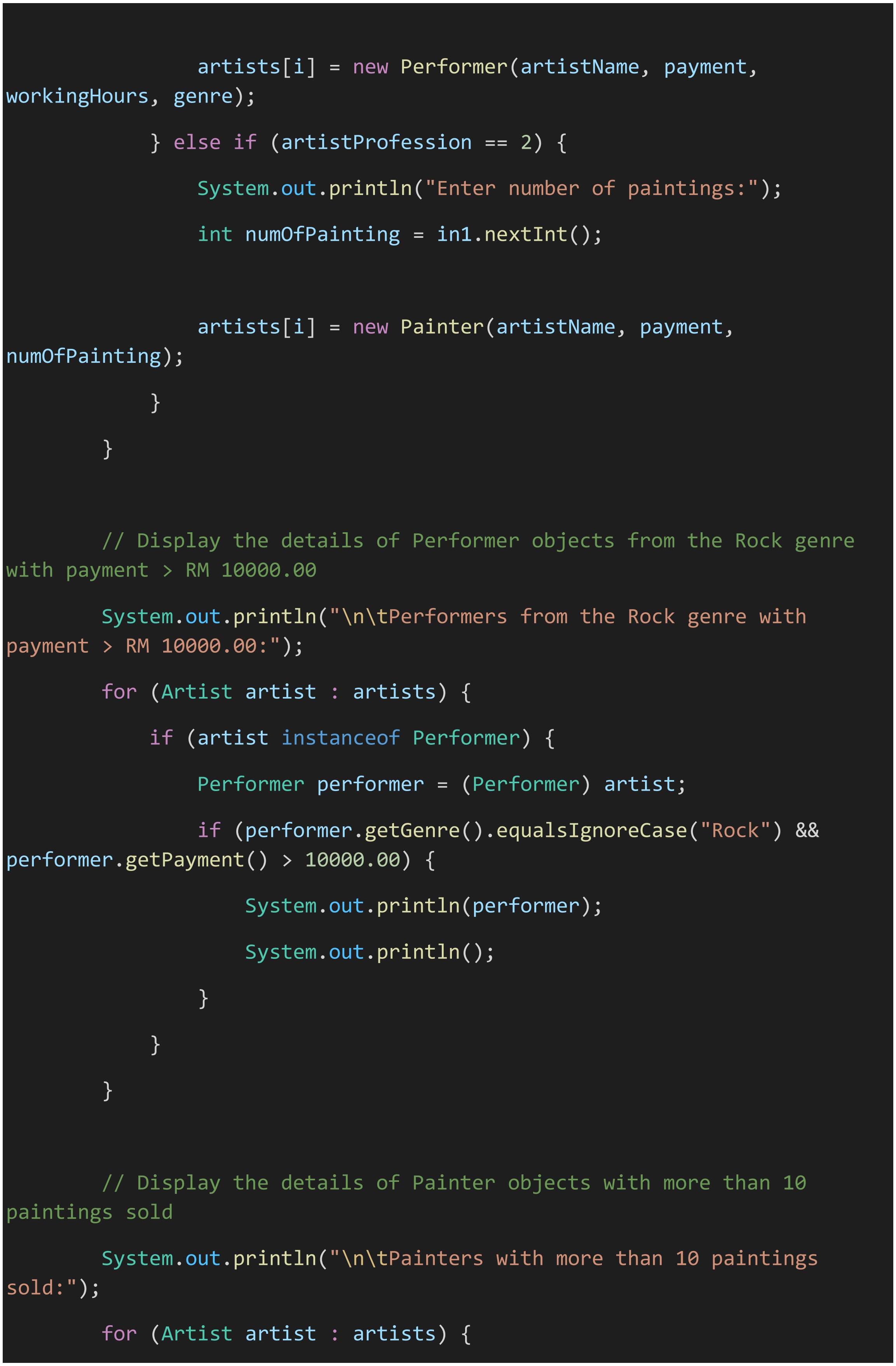
```
        if (foodSet == 1){
            price = 30.00;
        }
        else if (foodSet == 2){
            price = 20.00;
        }
        else if (foodSet == 3){
            price = 15.00;
        }
        else{
            price = 0.00;
        }

        double totalPrice = price * getQuantityOfOrder();

        if(dessert)
            totalPrice = totalPrice + 10.90 * getQuantityOfOrder();

        if(getMember())
            totalPrice = totalPrice * 0.9;

        return totalPrice;
    }

    //printer
    public String toString(){
        return super.toString() + "\nFood Set: " + foodSet + "\nDessert: " + dessert + "\n";
    }
```

QUESTION 6.2

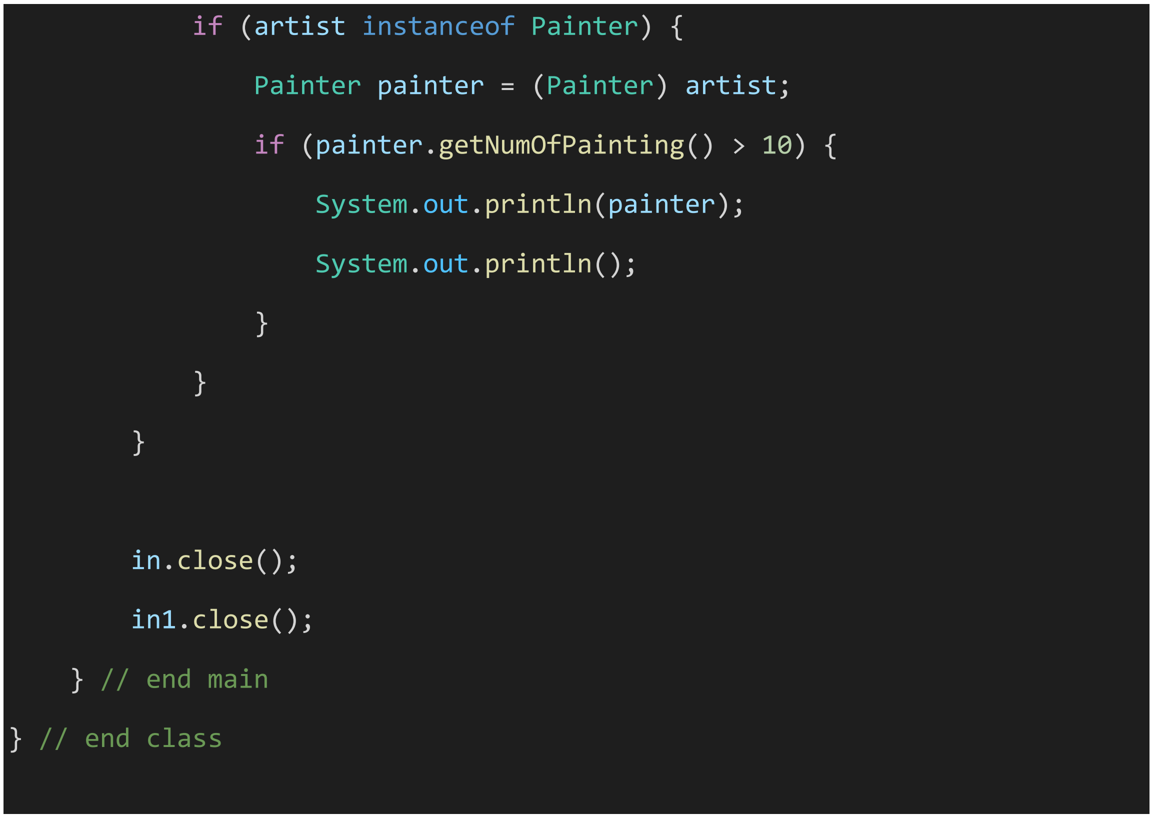
SOURCE CODE 2.1 : ArtistApp Class



```java
import java.util.Scanner;

public class ArtistApp {
    public static void main(String[] args) {
        Scanner in = new Scanner(System.in);
        Scanner in1 = new Scanner(System.in);
        Artist[] artists = new Artist[50];

        // Input data for each artist
        for (int i = 0; i < artists.length; i++) {
            System.out.println();
            System.out.println("\tArtist " + (i + 1));
            System.out.println("Enter artist type (1 - Performer, 2 -
Painter):");
            int artistProfession = in1.nextInt();

            System.out.println("Enter artist name:");
            String artistName = in.nextLine();

            System.out.println("Enter payment:");
            double payment = in1.nextDouble();

            if (artistProfession == 1) {
                System.out.println("Enter working hours:");
                int workingHours = in1.nextInt();

                System.out.println("Enter genre:");
                String genre = in.nextLine();
```

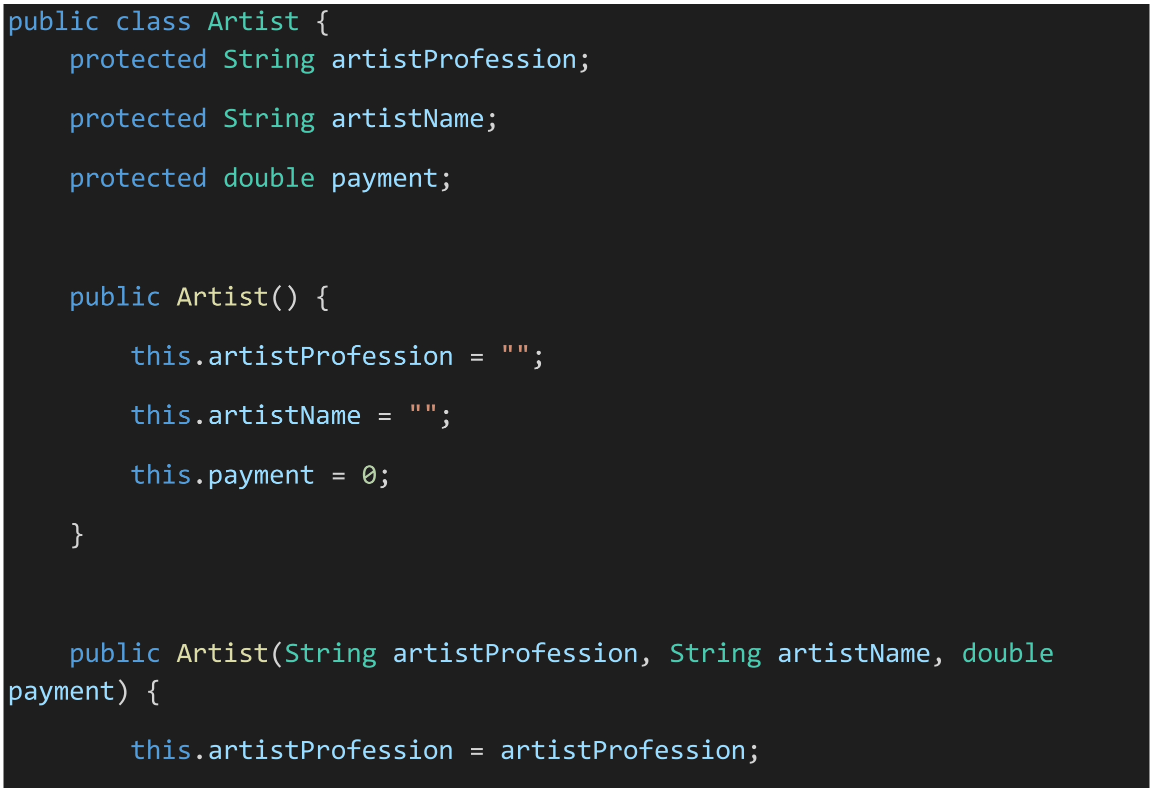


```
                artists[i] = new Performer(artistName, payment,
workingHours, genre);
            } else if (artistProfession == 2) {
                System.out.println("Enter number of paintings:");
                int numOfPainting = in1.nextInt();

                artists[i] = new Painter(artistName, payment,
numOfPainting);
            }
        }

        // Display the details of Performer objects from the Rock genre
with payment > RM 10000.00
        System.out.println("\n\tPerformers from the Rock genre with
payment > RM 10000.00:");
        for (Artist artist : artists) {
            if (artist instanceof Performer) {
                Performer performer = (Performer) artist;
                if (performer.getGenre().equalsIgnoreCase("Rock") &&
performer.getPayment() > 10000.00) {
                    System.out.println(performer);
                    System.out.println();
                }
            }
        }

        // Display the details of Painter objects with more than 10
paintings sold
        System.out.println("\n\tPainters with more than 10 paintings
sold:");
        for (Artist artist : artists) {
```

