一、 实验名称：

Selection Control Structures

二、 实验目的：

- Be able to construct boolean expressions to evaluate a given condition
- Be able to compare Strings
- Be able to use a flag
- Be able to construct if and if-else-if statements to perform a specific task
- Be able to construct a switch statement
- Be able to format numbers

三、 实验内容

Task #1 The if Statement, Comparing Strings, and Flags

Task #2 The if-else-if Statement

Task #3 Switch Statement

Task #4 Using a Flag as a Condition

Task #5 Formatting Numbers

四、 实验方法(原理、流程图)

1. by Intellij IDEA Community edition 2020.3
2. 如何实现实验内容的：

Task 1:

1.
Copy the file PizzaOrder.java (see code listing 3.1) from the Student CD or as directed by your instructor.
2.
Compile and run PizzaOrder.java. You will be able to make selections, but at this point, you will always get a Hand-tossed pizza at a base cost of $12.99 no matter what you select, but you will be able to choose toppings, and they should add intothe price correctly. You will also notice that the output does not look like money.
So we need to edit PizzaOrder.java to complete the program so that it works correctly.
3.
Construct a simple if statement. The condition will compare the String input by the user as his/her first name with the first names of the owners, Mike and Diane. Be sure that the comparison is not case sensitive.
4.
If the user has either first name, set the discount flag to true. This will not affect the price at this point yet.

Tsak 2:

1.

Write an if-else-if statement that lets the computer choose which statements to execute by the user input size (10, 12, 14, or 16). For each option, the cost needs to be set to the appropriate amount.

2.

The default else of the above if-else-if statement should print a statement that the user input was not one of the choices, so a 12 inch pizza will be made. It should also set the size to 12 and the cost to 12.99.

3.

Compile, debug, and run. You should now be able to get correct output for size and price (it will still have Hand-tossed crust, the output won't look like money, and no discount will be applied yet). Run your program multiple times ordering a 10, 12, 14, 16, and 17 inch pizza.

Task 3:

1.

Write a switch statement that compares the user's choice with the appropriate characters (make sure that both capital letters and small letters will work).

2.

Each case will assign the appropriate string indicating crust type to the crust variable.

3.

The default case will print a statement that the user input was not one of the choices, so a Hand-tossed crust will be made.

4.

Compile, debug, and run. You should now be able to get crust types other than Hand-tossed. Run your program multiple times to make sure all cases of the switch statement operate correctly.

Task 4:

1.

Write an if statement that uses the flag as the condition. Remember that the flag is a Boolean variable, therefore is true or false. It does not have to be compared to anything.

2.

The body of the if statement should contain two statements:

a)

A statement that prints a message indicating that the user is eligible for a $2.00 discount.

b)

A statement that reduces the variable cost by 2.

3. Compile, debug, and run. Test your program using the owners' names (both capitalized and not) as well as a different name. The discount should be correctly at this time.

Task 5:

1.

Add an import statement to use the DecimalFormat class as indicated above the class declaration.

2.

Create a DecimalFormat object that always shows 2 decimal places.

3.

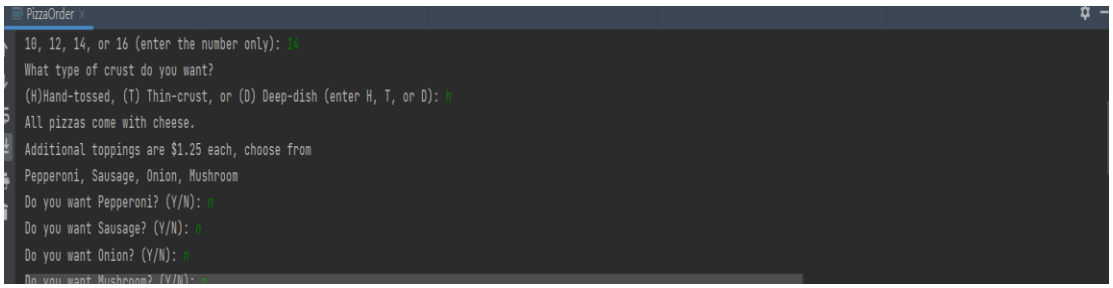
Edit the appropriate lines in the main method so that any monetary output has 2 decimal places.

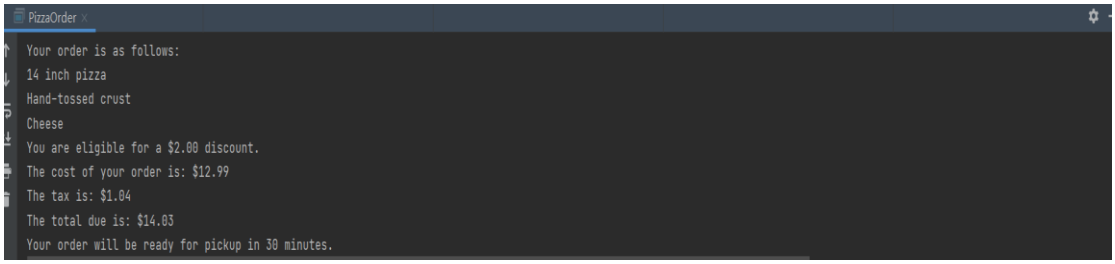
4.

Compile, debug, and run. Your output should be completely correct at this time, and numeric output should look like money.

五、 实验结论

The experimental requirements were successfully completed.





