# CPSC 1110 – LAB 06

Data Processing (File I/O), Exception Handling

In this lab we will implement a program that inputs data from a file, processes this data, and then writes new data into a new output file. This is problem **P11.12** from the book. You do not need screen-shots for this lab. Simply include your output file. You will need to use WordPad (not notepad) or the Eclipse editor to view your output file. (Notepad will not correctly display new lines from your java output file). You may use BlueJ or Eclipse to complete the lab. (If you want to use some other IDE please talk to me about it). **PLEASE COMMENT YOUR CODE.** You will have points taken off if you do not comment your code.

You should put your .java file and your output text files into a single .zip file that you will submit to UTC Learn.

**Some useful links:**

BlueJ tutorial [www.bluej.org/tutorial/tutorial-201.pdf](http://www.bluej.org/tutorial/tutorial-201.pdf)

Java tutorial home page: <http://docs.oracle.com/javase/tutorial/>

Start here: <http://docs.oracle.com/javase/tutorial/java/index.html>

Arrays <http://docs.oracle.com/javase/tutorial/java/nutsandbolts/arrays.html>

Array Lists <http://docs.oracle.com/javase/7/docs/api/java/util/ArrayList.html>

**Some helpful tips:**

1. Compile often – do it.
2. You are only responsible for creating a single class, CapacitorVoltage. You may put all your code into the main method. You will also need to create an output file, rc.txt.
3. It may be helpful to use the Debugger or print statements to check your work. (always). You only need to submit a single output file; however, I may test different inputs on your code. Feel free to do additional testing on your lab.
4. There is no starter code for this lab. You should make sure that your code works with the given input file, and produces output to the output file rc.txt.
5. For eclipse, store your input files in the home directory for your ***Project***. (This is one folder up from where your source files are stored). Your output will be written to this same location by default. If you place your file in the correct place, then you can simply refer to your file by name (no extra directories needed) in your code.
6. For BlueJ, store your input file in the home directory of your ***Project***. (This is the same folder that contains your source files). Your output will be written to this same location by default. If you place your file in the correct place, then you can simply refer to your file by name (no extra directories needed) in your code.
7. Again, for step 5 or 6, if your file is placed in the correct folder, you can refer to the file name in the File constructor, like this: new File("params.txt"). (Use rc.txt for your output).

## Tasks: Follow the directions below to complete your lab assignment

For today's lab we will be completing **Exercise P11.12** from the book page 561.

**P11.12** After the switch in the figure below closes, (see book for figure), the voltage (in volts) across the capacitor is represented by the equation

v(t) = B(1 - e-t/(RC))

Suppose the parameters of the electric circuit are *B* = 12 volts, *R* = 500 , and *C* = 0.25 F. Consequently

v(t) = 12(1 – e-0.008t)

where *t* has units of s. Read a file params.txt containing the values for *B*, *R*, *C*, and the starting and ending values for *t*. Write a file rc.txt of values for the time *t* and the corresponding capacitor voltage *v(t)*, where *t* goes from the given starting value to the given ending value in 100 steps. In our example, if *t* goes from 0 to 1000 s, the twelfth entry in the output file would be:

110.00 7.02261

Make sure that your program catches the FileNotFoundException that can occur if your input file params.txt cannot be found. Your program should catch this exception, and then prompt the user for a file name again until a valid file is entered.

***IMPORTANT!!*** For this lab you simply need to create a CapacitorVoltage class that implements the main method in order to perform your file I/O. Make sure you use params.txt as your input file. Use rc.txt for your output file.

## To Turn In via UTC Learn

You should turn in 1 .ZIP file containing your java files and an output file rc.txt. 1 file should be uploaded to UTC Learn. ***IMPORTANT!!!*** You should name your file in the following manner. lastname-firstname-lab06.zip. So John Smith would submit smith-john-lab06.zip.