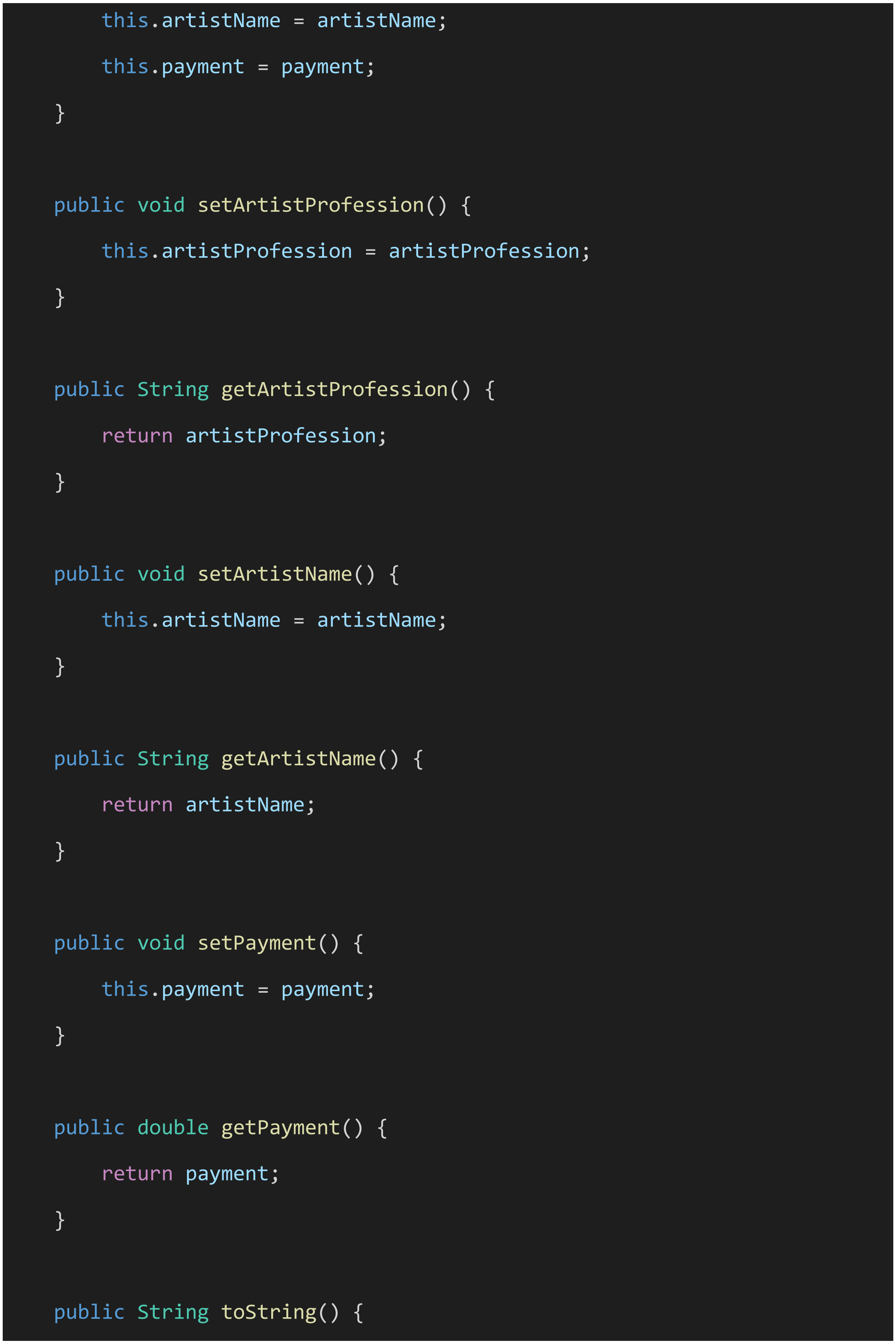


```
            if (artist instanceof Painter) {
                Painter painter = (Painter) artist;
                if (painter.getNumOfPainting() > 10) {
                    System.out.println(painter);
                    System.out.println();
                }
            }
        }

        in.close();
        in1.close();
    } // end main
} // end class
```

SOURCE CODE 2.2 : Class



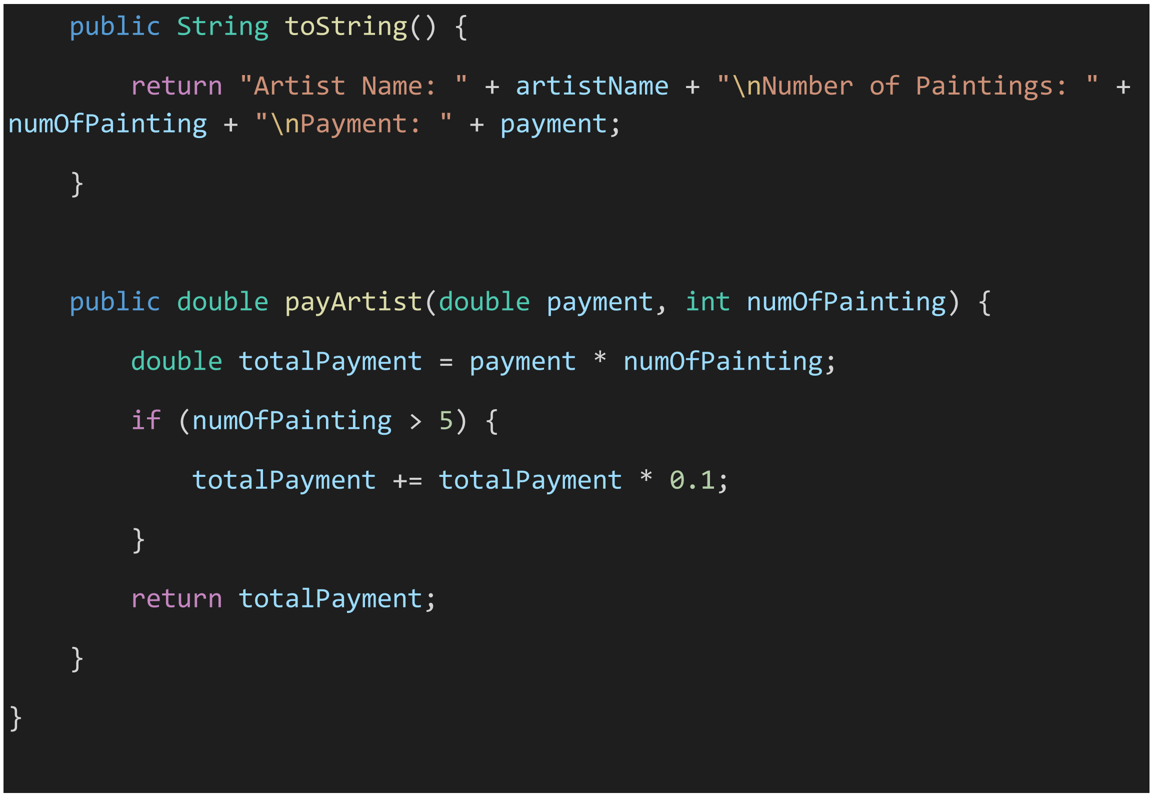
```
public class Artist {
    protected String artistProfession;
    protected String artistName;
    protected double payment;

    public Artist() {
        this.artistProfession = "";
        this.artistName = "";
        this.payment = 0;
    }

    public Artist(String artistProfession, String artistName, double
payment) {
        this.artistProfession = artistProfession;
```



```
        this.artistName = artistName;

        this.payment = payment;

    }


    public void setArtistProfession() {

        this.artistProfession = artistProfession;

    }


    public String getArtistProfession() {

        return artistProfession;

    }


    public void setArtistName() {

        this.artistName = artistName;

    }


    public String getArtistName() {

        return artistName;

    }


    public void setPayment() {

        this.payment = payment;

    }


    public double getPayment() {

        return payment;

    }


    public String toString() {
        return "Artist Profession: " + artistProfession + "\nArtist Name: 
" + artistName + "\nPayment: " + payment;

    }

} //end class
```

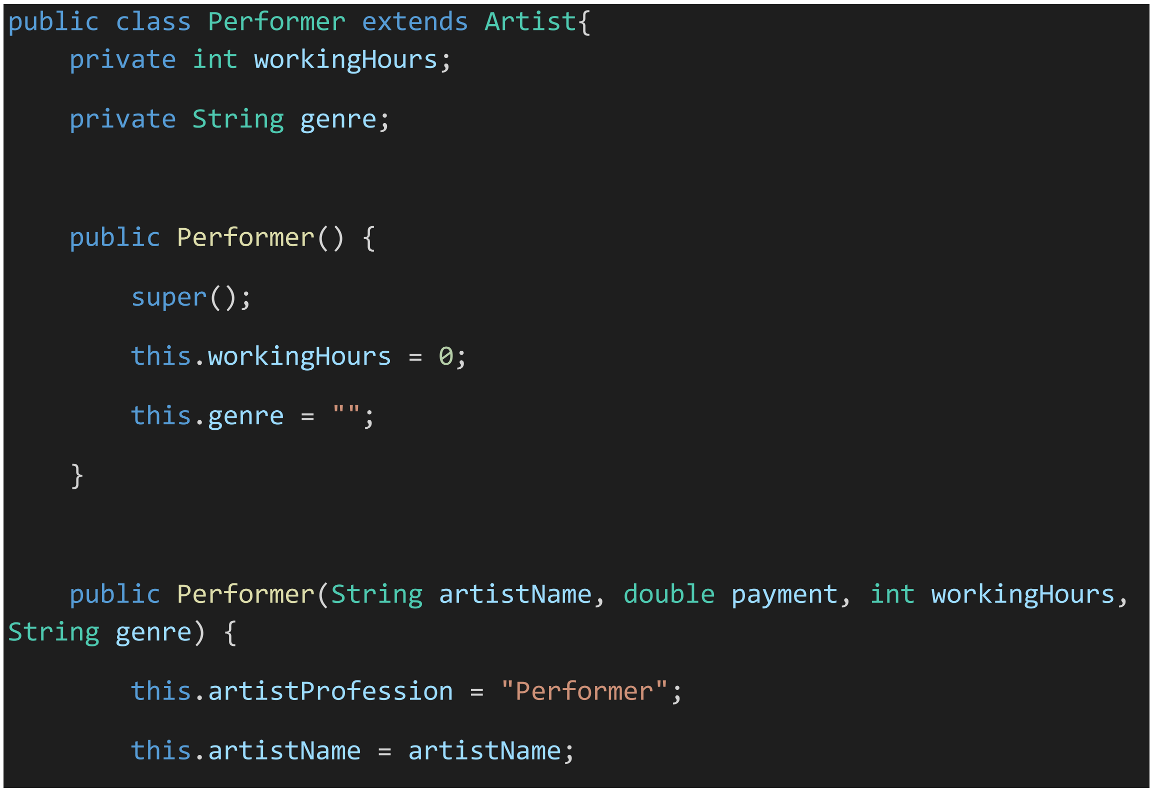
SOURCE CODE 2.3 : Painter Class

```
public class Painter extends Artist{
    private int numOfPainting;


    public Painter() {

        super();

        this.numOfPainting = 0;

    }


    public Painter(String artistName, double payment, int numOfPainting) 
{

        this.artistProfession = "Painter";

        this.artistName = artistName;

        this.payment = payment;

        this.numOfPainting = numOfPainting;

    }


    public void setNumOfPaintings() {

        this.numOfPainting = numOfPainting;

    }


    public int getNumOfPainting() {

        return numOfPainting;

    }
```