六、 实验体会和收获

I successfully applied the knowledge learned in the classroom to

practice.The conditional sentence is successfully implemented.Through this mission, I deeply feel the beauty of Java.At the same time, I also realized my own shortcomings

七、 程序代码

```
/**
 This program allows the user to order a pizza
 */
import java.util.Scanner;
import java.text.DecimalFormat;
public class PizzaOrder
{
    public static void main (String [] args)
    {   DecimalFormat decimalFormat=new DecimalFormat("#.##");
        //TASK #5 Create a DecimalFormat object with 2 decimal places

        //Create a Scanner object to read input
        Scanner keyboard = new Scanner (System.in);

        String firstName; //user's first name
        boolean discount = false; //flag, true if user is eligible for
discount
        int inches; //size of the pizza
        char crustType; //code for type of crust
        String crust = "Hand-tossed"; //name of crust
        double cost = 12.99; //cost of the pizza
        final double TAX_RATE = .08; //sales tax rate
        double tax; //amount of tax
        char choice; //user's choice
        String input; //user input
```

```
        String toppings = "Cheese "; //list of toppings
        int numberOfToppings = 0; //number of toppings

        //prompt user and get first name
        System.out.println("Welcome to Mike and Diane's Pizza");
        System.out.print("Enter your first name: ");
        firstName = keyboard.nextLine();
        String name1 = "Mike";
        String name2 = "Diane";

if(name1.equalsIgnoreCase(firstName)||name2.equalsIgnoreCase(firstNa
me))
        {
            discount=true;

        }

        //determine if user is eligible for discount by
        //having the same first name as one of the owners
        //ADD LINES HERE FOR TASK #1

        //prompt user and get pizza size choice
        System.out.println("Pizza Size (inches) Cost");
        System.out.println(" 10 $10.99");
        System.out.println(" 12 $12.99");
        System.out.println(" 14 $14.99");
        System.out.println(" 16 $16.99");
        System.out.println("What size pizza would you like?");
        System.out.print("10, 12, 14, or 16 (enter the number only): ");
```

```
        inches = keyboard.nextInt();
        if(inches==10)
        {
            cost=10.99;
        }
        else
            {
                if(inches==12)
                {
                    cost=12.99;
                }
                else {
                    if (inches == 14)
                    {
                        cost = 14.99;
                    }
                    else
                        {
                            if(inches==16)
                            {
                                cost=16.99;
                            }
                            else
                                {
                                    System.out.println("Sorry,we
don't have this size.So a 12 inche pizza will be given.");
                                    cost=12.99;
                                }
                        }
```

```
            }
        }

        //set price and size of pizza ordered
        //ADD LINES HERE FOR TASK #2

        //consume the remaining newline character
        keyboard.nextLine();

        //prompt user and get crust choice
        System.out.println("What type of crust do you want? ");
        System.out.print("(H)Hand-tossed, (T) Thin-crust, or " +
                "(D) Deep-dish (enter H, T, or D): ");
        input = keyboard.nextLine();
        crustType = input.charAt(0);
        switch (crustType)
        {
            case'H': case'h':crust="Hand-tossed";
                             break;
            case'T': case't':crust="Thin-crust";
                             break;
            case'D': case'd':crust="Deep-dish";
                             break;
            default:
                System.out.println( "Your input was not one of the
choices, so a Hand-tossed crust will be made");
                crust="Hand-tossed";
        }
```

```
        //set user's crust choice on pizza ordered
        //ADD LINES FOR TASK #3

        //prompt user and get topping choices one at a time

        System.out.println("All pizzas come with cheese.");
        System.out.println("Additional toppings are $1.25 each," +"
choose from");
        System.out.println("Pepperoni, Sausage, Onion, Mushroom");

        //if topping is desired,
        //add to topping list and number of toppings
        System.out.print("Do you want Pepperoni? (Y/N): ");
        input = keyboard.nextLine();
        choice = input.charAt(0);
        if (choice == 'Y' || choice == 'y')
        {
            numberOfToppings += 1;
            toppings = toppings + "Pepperoni ";
        }
        System.out.print("Do you want Sausage? (Y/N): ");
        input = keyboard.nextLine();
        choice = input.charAt(0);
        if (choice == 'Y' || choice == 'y')
        {
            numberOfToppings += 1;
            toppings = toppings + "Sausage ";
        }
        System.out.print("Do you want Onion? (Y/N): ");
```

```
input = keyboard.nextLine();
choice = input.charAt(0);
if (choice == 'Y' || choice == 'y')
{
    numberOfToppings += 1;
    toppings = toppings + "Onion ";
}
System.out.print("Do you want Mushroom? (Y/N): ");
input = keyboard.nextLine();
choice = input.charAt(0);
if (choice == 'Y' || choice == 'y')
{
    numberOfToppings += 1;
    toppings = toppings + "Mushroom ";
}
//add additional toppings cost to cost of pizza
cost = cost + (1.25*numberOfToppings);

//display order confirmation
System.out.println();
System.out.println("Your order is as follows: ");
System.out.println(inches + " inch pizza");
System.out.println(crust + " crust");
System.out.println(toppings);

//apply discount if user is eligible
if(discount)
{
    System.out.println("You  are  eligible  for  a  $2.00
```

```
discount.");
            cost-=2;

        }
        //ADD LINES FOR TASK #4 HERE

        //EDIT PROGRAM FOR TASK #5
        //SO ALL MONEY OUTPUT APPEARS WITH 2 DECIMAL PLACES
        System.out.println("The cost of your order is: $"
+decimalFormat.format(cost));
        //calculate and display tax and total cost
        tax = cost * TAX_RATE;
        System.out.println("The tax is: $" +
decimalFormat.format(tax));
        System.out.println("The total due is: $" +
decimalFormat.format(tax+cost));

        System.out.println("Your order will be ready for pickup in 30
minutes.");
    }
}
```