CS1073 - Assignment #2 - Fall 2020

Submission Deadline: Friday, September 25th before 12:00 NOON (Atlantic Daylight Time Zone) in the Assignment 2 dropbox in Desire2Learn. (Read the submission instructions at the end of this document carefully).

The purpose of this assignment is to:
- to gain practice compiling & running a Java application that includes more than one class
- to modify existing classes to add extra functionality.

This assignment is to be done individually. If you have questions, direct them to a tutor/assistant during a help session in the "Faculty of Computer Science Student Success Centre" team or to your course instructor.

I. Downloading, Compiling, and Running a Sample Application

The first step should always be to organize yourself. I suggest that you start by creating a directory where you can store your files for assignment #2; that way, they can be kept separate from your other assignment files. For example, inside your `CS1073` folder, create a new folder named `assign2`. As you work on this assignment, save all of your files to that location.

Next, download a copy of these two Java files from Desire2Learn.

• Course.java

• CourseDriver.java

Note: These files are probably inside a .zip file that is posted in Desire2Learn. Download and unzip that file and you should see the two Java files. You must unzip the file and work with the extracted files – you will not be able to save any changes you make to files that are inside a zipped folder.

Continued on the next page…

To unzip a file:
- On Windows, open the File Explorer window and go to the folder where you saved the .zip file you downloaded from D2L. Right click on the .zip file and a menu will pop up. From the menu select 'Extract All...' and a new window will pop up that allows you to choose where the files are extracted. The default path will extract the files to a folder with the same name as the .zip file in the same folder as the .zip file; however, you can change the path by clicking the 'Browse...' button and navigating to the folder you want the files to be extracted to and clicking the 'Select Folder' button. Once you have chosen the folder you want to extract the files into, click the 'Extract' button at the bottom of the window.
- On macOS, downloaded files will typically be saved in your Downloads folder (unless you have specified that you want them to go elsewhere – this is something that you can specify in your browser preferences). Depending upon what browser you are using and the preferences that you have specified, you may find that:
  - When you download a .zip file, your browser automatically unzips it when it does the download. So, the individual files that were contained within that zip would then be in your Downloads folder. If that is the case, you will simply need to move those files from your Downloads folder to the folder that you created for this assignment. (Aside: If you don't want .zip files to automatically be unzipped when they are downloaded in Safari, go to Safari's Preferences and under the General tab, uncheck the option *Open "safe" files after downloading*.)
  - If the .zip file is not automatically unzipped when the browser downloads it, you should see the .zip file in your Downloads folder. Move that file to the folder that you have created for this assignment. Then, in your Finder window just double-click on the .zip file to unzip it. You will then see the files that were contained inside the .zip.

The extracted files should now be in the directory that you created for this assignment. Use a text editor to open the two Java files that you downloaded. Read the comments that have been provided and trace through the code until you understand these two files. Compile these files and run the application to see what it does. If the results are not what you expected, go back and take another look at the Java files.

In assignment 1 we showed you how to include the output of a program in your report by capturing an image of the command prompt or terminal window. It is not necessary to do this all the time. Instead, once you have confirmed that your program is working correctly, you can create a text file containing your program output by running the program in the following manner:

```
java CourseDriver > CourseDriverOutput.txt
```

You will notice that the output no longer appears in your command prompt or terminal window. That is because this command runs the program but sends all the output to a file called "CourseDriverOutput.txt" instead of your command prompt or terminal window. Note: You should always choose a meaningful name for your output file; "CourseDriverOutput.txt" was just used as an example here.

For this question you have not been asked to alter the code in any way. Simply create a file containing the output, and include that file as part of your Assignment 2 submission.

Open the output file in a text editor to verify that the contents are correct. Then, copy and paste the contents into your assignment report. (See submission instructions below).

When you later create the .zip file that you will upload to D2L for this assignment, please include your output file from question I in that .zip archive as well. (Again, see submission instructions below.)

II.   Modifying the Application

Modify the application from question I as follows:

a) Modify the Course class so that, for each Course object, we also store the instructor's name.

Make sure that you:
- Define a new instance variable.
- Modify the constructor method.
- Modify the toString() method.
- Modify all calls to the Course constructor in the CourseDriver.java file. You will need to provide the name of the instructor for each course. You can choose any names you like for this.

Test these changes before moving on to part b.

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b) Add a new method to the Course class named addStudents. This method will increase the number of students in the course by some specified number of students, which the method will receive as a parameter.

c) In CourseDriver.java:

- Add a statement to create a fourth Course object called course4; you can choose values for that course's name, semester, year, and instructor.
- Add a fourth println statement at the end of the main method to display the values for this fourth Course object.
- Add the appropriate statements to record the fact that 23 students have been added to CS1073, 17 students have been added to CS1083, and 31 students have been added to MATH1013. Then, provide another statement to record the fact that 14 more students have been added to CS1073. Position these four statements after the objects are created and before they are printed out.

Compile and run the updated application (the modified Course.java and CourseDrivers.java files). If the application is working correctly, create a new text file containing your output for question II (refer back to question I to remind yourself how to do this.) Choose a different filename for this output file than what you used previously. (You do not want to overwrite your output file for question I, as you will need to submit both output files.)

Note: Since you have modified both of the .java files that we provided, you should add your name to the list of contributors in the Javadoc comment at the top of each class. Add a second @author tag (just below @author Leah Bidlake), and put your name & student number beside that.

Copy & paste the source code for both modified (updated) .java files into your Assignment 2 report. Then, copy & paste the output into the report. (Refer to the submission instructions on the next page.)

Include both modified (updated) .java files and your output file in your .zip archive. (Again, refer to the submission instructions on the next page.)

Your electronic assignment submission (submitted via Desire2Learn) will consist of <u>two files</u>:

i. a written report. This should begin with a title page; just as we described in Assignment #1, your title page should include: the course (CS 1073), your section (FR01A, FR02A, FR03A or FR04A), the assignment number (Assignment #2 in this case), your full name, and your UNB student number. That should be followed by four sections, with each part clearly identified with a section heading. Include:

   a. the sample output you created by running the program as per question I

   b. the updated source code for Course.java (including the revisions from question II)

   c. the updated source code for CourseDriver.java (including the revisions from question II)

   d. the sample output you created by running the program after successfully completing the revisions as per question II.

This written report should be prepared using a word processor; we recommend using Microsoft Word (i.e. create a .docx file for your report). (Copy & paste your java source code & output into the report document). Add appropriate headings for each part. Fix up the formatting where necessary, adjusting line breaks & page breaks to ensure that your document is easy to read. Use a monospaced font for your code to maintain proper indentation.) Once the report is complete and you've checked it all over, save the .docx file for your own records, and then **save a second copy in pdf format for submission**. (Note: Be sure to open that file in a pdf viewer to verify that the pdf was generated correctly.) The **SINGLE pdf file** containing your report will be submitted to the appropriate assignment drop box on Desire2Learn. (It is important that you submit a pdf file and NOT the original Word document. This pdf will allow the marker to write comments directly on your work to give you better feedback.)

Note: Please name this report as follows: **YourName_As2_Report.pdf**

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ii. an archive file **(.zip)** that contains all of your work for this assignment. Make sure that your archive includes the complete revised source code (.java files - in case the marker wishes to compile & run your code) and both of the output files. You should not include the report document or the .class files in your archive. This archive should be submitted as a **single file** to the appropriate drop box on Desire2Learn.

Note: Please name this archive file as follows:
YourName_As2_Archive.zip

End of Assignment 2