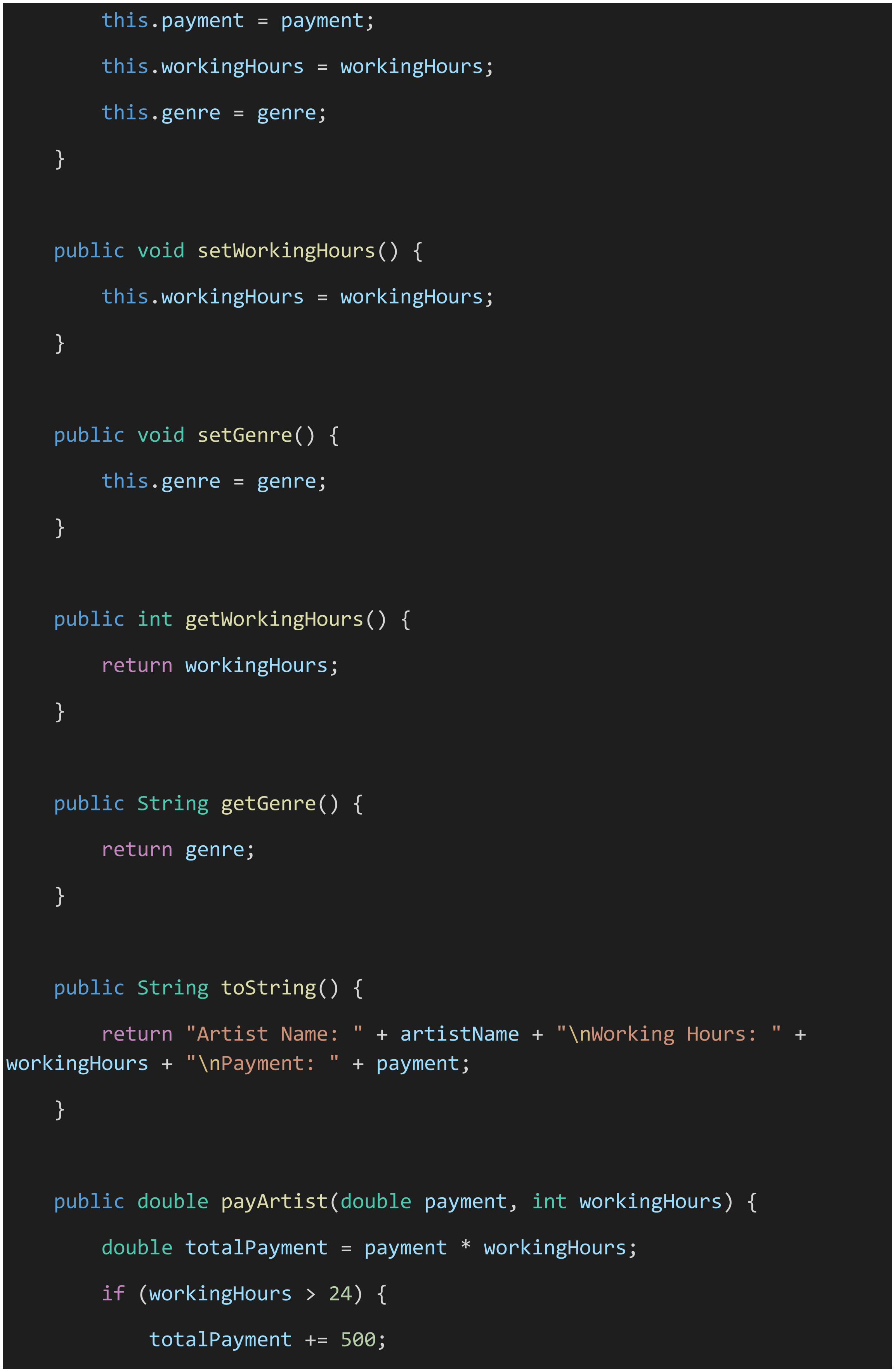


```java
    public String toString() {

        return "Artist Name: " + artistName + "\nNumber of Paintings: " +
numOfPainting + "\nPayment: " + payment;

    }


    public double payArtist(double payment, int numOfPainting) {

        double totalPayment = payment * numOfPainting;

        if (numOfPainting > 5) {

            totalPayment += totalPayment * 0.1;

        }

        return totalPayment;

    }

}
```

SOURCE CODE 2.4 : Performer Class



```java
public class Performer extends Artist{
    private int workingHours;

    private String genre;


    public Performer() {

        super();

        this.workingHours = 0;

        this.genre = "";

    }


    public Performer(String artistName, double payment, int workingHours,
String genre) {

        this.artistProfession = "Performer";

        this.artistName = artistName;
```



```
        this.payment = payment;
        this.workingHours = workingHours;
        this.genre = genre;
    }

    public void setWorkingHours() {
        this.workingHours = workingHours;
    }

    public void setGenre() {
        this.genre = genre;
    }

    public int getWorkingHours() {
        return workingHours;
    }

    public String getGenre() {
        return genre;
    }

    public String toString() {
        return "Artist Name: " + artistName + "\nWorking Hours: " +
workingHours + "\nPayment: " + payment;
    }

    public double payArtist(double payment, int workingHours) {
        double totalPayment = payment * workingHours;
        if (workingHours > 24) {
            totalPayment += 500;
        }
        return totalPayment;
    }


} //end class
```

QUESTION 6.3

SOURCE CODE 3.1 : App Class

```
import java.util.Scanner;

public class App {
    public static void main(String[] args) {

        Scanner in = new Scanner(System.in); //for string
        Scanner in1 = new Scanner(System.in); //for number
        CarRental[] carRentals = new CarRental[10];

        double charge = 0;
        double sumCharge = 0;
        for (int i = 0; i < carRentals.length; i++) {
            System.out.println();
            System.out.println("\tCustomer " + (i + 1));
            System.out.print("Enter Customer IC No: ");
            String custICNo = in.nextLine();
            System.out.print("Enter Customer Name: ");
            String custName = in.nextLine();
            System.out.print("Enter Customer Phone No: ");
            String custPhoneNo = in.nextLine();
            System.out.print("Enter Rental Period: ");
            double period = in1.nextDouble();
            System.out.print("Driver [true/false]: ");
            boolean driver = in1.nextBoolean();
            carRentals[i] = new CarRental(custICNo, custName,
custPhoneNo, period, driver);
```

```
            charge = carRentals[i].calcCharge();
            System.out.printf("Charge: RM%.2f\n", charge);
            sumCharge += charge;
        } //end for

        System.out.println();
        System.out.printf("Total charge: RM%.2f\n", sumCharge);
        System.out.println();
        System.out.println("Customers who rented cars with the driver
option:");
        for (CarRental carRental : carRentals) {
            if (carRental.getDriver()) {
                System.out.println(carRental.getCustName());
            }
        } //end for

    } //end main
} //end class
```

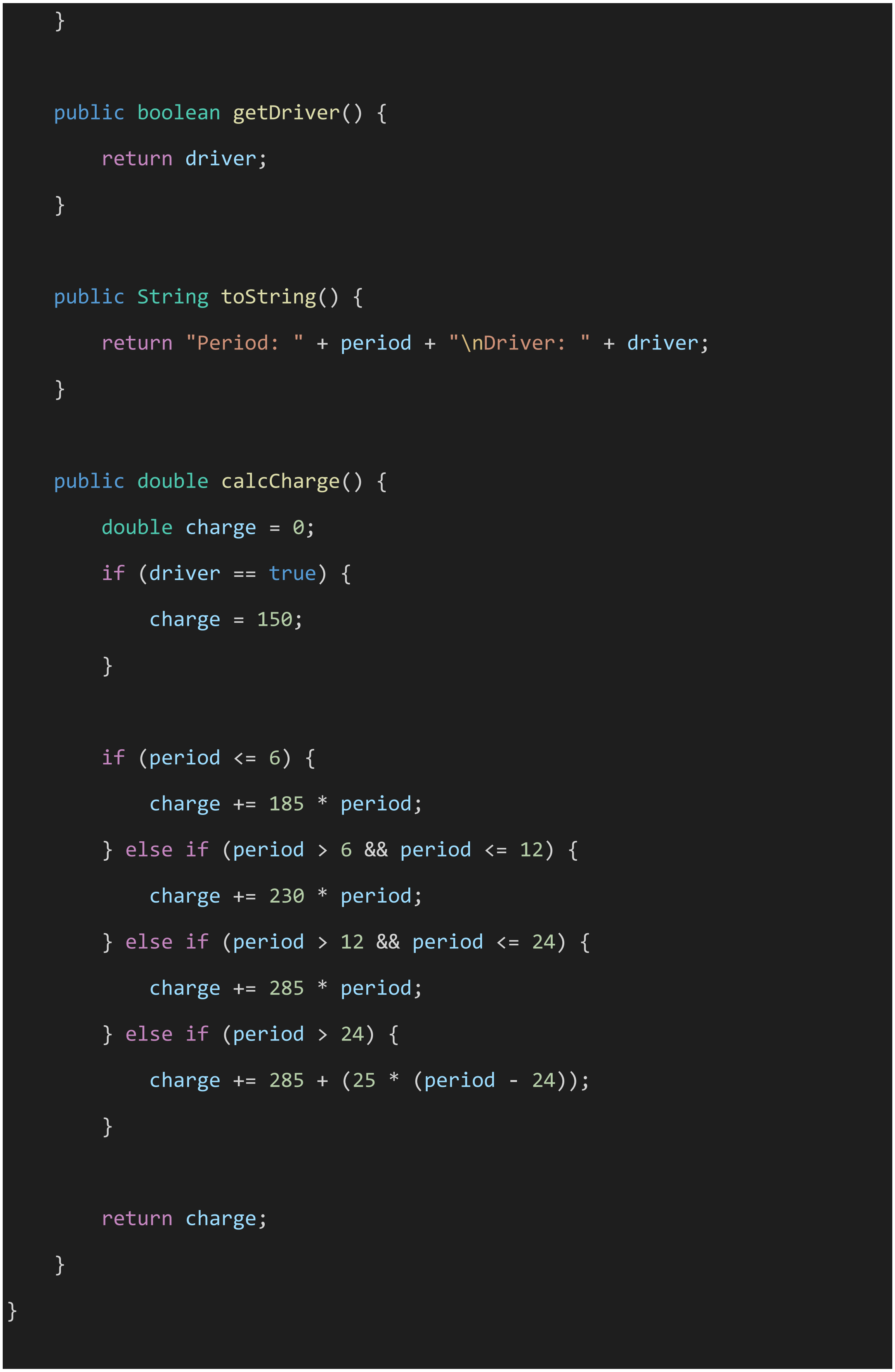
SOURCE CODE 3.2 : RentalService Class

```
public class RentalService {
    protected String custICNo;
    protected String custName;
    protected String custPhoneNo;

    public RentalService(String custICNo, String custName, String
custPhoneNo) {
        this.custICNo = custICNo;
        this.custName = custName;
        this.custPhoneNo = custPhoneNo;
    }

    public void setCustICNo(String custICNo) {
        this.custICNo = custICNo;
    }

    public void setCustName(String custName) {
        this.custName = custName;
    }

    public void setCustPhoneNo(String custPhoneNo) {
        this.custPhoneNo = custPhoneNo;
    }

    public String getCustICNo() {
        return custICNo;
    }

    public String getCustName() {
        return custName;
    }

    public String getCustPhoneNo() {
        return custPhoneNo;
    }

    public String toString() {
```

```java
        return "Customer IC No: " + custICNo + "\nCustomer Name: " +
custName + "\nCustomer Phone No: " + custPhoneNo;

    }



}
```

