**CSCI 470/502 Assignment 1: First Java Programs**

**30 points (15 points each)**

This introductory assignment is designed to familiarize you with the mechanics of creating, compiling, and running Java applications. You may use the IDE of your choice to build and run these programs. Make sure you add the required documentation box to the **top** of each as described in the Java Documentation and Coding Guidelines in Blackboard's Course Documents.

Once you are finished, submit two .java files named Add1.java and Add2.java on Blackboard by the due date and time. Be sure you do not submit files of the same names but with extensions .class. Also be sure you do not submit files ending with a tilde (~). This indicates that it is a temporary version of the file, i.e., it is open for editing.

If you choose to use Intellij IDEA as your development environment, here is a link to a simple tutorial to get you started with this assignment:

<https://www.jetbrains.com/help/idea/creating-and-running-your-first-java-application.html>

**Part 1: Compile and Run a Java Console Program**

Type in (or copy and paste) the program listed below and save it as Add1.java. The file name is case-sensitive and must match the class name in the program below.

import java.util.Scanner;

/\*

\* Add1.java

\*

\* Console program to add two numbers.

\*/

public class Add1 {

public static void main(String[] args) {

String amountStr;

double num1, num2;

Scanner sc = new Scanner(System.in);

// Read the first number as a String.

System.out.println("Enter the first number: ");

amountStr = sc.next();

// Try to convert String to double for calculation.

try {

num1 = Double.parseDouble(amountStr);

}

catch (NumberFormatException nfe) {

System.out.println("1st number invalid.");

return;

}

// Read the second number as a String.

System.out.println("Enter the second number: ");

amountStr = sc.next();

// Try to convert String to double for calculation.

try {

num2 = Double.parseDouble(amountStr);

}

catch (NumberFormatException nfe) {

System.out.println("2nd number invalid.");

return;

}

// Compute and print the sum.

System.out.printf("Sum is: %.2f\n", num1 + num2);

}

}

**Part 2: Build and Run a Java Swing GUI Program**

Type in (or copy and paste) the following program, and then build and run it.

import javax.swing.\*;

import java.awt.\*;

import java.awt.event.ActionEvent;

import java.awt.event.ActionListener;

/\*

\* Add2

\*

\* Swing program to find the sum of two numbers.

\*/

public class Add2 extends JFrame implements ActionListener {

private static final long serialVersionUID = 1L;

private JButton addButton = new JButton("Add Numbers");

private JButton clearButton = new JButton("Clear Numbers");

private JTextField num1Field = new JTextField(10);

private JTextField num2Field = new JTextField(10);

private JLabel sumLabel = new JLabel();

public static void main(String[] args) {

EventQueue.invokeLater(() -> {

Add2 frame = new Add2("Sum of Two Numbers");

frame.createAndShowGUI();

});

}

private Add2(String title) {

super(title);

}

/\*

\* Create the GUI and show it. For thread safety, this method should

\* be invoked from the event-dispatch thread.

\*/

private void createAndShowGUI() {

initComponents();

// Add listeners for the buttons.

addButton.addActionListener(this);

clearButton.addActionListener(this);

// Display the window.

setDefaultCloseOperation(WindowConstants.EXIT\_ON\_CLOSE);

pack();

setVisible(true);

}

/\*

\* Set the frame's layout, create the UI components, and add them to the

\* layout.

\*/

private void initComponents() {

JPanel panel = new JPanel(new GridLayout(4, 2, 5, 5));

panel.setBorder(BorderFactory.createEmptyBorder(10, 10, 10, 10));

panel.add(new JLabel("First number:"));

panel.add(num1Field);

panel.add(new JLabel("Second number:"));

panel.add(num2Field);

panel.add(new JLabel("Sum:"));

panel.add(sumLabel);

panel.add(addButton);

panel.add(clearButton);

add(panel, BorderLayout.CENTER);

}

/\*

\* Handle ActionEvents from the buttons.

\*/

@Override

public void actionPerformed(ActionEvent e) {

double num1, num2;

if (e.getSource() == clearButton) {

num1Field.setText("");

num2Field.setText("");

sumLabel.setText("");

}

else {

// Try to convert String to double for calculation

try {

num1 = Double.parseDouble(num1Field.getText());

}

catch (NumberFormatException nfe) {

sumLabel.setText("1st number invalid.");

return;

}

// Try to convert String to double for calculation

try {

num2 = Double.parseDouble(num2Field.getText());

}

catch (NumberFormatException nfe) {

sumLabel.setText("2nd number invalid.");

return;

}

// Compute and display the sum.

sumLabel.setText(String.format("%.2f", num1 + num2));

}

}

}