

LAB DIRECTIONS for LAB 2/5/2015

Based on Lesson Set 3

1. Create a folder named Lesson Set 3. Put all files you create for this lab in this folder.
2. Download the Lesson Set 3 source files from ilearn and extract them into your Lesson Set 3 folder on your computer or jump drive.
3. Bring in the program `bill.cpp` from the Lesson Set 3 source files. Follow the directions below to complete Exercise 1 & Exercise 4 of Lab3.1. Create a screen capture of your program running **after** Exercise 4 and paste in a word processing document (MS Word, Open Office) named "Lesson Set 3 Screen Captures".

LAB 3.1 Working with the `cin` Statement

Exercise 1: Complete the program so that a sample run inputting 22 for the number of items bought and 10.98 for the price of each item will produce the results below.

Sample run of the program.

```
Please input the number of items bought
22
```

```
Please input the price of each item
10.98
```

```
The total bill is $241.56
```

Exercise 4: Add the following directive to the program: `#include <string>` in the header. Alter the program so that the program first asks for the name of the product (which can be read into a string object) so that the following sample run of the program will appear.

```
Please input the name of the item
Milk
```

```
Please input the number of items bought
4
```

```
Please input the price of each item
1.97
```

```
The item that you bought is Milk
The total bill is $7.88
```

(Exercise 4 continued on next page!)

Now alter the program, if you have not already done so, so that the name of an item could include a space within its string.

Please input the name of the item

Chocolate Ice Cream

Please input the number of items bought

4

Please input the price of each item

1.97

The item that you bought is Chocolate Ice Cream

The total bill is \$7.88

4. Bring in the program `tabledata.cpp` from the Lesson Set 3 source files. Follow the directions below to complete Exercise 1 of Lab 3.2. Create a screen capture of your program running after Exercise 1 and paste in your "Lesson Set 3 Screen Captures" document.

LAB 3.2 Formatting Output

Look at the following table:

PRICE	QUANTITY
1.95	8
10.89	9

Assume that from the left margin, the price takes up fifteen spaces. We could say that the numbers are right justified in a 15-width space. Starting where the price ends, the next field (quantity) takes up twelve spaces. We can use the formatted output from Lab 3.1 and the statement `setw(n)` where `n` is some integer to indicate the width to produce such tables.

Exercise 1: Finish the code above by filling in the blanks and the instructions necessary to execute the following sample run. Note that two or more data items can be input at one time by having at least one blank space between them before hitting the enter key.

Please input the price and quantity of the first item

1.95 8

Please input the price and quantity of the second item

10.89 9

PRICE	QUANTITY
1.95	8
10.89	9

5. Bring in the program `righttriag.cpp` from the Lesson Set 3 source files. Follow the directions below to complete Exercise 1 of Lab 3.3. Create a screen capture of your program running after Exercise 1 and paste in your “Lesson Set 3 Screen Captures” document.

LAB 3.3 Arithmetic Operations and Math Functions

The formula for finding the hypotenuse is $hyp = \sqrt{a^2 + b^2}$.

How can this be implemented in C++? Hint: You will use two pre-defined math functions (one of them twice) learned in this lesson. One of them will be “inside” the other.

Exercise 1: Fill in the missing statement so that the following sample run is implemented:

```
Please input the value of the two sides
9 3
The sides of the right triangle are 9 and 3
The hypotenuse is 9.48683
```

6. Follow the directions below to complete Option 1 of LAB 3.5. You must write the complete program on your own – there is no file to bring down from Lesson Set 3 source files. Name your source file `grade.cpp`. Create a screen capture of your program running and paste in your “Lesson Set 3 Screen Captures” document.

LAB 3.5 Student Generated Code Assignments

Option 1: Write a program that will read in 3 grades from the keyboard and will print the average (to 2 decimal places) of those grades to the screen. It should include good prompts and labeled output. Use the examples from the earlier labs to help you. You will want to begin with a design. The Lesson Set 1 Pre-lab Reading Assignment gave an introduction for a design similar to this problem. Notice in the sample run that the answer is stored in fixed point notation with two decimal points of precision.

Sample run:

```
Please input the first grade
97
```

```
Please input the second grade
98.3
```

```
Please input the third grade
95
```

```
The average of the three grades is 96.77
```

7. **WHAT TO TURN IN:**

The following files should be zipped together in a folder and uploaded to the “LAB 02-05-2015” dropbox folder on ilearn.

- a. bill.cpp
- b. tabledata.cpp
- c. righttriag.cpp
- d. grade.cpp
- e. Lesson Set 3 Screen Captures