SOURCE CODE 3.3 : CarRental Class

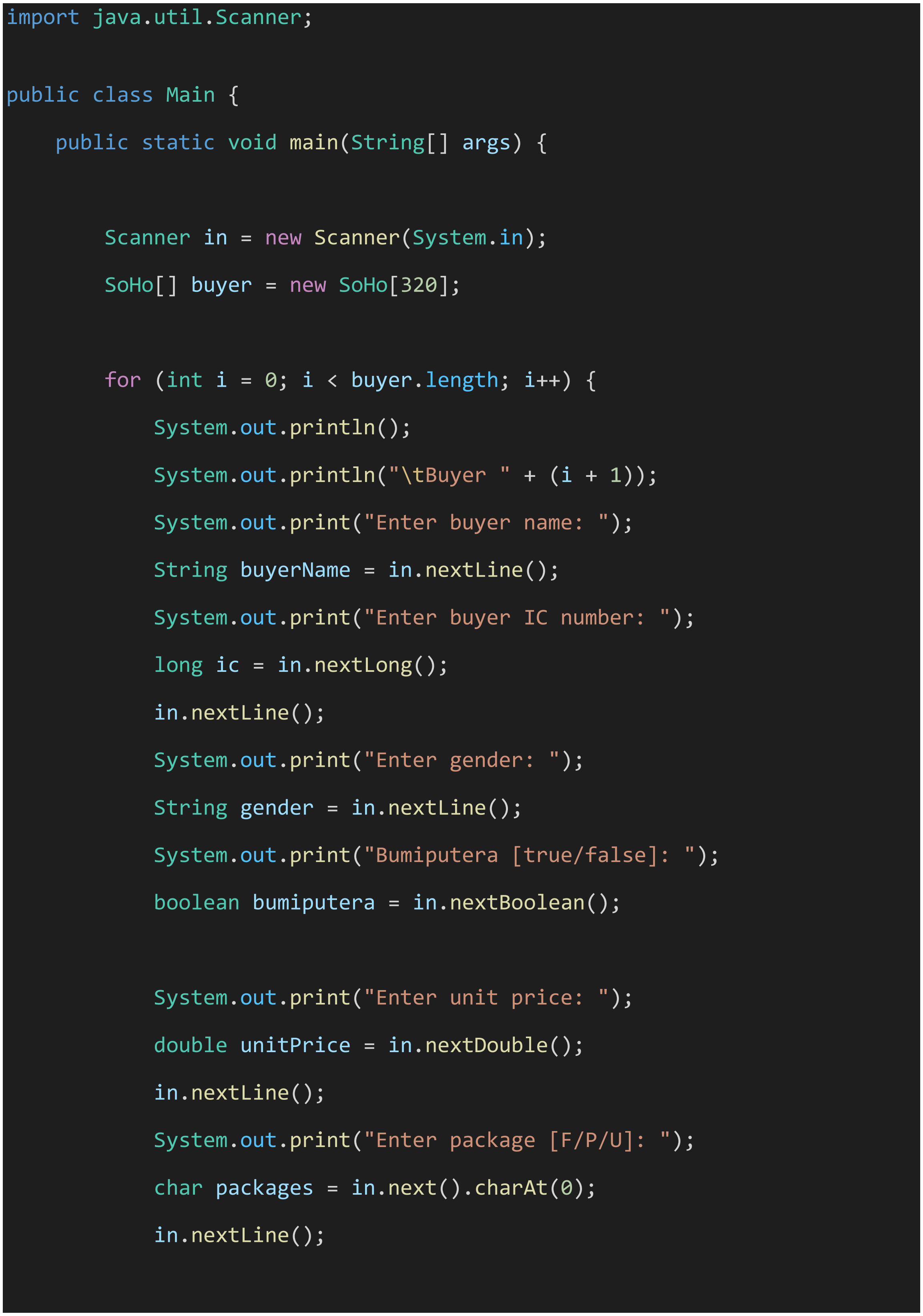
```java
public class CarRental extends RentalService{
    private double period;

    private boolean driver;


    public CarRental(String custICNo, String custName, String
custPhoneNo, double period, boolean driver) {

        super(custICNo, custName, custPhoneNo);

        this.period = period;

        this.driver = driver;

    }


    public void setPeriod(double period) {

        this.period = period;

    }


    public void setDriver(boolean driver) {

        this.driver = driver;

    }


    public double getPeriod() {

        return period;
```



```
    }

    public boolean getDriver() {
        return driver;
    }

    public String toString() {
        return "Period: " + period + "\nDriver: " + driver;
    }

    public double calcCharge() {
        double charge = 0;
        if (driver == true) {
            charge = 150;
        }

        if (period <= 6) {
            charge += 185 * period;
        } else if (period > 6 && period <= 12) {
            charge += 230 * period;
        } else if (period > 12 && period <= 24) {
            charge += 285 * period;
        } else if (period > 24) {
            charge += 285 + (25 * (period - 24));
        }

        return charge;
    }
}
```

QUESTION 6.4

SOURCE CODE 4.1 : Main Class



```java
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {

        Scanner in = new Scanner(System.in);
        SoHo[] buyer = new SoHo[320];

        for (int i = 0; i < buyer.length; i++) {
            System.out.println();
            System.out.println("\tBuyer " + (i + 1));
            System.out.print("Enter buyer name: ");
            String buyerName = in.nextLine();
            System.out.print("Enter buyer IC number: ");
            long ic = in.nextLong();
            in.nextLine();
            System.out.print("Enter gender: ");
            String gender = in.nextLine();
            System.out.print("Bumiputera [true/false]: ");
            boolean bumiputera = in.nextBoolean();

            System.out.print("Enter unit price: ");
            double unitPrice = in.nextDouble();
            in.nextLine();
            System.out.print("Enter package [F/P/U]: ");
            char packages = in.next().charAt(0);
            in.nextLine();
            buyer[i] = new SoHo(buyerName, ic, gender, bumiputera,
unitPrice, packages);
        }
        System.out.println();
        System.out.println("\tSoHo female buyers who bought fully
furnished package: ");
        int cntFemale = 0;
        for (SoHo soho : buyer) {
            if (soho.getGender().equalsIgnoreCase("female")) {
                if (soho.getPackages() == 'F' || soho.getPackages() ==
'f') {
                    System.out.println(soho.toString());
                    cntFemale++;
                }
            }
        }
        System.out.println("Total number of SoHo female buyers who bought
fully furnished package: " + cntFemale);

        in.close();
    }
}
```

SOURCE CODE 4.2 : House Class

```
public class House {
    private String buyerName;
    private long ic;
    private String gender;
    private boolean bumiputera;
```

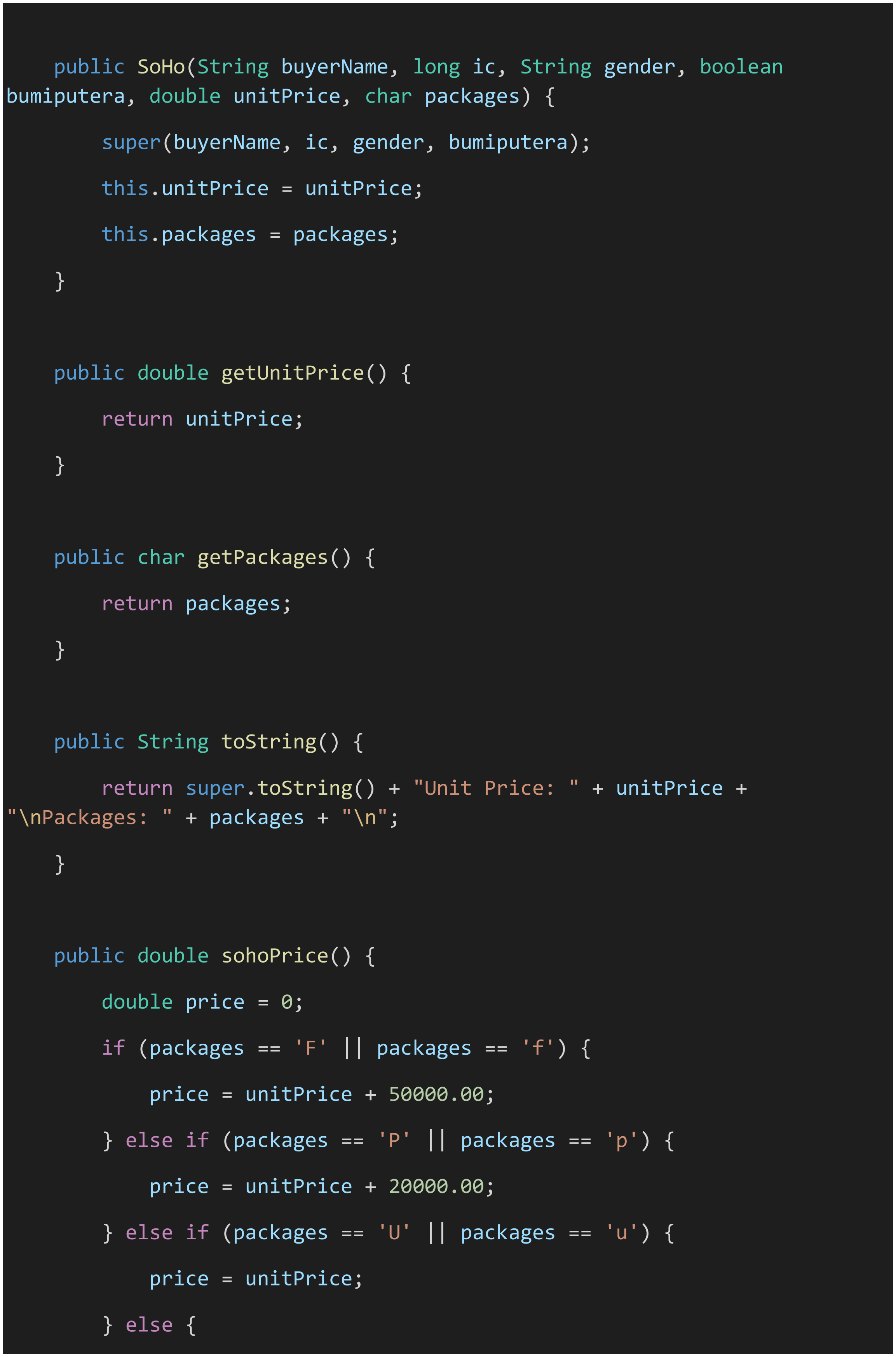
```java
    public House(String buyerName, long ic, String gender, boolean bumiputera) {
        this.buyerName = buyerName;
        this.ic = ic;
        this.gender = gender;
        this.bumiputera = bumiputera;
    }

    public String getBuyerName() {
        return buyerName;
    }

    public long getIc() {
        return ic;
    }

    public String getGender() {
        return gender;
    }

    public boolean isBumiputera() {
        return bumiputera;
    }

    public String toString() {
        return "Buyer Name: " + buyerName + "\nIC Number: " + ic + "\nGender: " + gender + "\nBumiputera: " + bumiputera + "\n";
    }
}
```

SOURCE CODE 4.3 : ResidentialSuites Class

```
public class ResidentialSuites extends House{
    private String residentialSuiteType; //A: 1 room, B: 2 rooms, C: 3
rooms


    public ResidentialSuites(String buyerName, long ic, String gender,
boolean bumiputera, String residentialSuiteType) {
        super(buyerName, ic, gender, bumiputera);
        this.residentialSuiteType = residentialSuiteType;
    }


    public String getResidentialSuiteType() {
        return residentialSuiteType;
    }


    public String toString() {
        return super.toString() + "Residential Suite Type: " +
residentialSuiteType + "\n";
    }


    public double residentialPrice() {
        double price = 0;
        return price;
    }


}
```

SOURCE CODE 4.4 : SoHo Class

```
public class SoHo extends House{
    private double unitPrice;
    private char packages;
```

