Wright College + Chapter 5

Using Methods( ) in Java: Using If statement and Logical Operators (And &&, Or || and Not !)

CIS 144 Java Programming Language– Introduction to Computer Programming

"Hands-On" Mastering Computer Logic, Design and Programming Using Java Language

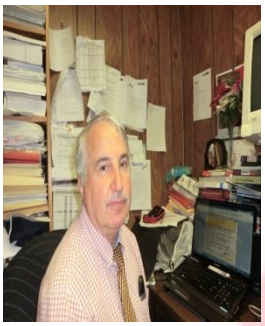
Written By:

OGAR HAJI

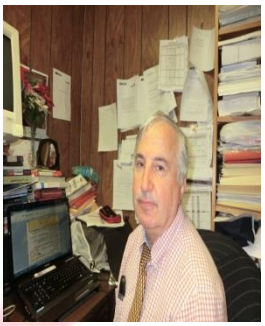
MS Computer Science

DePaul University ✚ Chicago, Illinois

Date Published: February 19, 2021

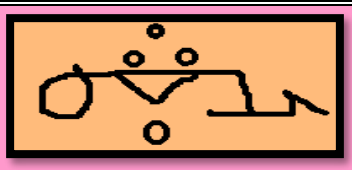


Computer Text Books Published by the Author: Ogar Haji

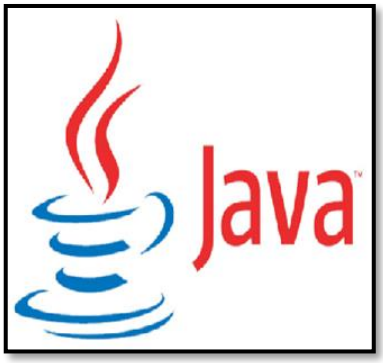


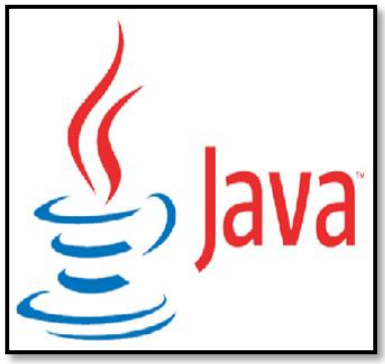
The Following is a List of Computer Text Books Published by the Author: Ogar Haji. He has an MS Degree in Computer Science from DePaul University, Chicago, Illinois - USA. Mr. Ogar Haji has over 30 Years of teaching experience at: The College of Office Technology, Oakton College, Washington College, Truman College, Wright College, Triton College, ITT Technical Institute, Phoenix University and East+West University in Chicago, Illinois.

1) **"Hands-On" Mastering Microsoft Windows 7 and Vista**
2) **"Hands-On" Mastering Microsoft Excel 2010 and 2007**
3) **"Hands-On" Mastering Microsoft Word 2010 and 2007**
4) **"Hands-On" Mastering Microsoft Access 2010 and 2007**
5) **"Hands-On" Mastering Microsoft PowerPoint 2010 & 2007**
6) **"Hands-On" Mastering Microsoft Publisher 2010**
7) **"Hands-On" Mastering MS Visual Basic .Net Language**
8) **"Hands-On" Mastering C# Programming Language**
9) **"Hands-On" Mastering Html5 and CSS3 Web Page Design**
10) **"Hands-On" Mastering JavaScript Programming Language**
11) **"Hands-On" Mastering Ruby Programming Language**
12) **"Hands-On" Mastering Python Programming Language**
13) **"Hands-On" Mastering QBasic Programming Language**
14) **"Hands-On" Mastering DOS (Disk Operating System)**
15) **"Hands-On" Mastering Java Programming Language**



Ogar Haji (Computer Instructor)
Harry S. Truman College
1145 West Wilson Avenue
Chicago, Illinois 60640
USA





Computer Labs Rules

1- **No Drinks, Food, Headphones** allowed in Computer labs. And Please **Turn Off the Cell Phones**.

2- When **Lecturing** is in progress, you are Not allowed to work on the computer. Please **Pay Attention** and **Take Notes**.

3- **Attendance and Punctuality** are very **important**. If you are absent, it is your responsibility to make up for the missing work and assignments. **Attendance will be taken daily.**

4- Students should have a **USB Flash Drive** and **Save Projects** to it.

5- **Practice makes perfect**. Please keep practicing the new features or steps over and over again until the instructor tells you to stop.

6- You have to **Concentrate** on what you are doing. **Talking is Not Allowed** in the computer Lab.

7- Please **Study** the Lessons in your **Java Handout and Text Book Daily** and **review your notes before class**. **There will be a Quiz Once a Week**.

8- Please **Check Mark ☑ the Lessons** in the Handout that you **have completed.**

9- You **must do All Java works**, **Assignments and Tests** located at the End of each Chapter on Time.

CIS 144 Java Programming

Instructor:

Ogar Haji

Chapter 5

Using Methods in Java: Using If statement and Logical Operators (And &&, Or || and Not !)

You will learn the following in Chapter 5:

- **Making Decision using Single if statement**
- **Using if --else statement to check if a condition is true or false.**
- **Calculate the Average of 3 Tests and using if statement t check if student is "Passing" or "Failing"**
- **Using if – else statement to find the Final Grade for the Average**
- **Calculate the Average of 3 Tests and Using if statement**
- **Using if statement to check if a condition is true or false**
- **Calculate Overtime of GrossPay exercise**
- **Using the Conditional And Operator &&**
- **Using the Conditional Or Operator ||**
- **Using the Switch …. Case statement**
- **Using the Ternary Conditional Operator (? :)**
- **Using the Not ! operator to Negate the Result (Opposite)**
- **Do Chapter 5 Homework #5**
- **Do Lab Assignment 5 + Hotel Room Charges Calculator Project**

Flowchart Symbols

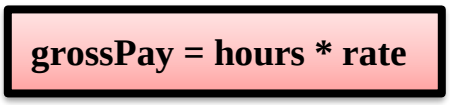
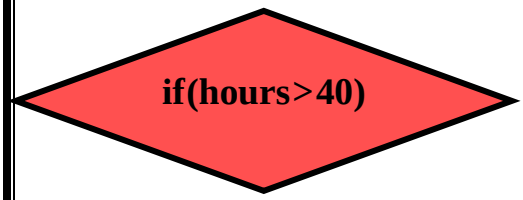
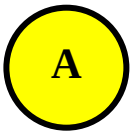
+++ Review +++

Lesson 110 Review : What are the Flowchart Symbols used in Java Language?

You should always **draw a Flowchart** when you Design, Code and Solve a problem in Java language.

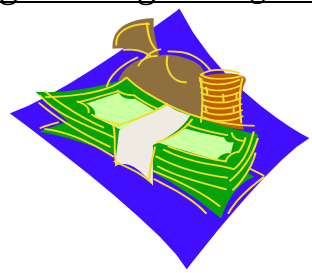
Before you Code a program in Java Language, you have to **Draw a Flowchart** to solve the problem of the program you want to code.

The following symbols are used with Java Programming Language:

Symbol	Symbol Name	Usage
	**Oval (Beginning and Terminal) symbol**	Use **Oval (Beginning and Terminal) Symbol** at the Beginning of the Flowchart and at the End of the Flowchart. Use with Start and End statements.
	**Parallelogram (Input/Output)** Symbol	Use **Parallelogram (Input /Output)** or **I/O** symbol to Input Data, Read Input or Print Output
	**Rectangle** Symbol	Use the **Rectangle** Symbol for Calculating, Assigning Values
	**FlowLine** Symbol	Use **FlowLine** Symbols to show the Flow or Sequence of the flowchart.
	**Diamond (Decision)** Symbol	Use **Diamond (Decision)** Symbol with the If or Select statements when deciding if Hours is > 40. The Result will be either True or False.
	**Connector** Symbol	Use **Connector** Symbol to Connect the Flowchart rather than draw a long Arrow. Use 
	**Function or Method (Predefined Process)** Symbol.	Use **Function** or **Method (Predefined Process)** Symbol to call another Function or Method that contains coding statements.

Calculate Gross Pay of Employees Project

+++ Review +++



Lesson 111 Ex : How to Calculate Gross Pay of Employees Project?

Do the following 12 Must Steps to Design, Code and Solve a project using Java Language.

Do Steps 1 thru 7 in your Note Book or on Paper.

Step 1) Purpose of the Program: State what Program will do: (5 Points)

a) This Program will calculate Gross Pay of Employees.
b) It will ask the User to Enter Employee's Full Name:
c) It will ask the User to Enter Number of Hours Worked and
d) It will ask the User to Enter Hourly Rate.
e) The program will then calculate Gross Pay.

Gross Pay = Hours * Rate

f) Display the Gross Pay

Step 2) Input: You should know how the Input looks like: (5 Points)

Enter Employee's Full Name: Ogar Haji
Enter Hours Worked: 40
Enter Hourly Rate: 10

Step 3) Processing and Calculation: The program will process each record and Calculate Gross Pay: (5 Points)

Gross Pay = Hours * Rate

Step 4) Output: You should know how output should look like: (5 Points)

********** Calculate Gross Pay Project **********

The Employee Ogar Haji Gross Pay is = $ 400

********** End of Program **********

Step 5) Flowchart: Draw a Flowchart for Gross Pay program.(5 Points)

Step 6) PseudoCode: print a PseudoCode for the Program.(5 Points)

1) Declare the variables to be used in the program

2) print to Console "The Title or Heading of the program "

3) Prompt the user "Enter Employee's Full Name: "

4) Read from Console fullName and store the String in a variable

5) Prompt the user "Enter Hours Worked: "

6) Read from console hours worked and store in a String variable

7) Convert String hours variable to integer value

8) Prompt the user "Enter Hourly Rate: "

9) Read from console the rate and store in a String variable

10) Convert String rate variable to double value

11) Calculate Gross Pay = Hours * Rate

12) Print out to Console "The Employee Gross Pay is = $", gross_pay

13) Print out to Console "***** End of Program *******"**

Step 7) Code the Program in Java by referencing the Flowchart or Pseudocode you designed above and Save it as CalculateGrossPay to USB**.**

a) Type the following Java code in Eclipse IDE.

Code for the first part of "CalculateGrossPay" project follows:

```
package calculategrosspay;

// import the Java Scanner class needed to Read and Write
import java.util.Scanner;

/*
 ************************************************************
   Purpose of the Project:
   a) This Interactive Project will prompt the user to enter
      his/her (First Name, Last Name, and Hours Worked and Rate)
      then it will read the text entered and store it
      in its variables. Then it Calculates the Gross Pay.
   b) Project Name: CalculateGrossPay
   c) Date: Saturday, December 28, 2016
   d) Programmer: Instructor – Ogar Haji
 ************************************************************
*/
```

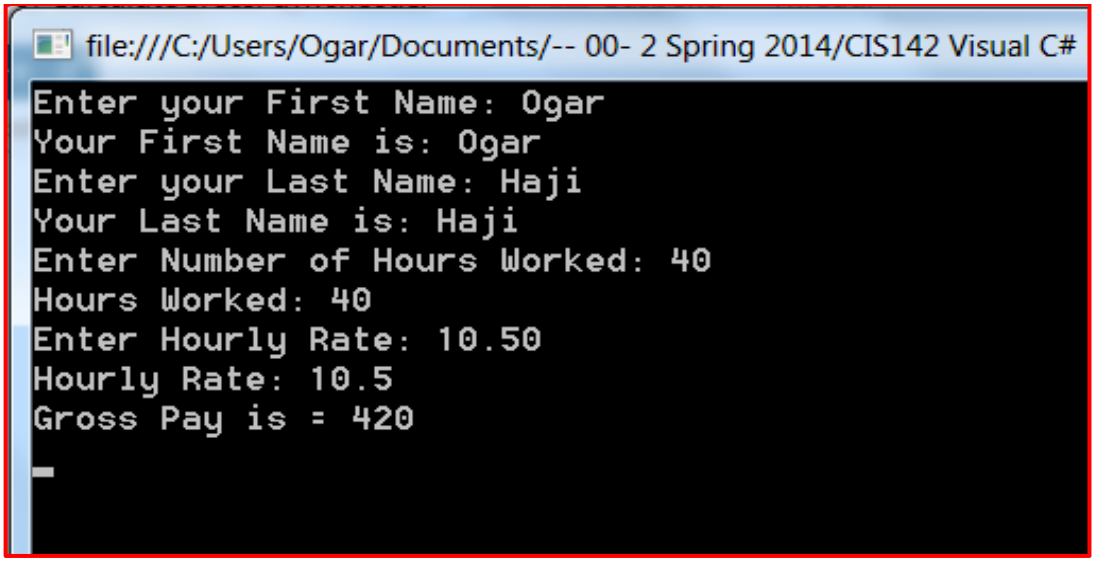
```
public class CalculateGrossPay {

public static void main(String[] args) {
    // 1) Declare the Local variables to be used in the project
    String firstName;
    String lastName;
    int hours = 0;
    double rate = 0.0;
    double grossPay = 0.0;

    // 2) Instantiate an object 'input' from the Scanner class
    Scanner input = new Scanner(System.in);

    // 3) Prompt the User to Enter his/her First Name
    System.out.print("Enter your First Name:\007 ");

    // 4) Read First Name from keyboard and store it in variable firstName
    firstName = input.nextLine();

    // 5) Print First Name to the output screen
    System.out.println("Your First Name is: " + firstName);

    // 6) Prompt the User to Enter his/her Last Name
    System.out.print("Enter your Last Name: \007");

    // 7) Read Last Name from keyboard and store it in variable lastName
    lastName = input.nextLine();

    // 8) Print out the Last Name to the console
    System.out.println("Your Last Name is: " + lastName);

    // 9) Prompt the User to Enter Hours Worked
    System.out.print("Enter Number of Hours Worked: \007");

    // 10) Read Hours Worked from keyboard and Store it in variable hours
    hours = input.nextInt();

    // 11) print Hours Worked to the output
    System.out.println("Hours Worked: " + hours);

    // 12) Prompt the User to Enter Hourly Rate
    System.out.print("Enter Hourly Rate: ");
```

```
    // 13) Read Hourly Rate and Store it in a variable
    rate = input.nextDouble();

    // 14) print Hourly Rate to the output
    System.out.println("Hourly Rate: " + rate);

    // 15) Calculate Gross Pay
    grossPay = hours * rate;

    // 16) print grossPay to the output screen
    System.out.printf ("Gross Pay is = $%,.2f %n" , grossPay);
  }
}
```

Step 8) Click **Run Project**  button to Start Running the program

The following output appears on the Left side of the screen with the Input you entered and the correct calculated GrossPay $400.

If any Syntax Errors Found Do Next Step 9:



Step 9) Debug the Program: Debug or Correct any Syntax Errors until you have a clean Compiled program. (5 Points) (Clean compiled program means No Errors in the program).

Step 10) Test the Program: Test the Program with Test Data. (5 Points)

Repeat Step 10) Test the program many Times and Test the Program again and again until All conditions are tested:

```
file:///C:/Users/Ogar/Documents/-- 00- 2 Spring 2014/CIS142 Visual C#
Enter your First Name: Mary
Your First Name is: Mary
Enter your Last Name: Smith
Your Last Name is: Smith
Enter Number of Hours Worked: 30
Hours Worked: 30
Enter Hourly Rate: 11.23
Hourly Rate: 11.23
Gross Pay is = 336.9
Mary Smith 30 11.23 336.9
Your Gross Pay is = $336.90
```

Step 11) Documentation (5 Points): You have to add more comments to the Program (like Comments about the Purpose of the Program, Your Name and the Date the Program was written.)

```
##################################################################
# Purpose of the Program:
#   a) This Program will calculate Gross Pay.
#   b) It will ask the User to Enter Employee's Full Name:
#   c) It will ask the User to Enter Number of Hours Worked
#   d) It will ask the User to Enter Hourly Rate.
#   e) The program will calculate Gross Pay.
#       Gross Pay = Hours * Rate
#   f) Display Gross Pay
##################################################################
```

Step 12) Print a Copy of Java Code along with screen printout of the Running program. Submit to your Instructor the Print Copy and the screen Printout (Snaps) along with the following: (Which you did on Paper)

Copy the Java Code and the result of the program and Paste it in Microsoft Word program:

1) Purpose of the Program.
2) Input: how the Input looks like
3) Processing and Calculations
4) Output: how the Output will look like
5) Flowchart 6) Pseudocode

7) Java Code and
8) Print out copy of Java code and Output after running the program.
Submit the Programs on Time.
Remember Points will be deducted (20%) for Programs submitted Late.

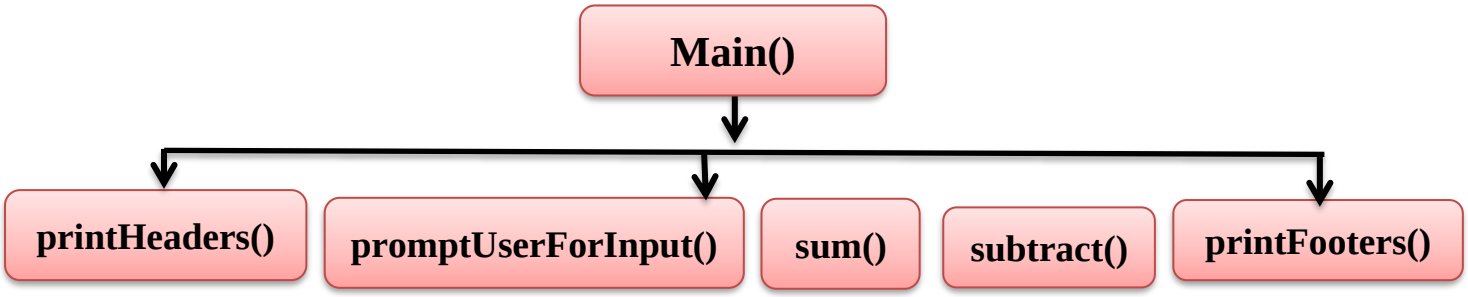
Important Note:
1) Do Steps 1 thru 7 on Paper.
2) Then Get into NetBeans IDE Code Editor
3) Type the Java code.
4) Save All the Files
5) Run the Program and Test it with Test Data for All Conditions.

Modify the Project and add the following to print to the Console using Format Specifiers (%s, %d, %,.2f, %n) with printf() method.

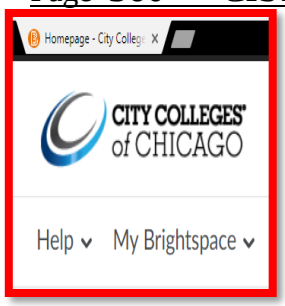
To print the Results using Format Specifiers: %s %d %f %.2f %n

```
// 19) Using Format Specifiers (%s, %d, %f, %n) to print out the output
System.out.printf ("%s      %s      %d      %f      $%,.2f ",
                                  firstName, lastName, hours, rate, grossPay);

// 20) Print the Formatted Gross Pay to output screen
System.out.printf("Gross Pay is = $%,.2f %n" , grossPay);
```

When Modifying a Project Do Only 1 Modification at a Time

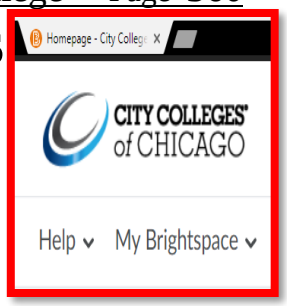


Please, Read, Study and Practice the Lessons in the Java Handout



Upload Your Weekly Assignments To Brightspace Correct Weekly Assignments Folder

+++ Review +++



Lesson 112 : How to Upload Your Weekly Assignments to Brightspace Correct Weekly Assignments Folder?

You have to Upload your Weekly Assignments and Homework to Brightspace correct Weekly Assignments Folder as following:

1) Copy the Java Code from NetBeans to Word document:

1. Copy the **Java Code from** the **NetBeans IDE** and **Paste it into** the **Microsoft Word Document.**
2. In NetBeans IDE, press **Ctrl+A (select All)** to **select All** the **Java code**.
3. Press **Ctrl+C (Copy)** to **Copy** the **selected Java code** into **computer memory RAM.**

2) Paste the Java Code into Microsoft Word:

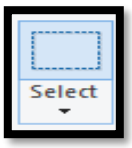
1. Get into **Microsoft Word document then** press **Ctrl+V (paste) to Paste** the **copied Java code** from **memory** into **Word document.**
2. Press **Ctrl+Home (go to the Top of Document)** and **type** your **Full Name** at the **top of document followed by** the **Java File Name** in **size 20 and bold.**

3) Print the Screen of the Output of Java NetBeans:

1. Run the **Java project** and **make sure the program** is **running** with **correct output.**
2. Press **PrintScreen button** 

to **capture** the **output screen shot.**

4) Paste the Print Screen of Java output into Paint program:

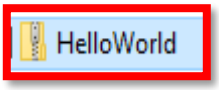
1. Get into **Paint program** and press **Ctrl+V (paste) to Paste** the **screen shot** in **Paint** program**.**
2. Inside the **Paint program,** Click **Select** 

icon and then **Select only** the **Output** of the **Java project.**
3. Press **Ctrl+C (Copy)** to **Copy** the **selected output image.**

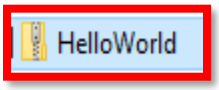
5) Get back into Microsoft Word program:

1. Go back to **Word Document,** press **Ctrl+End (End of Document)** to **go to End of document.**
2. In the **Word document,** press **Ctrl+V (Paste)** to **paste** the **Java output** there.
3. Save the **Word Document** as the **Name of the Java project** and in this **example (Save File as HelloWorld project)**

6) To Compress or Zip the Java project:

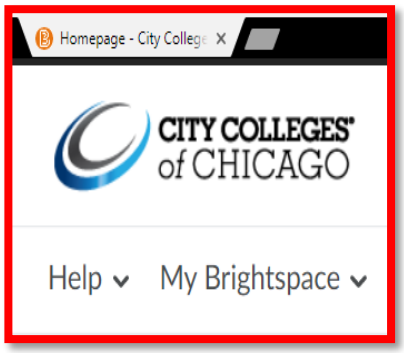


1. Right-Click on the **Java project (HelloWorld)** that is **saved on your computer**.
2. Point to **Send to,** then **click on Compressed (Zipped) Folder** and you will have **another File** which is Compressed or Zipped.



