CS520 Module 3 Assignment

General Rules for Homework Assignments

- You are strongly encouraged to add comments throughout the program. Doing so will help your facilitator to understand your programming logic and grade you more accurately.
- You must work on your assignments individually. You are not allowed to copy the answers from the others. *However*, you are encouraged to discuss the approaches to the homework assignments with your section mates and the facilitator in your section via the discussion board.
- Each assignment has a strict deadline. However, you are still allowed to submit your assignment within 2 days after the deadline with a penalty. 15% of the credit will be deducted unless you made previous arrangements with your facilitator and professor. Assignments submitted 2 days after the deadline will not be graded.
- When the term *lastName* is referenced in an assignment, please replace it with your last name.

You are strongly encouraged to add comments into your program!

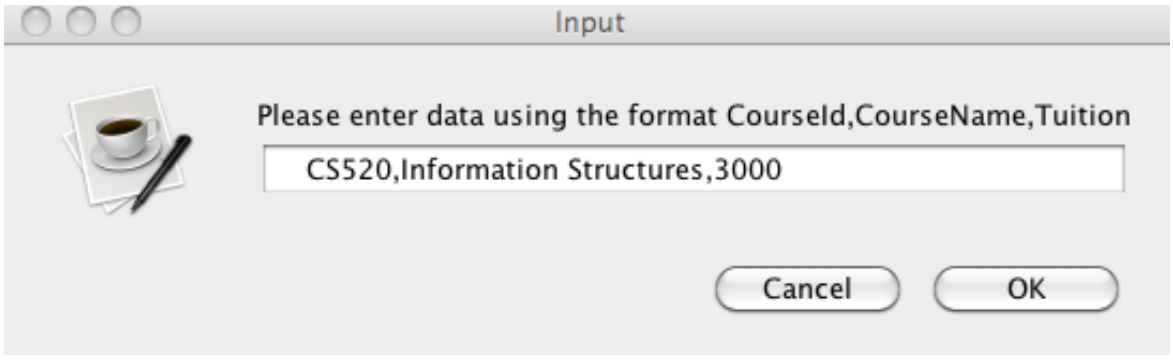
Create a new Java Project in Eclipse named HW3_*lastName* and complete the following two parts.

Part 1 (40 Points) – Strings

Create a package named *cs520.hw3.part1.* Using this package, create the class *StringTest* and implement the specified functionality in its *main* method.

a. Ask the user, through a single input dialog, for the *course id*, *course name*, and *tuition* in the format *CourseId*,*CourseName,Tuition*
b. *Trim* the user's input, in case spaces were entered at the beginning or at the end.
c. Display the trimmed data to the console. Do the following operations using this trimmed string.
d. Find the index of the first *comma* in the input using the *indexOf* method. Using this value, extract the *course id* part of the input using the *substring* method.
e. Display the position of the first *comma*, the *course id*, and the length of the *course id* to the console.
f. Find the index of the second *comma* in the input using the *indexOf* method. Using this value, extract the *course name* part of the input using the *substring* method.
g. Display the position of the second *comma*, the *course name*, and the length of the *course name* to the console.
h. Extract the *tuition* using the *substring* method. Convert the value to an integer. Display to the console the tuition and the tuition at 25% discount (as integers).
i. Now, examine the code for all possible exceptions that could occur. Handle all the different exceptions explicitly and print out the appropriate exception message to the user.

Sample Input:



Sample Output:

```
CS520,Information Structures,3000
First Comma Position:5, Course Id:CS520, Length:5
Second Comma Position:28, Course Name:Information Structures, Length:22
Regular Tuition $3000, Discount Tuition $2250
```

Also, test the following inputs where exceptions will occur and your program handles them gracefully -- when *Cancel* is clicked, when only the *course id* is entered, when only the *course id* and the *course name* are entered, and when all the three values are specified but the tuition is not an integer

Part 2 (60 Points) – StringTokenizer and File Input

Create a package named *cs520.hw3.part2.* Using this package, create the following classes.

1. Create a class named *Student* as follows. The class keeps track of the student's homework grades.

    a. The instance (or member) private variables – *name* (String), *homework1, homework2, homework3, homework4, homework5* and *homework6* (all of type integer).
    b. A single constructor with name as its argument.
    c. The public *set* methods for the six homework instance variables. The *get* methods are optional.
    d. A public *computeAverage* method that takes no arguments and returns a *double* showing the average homework grade for this student.
    e. Override the *toString* method to return the string representation of this object in the format "The <*studentName*>*'s* average grade is <the computed average>".

2. Create a *Test* class to test the following functionality in its *main* method.
    a. Use the *BufferedReader* class to read the *data.txt* file. The contents of the file are shown below. Create the data.txt file in HW3_*lastName*.
    b. Read the contents of the text file one line at a time using a loop. The program should work for any number of input lines. Invoke the *processInputData* method for each line read.
    c. Write a private method *processInputData* which processes its string input argument as follows.
        1. Tokenize the string argument using the *StringTokenizer* class using the *comma* as the delimiter.
        2. Extract the *name* token. Create a *Student* object and assign to the variable *currentStudent*.
        3. Read each homework grade token one token at a time. Use the corresponding *set* method on the student object to set the instance value.
        4. Display the string representation of the *currentStudent* object to the console.

Sample Input data.txt file:

```
Alice,44,79,85,72,77,57
Bob,79,94,70,71,71,51
Charlie,95,99,41,55,65,50
Dave,87,89,88,55,74,63
Ed,82,51,44,67,73,49
```

Sample Output:

```
Alice's average grade is 69.00
Bob's average grade is 72.67
Charlie's average grade is 67.50
Dave's average grade is 76.00
Ed's average grade is 61.00
```

Submission:

Create an archive of your Eclipse project using the following steps. Select the HW3_*lastName* project in the Eclipse IDE's *Package Explorer* or the *Navigator* window.

Click *File->Export*. Select the *General->Archive File* option. Click *Next*.

Specify the "*To archive file:"* entry as say, C:\Temp\HW3_*lastName*.zip.

The zip file will be created and stored in the C:\Temp folder.

Submit this zip file as an attachment in the Assignment Section.