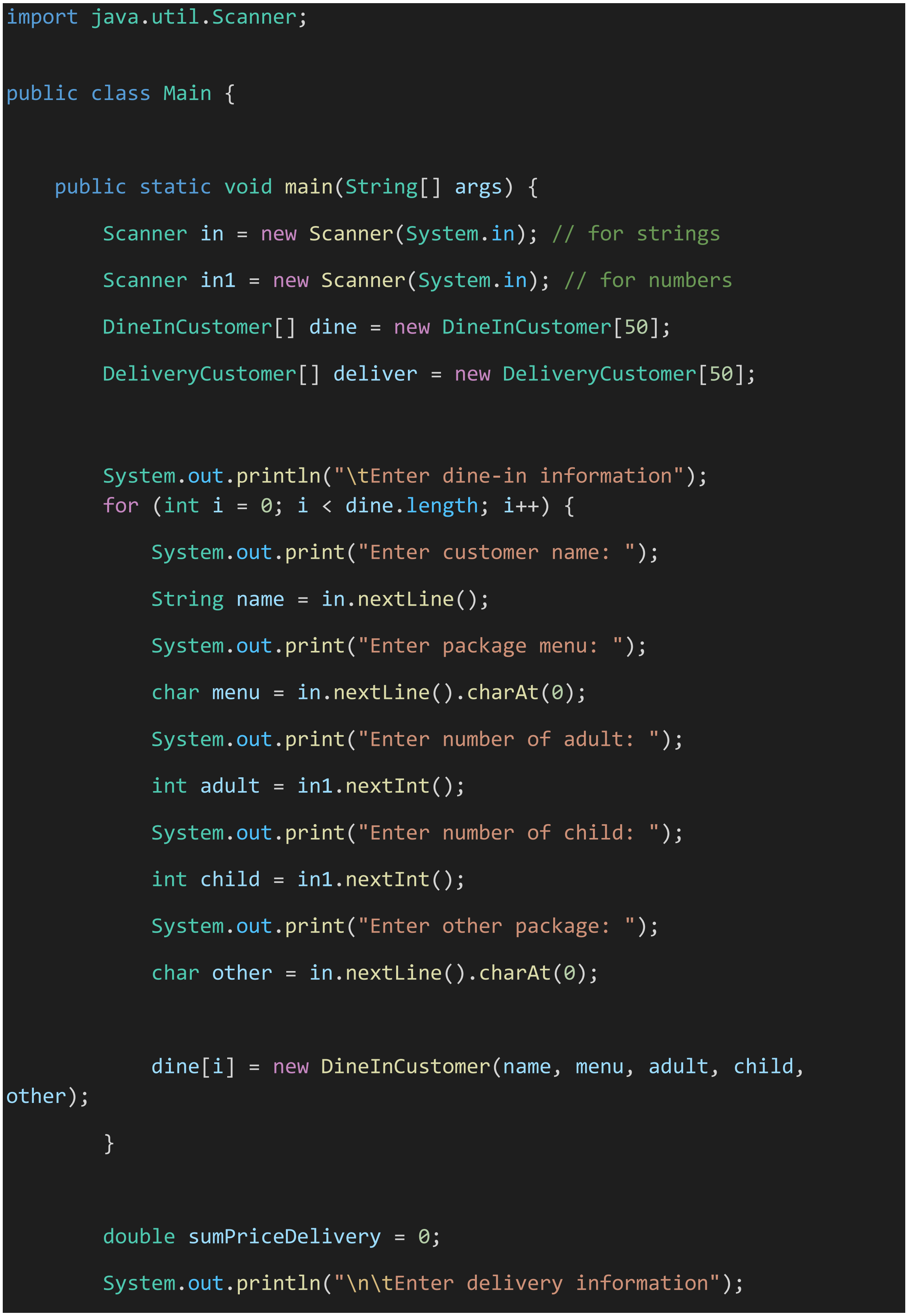


```
    public SoHo(String buyerName, long ic, String gender, boolean
bumiputera, double unitPrice, char packages) {
        super(buyerName, ic, gender, bumiputera);
        this.unitPrice = unitPrice;
        this.packages = packages;
    }

    public double getUnitPrice() {
        return unitPrice;
    }

    public char getPackages() {
        return packages;
    }

    public String toString() {
        return super.toString() + "Unit Price: " + unitPrice +
"\nPackages: " + packages + "\n";
    }

    public double sohoPrice() {
        double price = 0;
        if (packages == 'F' || packages == 'f') {
            price = unitPrice + 50000.00;
        } else if (packages == 'P' || packages == 'p') {
            price = unitPrice + 20000.00;
        } else if (packages == 'U' || packages == 'u') {
            price = unitPrice;
        } else {
```

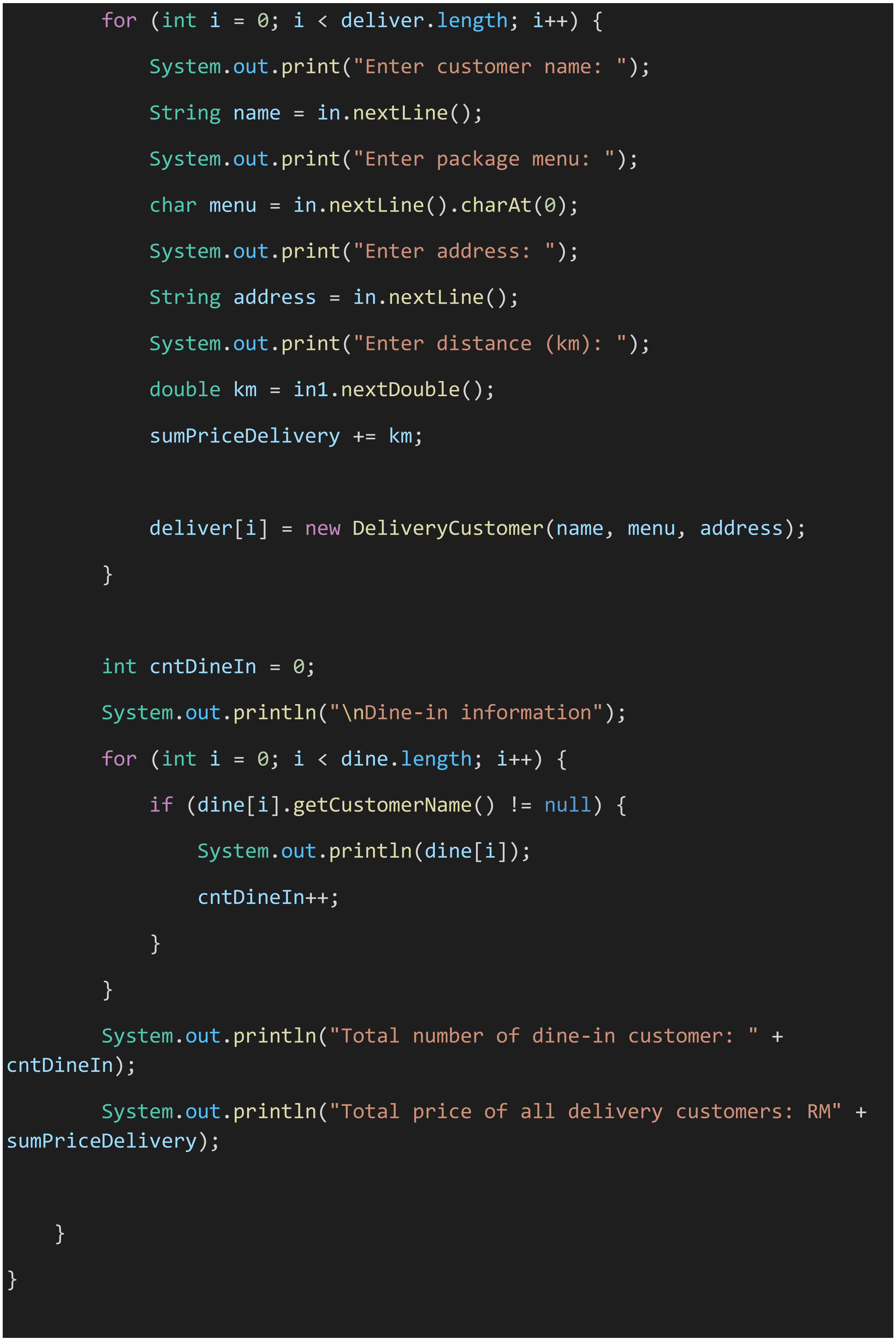
```java
            System.out.println("Invalid package");
        }

        if (super.isBumiputera()) { // bumiputera buyers get 10% discount
            price = price - (price * 0.10);
        }

        return price;
    }
}
```

QUESTION 6.5

SOURCE CODE 5.1 : Main Class



```java
import java.util.Scanner;

public class Main {


    public static void main(String[] args) {

        Scanner in = new Scanner(System.in); // for strings

        Scanner in1 = new Scanner(System.in); // for numbers

        DineInCustomer[] dine = new DineInCustomer[50];

        DeliveryCustomer[] deliver = new DeliveryCustomer[50];


        System.out.println("\tEnter dine-in information");
        for (int i = 0; i < dine.length; i++) {

            System.out.print("Enter customer name: ");

            String name = in.nextLine();

            System.out.print("Enter package menu: ");

            char menu = in.nextLine().charAt(0);

            System.out.print("Enter number of adult: ");

            int adult = in1.nextInt();

            System.out.print("Enter number of child: ");

            int child = in1.nextInt();

            System.out.print("Enter other package: ");

            char other = in.nextLine().charAt(0);


            dine[i] = new DineInCustomer(name, menu, adult, child,
other);

        }


        double sumPriceDelivery = 0;

        System.out.println("\n\tEnter delivery information");
```



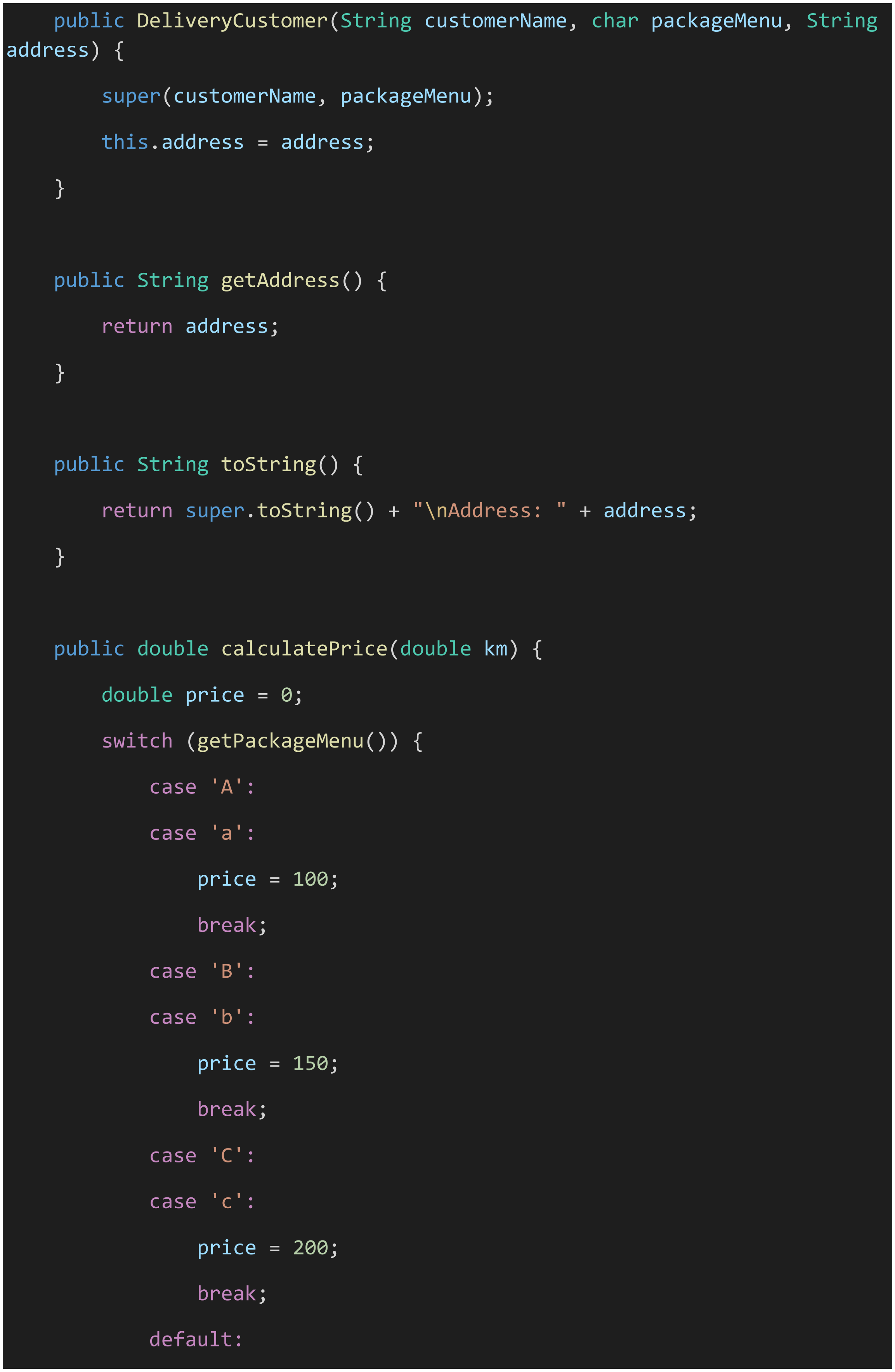
```
        for (int i = 0; i < deliver.length; i++) {
            System.out.print("Enter customer name: ");
            String name = in.nextLine();
            System.out.print("Enter package menu: ");
            char menu = in.nextLine().charAt(0);
            System.out.print("Enter address: ");
            String address = in.nextLine();
            System.out.print("Enter distance (km): ");
            double km = in1.nextDouble();
            sumPriceDelivery += km;

            deliver[i] = new DeliveryCustomer(name, menu, address);
        }

        int cntDineIn = 0;
        System.out.println("\nDine-in information");
        for (int i = 0; i < dine.length; i++) {
            if (dine[i].getCustomerName() != null) {
                System.out.println(dine[i]);
                cntDineIn++;
            }
        }
        System.out.println("Total number of dine-in customer: " +
cntDineIn);
        System.out.println("Total price of all delivery customers: RM" +
sumPriceDelivery);

    }
}
```