7) To Upload the 2 Files to Brightspace:

1. Log on Brightspace with your **User Name** and **Password**
2. Click on your course **CIS 144 Java** to **Select it**.
3. Click on **Assignments** ▾
4. Click on **Assignments**
5. Click on **Week 04 Assignments Folder**
6. Click on **"Add a File"** button
7. Click on **"My Computer"**
8. Click on **Upload** button



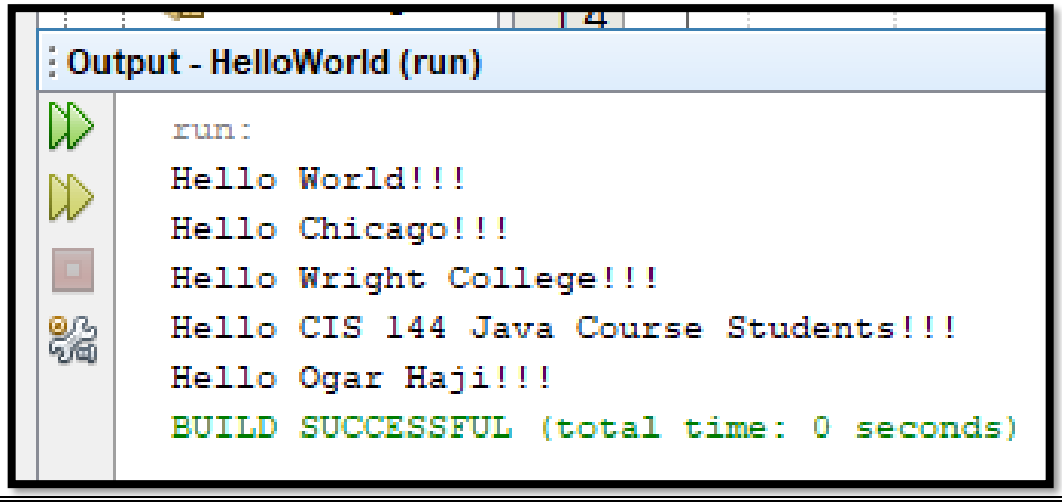
9. Go to the **location** where you **saved the Java project "HelloWorld".**
10. Click on the **File** or **Folder (HelloWorld)**
11. Click on **Add** button and the **File** or **Folder** will be **added** to the **Week 01 Assignments Folder.**

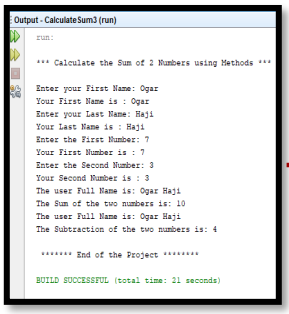
Note: Always **Upload** to **Brightspace 2 Files** of **same Java Project:**
1) The **Microsoft Word Document** of the **Java Project Code along with the Java Output Screen shots.**
2) The **Compressed** or **Zipped File** or **Folder** of **Java Project**.

The Java project "HelloWorld" code in Word Document along with the Output Screen Shots appear as following:

Ogar Haji (Your Full Name)
CIS 144 Java
Project Name: HelloWorld

```
/*
Project Name: HelloWorld
This Java project will print the message "Hello World" to screen
Programmer: Instructor + Ogar Haji (Type your Full Name)
Date:   June 01, 2017
*/

package helloworld;

public class HelloWorld {
   public static void main(String[] args) {
      // This project will print the Literal String "Hello World" to output screen

      System.out.println ("Hello World!!!");
      System.out.println ("Hello Chicago!!!");
      System.out.println ("Hello Wright College!!!");
      System.out.println ("Hello CIS 144 Java Course Students!!!");
      System.out.println ("Hello Ogar Haji!!!");
   }
}
```

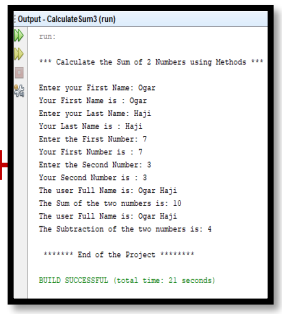




Using Methods To Find the Sum of 2 Numbers

++(Do Lab Exercise 1) 100 Points++

Do Lab Exercise 1



Lesson 113 Ex : Using Methods to Find the Sum of 2 Numbers in Java ?

Problem or Project: Design and Code in Java Language the project to Find the Sum of 2 Numbers.

Do the 12 Must Steps to Design, Code and Solve a project using Java Language.

This Java project will find the Sum of 2 Numbers.
The project will prompt the user to enter First Name, Last Name, First Number and Second Number. Then it will print out your Full Name and call the sum() method to Sum the 2 Integer Numbers and print out the Sum result.

1) You must import the classes needed to work in this Java project. The Scanner Class is needed to Read the Input from the keyboard.

```
import java.util.Scanner;
```

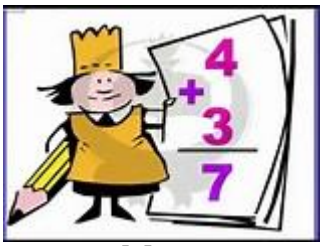
2) Create a Global 'input' object for Scanner class. A Global static Scanner means you declare only once it can be accessed in all the other methods.

```
public static Scanner input = new Scanner(System.in);
```

3) Call **promptUserForInput()** methods to prompt user for input of the 2 integers.

```
promptUserForInput();
```

4) Define and Code **promptUserForInput()** method




```
public static void promptUserForInput() {
    // Prompt the user to Enter the First Number
    System.out.print("Enter the First Number: ");
   // Read what user typed on keyboard & store in First Number variable
    firstNumber = input.nextInt();
  // Prompt the user to Enter the Second Number
   System.out.print("Enter the Second Number: ");
```

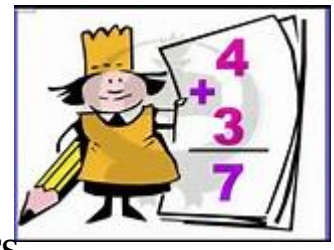
// Read what user typed on keyboard & store in First Number variable

secondNumber = input.nextInt();

5) Call the **calculateSum()** method to find the sum of the 2 numbers

calculateSum();

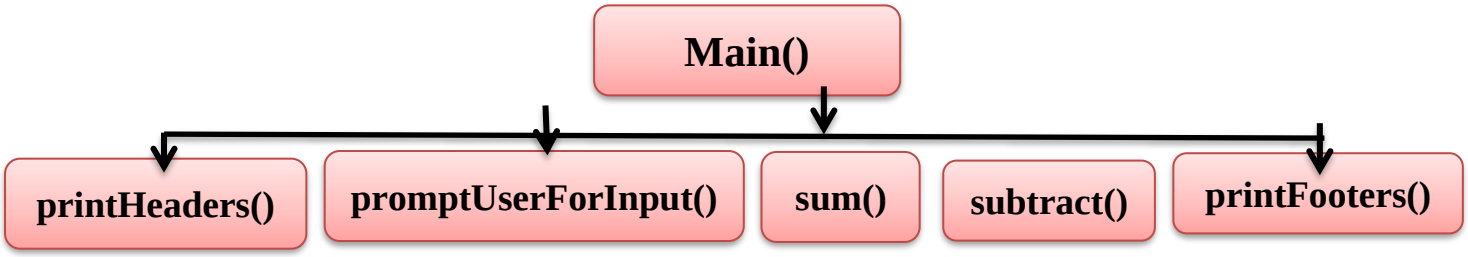
6) Define and Code **sum()** method to sum the numbers




```
public static void calculateSum() {
    // Find the Sum of the two numbers
    result = firstNumber + secondNumber;
    // Print out the Sum of the First and Second Numbers
    System.out.println("The Sum of the two numbers is: " + result);
}
```

The Input and Output of the project will look like the following:

```
Output - CalculateSum3 (run)
run:

*** Calculate the Sum of 2 Numbers using Methods ***

Enter your First Name: Ogar
Your First Name is : Ogar
Enter your Last Name: Haji
Your Last Name is : Haji
Enter the First Number: 7
Your First Number is : 7
Enter the Second Number: 3
Your Second Number is : 3
The user Full Name is: Ogar Haji
The Sum of the two numbers is: 10
The user Full Name is: Ogar Haji
The Subtraction of the two numbers is: 4

 ******* End of the Project ********

BUILD SUCCESSFUL (total time: 21 seconds)
```



1) Launch **NetBeans IDE** program **Do Lab Exercise**

2) Type following **Java Lab exercise, Save** it as **CalculateSumMethods.**

```
package calcuatesummethods;
// Import the class Scanner needed to read user input
import java.util.Scanner;
public class CalcuateSumMethods {
   //1) Create a Global 'input' object for Scanner class
   public static Scanner input = new Scanner(System.in);
   // 2) Declare Global static variables to be used by all methods
   public static String firstName;
   public static String lastName;
   public static int firstNumber, secondNumber;
   public static int result;
  public static void main (String[] args) {
      //1) Call printHeadings() methods to print the headings
      printHeadings();
      //2) Call promptUserForInput() methods to prompt user for input
      promptUserForInput();
     // 3) Call the calculateSum() method to find sum of the numbers
     calculateSum();
     // 4) Call the subtract() method to subtract the numbers
     calculateSubtract();
      //5) Call printFootings() method to print the footers
      printFootings();
  } // End of main() method
```

```
// 1) Define and Code printHeadings() method
public static void printHeadings() {
    System.out.println("\n Calculate Sum of 2 Numbers using Methods \n");
}

// 2) Define and Code promptUserForInput() method
public static void promptUserForInput() {
   //3) Prompt the user to Enter his/her First Name
    System.out.print("Enter your First Name: ");

    //4) Read what user typed on keyboard & store in First Name variable
    firstName = input.nextLine();

    //5) Echo back what the user entered
    System.out.println("Your First Name is : " + firstName);

    //6) Prompt the user to Enter his/her First Name
    System.out.print("Enter your Last Name: ");

     //7) Read what user typed on keyboard & store in Last Name variable
     lastName = input.nextLine();

    //8) Echo back what the user entered
    System.out.println("Your Last Name is : " + lastName);

    //9) Prompt the user to Enter the First Number
    System.out.print("Enter the First Number: ");

   //10) Read what user typed on keyboard & store in First Number variable
    firstNumber = input.nextInt();

    //11) Echo back what the user entered
    System.out.println("Your First Number is : " + firstNumber);

   //12) Prompt the user to Enter the Second Number
   System.out.print("Enter the Second Number: ");
```

```
Enter your First Name: Ogar
Your First Name is : Ogar
Enter your Last Name: Haji
Your Last Name is : Haji
```

```
Enter your First Name: Ogar
Your First Name is : Ogar
Enter your Last Name: Haji
Your Last Name is : Haji
```

```
Enter the First Number: 7
Your First Number is : 7
Enter the Second Number: 3
Your Second Number is : 3
```

```
        //13) Read what user typed on keyboard & store in First Number variable
        secondNumber = input.nextInt();
        //14) Echo back what the user entered
      System.out.println("Your Second Number is : " + secondNumber);
    }
// 3) Define and Code sum() method to sum the numbers
    public static void calculateSum() {
        //15) Find the Sum of the two numbers
        result = firstNumber + secondNumber;
        //16) Print out First and Last name
      System.out.println("The user Full Name is: " + firstName + " " +
                                                    lastName);
        //17) Print out the Sum of the First and Second Numbers
        System.out.println("The Sum of the two numbers is: " + result);
    }
// 4) Define and Code the subtract() method
    public static void calculateSubtract() {
        //15) Find the Subtraction of the two numbers
        result = firstNumber - secondNumber;
        //16) Print out First and Last name (Full Name)
      System.out.println ("The user Full Name is: " + firstName + " " + lastName);
        //17) Print out the Sum of the First and Second Numbers
        System.out.println ("The Subtraction of the two numbers is: " + result);
    }
// 5) Define and Code printFootings() method
    public static void printFootings() {
        System.out.println ("\n This is Footings\n");
    }
}
```

```
The user Full Name is: Ogar Haji
The Sum of the two numbers is: 10
```

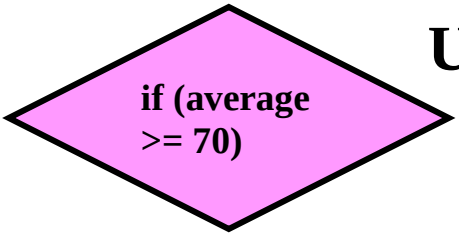
```
The user Full Name is: Ogar Haji
The Subtraction of the two numbers is: 4
```

The Input and Output of the Java project will look like the following:

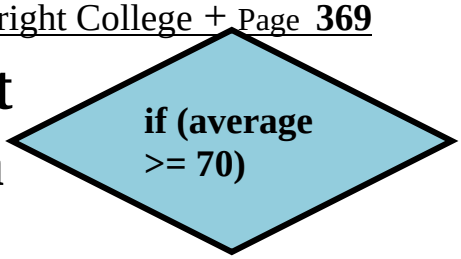

```
Output - CalculateSum3 (run)
run:

*** Calculate the Sum of 2 Numbers using Methods ***

Enter your First Name: Ogar
Your First Name is : Ogar
Enter your Last Name: Haji
Your Last Name is : Haji
Enter the First Number: 7
Your First Number is : 7
Enter the Second Number: 3
Your Second Number is : 3
The user Full Name is: Ogar Haji
The Sum of the two numbers is: 10
The user Full Name is: Ogar Haji
The Subtraction of the two numbers is: 4

 ******* End of the Project ********

BUILD SUCCESSFUL (total time: 21 seconds)
```

Modify the project to do the following:

1) **Add calculateSubtract() method** to **Subtract** the **2 numbers.**
2) **Add calculateProduct() method** to **Multiply** the **2 numbers.**
3) **Add calculateDivision() method** to **Divide** the **2 numbers.**
4) **Add calculateAverage() method** to **Average** the **2 numbers.**
5) **Add calculateModulus() method** to **find** the **Modulus** of the **2 numbers**.
6) **Modify print the Headings method** to **print** a nice **Header** of **many Lines** along with **lines of Stars** **********.
7) **Modify print the Footings method** to **print** a nice **Footer** of **many Lines** along with **lines of Stars** **********.
8) **Add** the **Date** and **Time** in the **Print Headers method** to **print** the **Date** and **Time** on the **Top**.



Using Single if statement To Check if a Condition is true



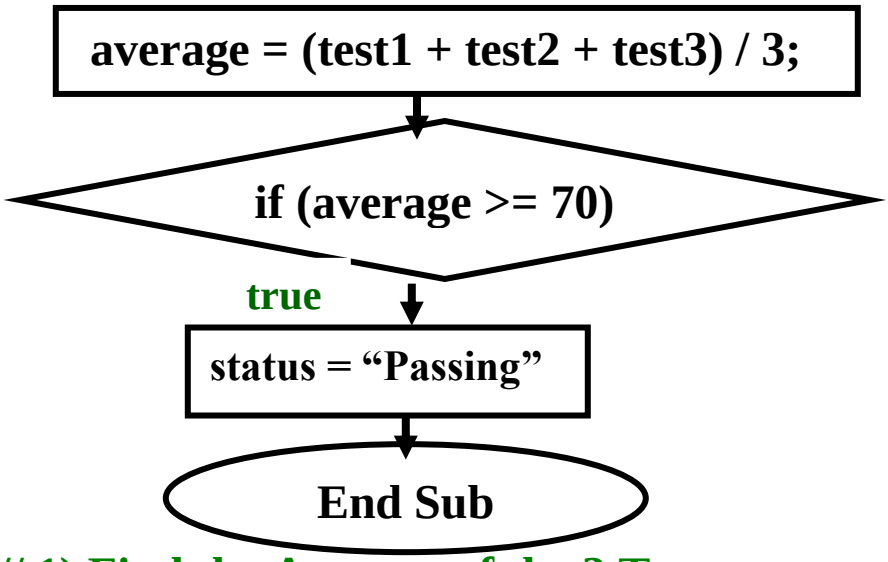
Lesson 114: How to Use the If statement to check if a Condition is true or false?

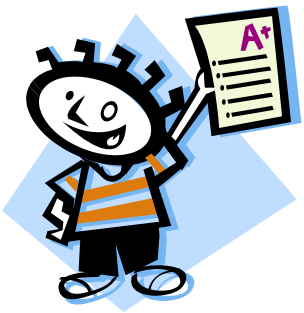
Using Single If statement to Check if a Condition is true:

You can use a **Single if statement to check for a condition if true**, you will **execute a statement or series of statement**, **otherwise you will do Nothing**.

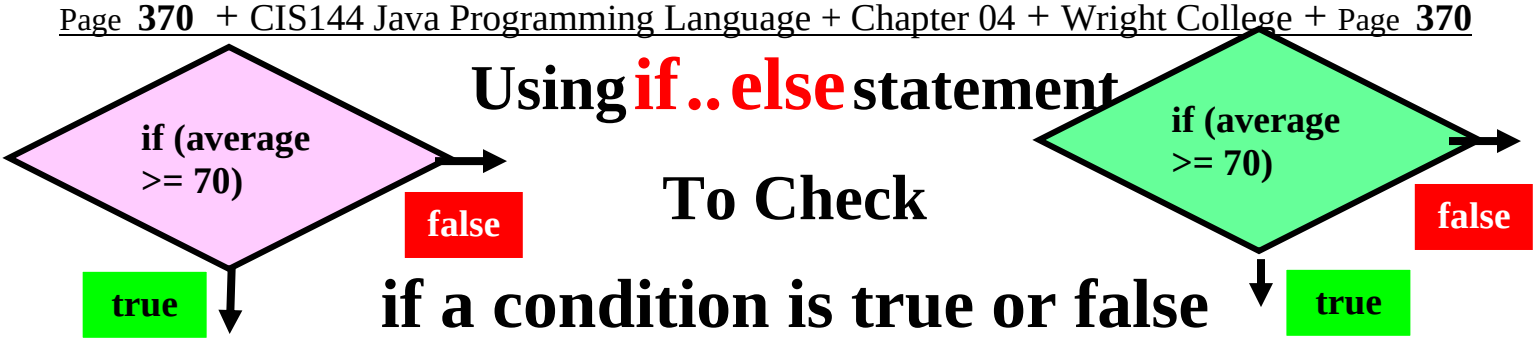
It is **recommended to use Curly Braces { }** to **enclose** the **true statements** and the **false statements even if you have only 1 statement**.

The following Flowchart is a portion of Calculate Average and then using if statement to check if average is >= 70 is true then only assign to status the String "Passing", otherwise do nothing.






```
// 1) Find the Average of the 3 Tests
      average = (test1 + test2 + test3) / 3;
// 2) Find out if the student is Passing
      if (average >= 70) {
          status = "Passing";
       }
 // 3) Print out the Student Average and Status to System.out
     System.out.printf("Student Average = %d and is %s",
                                          average, status);
```

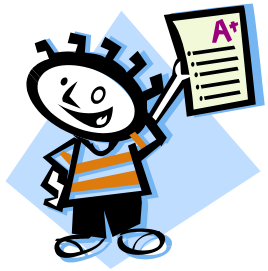


Lesson 115: How to Use If - else statement to check if a Condition is true or false?

Using If - else statement to Check if a Condition is true or false:

You can use if statement to check whether a Condition is true or false.
For example, a student takes 3 Test, then I will calculate the Average and then use If statement to check if average is Greater or Equal to 70, then the student is Passing else the student is Failing.

The following Flowchart is a portion of Calculate Average and then using if - else statement to check if average >= 70 is true then assign to status the String "Passing", else (means if false) assign to status the String "Failing".



This is also the Pseudocoe:

1- Calculate Average of the 3 Tests

2- Use if to check if average if >=70, then student is Passing, else student is Failing.

3- Print out using System.out the **student average** and the **status of student.**

The following is the Java Code:

```
// 1) Find the Average of the 3 Tests
average = (test1 + test2 + test3) / 3;

// 2) Find out if the student is Passing or Failing
if (average >= 70) {
    status = "Passing";
 }
 else {
    status = "Failing";
 }

// 3) print out the Student Average and Status to System.out
System.out.printf ("Student Average = %d and status is %s",
                                        average, status);
```

It is **recommended to use Curly Braces { } with if statement** to **enclose** the **true statements** and the **false statements even if you have only 1 statement**.

