

if Statements With Object Oriented Programming

1. This version of the Pizza Parlor (beginning on page 2) incorporates all suggested enhancements from lessons 6 and 7. It also refines the instance variables and constructors to improve efficiency. This exercise asks you to find the exact output, so if you skipped any of the previous Pizza Parlor exercises, this is a good opportunity to familiarize yourself with those additions. This version uses the if statement many times and introduces the concept of passing objects as parameter to methods. A customer (using the new PizzaCustomer4 class) will be asked whether or not they have a pizza coupon – entitling them to a 10% discount. This new PizzaCustomer4 class allows you to create a customer object that tallies a customer's bill and tracks whether he/she has a coupon. This coupon information is used to reduce the customer's bill and the Pizza Parlor's revenue. Also included with this version is the method checkSupply() that checks the supply of cheese, dough, pepperoni and veggies. If any supply is low, more is added. A \$10 ordering fee is added which isn't the actual supply cost since this is already accounted for in the instance variable myCost.

Using the code after #2 below, find the output for the customer portion only – refer to the part of the PizzaTester4 class that is highlighted in yellow on pages 6 and 7. It may seem odd to run this program for only one customer; however, we will expand this to multiple customers using the while loop in lesson 9. The remaining output pertaining to the day's ending supplies, revenue, costs, etc. will be utilized as well when multiple customers are considered in lesson 9. The customer output begins as follows with input from the keyboard shown in italics:

```
Enter the customer's name: Joe

Does the customer have a coupon?

Type 1 for yes and 2 for no: 1

How many cheese pizzas does customer want?: 12

How many pepperoni pizzas does customer want?: 7

How many Veggie pizzas does customer want?: 7

How many Combo pizzas does customer want?: 7
```

2. Revise the Pizza Parlor classes in #1 to allow for a delivery charge. The customer will be charged \$3.00 that increases his/her bill and adds to the restaurant's revenue; however, you must add \$2.00 to the restaurant's cost for each delivery. You should add a boolean variable for delivery to the PizzaCustomer4 class and initialize it through its constructor.

```
// Use this code for question #1

import chn.util.*;
import apcslib.*; // for formatting

class PizzaParlor4
{
    // instance variables
    private String myName;
    private int myNumCheesePizzas = 0; // # of cheese pizzas
    private int myNumPeppPizzas = 0; // # of pepperonini pizzas
    private int myNumVegPizzas = 0; // # of veggie pizzas
    private int myNumComboPizzas = 0; // # of combo pizzas
    private int myCheeseSupply = 400; // ounces of cheese
    private int myDoughSupply = 400; // ounces of dough
    private int myPepperoniSupply = 200; // ounces of pepperoni
    private int myVeggieSupply = 200; // ounces of veggies
    private double myRevenue = 0.0; // dollars collected
    private double myOrigAcctBal; // dollars in bank account
    private double myCost = 0.0; // cost of running business

    // constructors

    // This constructor uses the advanced approach mentioned
    // in the comments for the PizzaParlor constructor on
    // page 2 of W.A.7.2
    PizzaParlor4(String name)
    {
        this(name, 1000);
    }

    PizzaParlor4(String name, double amount)
    {
        myName = name;
        myOrigAcctBal = amount;
    }

    // methods

    void totalCheese(int num, PizzaCustomer4 customer)
    // note that the parameter customer is an object
    {
        myNumCheesePizzas += num;
        double price = 8.00;
        if (customer.haveCoupon())
            price *= 0.9;
        myRevenue += num * price;
        customer.addToBill(num * price); // adds to customer's bill
        myCheeseSupply -= num * 12;
        myDoughSupply -= num * 11;
        checkSupply();
        myCost += num * 2;
    }
}
```

```

void totalPepperoni(int num, PizzaCustomer4 customer)
{
    myNumPeppPizzas += num;
    double price = 10.00;
    if (customer.haveCoupon())
        price *= 0.9;
    myRevenue += num * price;
    customer.addToBill(num * price);
    myCheeseSupply -= num * 8;
    myPepperoniSupply -= num * 6;
    myDoughSupply -= num * 11;
    checkSupply();
    myCost += num * 2.5;
}

void totalVeggie(int num, PizzaCustomer4 customer)
{
    myNumVegPizzas += num;
    double price = 11.00;
    if (customer.haveCoupon())
        price *= 0.9;
    myRevenue += num * price;
    customer.addToBill(num * price);
    myCheeseSupply -= num * 8;
    myVeggieSupply -= num * 12;
    myDoughSupply -= num * 11;
    checkSupply();
    myCost += num * 2.75;
}

void totalCombo(int num, PizzaCustomer4 customer)
{
    myNumComboPizzas += num;
    double price = 14.00;
    if (customer.haveCoupon())
        price *= 0.9;
    myRevenue += num * price;
    customer.addToBill(num * price);
    myCheeseSupply -= num * 8;
    myPepperoniSupply -= num * 5;
    myVeggieSupply -= num * 8;
    myDoughSupply -= num * 11;
    checkSupply();
    myCost += num * 3;
}

void checkSupply()
{
    if (myCheeseSupply < 100)
    {
        myCheeseSupply += 200;
        myCost += 10; //ordering fee
        System.out.println("\n200 ounces of cheese have been ordered.");
        System.out.println("Cheese Supply is now "
            + myCheeseSupply + " ounces.");
    }
    if (myDoughSupply < 100)
    {
        myDoughSupply += 200;