SOURCE CODE 5.2 : Customer Class

```
public class Customer {
    protected String customerName;

    private char packageMenu;


    public Customer(String customerName, char packageMenu) {

        this.customerName = customerName;

        this.packageMenu = packageMenu;

    }


    public String getCustomerName() {

        return customerName;

    }


    public char getPackageMenu() {

        return packageMenu;

    }


    public String toString() {

        return "Customer Name: " + customerName + "\nPackage Menu: " + 
packageMenu;

    }

}
```

SOURCE CODE 5.3 : DeliveryCustomer Class

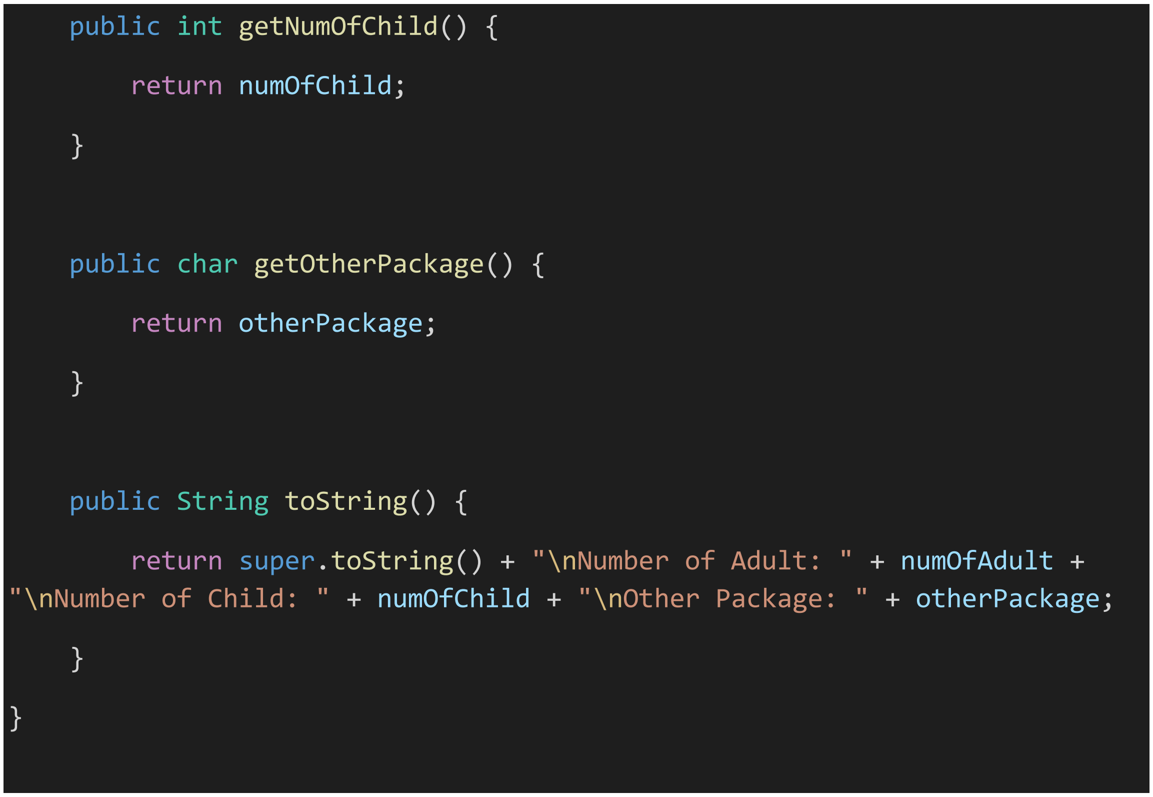
```
public class DeliveryCustomer extends Customer{
    private String address;
```



```java
    public DeliveryCustomer(String customerName, char packageMenu, String address) {
        super(customerName, packageMenu);
        this.address = address;
    }

    public String getAddress() {
        return address;
    }

    public String toString() {
        return super.toString() + "\nAddress: " + address;
    }

    public double calculatePrice(double km) {
        double price = 0;
        switch (getPackageMenu()) {
            case 'A':
            case 'a':
                price = 100;
                break;
            case 'B':
            case 'b':
                price = 150;
                break;
            case 'C':
            case 'c':
                price = 200;
                break;
            default:
                System.out.println("Invalid package menu");
                break;
        }

        if (km > 15) {
            price += 10;
        }

        return price;
    }
}
```

SOURCE CODE 5.4 : DineInCustomer Class

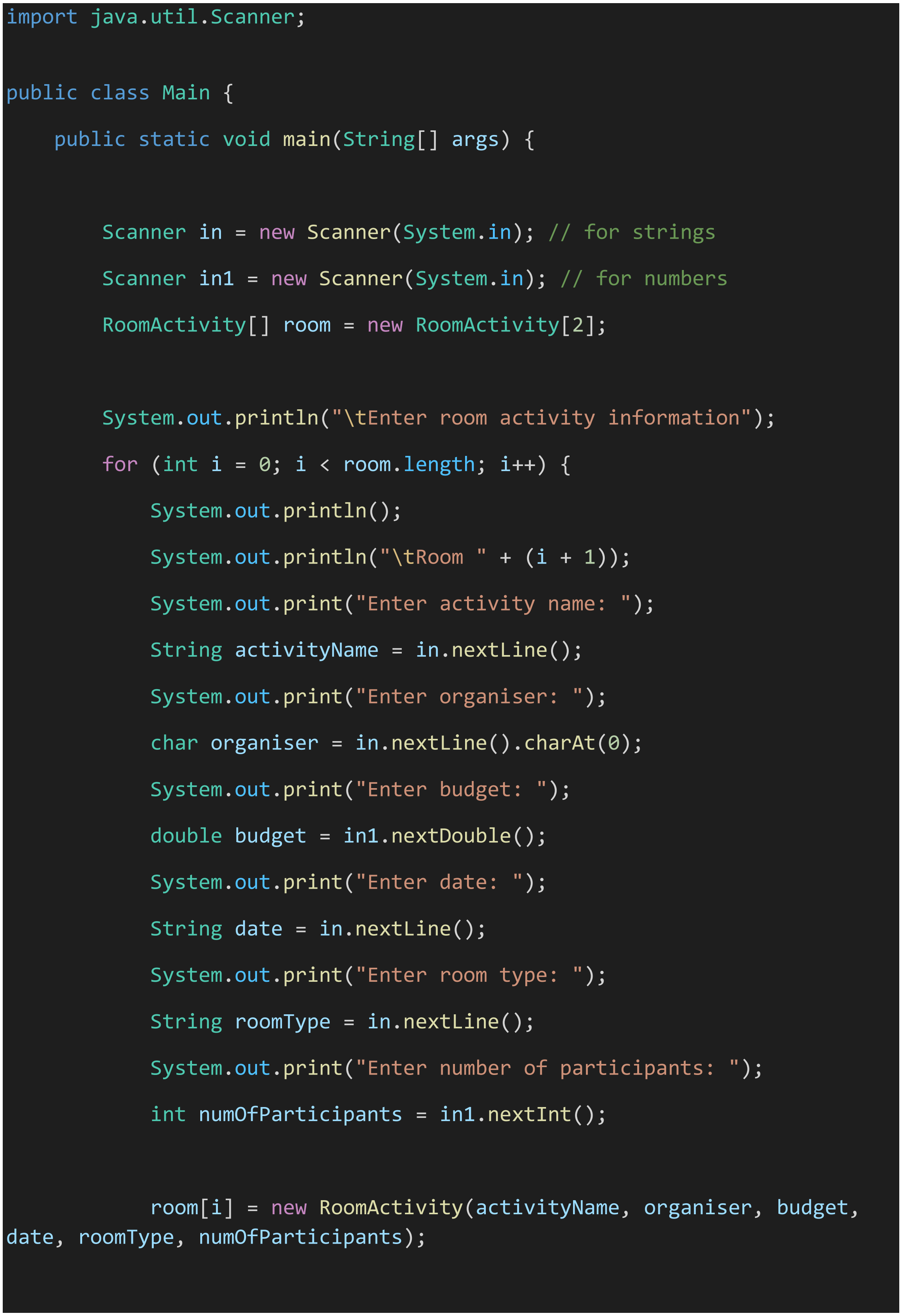
```
public class DineInCustomer extends Customer{
    private int numOfAdult;
    private int numOfChild;
    private char otherPackage;

    public DineInCustomer(String customerName, char packageMenu, int
numOfAdult, int numOfChild, char otherPackage) {
        super(customerName, packageMenu);
        this.numOfAdult = numOfAdult;
        this.numOfChild = numOfChild;
        this.otherPackage = otherPackage;
    }

    public int getNumOfAdult() {
        return numOfAdult;
    }
```



```
    public int getNumOfChild() {
        return numOfChild;
    }

    public char getOtherPackage() {
        return otherPackage;
    }

    public String toString() {
        return super.toString() + "\nNumber of Adult: " + numOfAdult +
"\nNumber of Child: " + numOfChild + "\nOther Package: " + otherPackage;
    }
}
```

QUESTION 6.6

SOURCE CODE 6.1 : Main Class



```java
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {

        Scanner in = new Scanner(System.in); // for strings
        Scanner in1 = new Scanner(System.in); // for numbers
        RoomActivity[] room = new RoomActivity[2];

        System.out.println("\tEnter room activity information");
        for (int i = 0; i < room.length; i++) {
            System.out.println();
            System.out.println("\tRoom " + (i + 1));
            System.out.print("Enter activity name: ");
            String activityName = in.nextLine();
            System.out.print("Enter organiser: ");
            char organiser = in.nextLine().charAt(0);
            System.out.print("Enter budget: ");
            double budget = in1.nextDouble();
            System.out.print("Enter date: ");
            String date = in.nextLine();
            System.out.print("Enter room type: ");
            String roomType = in.nextLine();
            System.out.print("Enter number of participants: ");
            int numOfParticipants = in1.nextInt();

            room[i] = new RoomActivity(activityName, organiser, budget,
date, roomType, numOfParticipants);
```