Please, Read, Study and Practice the Lessons in the Java Handout

Using Methods ( ): To Calculate the Average of 2 Tests and Assign Final Grade: 'A', 'B', 'C', 'D' or 'F'

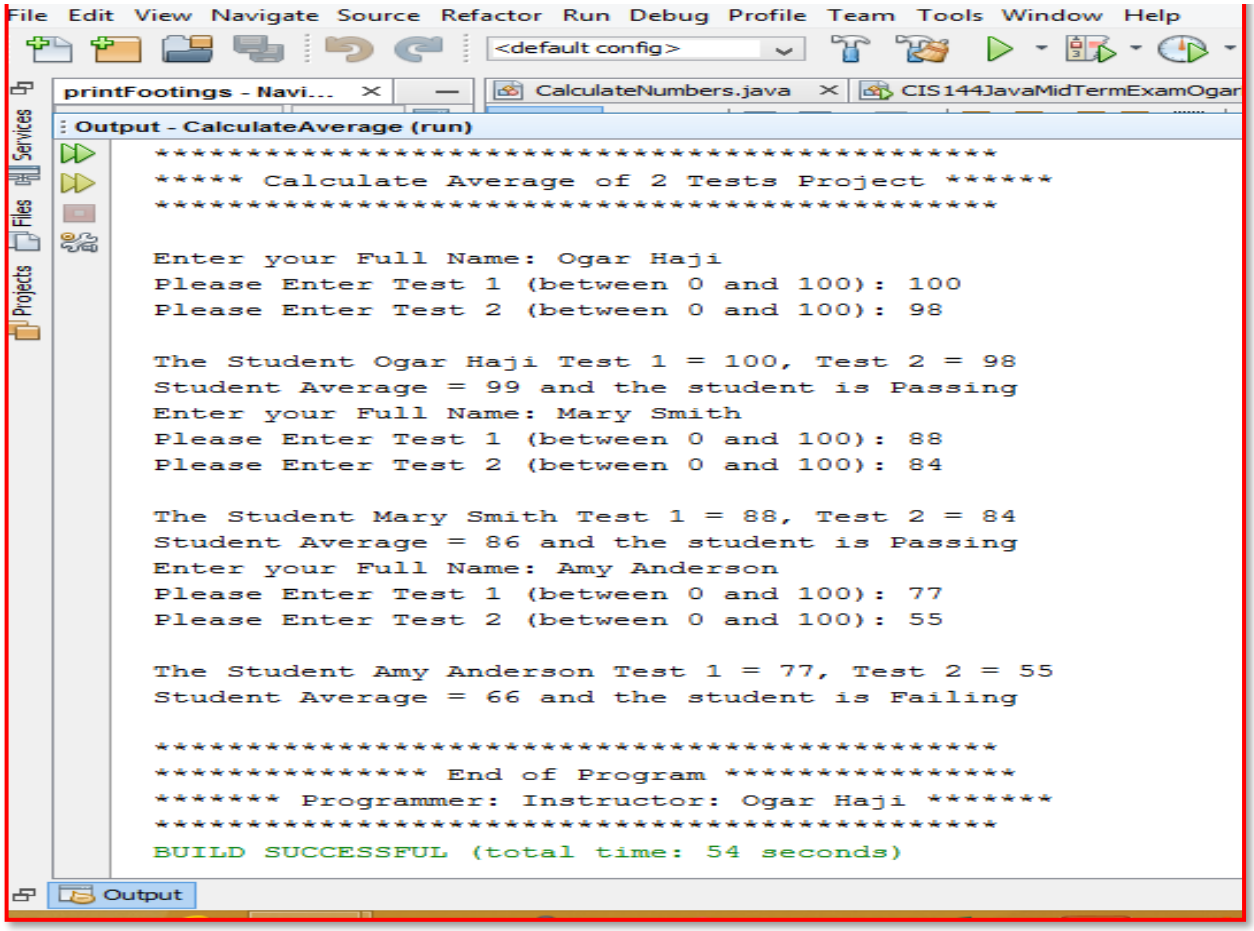
+++(Do Lab Exercise 2) 100 Points +++

Do Lab Exercise 2

Lesson 116 Ex : How to Calculate the Average of 2 Tests and using If statement to check if the student is "Passing" or "Failing" and using Methods?

Do the 12 Must Steps to Design, Code and Solve a project using Java Language

The Input and Output of the project will look like the following:

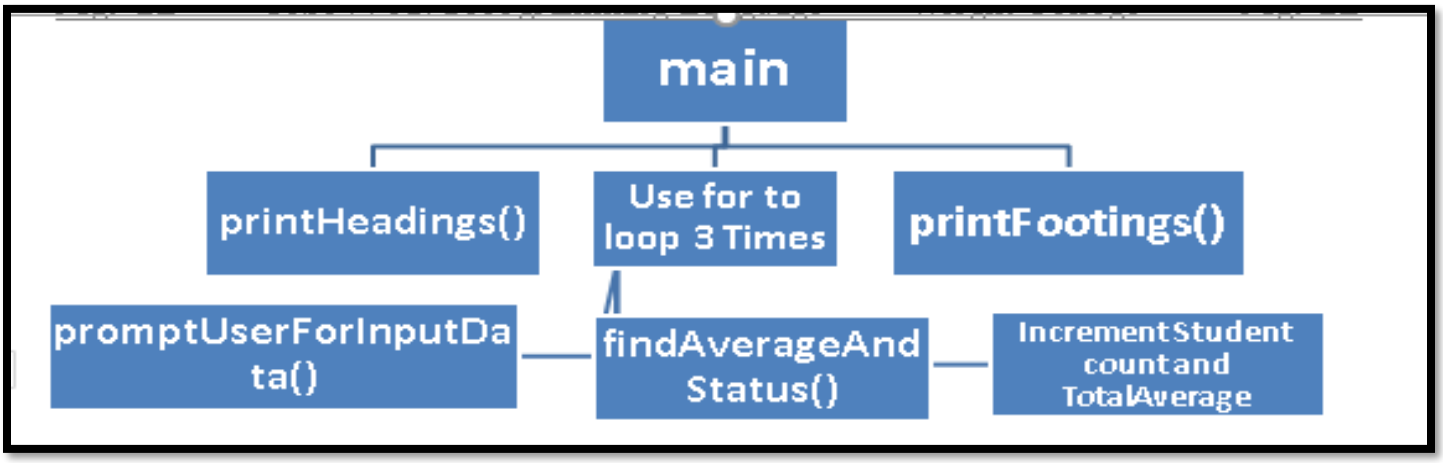


1) Design and code a Console program in Java to **calculate the Average of 2 Tests**. Ask user to **Enter Full Name, Test1 (between 0 and 100), Test2 (between 0 and 100) and then check for Invalid Test1 and Test2** then **Find** the **Average** of the **2 tests**.
If the **Average** is **>= 70** then **assign** the **String "Passing"** to **student's status**, **otherwise assign** "**Failing**" to **status**.

2) Modify project to Assign Final Grade according to the following **Average** Criteria:

90 - 100 Grade A
80 - 89 Grade B
70 - 79 Grade C
50 - 69 Grade D
0 - 49 Grade F

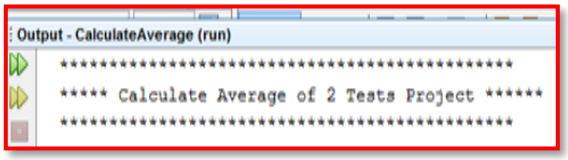
Do Lab Exercise



3) Save the project as **CalculateFinalGrade** **Do Lab Exercise**

```
/*
 * This program calculates the average of 2 Tests and
 *  prints out if the student passed or failed. Also Find the class average
 *   Programmer: Ogar Haji (Instructor)
 *   Date: Friday, November 03, 2017
 * Project Name: CalculateFinalGrade
*/
package calculatefinalgrade;
import java.util.Scanner;
public class CalculateFinalGrade {
   // 1) Declare only once a static global object 'input' from class Scanner
    static Scanner input = new Scanner (System.in);
  // 2) Declare the Global variables to be used in this project
    public static String fullName;
    public static int test1, test2, average;
    public static String status;
    public static int totalAverage = 0;
    public static int classAverage = 0;
```

```
  public static int studentsCounter = 0;
  public static int aCounter = 0;
public static void main(String[] args) {
  // 1) Call the printHeadings ( ) method
  printHeadings();
 // 2) Use for statement to loop 3 times to enter 3 students
   for (int counter = 1; counter <= 3; counter++) {
     // 3) Call the promptUser For Input Data ( ) method
     promptUserForInputData();
     // 4) Call the findAverageAndStatus() method
     findAverageAndStatus();
     // 5) Increment the student counter by 1 and add to total average
     studentsCounter++;
     totalAverage += average;
     aCounter++;
  }
  // 6) Call the printFootings() method
  printFootings();
}    // End of main( ) method
```




```
 // 2) Define and code the print Headings method
  public static void printHeadings ( ) {
     System.out.println("*****************************************");
     System.out.println("*** Calculate Average of 2 Tests Project *****");
     System.out.println("*****************************************");
     System.out.println();    // print a Blank Line
  }
 // 4) Define and code the prompt User For Input method
  public static void promptUserForInputData() {
     // 1) Prompt the user to enter Full Name
     System.out.print("Enter your Full Name: ");
     fullName = input.nextLine();
```

```
        // 2) Prompt the user to enter Test 1 between 0 and 100
        System.out.print("Please Enter Test 1 (between 0 and 100): ");
        // 3) Get or Read test 1
        test1 = input.nextInt();
        // 4) Call checkUserInputData() to check test 1
        checkUserInputData();
        // 5) Prompt the user to enter Test 2 between 0 and 100
        System.out.print("Please Enter Test 2 (between 0 and 100): ");
        // 6) Get or Read test 2
        test2 = input.nextInt();
        // 7) Call checkUserInputData() to check test 2
        checkUserInputData();
         // 8) Read or Get the extra new line at the end and discard it
        String extraNewLine = input.nextLine();
    }
// 4.2) Define and code the check User Input Data() method
    public static void checkUserInputData() {
        //1) Use while statement to check for Valid Test1
        while (test1 < 0 || test1 > 100) {
         // 2) Prompt the user to enter Test 1 between 0 and 100
        System.out.print("**Invalid Test 1**.Please Enter Test 1 (between 0 and 100): ");
            // 3) Get or Read Test 1
            test1 = input.nextInt();
        }
         //1) Use while statement to check for Valid Test2
        while (test2 < 0 || test2 > 100) {
            // 2) Prompt the user to enter Test 2 between 0 and 100
      System.out.print("**Invalid Test 2**. Please Enter Test 2 (between 0 and 100): ");
            // 3) Get or Read Test 2
            test2 = input.nextInt();
        }
    }
```

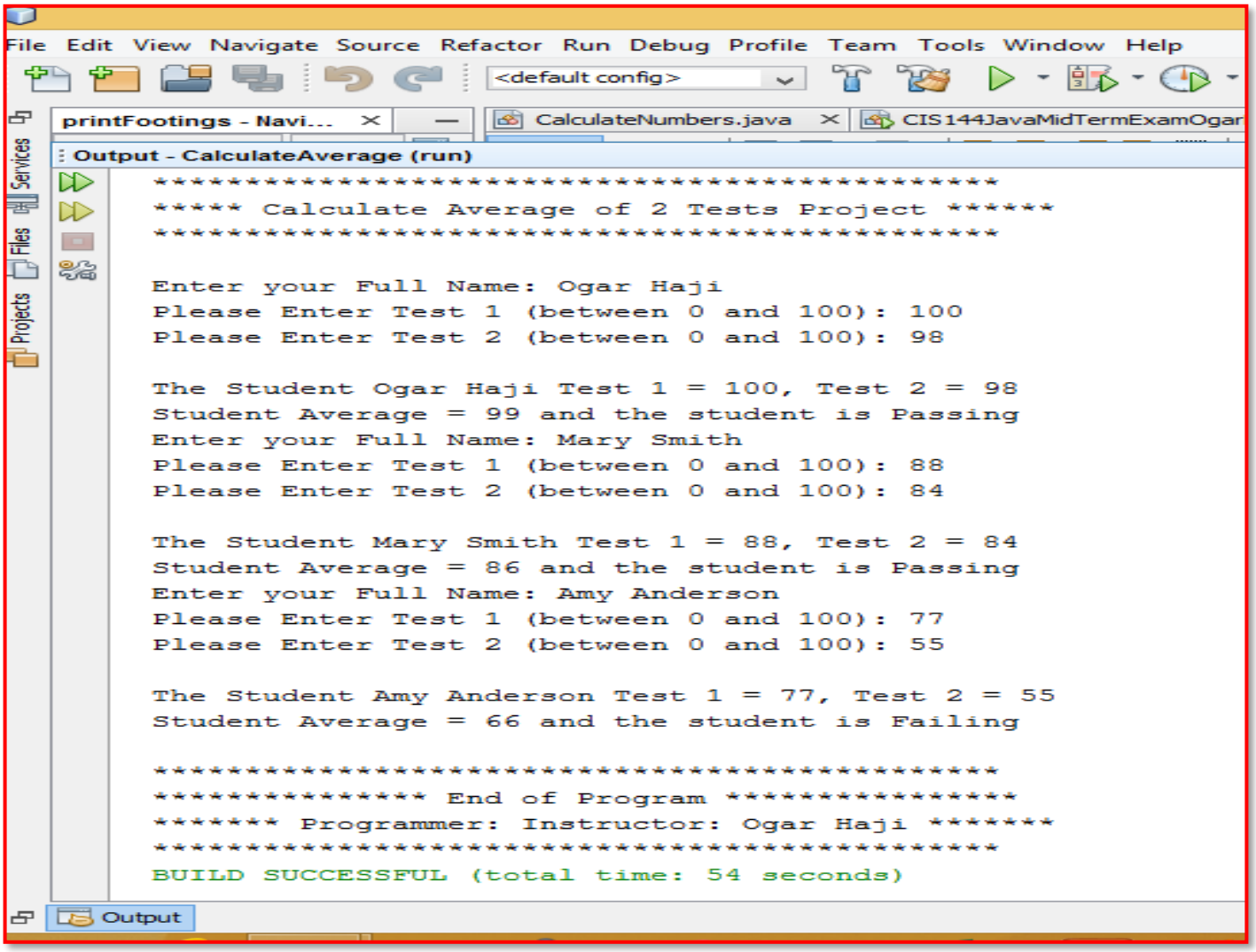
```
Enter your Full Name: Ogar Haji
Please Enter Test 1 (between 0 and 100): 100
Please Enter Test 2 (between 0 and 100): 98
```


```
Enter your Full Name: Ogar Haji
Please Enter Test 1 (between 0 and 100): 100
Please Enter Test 2 (between 0 and 100): 98
```

```
// 5) Define and code the find Average And status method
   public static void findAverageAndStatus() {
      // 6) Find the Average of the 2 Tests
      average = (test1 + test2 ) / 2;
      // 7) Find out if the student is Passing or Failing
      if (average >= 70) {
          status = "Passing";
      }
      else {
          status = "Failing";
      }
      // 8) Print out the data about the student
      System.out.println();              // Print a Blank Line
      System.out.printf ("The Student %s Test 1 = %d, Test 2 = %d %n",
                         fullName, test1, test2);
      System.out.printf ("Student Average = %d and the student is %s %n",
                         average, status);
   }
   // 7) Define and code the print Footings method
   public static void printFootings() {
      // 8) Calculate class Average by dividing total average by number of students
      classAverage = totalAverage / studentsCounter;
      System.out.printf("Total Number of students = %d %n", studentsCounter);
      System.out.printf("Class Average = %d %n", classAverage);
      System.out.printf("A students = %d %n", aCounter);
      // 9) Print End of Program message
      System.out.println();
      System.out.println("*********************************************");
      System.out.println("********** End of Program ****************");
      System.out.println("***** Programmer: Instructor: Ogar Haji ******");
      System.out.println("*********************************************");
   }
}
```

```
The Student Ogar Haji Test 1 = 100, Test 2 = 98
Student Average = 99 and the student is Passing
```

The Input and Output of the project will look like the following:



4) Modify the project to Calculate the Average of 3 Tests

5) Modify project to **Assign the Final Grade** according to the following

Average Criteria:

90 - 100 Grade A

80 - 89 Grade B

70 - 79 Grade C

50 - 69 Grade D

0 - 49 Grade F

Do Lab Exercise

```
if (average >= 90) {
        finalGrade = "A";
}
else if (average >= 80) {
        finalGrade = "B";
}
else if (average >= 70) {
        finalGrade = "C";
}
else if (average >= 50) {
        finalGrade = "D";
}
 else if (average >= 0) {
        finalGrade = "F";
}
 else {
        finalGrade = "U";
}
```

6) Modify the program to Count the number of "A" Students, "B" Students, "C" Students, "D" Students and "F" Students.

7) Modify the program to use for loop to loop 5 Times to Enter 5 Students.

Note: Always **Upload** to **Brightspace 2 Files** of **same Java Project:**
1) The **Microsoft Word Document** of the **Java Project Code along with the Java Output Screen shots.**
2) The **Compressed** or **Zipped File** or **Folder** of **Java Project**.

Using if - else statement to Check if a Condition is true or false to Calculate Gross Pay Overtime

Lesson 117: How to Use If - else statement to check if a Condition is true or false?

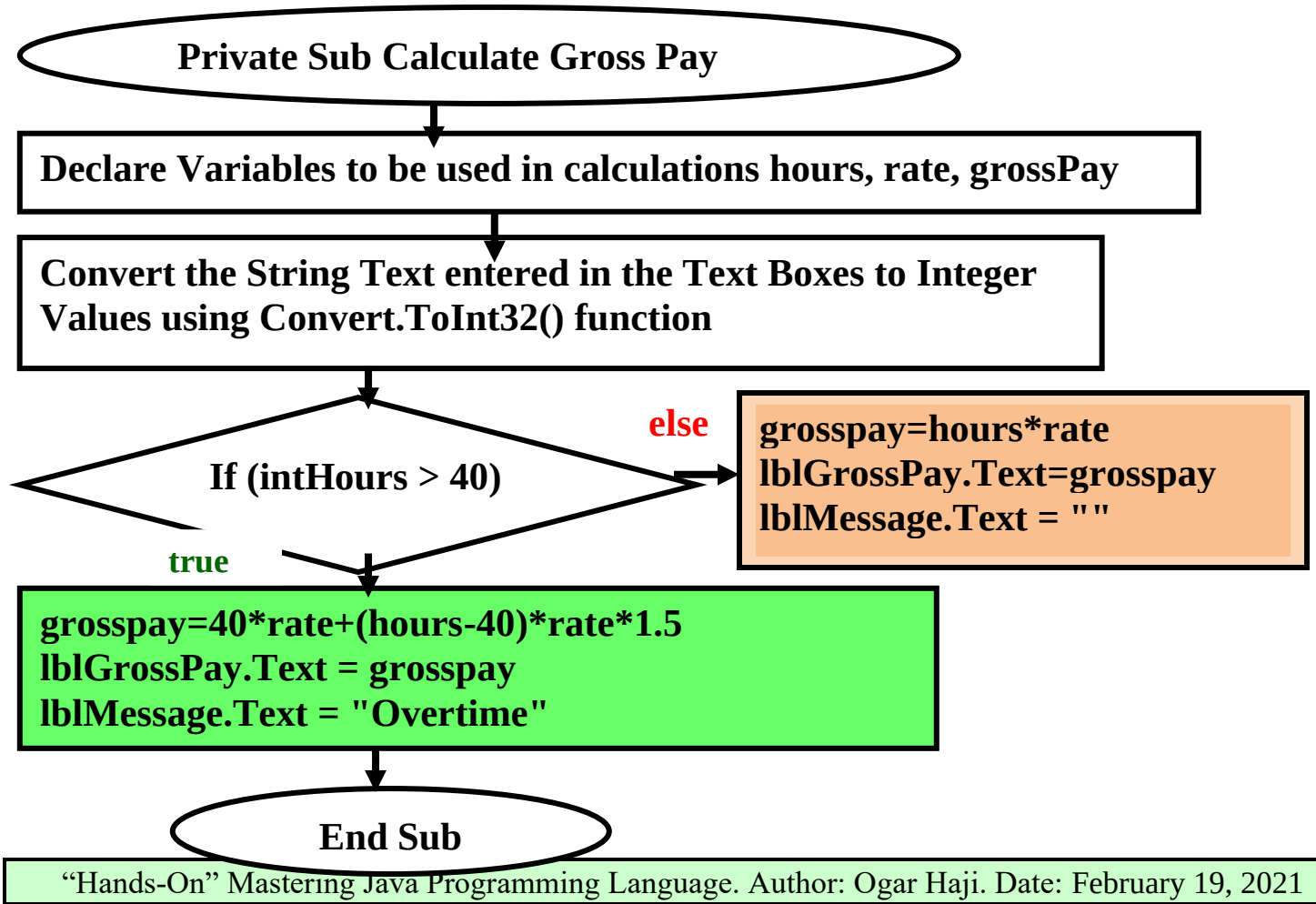
Using **if - else** statement to **Check if** a **Condition** is **true** or **false**:

You can use if statement to check whether a Condition is true or false.

For example, to check if an employee worked overtime (**hours > 40**), then calculate overtime gross pay and also display the message "Overtime", else just calculate gross pay without overtime and display a blank message for overtime message.

The following Flowchart is a portion of Calculate Overtime Gross Pay and then using if - else statement to check if hours worked >40 is true then do overtime grosspay and display the message "Overtime", else (means if false) calculate grosspay without overtime and display nothing for the overtime message.