```

```

        myCost += 10;//ordering fee
        System.out.println("\n200 ounces of dough have been ordered.");
        System.out.println("Dough Supply is now " + myDoughSupply
            + " ounces.");
    }
    if (myPepperoniSupply < 50)
    {
        myPepperoniSupply += 100;
        myCost += 10;//ordering fee
        System.out.println("\n100 ounces of pepperoni have been ordered.");
        System.out.println("Pepperoni Supply is now " + myPepperoniSupply
            + " ounces.");
    }
    if (myVeggieSupply < 50)
    {
        myVeggieSupply += 100;
        myCost += 10;//ordering fee
        System.out.println("\n100 ounces of veggies have been ordered.");
        System.out.println("Veggie Supply is now " + myVeggieSupply
            + " ounces.");
    }
}

void calculateDailyCost()
{
    myCost += 200;//$200 is approx daily overhead cost
}

String getName()
{
    return myName;
}

int getNumCheesePizzas()
{
    return myNumCheesePizzas;
}

int getNumPepperoniPizzas()
{
    return myNumPeppPizzas;
}

int getNumVeggiePizzas()
{
    return myNumVegPizzas;
}

int getNumComboPizzas()
{
    return myNumComboPizzas;
}

int getCheeseSupply()
{
    return myCheeseSupply;
}

```

```

int getPepperoniSupply()
{
    return myPepperoniSupply;
}

int getVeggieSupply()
{
    return myVeggieSupply;
}

int getDoughSupply()
{
    return myDoughSupply;
}

double getRevenueTotal()
{
    return myRevenue;
}

double getDailyCost()
{
    return myCost;
}

double getBankAccountBalance()
{
    return myOrigAcctBal + myRevenue - myCost;
}
}

//----- End of PizzaParlor4 class -----//

```

```

class PizzaCustomer4
{
    private String myName;
    private double myBill = 0.0;
    private boolean myCoupon;

    PizzaCustomer4(String name, boolean coupon)
    {
        myName = name;
        myCoupon = coupon;
    }

    String getName()
    {
        return myName;
    }

    boolean haveCoupon()
    {
        return myCoupon;
    }

    void addToBill(double num)
    {

```

```

        myBill += num;
    }

    double getBill()
    {
        return myBill;
    }
}

//----- End of PizzaCustomer4 class -----//

```

```

public class PizzaTester4
{
    public static void main(String[] args)
    {
        ConsoleIO keyboard = new ConsoleIO ();
        String name, custName;
        double amount;
        int coupon, numCheese, numPepp, numVeg, numCombo;
        boolean haveCoupon;

        //Pizza Parlor Info
        System.out.print("Please enter your name: ");
        name = keyboard.readToken();
        System.out.print("\nEnter the beginning balance of your
            banking account: ");
        amount = keyboard.readDouble();

        PizzaParlor4 diner = new PizzaParlor4(name, amount);

        System.out.print("\nThe name of your restaurant is: ");
        System.out.println(diner.getName() + "'s Pizza Parlor");

        //Customer Info
        System.out.println("\n*****");
        System.out.print("\nEnter the customer's name: ");
        custName = keyboard.readToken();

        System.out.println("\nDoes the customer have a coupon?");
        System.out.print("\nType 1 for yes and 2 for no: ");
        coupon = keyboard.readInt();

        if (1 == coupon)
            haveCoupon = true;
        else
            haveCoupon = false;

        PizzaCustomer4 customer = new PizzaCustomer4(custName, haveCoupon);

        System.out.print("\nHow many cheese pizzas does customer want?: ");
        numCheese = keyboard.readInt();
        if (numCheese > 0)
            diner.totalCheese(numCheese, customer);
        // uses customer object as parameter

        System.out.print("\nHow many pepperoni pizzas does customer want?: ");
        numPepp = keyboard.readInt();
        if (numPepp > 0)

```

```

        diner.totalPepperoni(numPepp,customer);

    System.out.print("\nHow many Veggie pizzas does customer want?: ");
    numVeg = keyboard.readInt();
    if (numVeg > 0)
        diner.totalVeggie(numVeg,customer);

    System.out.print("\nHow many Combo pizzas does customer want?: ");
    numCombo = keyboard.readInt();
    if (numCombo > 0)
        diner.totalCombo(numCombo,customer);

    System.out.println();
    System.out.print(customer.getName() + "'s bill is $");
    System.out.println(Format.right(customer.getBill(),6,2));

    System.out.println("\n*****END OF DAY PROCESSING*****");
    System.out.println("\n# of Cheese ordered is "
        + diner.getNumCheesePizzas());
    System.out.println("# of Pepperoni ordered is "
        + diner.getNumPepperoniPizzas());
    System.out.println("# of Veggie ordered is "
        + diner.getNumVeggiePizzas());
    System.out.println("# of Combo ordered is "
        + diner.getNumComboPizzas());

    System.out.print("\nRemaining supply of cheese in ounces is: ");
    System.out.println(diner.getCheeseSupply());
    System.out.print("Remaining supply of pepperoni in ounces is: ");
    System.out.println(diner.getPepperoniSupply());
    System.out.print("Remaining supply of veggies in ounces is: ");
    System.out.println(diner.getVeggieSupply());
    System.out.print("Remaining supply of dough in ounces is: ");
    System.out.println(diner.getDoughSupply());

    System.out.print("\nRevenue is $");
    System.out.println(Format.right(diner.getRevenueTotal(),6,2));
    diner.calculateDailyCost();
    System.out.print("Your daily cost, including overhead, is $");
    System.out.println(Format.right(diner.getDailyCost(),6,2));
    System.out.print("\nYour profit for the day is $");
    System.out.println(Format.right(diner.getRevenueTotal()
        - diner.getDailyCost(),6,2));
    System.out.print("Bank balance is now $");
    System.out.println(Format.right(diner.getBankAccountBalance(),6,2));
}
}

```