Lab 2

Master the concepts of variables, math operations, and user-input

In this Lab, you learn more about variables, variable declaration, using variables in input and output statements, as well as using variables to create expressions using arithmetic operators.

Required Material:

Get a **notebook, which we will refer to as the Lab Workbook,** (or you can use a binder with some loose papers) and **bring this to Lab ALWAYS**. It will be necessary to analyze the problem and write down a plan before we actually start coding a program. For this purpose, you will use the notebook to keep all your brainstorming ideas before and after discussion with your peer in **pair programming**. Eventually, it helps anyone who is learning programming to organize the steps and avoid more confusion, especially with more complicated programs.

There will also be **guided inquiry** questions shown in Lab Documents from now on in which you must answer it in your **notebook**. Some Labs may also give additional instructions that will require the use of your notebook.

Writing in this notebook throughout Lab will be a part of your **participation grade – if you do not use this for *at least* the activities specified, you will lose points**. We will not ask to look at every single page, so use it freely and in whatever ways helps you learn best**. Keep it organized**, and there is an **extra credit opportunity of up to 5 overall points towards your final grade** for those who have an organized and complete workbook.

The lab process includes reading the problem and brainstorming for it in your **Lab Workbook** for the given time, and then discuss it with your lab partner, modify and finalize it, and then start coding.

Pre Lab

You can do this part before the lab, working individually or with other students. It is to help you have more effective time during the lab.

Revel Work:

- Read Chapter 2
- Do Self-Check Questions
  - Focus on the following sections:

    2.2 2.3 2.4 2.5 2.6 2.7 2.9

    2.10 2.11 2.13 2.14 2.15 2.17
- Watch *all* of the videos in Revel, however the following ones are of the highest priority:
  - Reading input from the console (Video in 2.3)
  - Using Operators / and % (Video in 2.12)

    Note: This video's concepts will be in Lab. Read the section as well as watching the video to get a better understanding of the topics.

- Finish the following Exercise Sets:
  - 2.2 2.3 2.5 2.6 2.7 2.9
    2.10 2.11 2.13 2.14 2.15 2.17

How to comment:

You will also need to know how to properly **comment** for next Lab.
The icon to the left will be used a lot in Lab 2 as a reminder to comment.
Follow the steps below to learn more about commenting.

1. Download the CommentingSample.java class file from Canvas.
2. Make a new project in Eclipse and drag this class from your **File Explorer** to the **src folder** from within Eclipse's project manager.
3. Compile and run this class to see what happens, and pay attention to how the comments are written.
4. Now, go back to your programs from **Post Lab 1** and make sure everything is properly commented. You may use this sample as a reference while commenting if you need to. Re-upload your Post Lab 1 files with the updated, commented version.

Review:

- **Make sure to review the "Key Terms" and "Chapter Summary" frequently and especially before every session.**
- Optional: Set up a Google Drive specifically for your Lab programs, and share it with your TA.

Benefits

If you ever need to **review** a previous Lab problem (for Lab Test studying, hint hint), you have your own archive ready.

Use it later to create your **digital portfolio**, which can be used to apply for **internships.**

In-Lab Activities

You will receive this section during Lab. ☺

There will be some **Guided Inquiry** questions in chat bubbles located next to various Lab Activities. You will need to answer these in your **notebook**.

Post Lab (Individual work and submission)

Revel Work

- Finish the following Exercise Sets:
  - 2.5 2.6 2.9 2.15
- Chapter 2 Programming Project

Programming Project

Write a program for a dealership that displays information and cost about a particular car model. Allow the program to take in the car model as user-input, as well as the initial cost. It will then add a 3.6% sales tax to the total price. We will also assume that the customer has a membership with the dealership, which means they will also receive a 15% discount, calculate in after tax. You must display these items at the end:

1. Car Model
2. Initial Cost
3. Sales Tax
4. Discount
5. Final Price

The salesman is also interested in how much he receives as commission, which is 10% of the final cost. Calculate this and display it for him.

Important Concepts

Answer the following questions to turn in:

1. What variable is appropriate to use if we have to calculate a total.
2. List the space occupied by primitive variables in the memory. (for example: int occupies 32 bits) You can use internet as a resource if you want but document the website if you do so.

Submit Work

You may zip all your files from each section (Programming project and Important Concept answers) into one folder to turn in on Canvas. Name the zipped folder "LastName_PostLab2" before uploading.

When including the programming project, make sure to only include the JAVA class file. This can be find under your **project folder > src**.