3) Draw a Flowchart or print a Pseudo Code



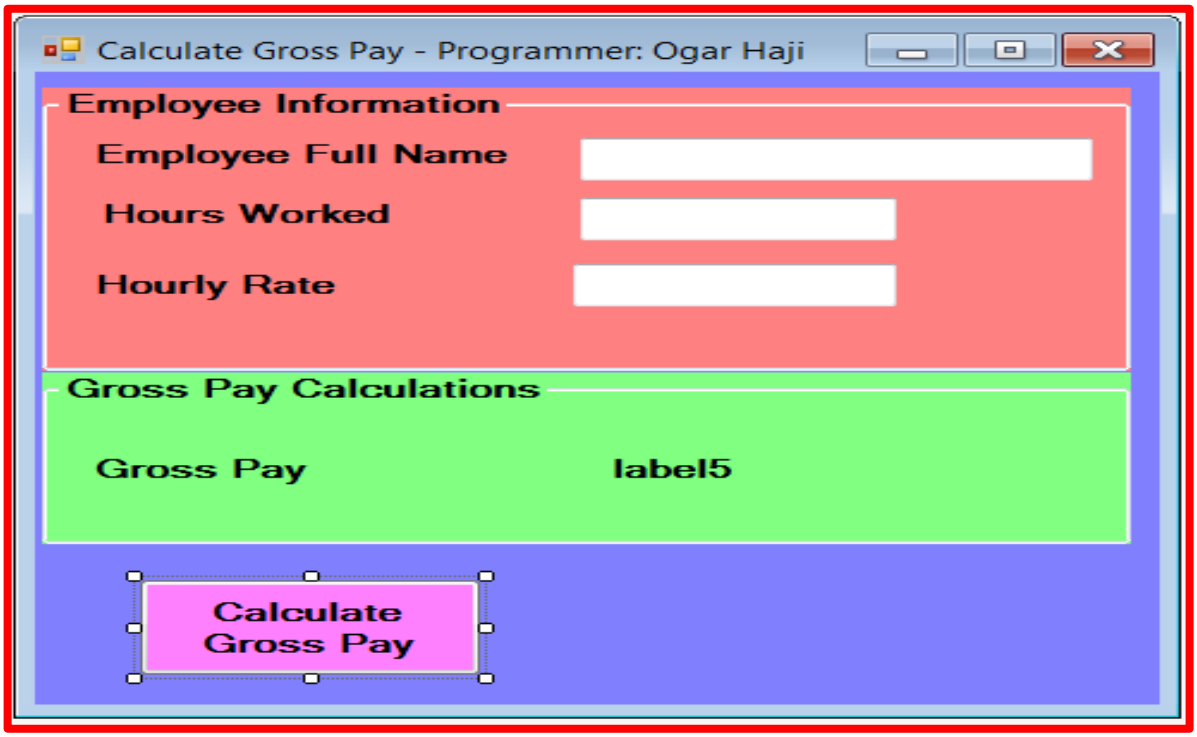
// To Calculate **overtime grosspay** and display message "**overtime**"
// For example, if you **work 60 hours** and your **Rate = $10**, to **calculate Overtime Gross Pay**

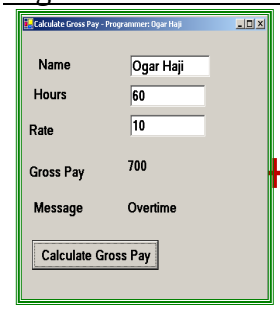
1) **Calculate** the **original pay** for **40 hours** = **40 * 10 = 400**
2) **Calculate** the **Hours Worked Overtime** = **60 – 40** = **20 hours**
3) To **Calculate** the **Extra Pay over 40 hours** = **20 * 10 * 1.5** = **300**

Note: **1.5 is Time and a Half** for **Overtime** work

4) **Add Original Pay + Extra Pay over 40 hours = 400 + 300 = $700**

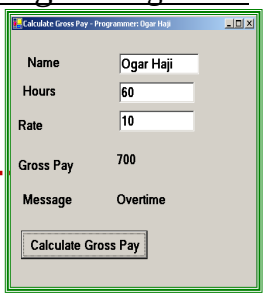
```
if (hours > 40) {
    grossPay = 40*rate + (hours - 40) * rate * 1.5;
    lblGrossPay.Text = grossPay;
    lblMessage.Text = "Overtime";
}
else {
   grossPay = hours*rate;
   lblGrossPay.Text = grossPay;
   lblMessage.Text = "";
}
```





Calculate Gross Pay Project Using Java JFrame Form

++(Do Lab Exercise 3) 100 Points++



Do Lab Exercise 3

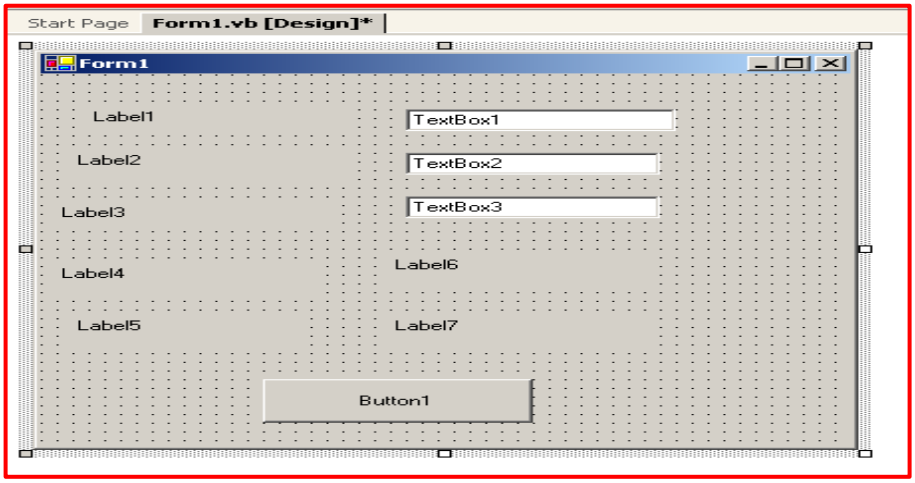
Lesson 118 Ex : How to Calculate the Overtime GrossPay using If statement?

Problem or Project: Design and Code in Java Language the project to Create a JFrame to Calculate Gross Pay of Employees in a company.

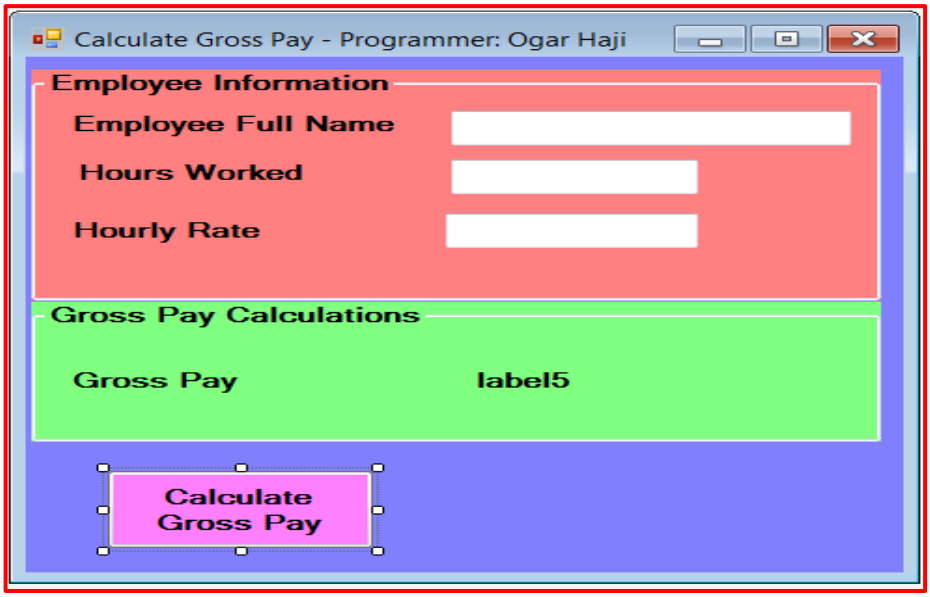
Do the 12 Must Steps to Design, Code and Solve a project using Java.

1) Design the User Interface Form as shown below

2) Save the Java project as CalculateGrossPayForm

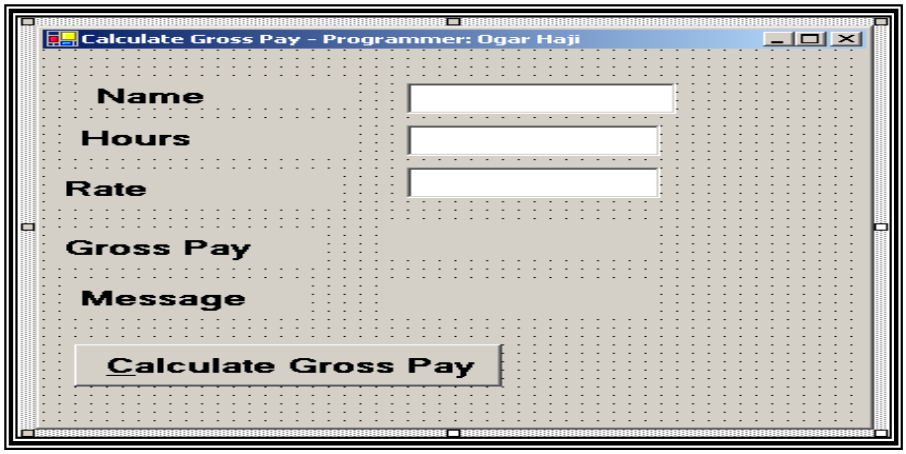


2) Set Text and Name Properties of the Controls

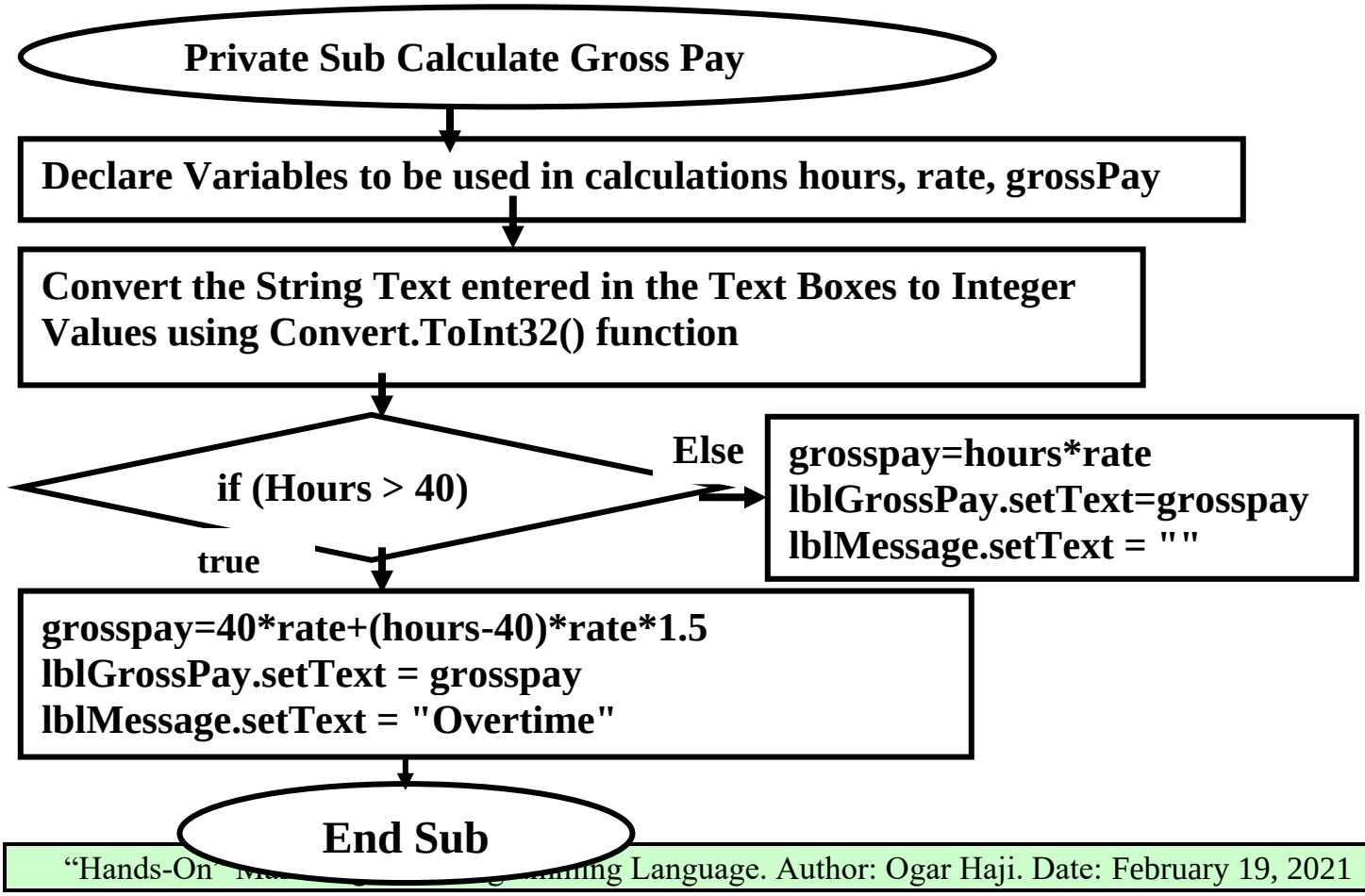


2) Set Text and Name Properties of the Controls as follows:

A) Set **Text** property of the **Labels (Label1 thru Label5)** on the **left side** as shown below:
B) Set **Text** property of the **Text Boxes** to **Blanks (Delete Contents of Text Box)**
C) Set **Name** property of the **Text Boxes** as **txtName**, **txtHours**, **txtRate**
D) Set **Name** property of the **Label6** of **Gross Pay** to **lblGrossPay**
E) Set **Name** property of the **Label7** of **Message** to **lblMessage**
F) Set **Text** property of **Button** to **&Calculate Gross Pay**
G) Set **Name** property of **Button** to **btnCalculateGrossPay**



3) Draw a Flowchart or print a Pseudo Code



Or print a Pseudo Code

Private Sub CalculateGrossPay

Declare Variables to be used in calculations intHours, intRate, intGrosspay

Convert the String Text entered in the Text Boxes to Integer Values using Convert to Integer or Parse function

```
    if (hours > 40) {
        Grosspay=40*Rate+(Hours-40)*Rate*1.5
        lblGrossPay.setText = Grosspay
        lblMessage.setText = "Overtime"
    }
    else {
        Grosspay=Hours*Rate
        lblGrossPay.setText=Grosspay
        lblMessage.setText = ""
    }
```

4) Code the above Flowchart or Pseudo Code in Java Language

5) Run the program after Saving it again.

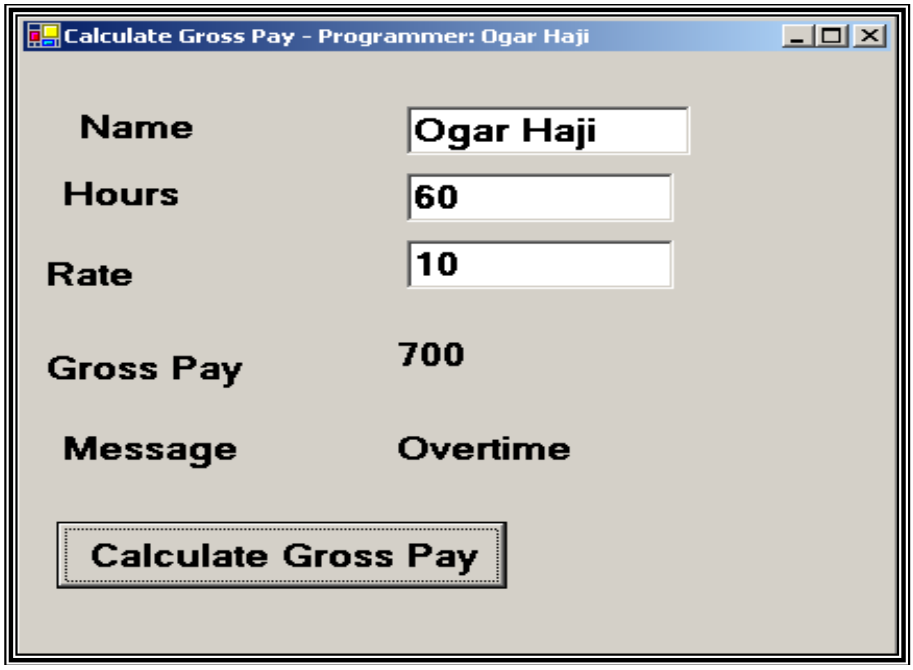
Type in the Name Text Box: Ogar Haji

Type in Hours Text Box: 60

Type in Rate Text Box: 10

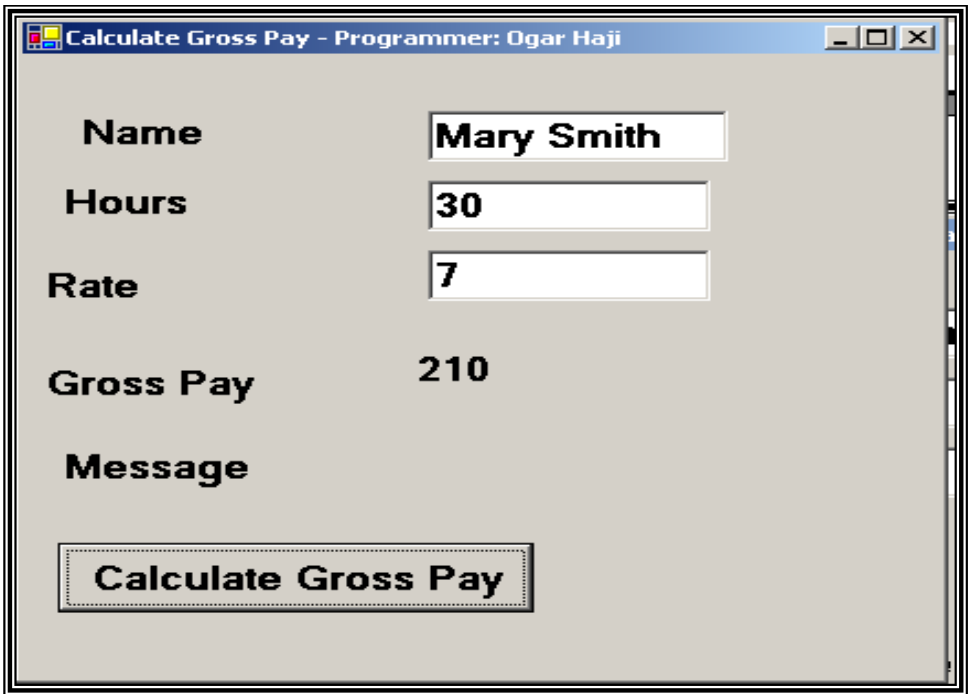
Click on Calculate Gross Pay button

The Result of the calculations will be displayed as shown below:

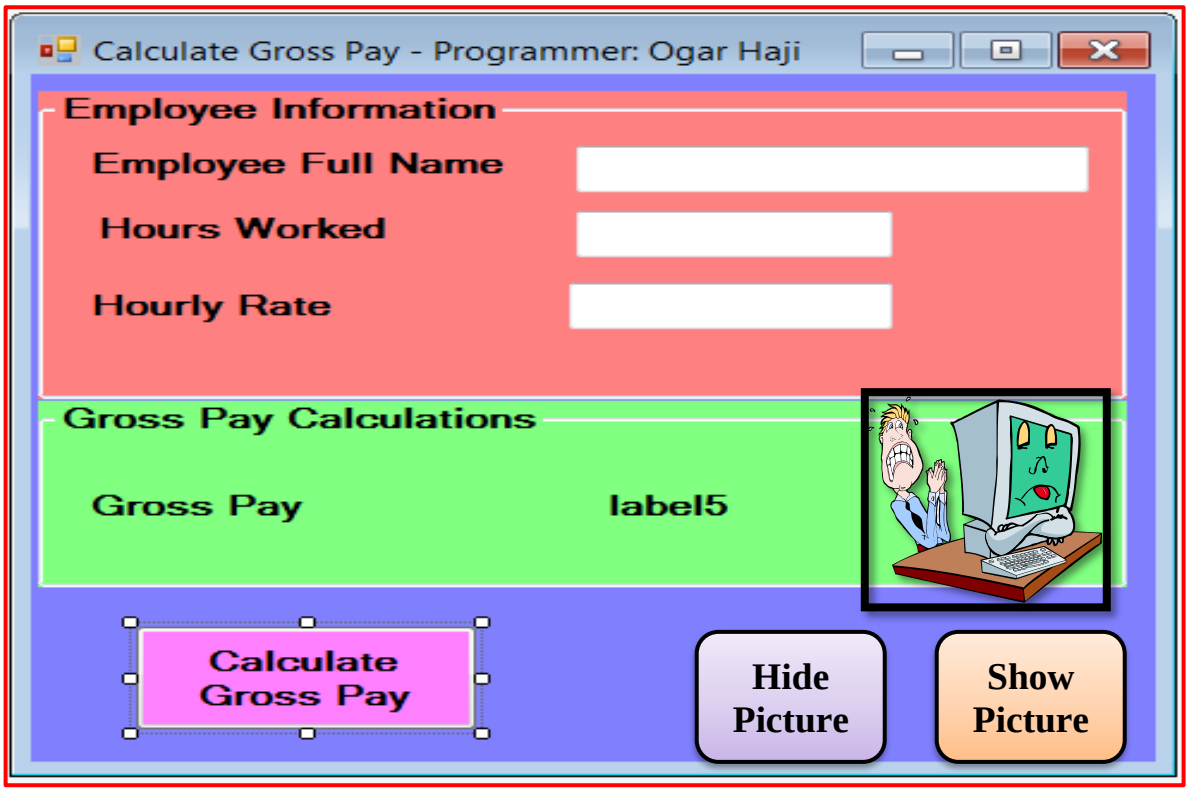


6) Run the program again with the following Data:

Mary Smith 30 7



7) Modify the program and Add a Picture (Any Picture) and Four Buttons as shown below:



8) Also Add the Buttons: Clear Fields and Exit.