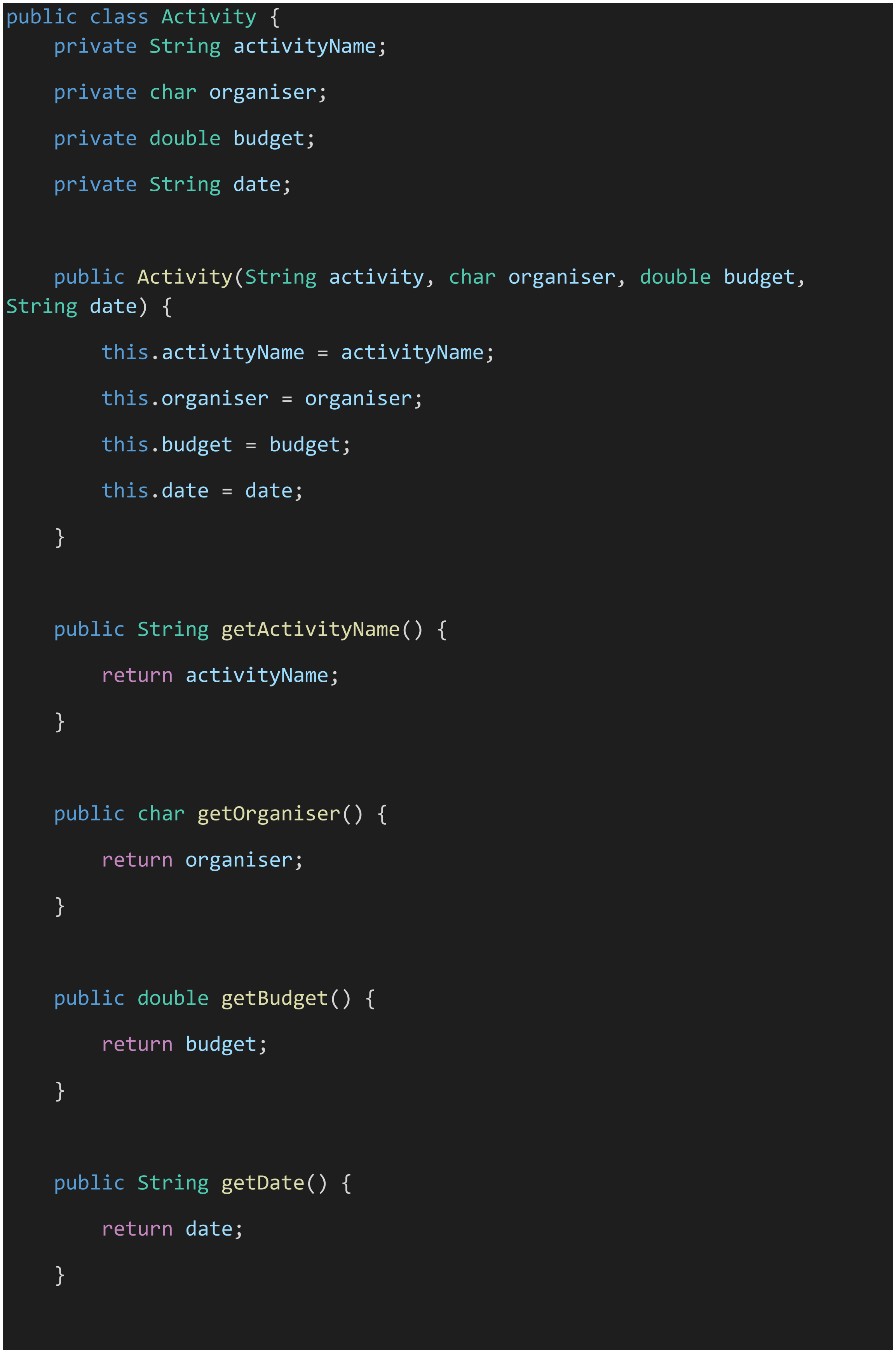
```
        }


        System.out.println();

        System.out.println("\tBooked Activities");

        for (int i = 0; i < room.length; i++) {

            if (room[i] != null) {

            System.out.println("Activity Name: " +
room[i].getActivityName());

            }

        }


        System.out.println();

        System.out.println("\tBookings by Private Organisers");

        for (int i = 0; i < room.length; i++) {

            if (room[i] != null && room[i].getOrganiser() == 'P' ||
room[i].getOrganiser() == 'p') {

                System.out.println(room[i].toString());

                System.out.println("Charges: " + room[i].roomCharges());

                System.out.println();

            }

        }


        System.out.println("\tBookings for lab with more than 30
participants");

        int cntLab = 0;

        for (int i = 0; i < room.length; i++) {

            if (room[i] != null &&
room[i].getRoomType().equalsIgnoreCase("lab") &&
room[i].getNumOfParticipants() > 30) {

                System.out.println(room[i].toString());

                System.out.println();
```

```java
                cntLab++;
            }
        }
        System.out.println("Total number of lab with more than 30
participants: " + cntLab);

        in.close();
        in1.close();
    }
}
```

SOURCE CODE 6.2 : RoomActivity Class

```java
public class RoomActivity extends Activity{
    private String roomType;
    private int numOfParticipants;

    public RoomActivity(String activityName, char organiser, double
budget, String date, String roomType, int numOfParticipants) {
        super(activityName, organiser, budget, date);
        this.roomType = roomType;
        this.numOfParticipants = numOfParticipants;
    }

    public String getRoomType() {
        return roomType;
    }

    public int getNumOfParticipants() {
        return numOfParticipants;
    }
    public String toString() {
        return super.toString() + "\nRoom Type: " + roomType + "\nNumber of Participants: " + numOfParticipants;
    }

    public double roomCharges() {
        double charge = 0;
        switch (getOrganiser()) {
            case 'G':
            case 'g':
                charge = 1500;
                break;
            case 'P':
            case 'p':
                charge = 25 * numOfParticipants;
                break;
            case 'U':
            case 'u':
                charge = 10 * numOfParticipants;
                break;
            default:
                System.out.println("Invalid organiser type");
                break;
        }
        return charge;
    }
}
```

