CSE1341 – Lab #1

PRE-LAB [10 points]

Must be done prior to your lab session .

Read the "Java SE – JDK Installation Instructions " (found in Appendix A in the textbook, or provided by the instructor.) Install the JDK (Java Development Kit) on your own computer.

All: To use *java* and *javac* from the command line
Mac: Spotlight: Terminal
Windows*: Start->Run... and enter the text **cmd**

Type the program below into a file name "FirstProgram.java" using Notepad (Windows) or TextEdit (Mac) and compile it using javac in the Windows CMD window / or Mac Terminal window. Execute it using the "java" command in the Windows CMD window / or Mac Terminal window. Mac users – see the note at the end of this document regarding settings in the TextEdit app.

Important: Complete this *before* your first lab class and bring your computer to class to show your lab instructor for pre-lab credit.

```
import java.util.Scanner;

public class FirstProgram
{
  public static void main(String[] args)
  {
    Scanner input = new Scanner(System.in);

    System.out.println("This is my first Java program!");
    System.out.print("What is your name? ");
    String name = input.next();

    System.out.printf("Hello %s welcome to CSE 1341 at SMU! \n", name);

    System.out.println("I am pretty intelligent. I can count the numbers from 1 to 50 and find their sum!");

    int total =0;
    for (int i=1; i<=50; i++)
    {
       System.out.print(i + " ");
       total = total + i;
    }
    System.out.printf("\nThe sum is %d. \n", total);
  }
 }
```

If this compiles and executes correctly your installation of Java was successful.

LAB - Syntax Errors and Productivity Software [90 points]

Part 1 – Syntax errors:

[10 points] Using with the pre-lab program you typed and compiled, remove one of the semicolons in your code and try to compile your program. Paste the program and the error message into a word/open office document and explain what this message means.

Part 2 - Create a spreadsheet with solutions to the following three algorithm problems:

2A [30 points] – You have been offered a programmer job and need to choose whether to take a salaried position or an hourly contract position. The salary is $80,000 per year and the contractor rate is $70 per hour. The salaried position includes free medical benefits, 8 holidays per year and 20 vacation days per year. The contractor position has higher pay, but the contractor must pay $1000/month for medical insurance, 15% self-employment tax, and is not paid for holidays or vacations.

Create a spreadsheet that calculates the total gross income for the specified duration, then calculates the net difference between the employment options following the format shown to the right. The cells in yellow are entered by the user, and the rest of the values should be calculated using formulas.

PROBLEM 2a

Annual Salary	$	80,000.00	per year
Hourly contract rate	$	70.00	per hour
Duration		10	months
Work Hours/Day		8	hours
Work Days/month		21	days
Total holidays		8	days
Total vacation days		20	days

Salaried		
Gross income	$	66,666.67
Contract		
Gross income	$	117,600.00
Gross difference	$	50,933.33
- medical insurance	$	10,000.00
- Self Employment tax	$	17,640.00
- unpaid holidays	$	4,480.00
- unpaid vacation	$	11,200.00
Net Difference	**$**	**7,613.33**

2B [20 points] – Jane earns an annual salary of $30,000/year. Jane's company offers an annual raise of 5.1% calculated at the end of the year, but plans to reduce the annual raise by 0.1% each year for the next decade. Build a spreadsheet that uses formulas to calculate Jane's salary at the beginning of each year over a decade. Also show the total earnings for the entire decade. The spreadsheet should look like this:

	Jan 1 Salary	Dec 31 Raise %
Year 1	$ 30,000.00	5.10%
Year 2	$ 31,530.00	5.00%
Year 3	$ 33,106.50	4.90%
Year 4	$ 34,728.72	4.80%
Year 5	$ 36,395.70	4.70%
Year 6	$ 38,106.29	4.60%
Year 7	$ 39,859.18	4.50%
Year 8	$ 41,652.85	4.40%
Year 9	$ 43,485.57	4.30%
Year 10	$ 45,355.45	4.20%
Total Earnings	***$ 374,220.27***	

Type in these fixed values.

Put formulas in all the white cells. The results should match these numbers.