9) Change the Text property and Name property of the Picture and Buttons:

9) Code the Buttons in Java Language.

10) Run the program and make sure All the Buttons work correctly.

11) Print a List of the Java Code program and Hand it to the instructor.

12) Upload the Java Project to Brightspace as a Word Document with the Java Code and output and also upload a Compressed project.

Please, Read, Study and Practice the Lessons in the Java Handout

And &&

Using the Conditional Operator: And Operator &&

And &&

Lesson 119: How to use conditional Operator And && to check if a Condition is true or false?

Using conditional And Operator "&&" to Check if a Condition is true of false:

With Conditional Operator **And &&, Both Conditions must be True so** the **true block will be executed**; **otherwise**, the **false block will be executed**.

For Example:

```
int average = 99;

if (average >= 0 && average <=100) { //Both conditions are met and true
        System.out.println ("Average is Valid Number");
}

else {
        System.out.println ("Average is Invalid Number");
}
```

```
Output - CalculateSum3 (run)
run:
Average 99 is Valid Number
BUILD SUCCESSFUL (total time: 2 seconds)
```

Truth table of And && Conditional operator:

a && b	result
true && true	result is true
true && false	result is false
false && true	result is false (Short-Circuit And)
false && false	result is false (Short-Circuit And)

Notice: with And &&, the result is true only when Both conditions are true.

Or ||

Using the Conditional Operator: Or Operator || (pipe letter)

Or ||

Lesson 120: How to use conditional Operator Or || to check if a Condition is true or false?

Using conditional Or Operator "||" (Shift key and \) to Check if a Condition is true of false:

With Conditional Operator **Or ||, Only 1 Condition may be True so** the **true block will be executed**; **otherwise**, the **false block will be executed**.

For Example:

```
int average = 177;

if (average < 0 || average >100)  {    // 1 condition is true (average is > 100)
        System.out.println ("Average is Invalid Number");
}

else {
        System.out.println ("Average is Valid Number");
}
```

```
Output - CalculateSum3 (run)
run:
Average is Invalid Number
BUILD SUCCESSFUL (total time: 1 second)
```

Truth table of Or || Conditional operator:

a || b	result
true	true result is true (Short-Circuit Or)
true	false result is true (Short-Circuit Or)
false	true result is true
false	false result is false

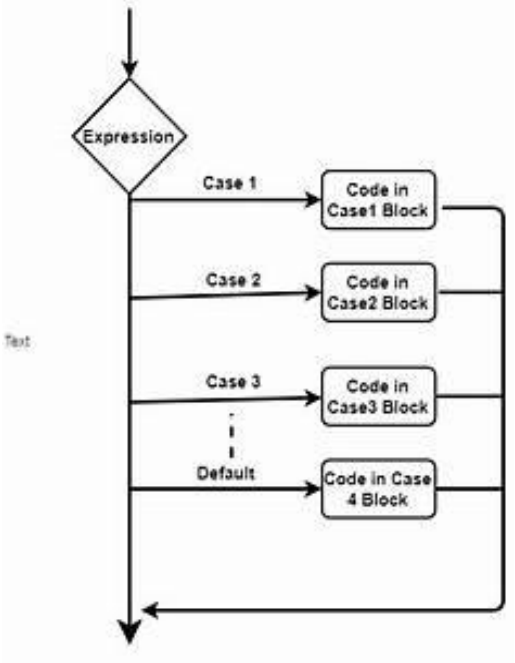
Notice: with Or ||, the result is false only when Both conditions are false.

Using the Java
switch … case statement

Lesson 121: How to use switch…case statement to check which condition is true?

The switch statement tests a single variable against a series of exact matches and it is better than using Multiple if-else statements.

```
int schoolYear = 4;    // Declare the variable and initialize year to 4
switch (schoolYear) {
    case 1:
        System.out.println ("Freshman");
        break;
    case 2:
        System.out.println ("Sophmore");
        break;
    case 3:
        System.out.println ("Junior");
        break;
    case 4:
        System.out.println ("Senior");
        break;
    default:
        System.out.println ("Invalid Year");
        break;
}
```



The Output will be Written on output: **The Student is: Senior**

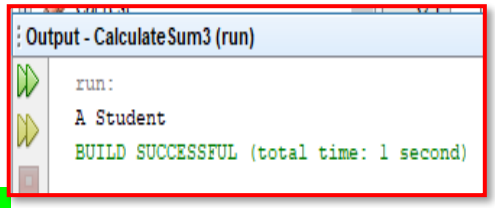
```
Output - CalculateSum3 (run)
run:
The Student is: Senior
BUILD SUCCESSFUL (total time: 1 second)
```

Using the switch … case statement With Final Grades for Students

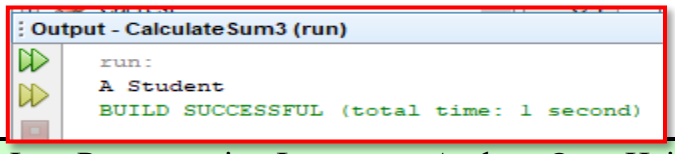
Lesson 122: How to use switch…case statement to check Final Grade?

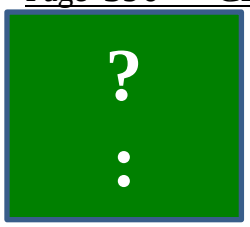
The switch statement tests a single variable against a series of exact matches and it is better than using Multiple if-else statements.

```
String finalGrade = "A";          // initialize variable year
switch (finalGrade) {
        case "A":
        case "a":
                System.out.println ("A Student");
                break;
        case "B":    case "b":
                System.out.println ("B Student");
                break;
        case "C":    case "c":
                System.out.println ("C Student");
                break;
        case "D":    case "d":
                System.out.println ("D Student");
                break;
        case "F":    case "f":
                System.out.println ("F Student");
                break;
        default:
                System.out.println ("Invalid Grade Student");
                break;
}
```



The Output will be printed output on console as: **A Student**





Using the Ternary Conditional Operator (? :)

Lesson 123: How to conditional Ternary Operator to check if a Condition is true or false?

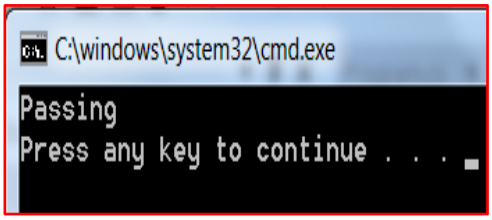
You can use Ternary Conditional Operator (? :) to check if a condition is true or false.
The format is as follows:

```
testExpression ? trueResult :  falseResult;
```

You test a condition, then use ? and the true result, if false use : and false result.

For example:

```
int average = 95;
String status;

status = average >= 70 ? "Passing" : "Failing";
System.out.println (status);
```

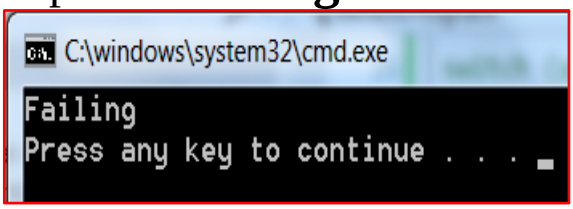


The output written on output is: **Passing**

Another example:

```
int average = 40;
String status;

status = average >= 70 ? "Passing" :  "Failing";
System.out.println (status);
```

The output written on output is: **Failing**



Not !

Using the Not ! operator To Negate the Result (Opposite)

Not !

Lesson 124: How to use Not ! Operator to Negate the Result of comparison?

You can use the **Not !** **operator to change or negate the result.**

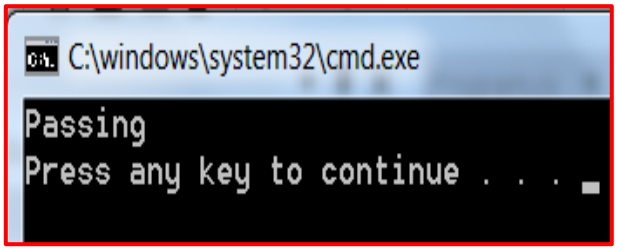
For example **!(true)** will be **false. (Not true will be false)**

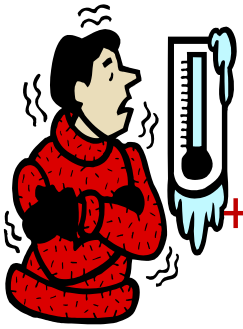
And **!(false)** will be **true**. **(Not false will be true)**

For example:

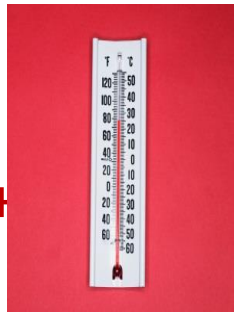
```
int average = 95;

if  (  !(average >= 70)  ) {
      System.out.println ("Failing");
}
else {
      System.out.println ("Passing");
}
```

The output will be: **Passing**





Create a JFrame Form to Convert from Celsius Temperature to Fahrenheit Temperature



+++(Do Lab Exercise 4) 100 Points +++

Do Lab Exercise 4

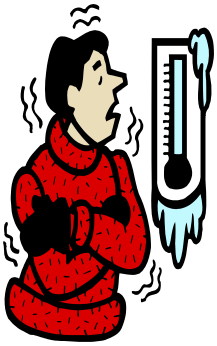
Lesson 125 Ex: How to Convert from Celsius Temperatures to Fahrenheit temp?

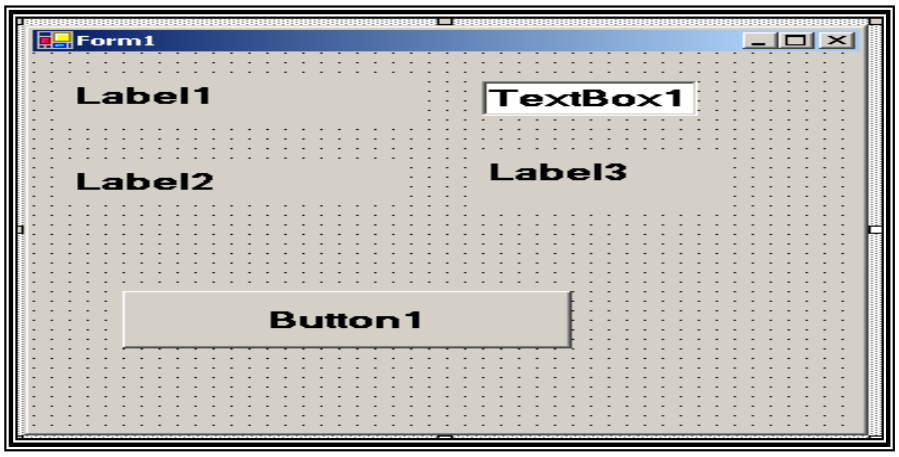
Problem or Project: Design and Code in Java Language the project to Create a JFrame to Convert Temperature from Celsius to Fahrenheit.

Do the 12 Must Steps to Design, Code and Solve a project using Java Language.

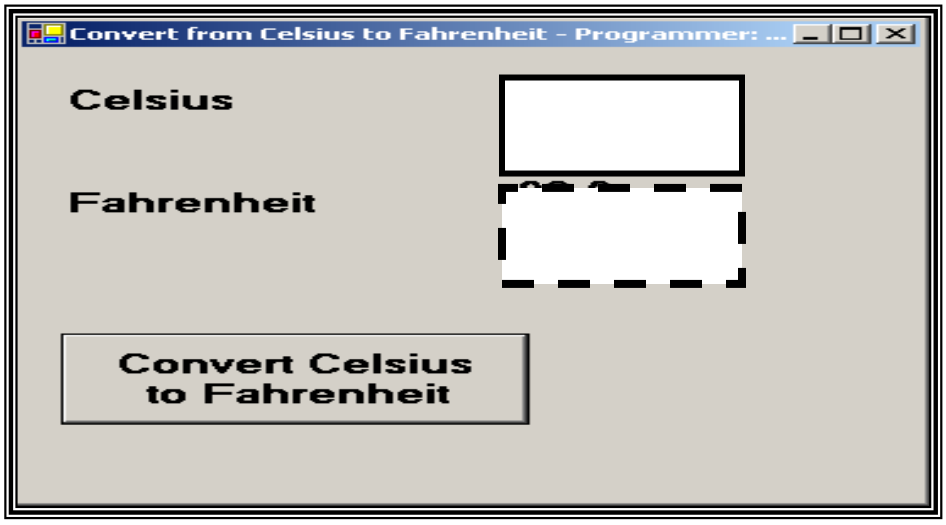
1) Save the JFrame Form as ConvertFromCelsiusToFahForm

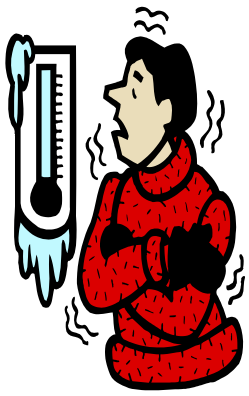
2) Design the following User Interface Form using NetBeans IDE





3) Set Text and Name properties of Controls as shown below:





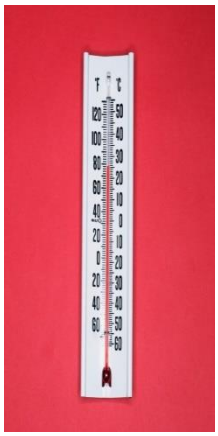
4) **Run the program after Saving it again.**

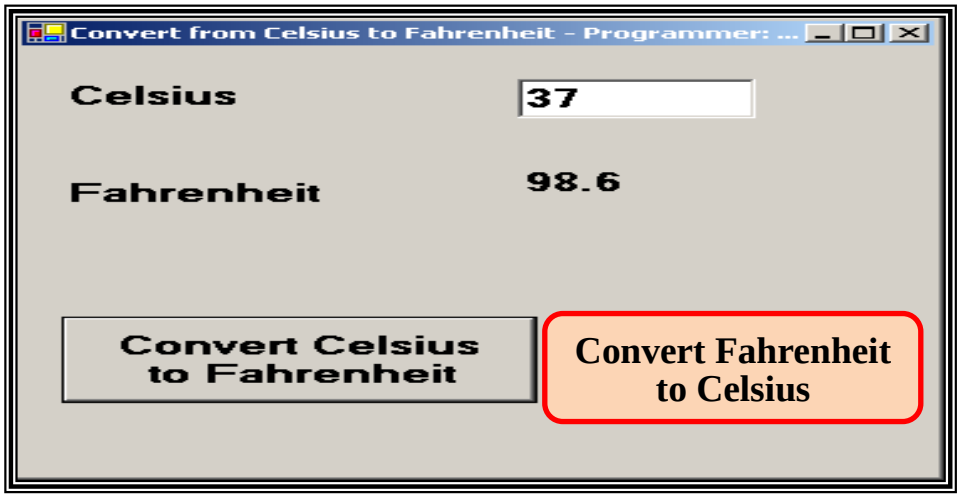
5) **The Formula to Convert from Celsius temperature to Fahrenheit is:**

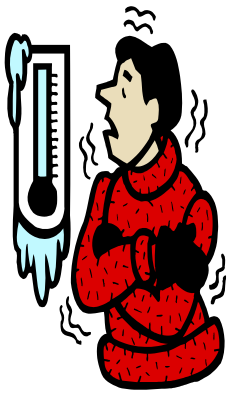
$$Fahrenheit = (Celsius * 9/5) + 32$$

6) **Type** in **Celsius Text Field: 37**

7) **Click** on "**Convert Celsius to Fahrenheit**" **button**

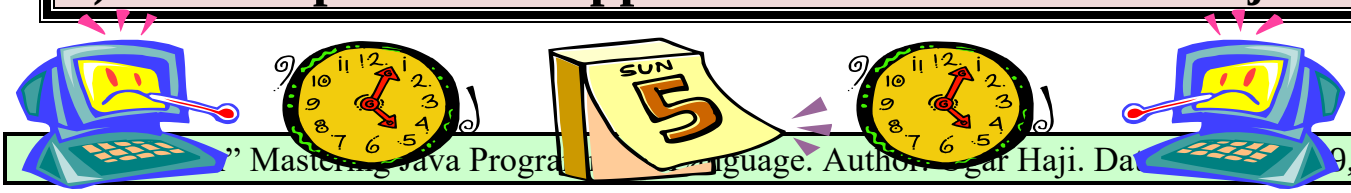


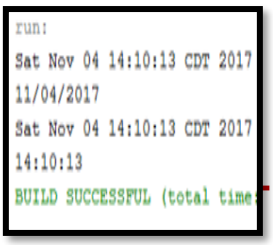




1) **Modify the project by adding another Label to display a message. If the Fahrenheit temperature is Greater or Equal to 90, display the message "Very HOT", else if the Fahrenheit temperature is Greater or Equal to 70, display the message "Nice Weather", and if the Fahrenheit temperature is Less than 30, display message "Very COLD"**
2) **Modify the Project by Adding Date and Time at the top and Move down the Controls so you will have room for New 4 Labels and set the Name and Text properties of the controls.**
3) **Write the Java code to Display the Date and Time on the Form when the Form is automatically loaded and run.**
4) **Modify the Java project to Add another button "Convert Fahrenheit to Celsius" to Convert from Fahrenheit to Celsius.**

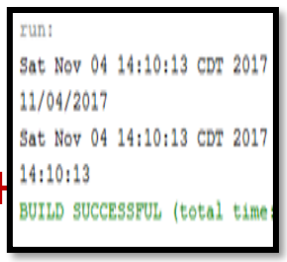
Note: Always **Upload** to **Brightspace 2 Files** of **same Java Project:**
1) The **Microsoft Word Document** of the **Java Project Code along with the Java Output Screen shots.**
2) The **Compressed** or **Zipped File** or **Folder** of **Java Project**.





Insert Date and Time In a Java Project

+(Read and Study This Lesson)+



Lesson 126: How to Use Date and Time in Java projects?

To use and insert Date and time objects in Java, you have to import the following 2 Libraries.

// 1) Use import statement to import the following libraries

```
import java.util.Date;
import java.text.SimpleDateFormat;
```

//2) Create an instance object **'dateFormat'** from the class **SimpleDateFormat**

```
SimpleDateFormat dateFormat = new
                              SimpleDateFormat("MM/dd/yyyy");
```

// 3) Print out dateFormat

```
System.out.println (dateFormat.format (date));
```
// prints like 02/03/2019

//4) Create an instance object **'timeFormat'** from the class **SimpleDateFormat**

```
SimpleDateFormat timeFormat = new
                              SimpleDateFormat("HH:mm:ss");
```

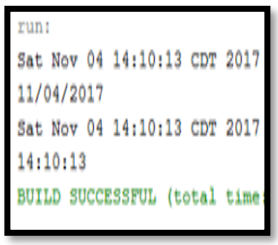
// 3) Print out timeFormat

```
System.out.println (timeFormat.format (time));
```
// prints like 16:16:39

// 3) **Date()** and **Time()** methods will print **Date** and **Time** as CDT format

```
Date date = new Date();
System.out.println (date);
```

The above statements will print the date as following:
Sat Nov 04 13:52:31 CDT 2017



Print Date and Time In Java Project +++ (Do Lab Exercise) +++ (Read and Study This Lesson)

Lesson 127 Ex : How to Print Date and Time in Java language Exercise ?

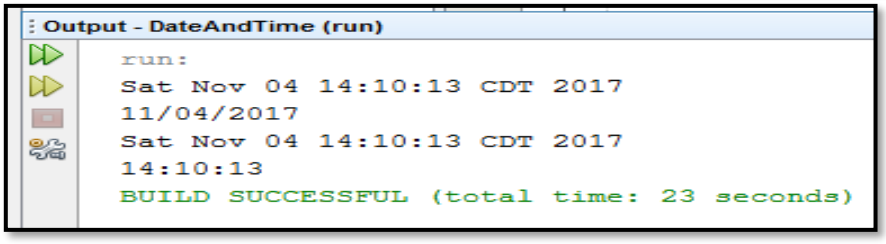
1) Launch **NetBeans IDE** program

2) Type the following **Java Lab exercise** and **Save** it as **DateAndTime.**

```
package dateandtime;
// 1) Use import statement to import the following libraries
import java.util.Date;
import java.text.SimpleDateFormat;

public class DateAndTime {
   public static void main(String[] args) {
    //1) Create an instance object 'dateFormat' from the class SimpleDateFormat
     SimpleDateFormat dateFormat = new SimpleDateFormat("MM/dd/yyyy");

      //2) Create an instance object 'date' from the class Date
      Date date = new Date();

     // 3) Print out the date
     System.out.println(date);

      // 4) Print out the dateFormat
     System.out.println(dateFormat.format(date)); // prints 12/03/2019

     //5) Create an instance object 'timeFormat' from the class SimpleDateFormat
      SimpleDateFormat timeFormat = new SimpleDateFormat("HH:mm:ss");

      // 6) Print out the timeFormat
      System.out.println(timeFormat.format(time)); // prints 14:10:13
   }
}
```

```
Sat Nov 04 14:10:13 CDT 2017
11/04/2017
```

```
Sat Nov 04 14:10:13 CDT 2017
14:10:13
```



Today's Date:

Current Time:

Display Date and Time in Java Using JFrame Form ++(Do Lab Exercise 5) 100 Points++

11/04/2017

15:18:24

Do Lab Exercise 5

Lesson 128 Ex : How to Print Date and Time in JFrame Form Java language?

