Exposure Java	Lab 03
The Time Display Program	**80 & 100 Point Versions**

Assignment Purpose:

The purpose of this lab assignment is to demonstrate knowledge of using simple data type variables in a program and use arithmetic binary operations.

Write a program that starts with seconds, and then displays the hours, minutes and seconds. It will be your job to give the computer a set of computational instructions that will provide the desired results. Right now, early in your computer science course you need to realize that it is not possible to write a program, which means a set of computer instructions, to accomplish anything unless you can personally solve the problem.

It is possible to write a computer program that will play chess. Now can you imagine writing such a program if you cannot personally play chess? In other words, right now you need to first understand the logical steps that are necessary to compute the time from seconds.

Step description	Arithmetic Operation
Start with 10,000 seconds.	10000
First, you need to compute the number of whole hours using integer division. Use the fact that there are 3600 seconds in one hour.	10000 seconds / 3600 = 2 hours
Now you need to determine how many seconds are left over from the integer division. This is accomplished with the remainder division.	10000 seconds % 3600 = 2800 seconds
The 2800 seconds now need to be used to compute the whole minutes by using integer division with 60.	2800 seconds / 60 = 46 minutes
Once again you need to determine the left over seconds. Use the remainder division with 60.	2800 seconds % 60 = 40 seconds
The result of these computations shows the following results:	10000 seconds equals: 2 hours, 46 minutes and 40 seconds

Lab03 Student Version	Do not copy this file, which is provided.

```
// Lab03vst.java
// Student starting version of the Lab03 assignment.
// Resave this program as Lab03v80 for the 80 point version.
// Resave this program as Lab03v100 for the 100 point version.


public class Lab03st
{
     public static void main(String[] args)
     {
          System.out.println("Lab03, 80 Point Version\n");

     }
}
```

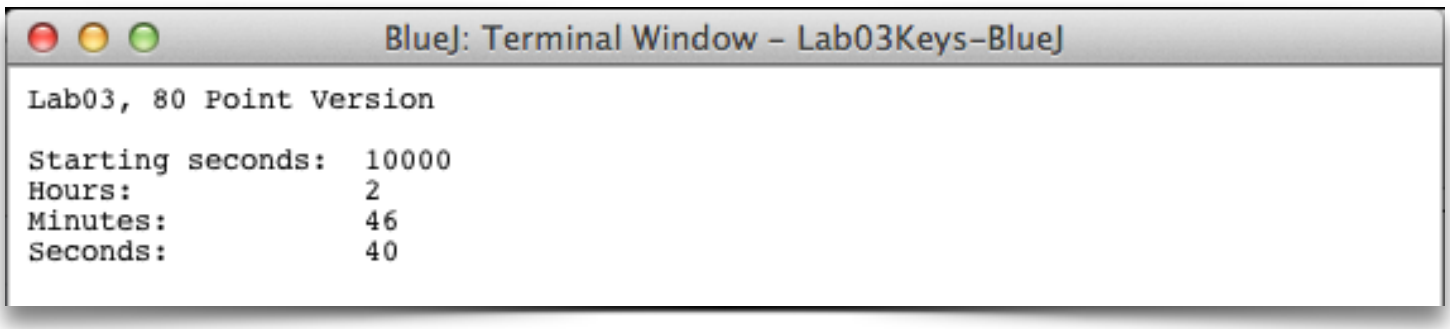
Special BlueJ Note: Since BlueJ does not update after copying the 80-point program file in preparation to write the 100-point version, I will provide two program files for you, one for each version, in a BlueJ project folder. All you need to do is unzip the Lab##-BlueJ.zip file in your BlueJ "Chapter ##" folder, then *Open Project* in BlueJ and navigate to the folder just unzipped.

Special Other Note: Another ZIP file is provided for use with non-BlueJ IDEs. You will have to rename the Lab##vst.java file to Lab##v80.java for the 80-point version. Once finished coding that, copy it to Lab##v100.java for the 100-point version.

80 Point Version

The **80-point** version requires a program that simulates the computational steps demonstrated on the previous page. Starting with this assignment you will do your lab assignments by starting with a special *student* version. All student versions include the letters **st** in the file name, like **Lab03vst.java**. Student versions are intended to save time and provide code that is not the focus of the graded assignment. There was a **Lab02vst.java** for the last assignment, but that file was totally empty since it was your job to copy a program correctly.

Lab03 80 Point Version	One Required Output



100 Point Version

The **100-point** version is slightly more complex. For this program the computer is provided with milli-seconds, not seconds. The program logic is identical to the 80-point version. The only change is that additional steps are required to handle the milli-seconds. There are 1000 milli-seconds in one second and there are 3 600 000 milliseconds in one hour.

Lab03 100 Point Version	One Required Output