2C [20 points] – Create a spreadsheet that calculates the ***area*** of the following geometric shapes based on the known values you enter. You can approximate the value of PI using 355/113:

Shape	Known Values Entered
Square	length of one side
Rectangle	Length of two corresponding sides
Triangle	length of the base and height
Circle	length of the radius

Area

Square

Length of side:	5
Area:	25

Rectangle

Length of side 1:	4
Length of side 2:	7
Area:	28

Triangle

Length of base:	4
Length of height:	5
Area:	10

Circle

Radius:	5
Pi:	3.14159
Area:	78.5398

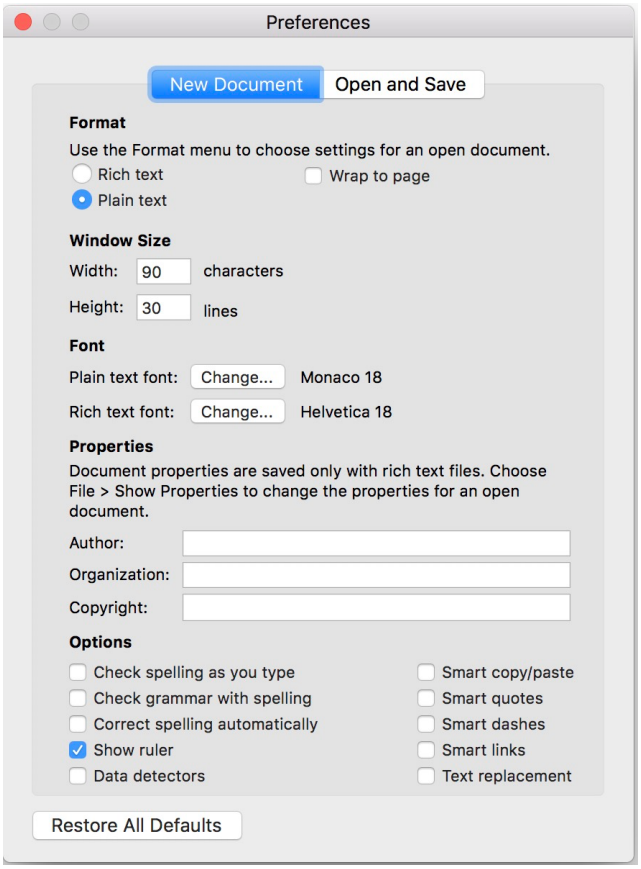
Submit the document and spreadsheet via Canvas (as a single zip-file).

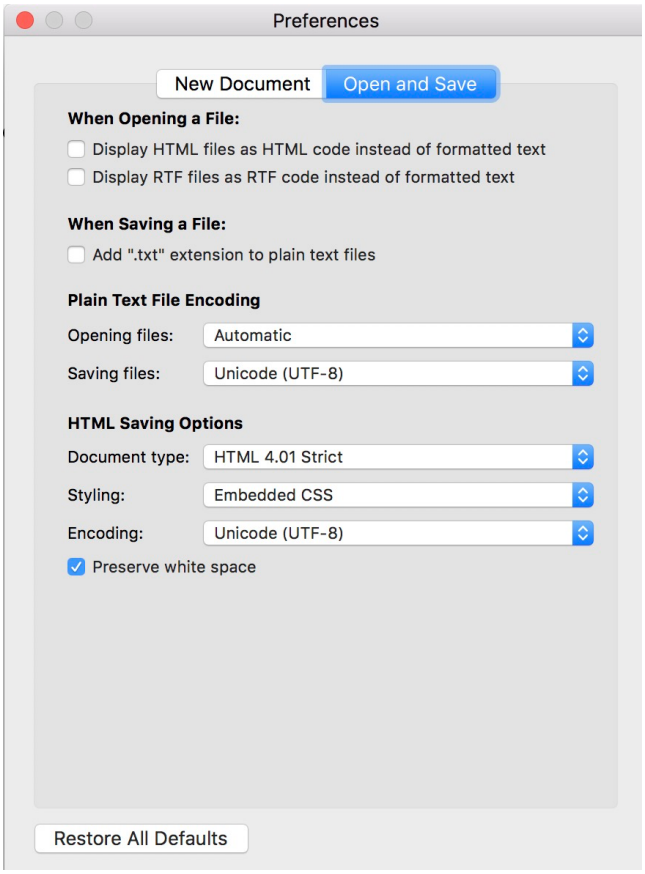
This assignment is due by 6:00AM Saturday, February 4, 2023.

Submit the spreadsheet file and Word document via Canvas (as a single zip-file). Include a note at the top of the Word document and spreadsheet file that includes your name, student id number, and "Lab 3-Spring 2023". If you used a web-based spreadsheet tool (e.g., Google Sheets) be sure to export it in Microsoft Excel format. Do not submit PDFs or Screenshots.

Additional Note for Mac Users:

The TextEdit app must be set up for plain text with no smart quotes to properly create and save a document that the compiler can read. Before starting, open preferences in TextEdit and make sure the settings match the following:





Also, make sure the **Format** menu shows ***Make Rich Text*** as its third item. If it says ***Make Plain Text,*** click it to set it to plain text mode.