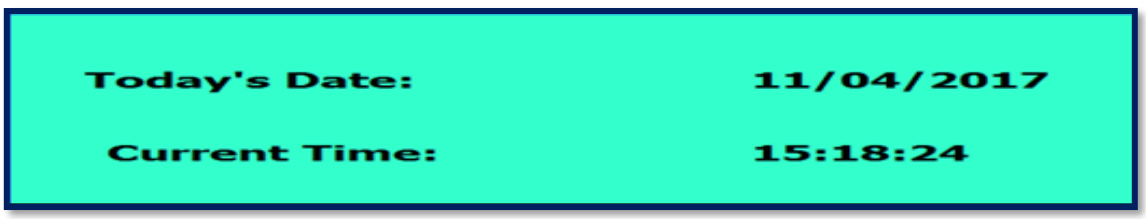
1) **Launch NetBeans IDE** program
2) **Design** the following **JForm Java Lab exercise,**
3) **Save** the Java project as **DateAndTimeForm**

RC on JFrame, C Properties, C Events tab, C WindowOpened, C FormWindowOpened

```
private void formWindowOpened(java.awt.event.WindowEvent evt) {
 //1) Create an instance object 'dateFormat' from the class SimpleDateFormat
 SimpleDateFormat dateFormat = new SimpleDateFormat("MM/dd/yyyy");
//2) Create an instance object 'date' from the class Date
 Date date = new Date();
// 3) Display out the date in Date Label using .setText() method
 lblDate.setText("" + dateFormat.format(date) ); //use "" and + to join strings
// 4) Create an instance object 'timeFormat' from the class SimpleDateFormat
   SimpleDateFormat timeFormat = new SimpleDateFormat("HH:mm:ss");
// 5) Create an instance object 'time' from the class Date
 Date time = new Date();
// 6) Display out the Time in Time Label using .setText() method
  lblTime.setText("" + timeFormat.format(time) );//use "" and + to join strings
```

Today's Date: 11/04/2017

Current Time: 15:18:24



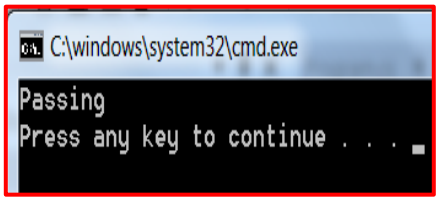
Chapter 5 + Java Homework #5 (Due Next Week) 100 Points

Name:_____ **CIS144 Java** Programming Language–Wright College

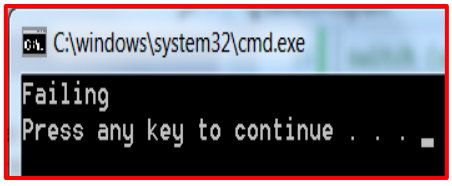
Answer the Following Chapter 5 Java Questions: *Instructor: Ogar Haji*

1) What is a **Program Language** and what is **Object-Oriented Language**?

2) Write the Java code to use an **if statement to check if a condition is true**? **Declare a variable** called **average** and **assign** the **value 99** to it and then **writing** the message "**Passing**" to the **output**?



3) Write the Java code to use **if…else statement to check if a condition is true or false**? **Declare a variable** called **average** and **assign** the **value 55** to it and then writing the message "**Passing**" to the **output if the average is Greater or equal to 70 and "Failing" if false**?



4) Write the Java code to use **if…else statement with multiple else if statements to assign the final grade a letter 'A', 'B', 'C', 'D', or 'F. according to the following criteria:**

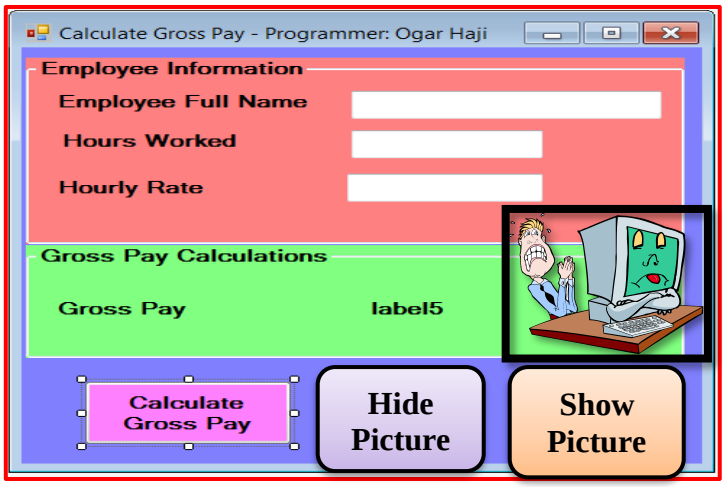
Assign the Final Grade according to the following **Average** Criteria:

90 - 100 Grade A
80 - 89 Grade B
70 - 79 Grade C
50 - 69 Grade D
0 - 49 Grade F

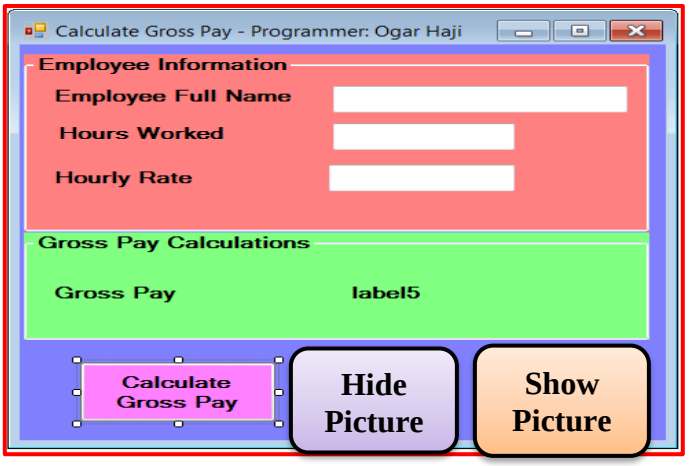
5) Write the Java code to **calculate Overtime Gross Pay if** the **employee works more than 40 Hours**.

6) Write the Java code to **display the Gross Pay calculated above** in **a Label Control** named "**lblGrossPay**".

7) Write the Java code to use to **Hide a Picture** named **picComputer**.



8) Write the Java code to use to **Show a Picture** named **picComputer**.



9) Write Java code to use the Conditional **And** operator to **check if average** is **between 0 and 100 inclusive**, then **write** to **System.out** the **message** "**Average is Valid Number**", **else write** to **System.out** the **message** "**Average is Invalid Number**".

10) Write the Java code to use the Conditional **Or** operator to **check if the average is less than 0** or **average Greater than 100**, then **write** to the **output** the **message** "**Average is Invalid Number**", **else write** to the **output** the **message** "**Average is Valid Number**".

11) Write the **And Truth Table** for the following:

true && true result is _____

true && false result is _____

false && true result is _____

false && false result is _____

12) Write the **Or Truth Table** for the following:

true || true result is _____

true || false result is _____

false || true result is _____

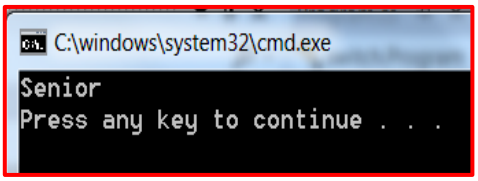
false || false result is _____

13) What is **switch….case** statement and why it is better to use it?

14) Write the Java code to use the **Switch….case** statement **to check the variable** called "**year**" which will **contain** the **student's year** which is as following:

1 is **Freshman, 2** is **Sophomore, 3** is **Junior** and **4** is **Senior**

And **write** to the **output** the **year** and the **status** of the **student**.



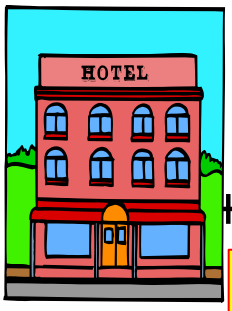
15) Write the Java code to use **Ternary Operator** to assign the String "**Passing**" to a String **variable** called "**status**" **if the average is Greater or Equal to 70**, **otherwise**, **assign** the String "**Failing**" to **status variable**.

16) What is the **Not Operator** and what **symbol does it use**?

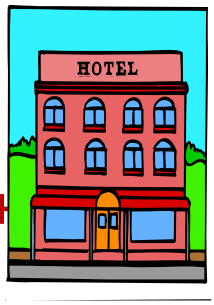
17) Write the Java code to use the **Negator operator !** to **check** the **average** of a student and **whether** the **student** is **Passing or Failing**.

Chapter 5 + Java Lab Assignment #5A (Due Next Week) 100 Points

Name:_____ **CIS144 Java language + Wright College**



Java Programming Assignment #5A: Hotel Room Charges Calculator Form Project



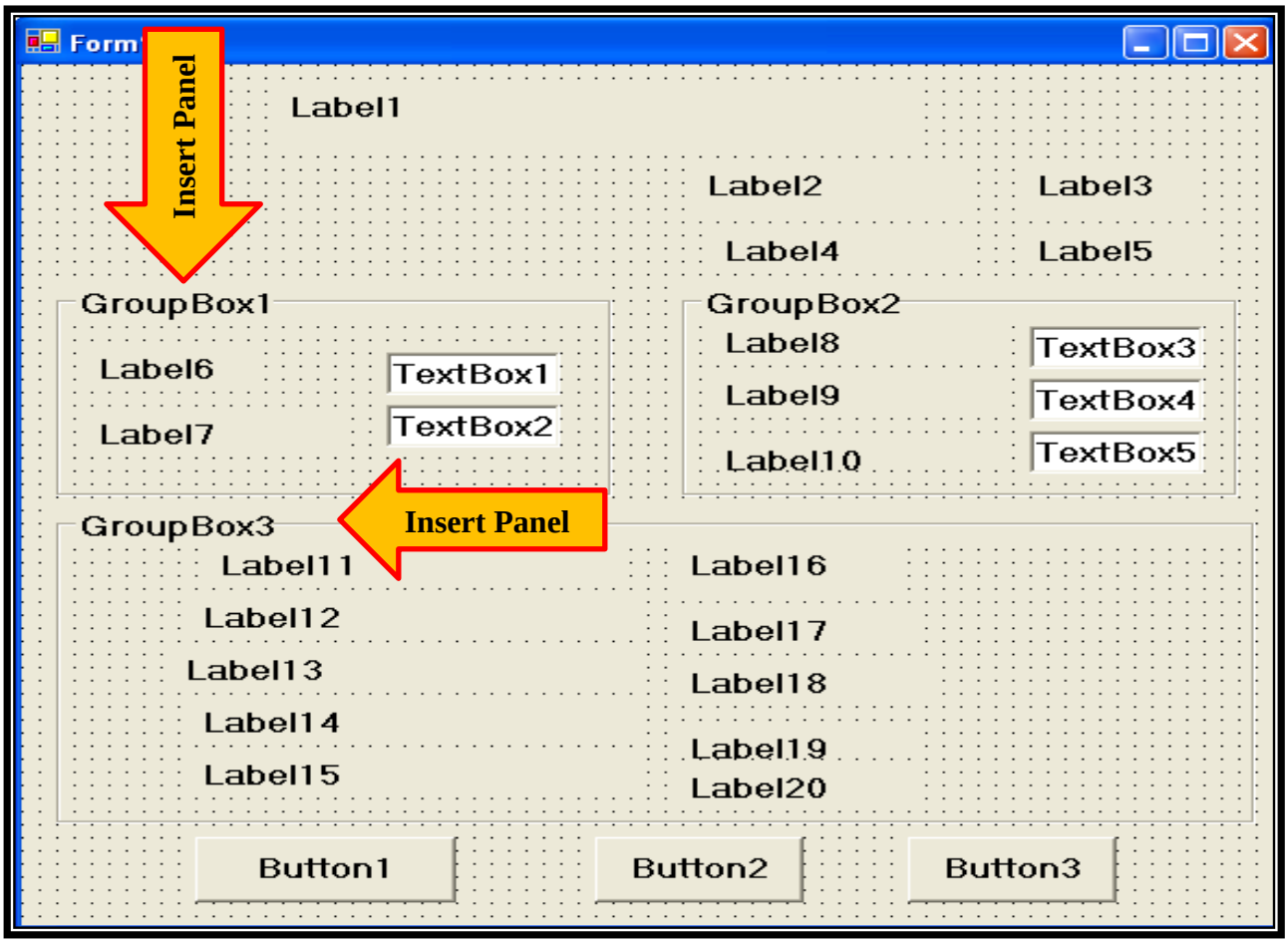
+++(Do Lab Assignment + Lab 5A)+++

Do Lab Assignment + Lab 5A

Do the 12 Must Steps to Design, Code and Solve a Project in Java.

Do Steps 1 thru 7 in your Note Book or on Paper.

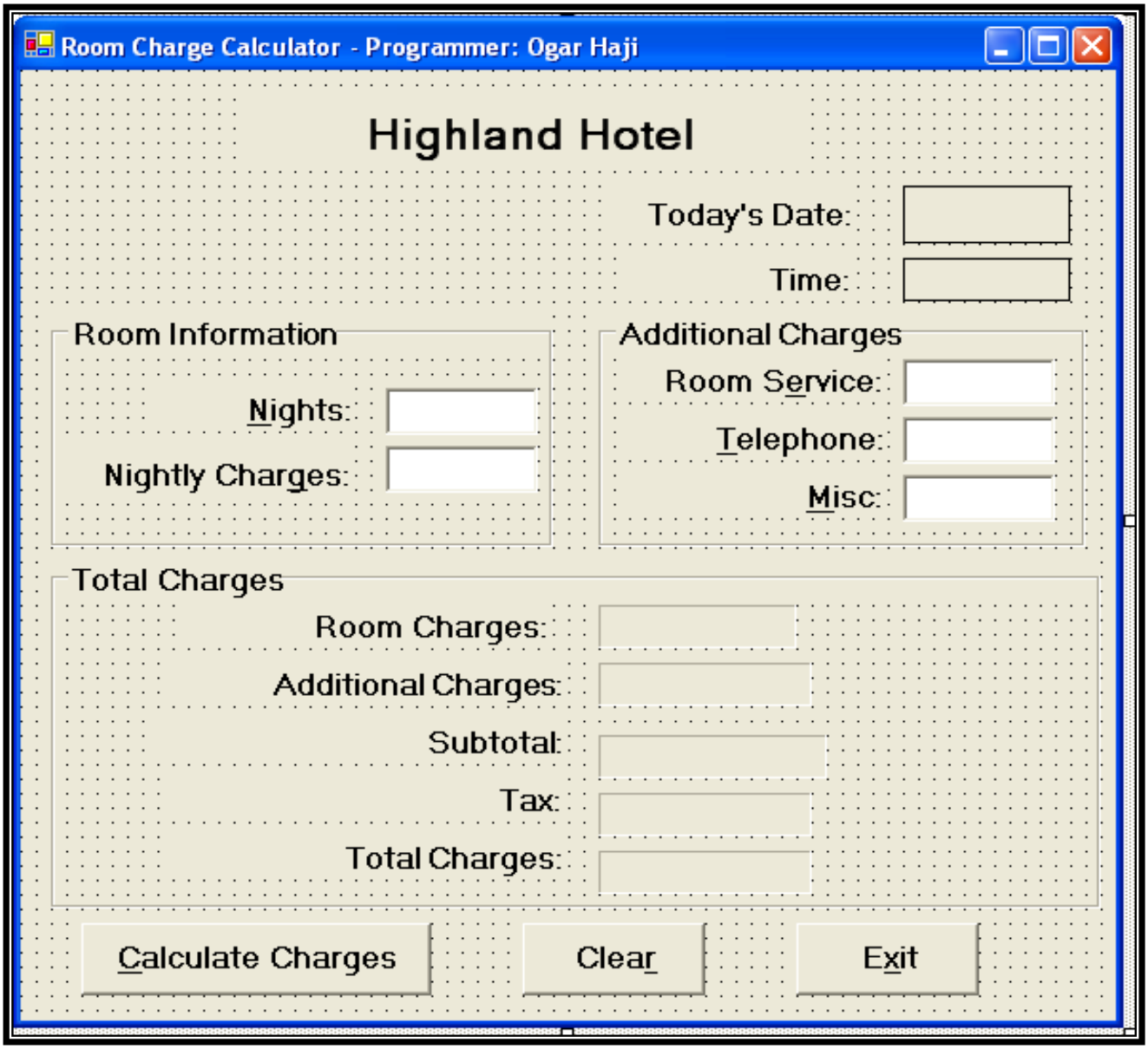
1) **Design the User Interface Form by Adding Labels, Panels, TextFields and Buttons as show below:** **Do Lab Assignment**
2) **Save Java Form project** as **HotelRoomChargesFormLab5A**



3) Set Text & Name Properties: The following are Name Properties:

txtNights, txtNightlyCharges, txtRoomService, txtTelephone, txtMisc

lblRoomCharges, lblAdditionalCharges, lblSubtotal, lblTax, lblTotalCharges



4) Either Draw a Flowchart or print a Pseudo code or Do Both.

Do One Modification at a Time

5) Code in Java language and then type the code.

//1) Declare all variables to be used in the Project

//2) Convert Text entered in Text Boxes to Numeric Values

//3) Calculate Room Charges

//4) Format Currency and Display results in Label controls

Calculate Room Charges (Add the following in the correct order)

B) Add the following to Calculate Charges Button in the correct order

// 1) Declare all variables to be used in the Project

//2) Convert Text entered in Text Boxes to Numeric Values

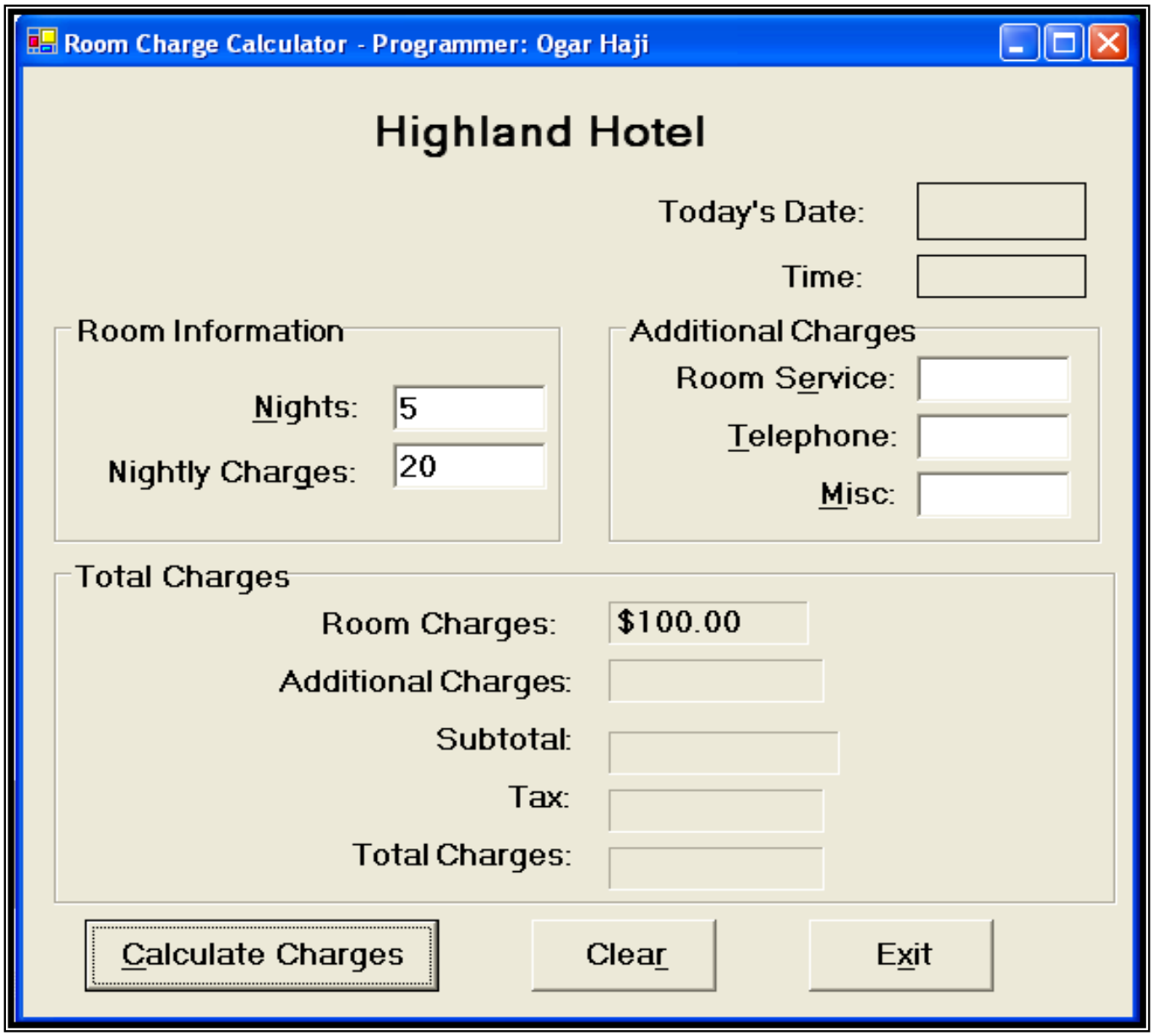
//3) Calculate Room Charges

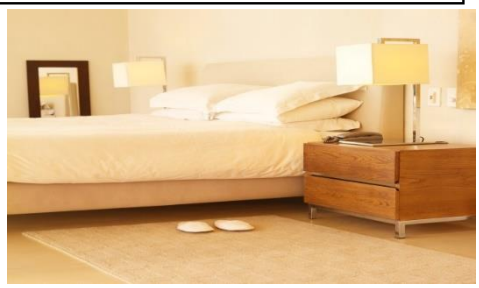
//4) Format Currency and Display results in Label controls

Do One Modification at a Time

6) Run the Project and correct any errors.