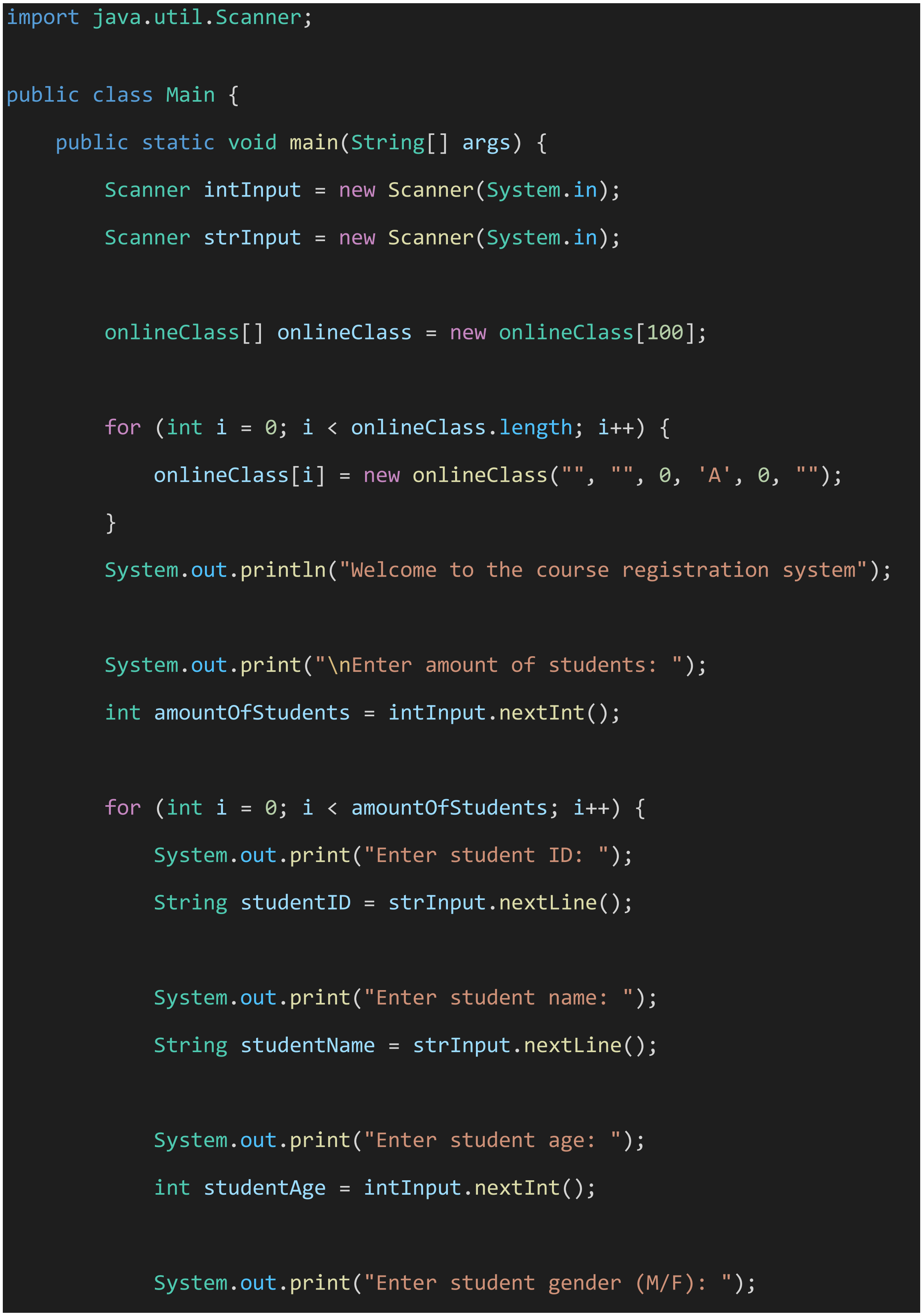
SOURCE CODE 6.3 : Activity Class



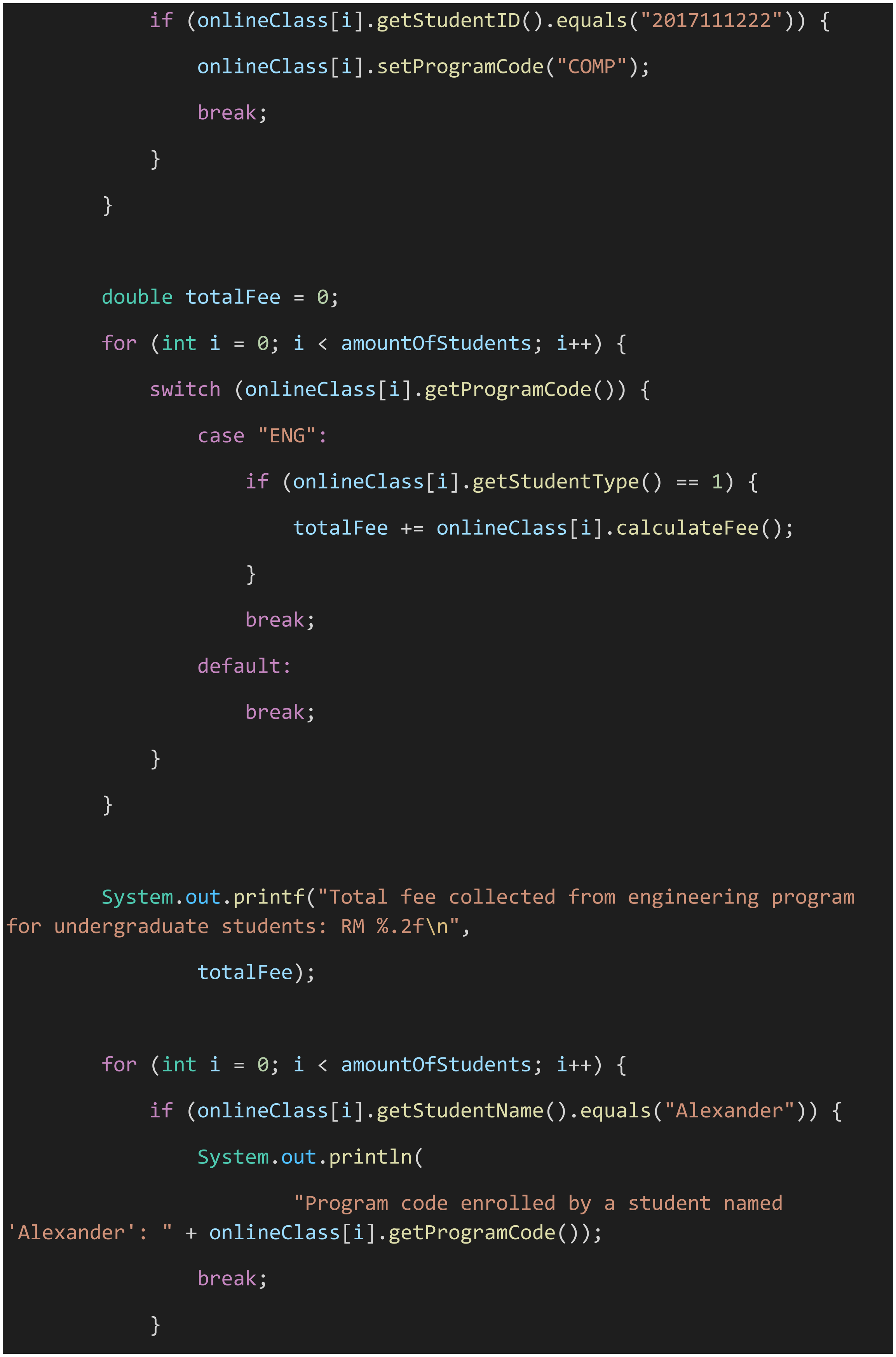
```java
public class Activity {
    private String activityName;

    private char organiser;

    private double budget;

    private String date;


    public Activity(String activity, char organiser, double budget,
String date) {
        this.activityName = activityName;

        this.organiser = organiser;

        this.budget = budget;

        this.date = date;

    }


    public String getActivityName() {

        return activityName;

    }


    public char getOrganiser() {

        return organiser;

    }


    public double getBudget() {

        return budget;

    }


    public String getDate() {

        return date;

    }
    public String toString() {
        return "Activity: " + activityName + "\nOrganiser: " + organiser
+ "\nBudget: " + budget + "\nDate: " + date;
    }
}
```

QUESTION 6.6

SOURCE CODE 7.1 : Main Class



```java
import java.util.Scanner;

public class Main {
    public static void main(String[] args) {
        Scanner intInput = new Scanner(System.in);
        Scanner strInput = new Scanner(System.in);

        onlineClass[] onlineClass = new onlineClass[100];

        for (int i = 0; i < onlineClass.length; i++) {
            onlineClass[i] = new onlineClass("", "", 0, 'A', 0, "");
        }
        System.out.println("Welcome to the course registration system");

        System.out.print("\nEnter amount of students: ");
        int amountOfStudents = intInput.nextInt();

        for (int i = 0; i < amountOfStudents; i++) {
            System.out.print("Enter student ID: ");
            String studentID = strInput.nextLine();

            System.out.print("Enter student name: ");
            String studentName = strInput.nextLine();

            System.out.print("Enter student age: ");
            int studentAge = intInput.nextInt();

            System.out.print("Enter student gender (M/F): ");
            char studentGender = strInput.nextLine().charAt(0);


            System.out.print("\n1. Undergraduate\n2. Postgraduate\n\nEnter student type (1-2): ");
            int studentType = intInput.nextInt();


            System.out.print("\n1. COMP\n2. ENG\n\nEnter program code (1-2): ");
            int programCodeInt = intInput.nextInt();


            String programCode = "";
            switch (programCodeInt) {
                case 1:
                    programCode = "COMP";
                    break;
                case 2:
                    programCode = "ENG";
                    break;
                default:
                    break;
            }


            onlineClass[i] = new onlineClass(studentID, studentName, studentAge, studentGender, studentType,
                    programCode);


            System.out.println();


        }


        for (int i = 0; i < amountOfStudents; i++) {
```



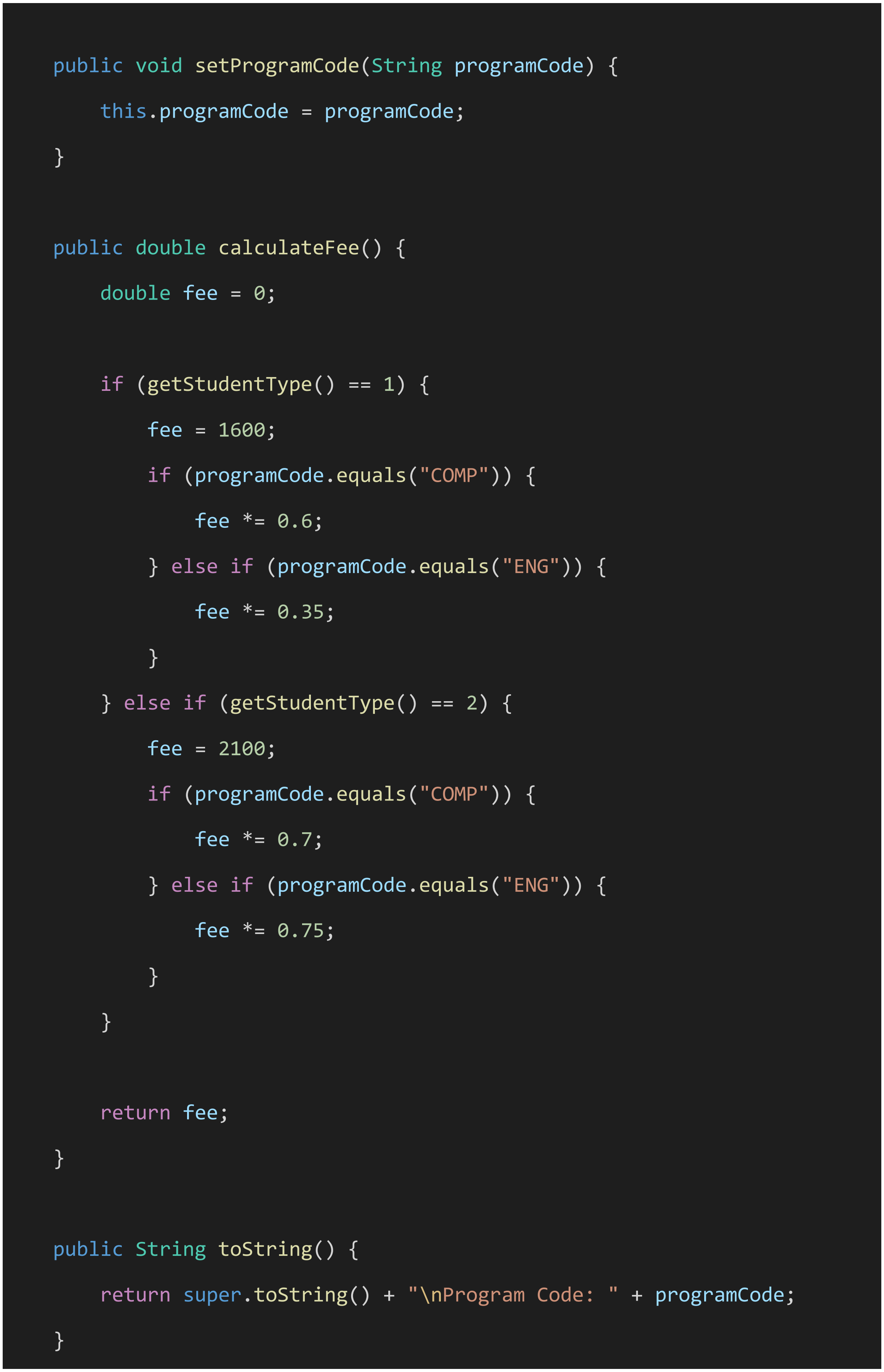
```
            if (onlineClass[i].getStudentID().equals("2017111222")) {
                onlineClass[i].setProgramCode("COMP");
                break;
            }
        }

        double totalFee = 0;
        for (int i = 0; i < amountOfStudents; i++) {
            switch (onlineClass[i].getProgramCode()) {
                case "ENG":
                    if (onlineClass[i].getStudentType() == 1) {
                        totalFee += onlineClass[i].calculateFee();
                    }
                    break;
                default:
                    break;
            }
        }

        System.out.printf("Total fee collected from engineering program
for undergraduate students: RM %.2f\n",
                totalFee);

        for (int i = 0; i < amountOfStudents; i++) {
            if (onlineClass[i].getStudentName().equals("Alexander")) {
                System.out.println(
                        "Program code enrolled by a student named
'Alexander': " + onlineClass[i].getProgramCode());
                break;
            }
        }


        intInput.close();

        strInput.close();


    }
}
```

SOURCE CODE 7.2 : courseRegistration Class

```
public abstract class courseRegistration {
    private String studentID;

    private String studentName;

    private int studentAge;

    private char studentGender;

    private int studentType;


    public courseRegistration(String studentID, String studentName, int
studentAge, char studentGender,

            int studentType) {

        this.studentID = studentID;

        this.studentName = studentName;

        this.studentAge = studentAge;

        this.studentGender = studentGender;

        this.studentType = studentType;

    }


    public String getStudentID() {

        return this.studentID;

    }

    public void setStudentID(String studentID) {

        this.studentID = studentID;

    }


    public String getStudentName() {

        return this.studentName;

    }


    public void setStudentName(String studentName) {

        this.studentName = studentName;

    }


    public int getStudentAge() {

        return this.studentAge;

    }


    public void setStudentAge(int studentAge) {

        this.studentAge = studentAge;

    }


    public char getStudentGender() {

        return this.studentGender;

    }


    public void setStudentGender(char studentGender) {

        this.studentGender = studentGender;

    }


    public int getStudentType() {

        return this.studentType;
    }

    public void setStudentType(int studentType) {
        this.studentType = studentType;
    }

    public abstract double calculateFee();

    public String toString() {
        return "Student ID: " + studentID + "\nStudent Name: " +
studentName + "\nStudent Age: " + studentAge
                + "\nGender: " + studentGender + "\nStudent Type: " +
studentType;
    }

}
```

SOURCE CODE 7.3 : onlineClass Class

```
public class onlineClass extends courseRegistration {
    private String programCode;

    public onlineClass(String studentID, String studentName, int
studentAge, char studentGender, int studentType,
            String programCode) {
        super(studentID, studentName, studentAge, studentGender,
studentType);
        this.programCode = programCode;
    }

    public String getProgramCode() {
        return this.programCode;
    }
```



```
public void setProgramCode(String programCode) {
    this.programCode = programCode;
}

public double calculateFee() {
    double fee = 0;

    if (getStudentType() == 1) {
        fee = 1600;
        if (programCode.equals("COMP")) {
            fee *= 0.6;
        } else if (programCode.equals("ENG")) {
            fee *= 0.35;
        }
    } else if (getStudentType() == 2) {
        fee = 2100;
        if (programCode.equals("COMP")) {
            fee *= 0.7;
        } else if (programCode.equals("ENG")) {
            fee *= 0.75;
        }
    }

    return fee;
}

public String toString() {
    return super.toString() + "\nProgram Code: " + programCode;
}
```

```


}
```