7) Test the project with Test Data: (Nights: 5, Nightly Charges: 20)





Do One Modification at a Time

Calculate Additional Charges. (Add the following in the correct order)

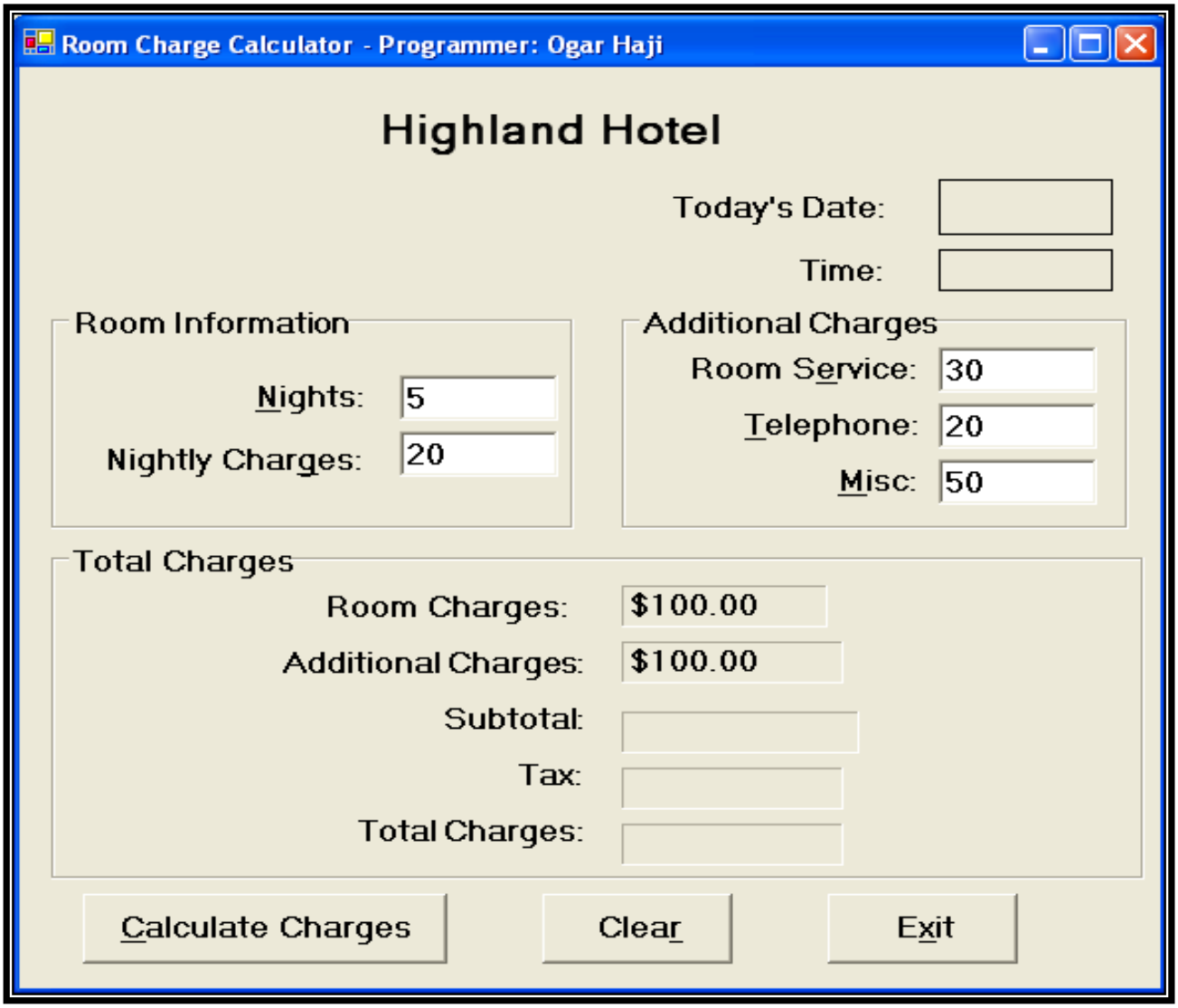
C) Add the following to Calculate Charges Button in the correct order

// 1) Declare all variables to be used in the Project

//2) Convert Text entered in Text Boxes to Numeric Values

//3) Calculate Additional Charges

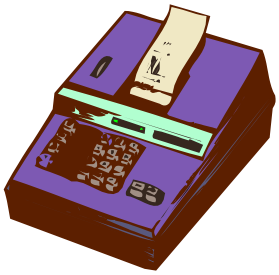
//4) Format Currency and Display results in Label controls



Do One Modification at a Time

Calculate SubTotal. (Add the following in the correct order)

D) Add the following to Calculate Charges button in the correct order

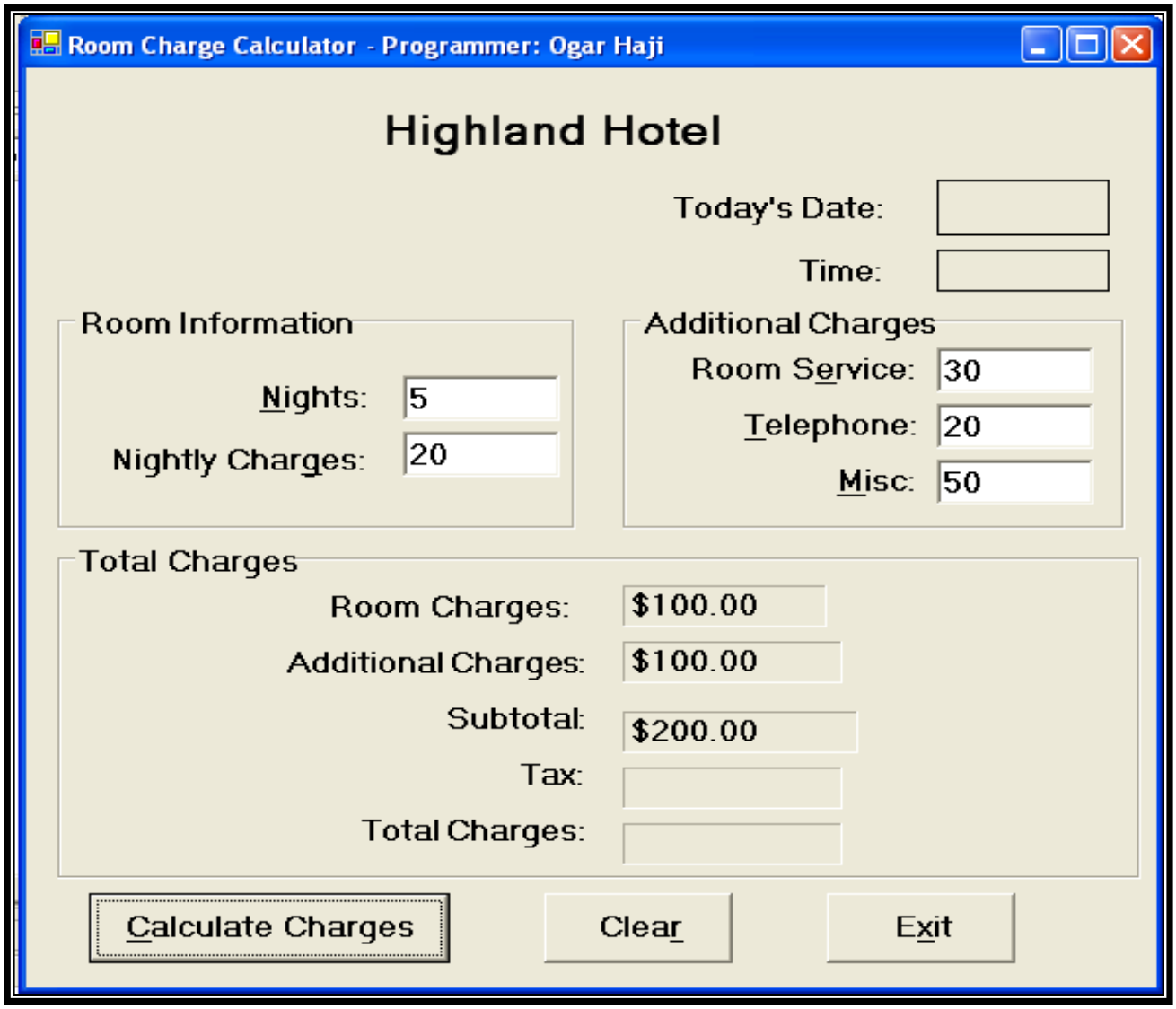


// 1) Declare all variables to be used in the Project

// 2) Convert Text entered in Text Boxes to Numeric Values

// 3) Calculate Sub Total Charges

// 4) Format Currency and Display results in Label controls



Do One Modification at a Time

Calculate Tax. (Add the following in the correct order)

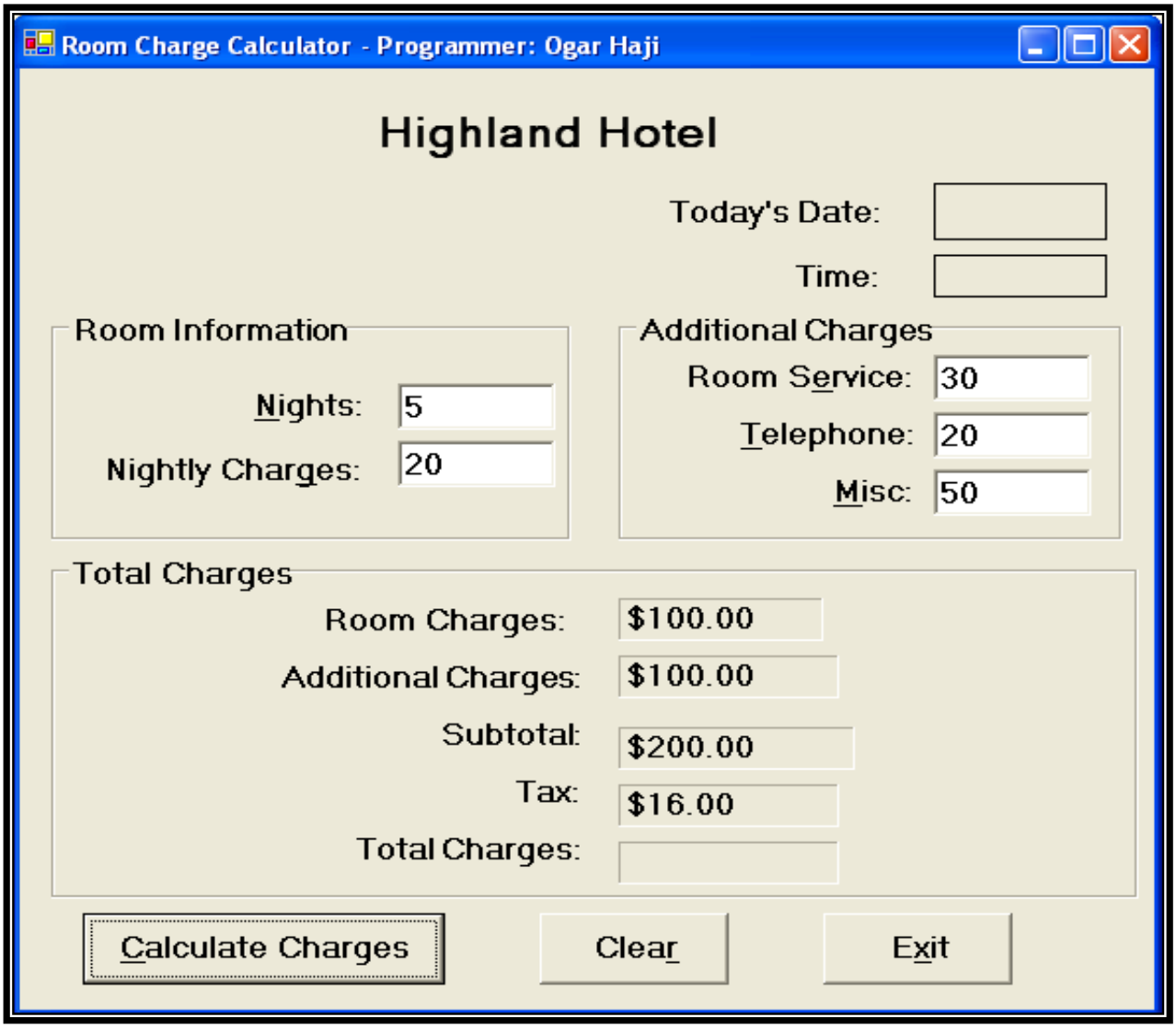
E) Add the following to Calculate Charges button in the correct order

// 1) Declare all variables to be used in the Project

// 2) Convert Text entered in Text Boxes to Numeric Values

// 3) Calculate Taxes

// 4) Format Currency and Display results in Label controls



Do One Modification at a Time

Calculate Total Charges. (Add the following in the correct order)

F) Add the following to Calculate Charges button in the correct order

//1) Declare all variables to be used in the Project

//2) Convert Text entered in Text Boxes to Numeric Values

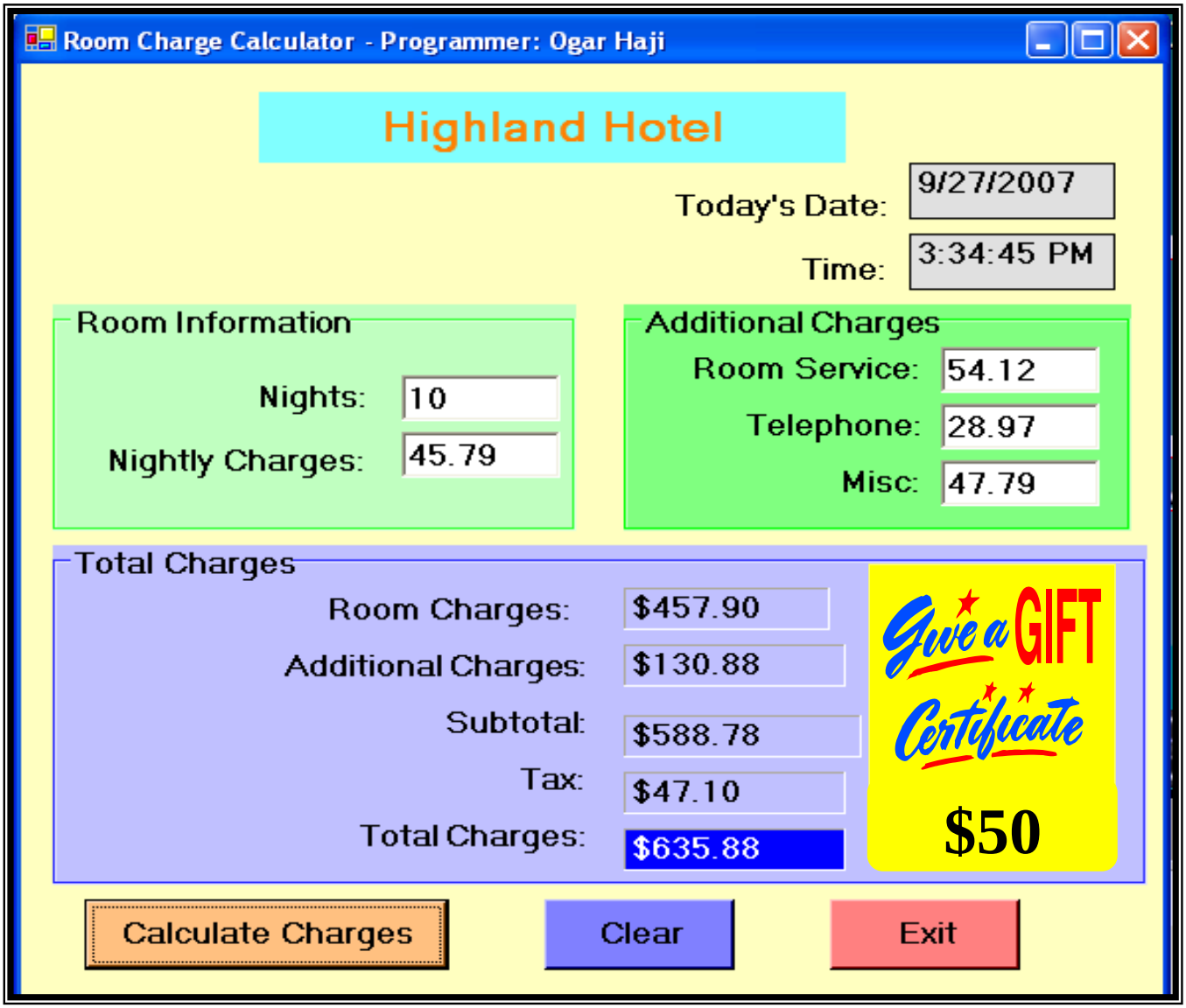
// 3) Calculate Total Charges

// 4) Format Currency and Display results in Label controls

Do One Modification at a Time

Change BackColor and **ForeColor of Total Charges and make it in Larger Font Size.**

If Total Charges is more than $500, then give the Person a $50 Coupon and display the Coupon on the Form.



3) Document the Project. write more comments

3) Write a **Console Application for HotelRoomCharges First**

Note: Always **Upload** to **Brightspace 2 Files** of **same Java Project:**
1) The **Microsoft Word Document** of the **Java Project Code along with the Java Output Screen shots.**
2) The **Compressed** or **Zipped File** or **Folder** of **Java Project**.

Chapter 5 + Java Lab Assignment #5B (Due Next Week) 100 Points

Name:_____ CIS144 Java language + Wright College

Chapter 5 + Lab 5B JFrame Form Project + NewHadra Pizza Palace Project (Due Next Week) 100 Points

Problem or Project: Design and Code in Java Language the project to Create a Jrame to Manage and Do Calculation for a Pizza Shop.

Do Steps 1 thru 7 in your Note Book or on Paper.

****

** The NewHadra Pizza Palace **

** 6777 N. King Sargon Blvd., Chicago, IL 60645 **

** Phone: 1(773) 123-6777 **

** Store Hours: 10:00 AM till 2:00 PM **

****

1) Go to the location where you saved the Java project NewHadraPizzaPalaceFormOH3 is located.

2) Coy the Folder by RC on Folder NewHadraPizzaPalaceFormOH3 and Click on Copy.

3) RC on the Folder Project NewHadraPizzaPalaceFormOH3. C Copy

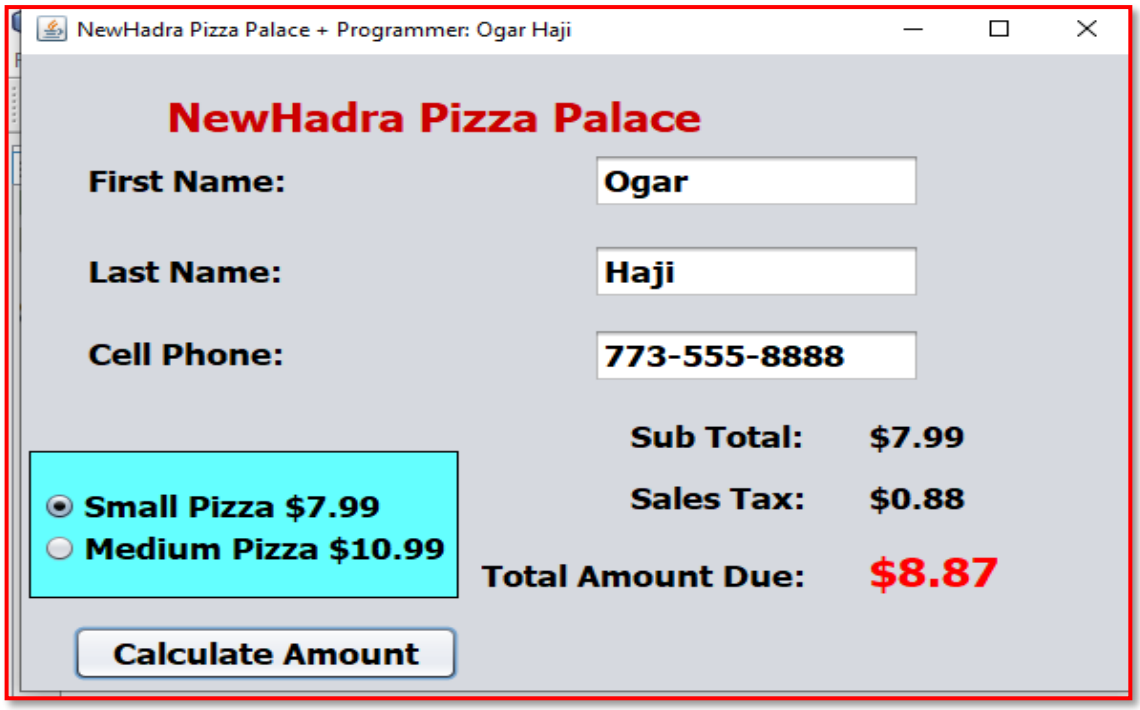
4) Click on Paste to Paste and create a duplicate of the Java project.

5) Rename Java project Folder to NewHadraPizzaPalaceFormOH4.

(RC Java project NewHadraPizzaPalaceFormOH3, C Rename, type the new folder, just change 3 to 4 as: NewHadraPizzaPalaceFormOH4

8) Open the project called NewHadraPizzaPalaceFormOH4.

10) To Center the JForm when you Run it: Click the Form, C Properties, C Code, C Generate Center



Modify the Java project again to add 4 more Labels on Top to Display Date and Time as shown below.

1) Add another button and set the Text property of the button to "Clear the Form" and set its Name property to "btnClearForm" and write the Java Code to clear All the Fields when clicked.

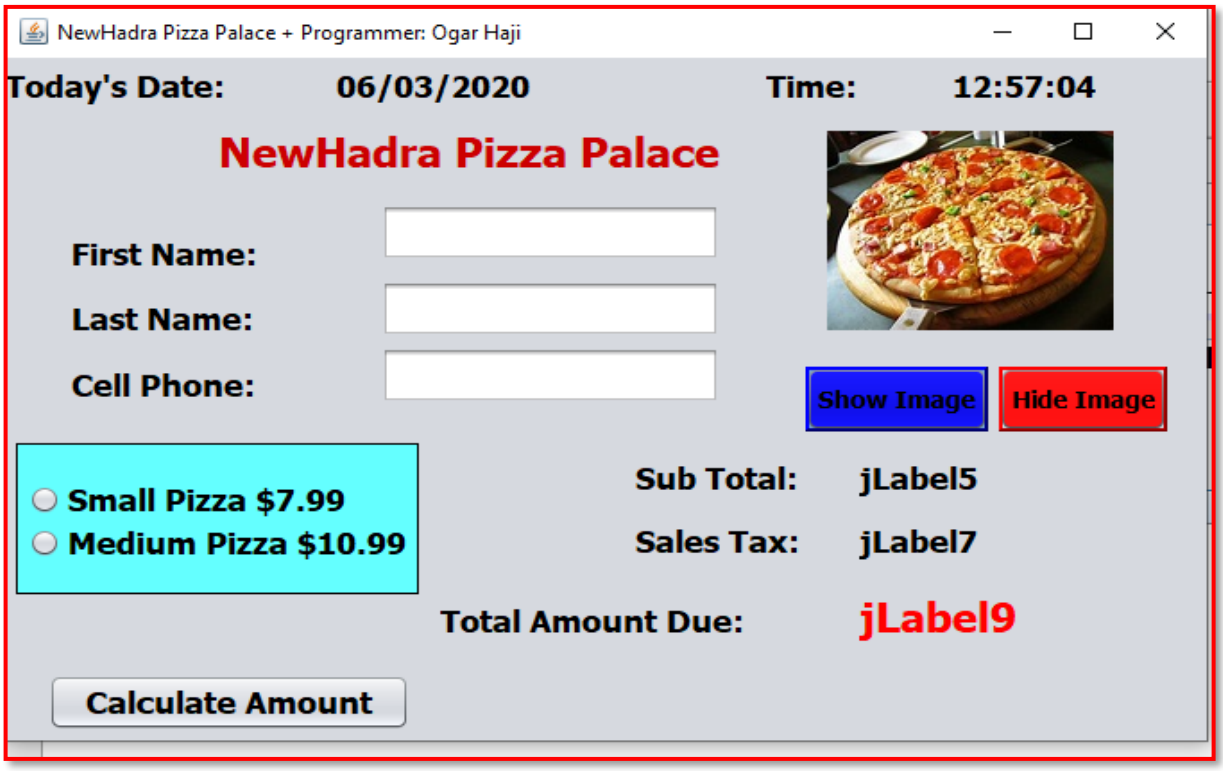
2) Add an **Exit Button. Set** the **Text property** to **"Exit"** and **Name** property to **"btnExit"** and **program** the **button** to **Exit** the **program**.

3) Add an **Image** of **Pizza** and **2 Buttons "Show Image"** and **"Hide Image"** and **Write Java code** to **Show** or **Hide** the **image** when **clicked**.

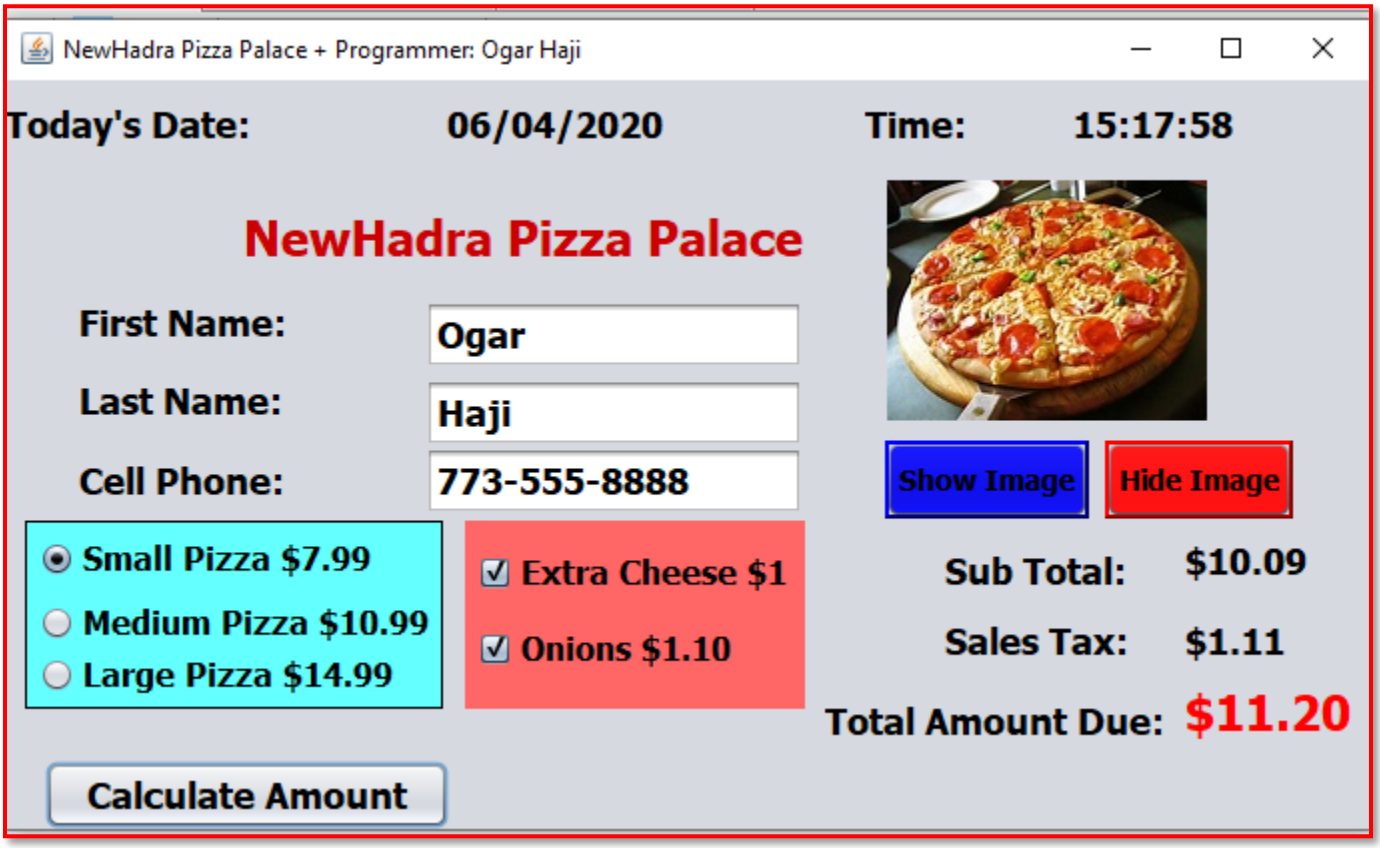
<u>To Insert the Image of Pizza to your JFrame Java project.</u>

1) Save an **Image** of **Pizza** to your **PC Pictures folder.**
2) Add a **jLabel** to the **Jframe** where you want the Pizza image
3) Click the **Label,** Click **Properties**
4) Click the **icon build button**  to display image dialog box
5) Click ○ **External Image**
6) Click Import to Project button
7) Click **This PC,** C **Picture Folder,** C **Pizza,** C **Finished,** C **OK**

3. Set Layout of the **JForm** so the **buttons** and **controls will Not Move:**
RC the **Form**
Point to **Set Layout**
C Absolute Layout



To Modify the project



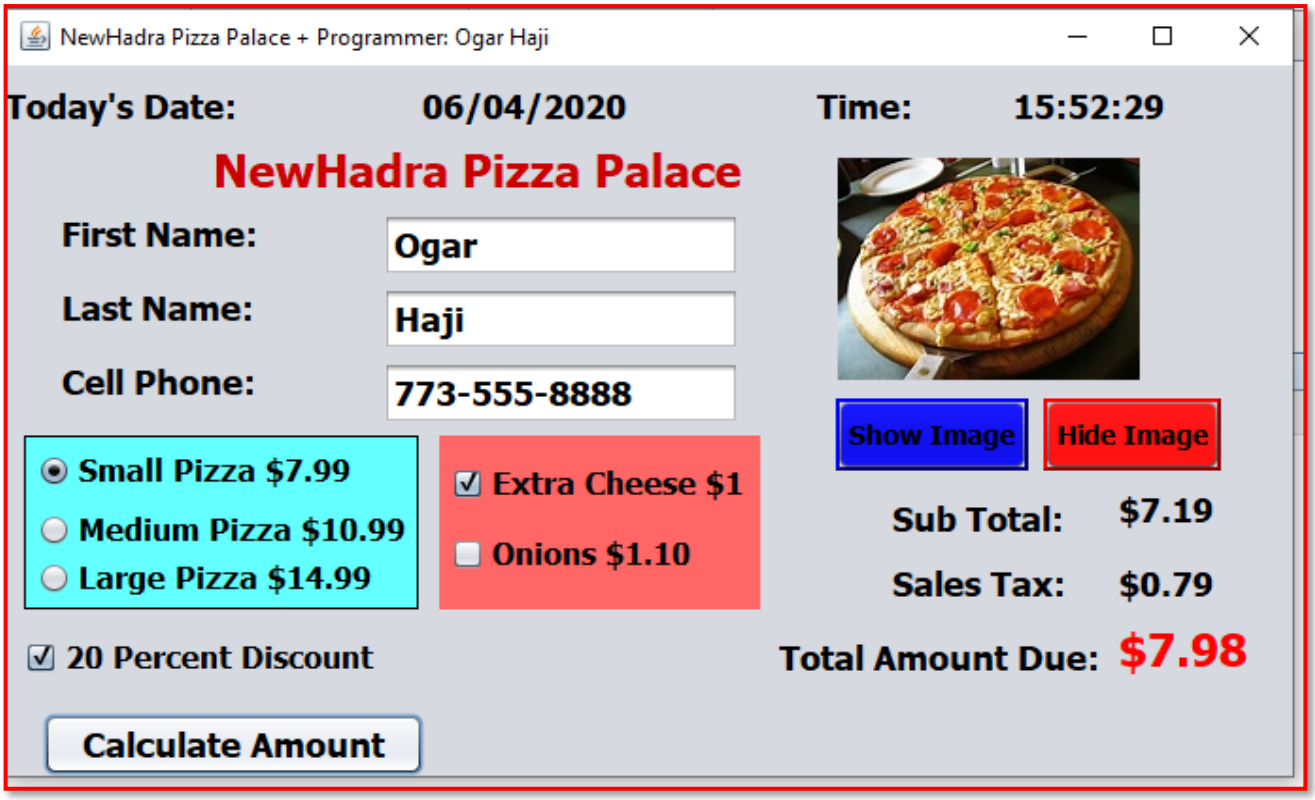
1) **Add** another **Radio Button** called **"Large Pizza $14. 99" below "Medium Pizza $10.99".**
2) **Group All** the **Radio Buttons** to be **Exclusive (Exclusive means you can Only Select 1 Radio Button".**
    a. **Drag** and **Drop** a **Button Group Control** on the **Form (Note: You will Not See the Button Group Control, but it is there)**
    b. **Select All** the **3 Radio Buttons** using the **Mouse selector**
    c. Click on **Properties**
    d. Click on **Button Group** ▼
    e. Select **Button Group 1**
3) **Save** the **Project** and **Run** it and **Notice** now that **you can Select only 1 Radio Button** because you **Grouped** the **Radio Buttons** and they are **Exclusive.**
4) **Add 2 Check Boxes** and place them **Next** to **Pizza Sizes. (Note: With Check Boxes, you can select None, 1, 2 or All of the Check Boxes).**

5) **Set** the **Text Property** of the **First Check Box** to **"Extra Cheese $1.00"** and **set Name Property** to **"chkExtraCheese"**
6) **Set** the **Text Property** of the **Second Check Box** to **"Onions $1.10"** and **set Name Property** to **"chkOnions"**
7) **Code** the **Check Boxes** and **Add 1.00** if the **Customer Checks Extra Cheese** and **Add 1.10** to **Sub Total Amount** if **Onions** is **selected.**

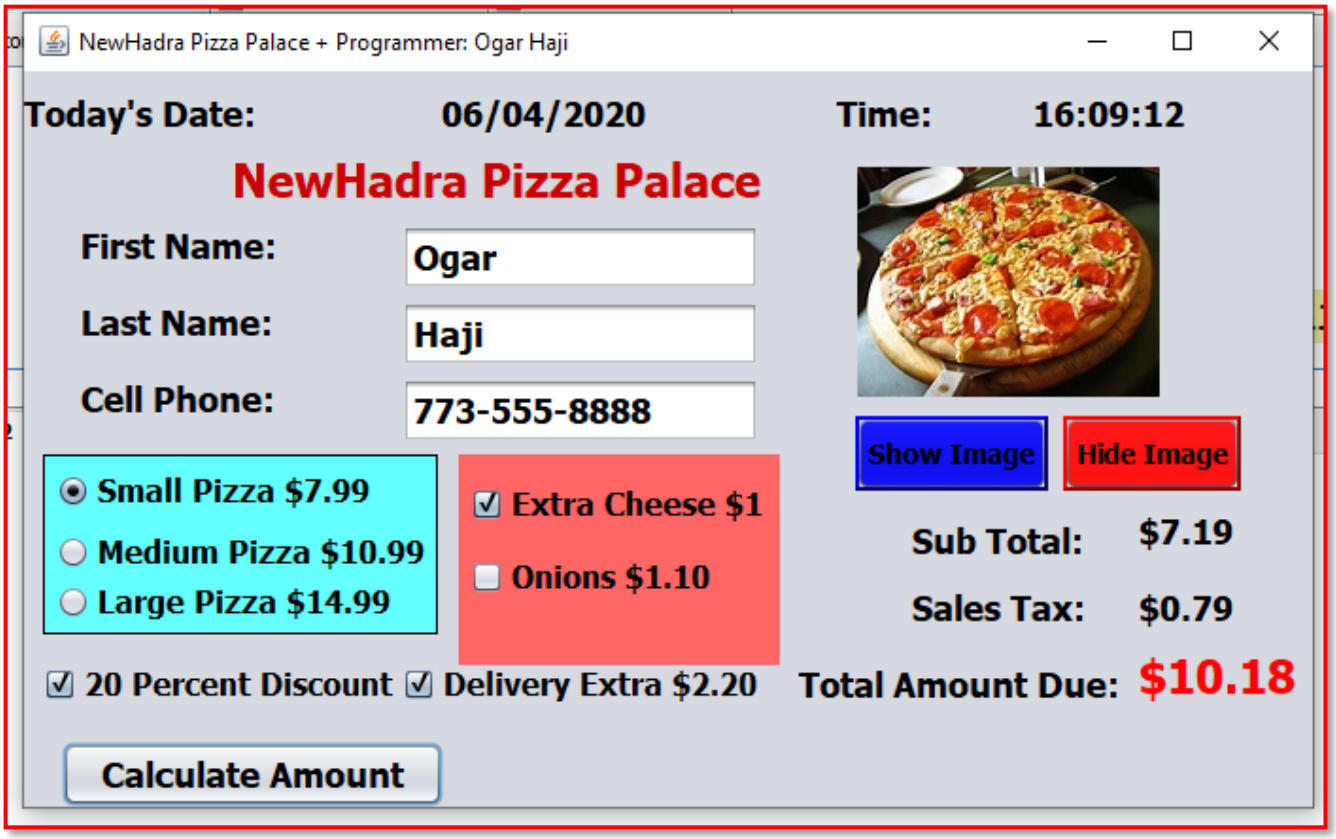
```
if (chkExtraCheese.isSelected()) {
        subAmountDue += 1.00;
}

if (chkOnions.isSelected()){
        subAmountDue += 1.10;
    }
```

8) **Add** another **Check Boxes** and **place below** the **Onions Check Box.**
9) **Set** the **Text Property** of the **Check Box to "Mushrooms $1.25"** and **set Name Property** to **"chkMushrooms"**
10) **Add** a **Check Box** called **"20 Percent Discount" below "Large Pizza".**
11) **Set** the **Text Property** of the **Check Box** to **"20 Percent Discount"** and **set Name Property** to **"chk20PercentDiscount". Remember** to **Apply** the **20 Percent Discount** on **Sub Total** and **before** you **calculate** and **Add** the **Sales Taxes.**
12) **Add** another **Check Box** called **"Delivery Extra $2.20" Next** to **"20 Percent Discount"**.
13) **Set** the **Text Property** of the **Check Box** to **"Delivery Extra $2.20"** and **set Name Property** to **"chkDeliveryExtra".**

Note: When Modifying a Project, Do One Modification at a time.



Run the **Java Project** with the **following Data,** then **Click Calculate Amount Button** to **display** the **following:**



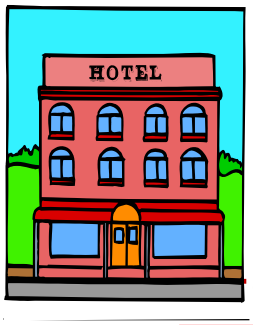
Note: When Modifying a Project, Do One Modification at a time.

Note: Always **Upload** to **Brightspace 2 Files** of **same Java Project:**
1) The **Microsoft Word Document** of the **Java Project Code along with the Java Output Screen shots.**
2) The **Compressed** or **Zipped File** or **Folder** of **Java Project**.

Please, Read, Study and Practice the Lessons in the Java Handout

Chapter 5 + Java Lab Assignment #5C (Due Next Week) 100 Points

Name:_____ CIS144 Java language + Wright College



Java Programming Assignment #5C: Hotel Room Charges Calculator Project (Optional Lab Assignment + Lab 5C)

Optional Lab Assignment Lab 5 C

Do the 12 Must Steps to Design, Code and Solve a Project in Java Language.

Do Steps 1 thru 7 in your Note Book or on Paper.

Note: When Modifying a Program, Do One Modification at a time.

1) Design and **Code** a **Console Java App and Save as**

HotelRoomChargesLab5C. **Do Lab Assignment**

2) Prompt the User to Enter Number of Nights stayed at the

Hotel and

3) Prompt the user to Enter the Nightly Charges

4) Then continue the Rest of Prompt and Calculations.

Purpose of the Project:

- **Calculate Room Charges based on a per night Rate**

- **Room Service Charges**

- **Telephone Charges**
- **Miscellaneous Charges**

- **Also Calculate Taxes then**
- **Calculate Total Charges**
- **Give a Discount of 10% if Number of Nights is over 7 Nights**
- **Give a Gift Certificate of $50 and display an Image of Gift Certificate if Total Amount Charges is over $500.**

- **Insert Computer Current Date and Time at the Top.**

Note: Always **Upload** to **Brightspace 2 Files** of **same Java Project:**
1) The **Microsoft Word Document** of the **Java Project Code along with the Java Output Screen shots.**
2) The **Compressed** or **Zipped File** or **Folder** of **Java Project**.

Wright College + Chapter 5

Using Methods( ) in Java: Using If statement and Logical Operators (And &&, Or || and Not !)

CIS 144 Java Programming Language– Introduction to Computer Programming

"Hands-On" Mastering Computer Logic, Design and Programming Using Java Language

Written By:

OGAR HAJI

MS Computer Science

DePaul University ✚ Chicago, Illinois

Date Published: February 19, 2021