

## COP3331 Lab 3

### Directions:

- Create a folder named Lab3\_LastName\_FirstInitial (e.g. Lab3\_Neal\_T).
- In your folder, place a **PDF** file containing your answers to questions with a ♦.
- Copy your directories containing your programs for questions with a ♠ into the folder; **these directories should only contain files needed to run your program, which may include one or more of the following file types: .cpp, .h., and .txt.** Do NOT include the full project (e.g., solution file). Test your program on CIRCE before submitting by compiling and running with g++. Your file containing main() should **always** be named main.cpp.
- Ensure that all programs have block comments at the very beginning (starting at the first line) in the file containing main() with your name and the program's description. **The block comment's format should be identical to what's provided in Figure 2-1.**
- Use single-line comments to describe your code's functionality as needed.
- Do not submit anything for questions with a ♣.
- Zip the folder and submit it via Canvas.

**Points:** ♦ = 5 points each, ♠ = 15 points each

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1. ♣ Read *Chapter 5: How to work with I/O streams and files.*
2. ♦ A buffer is
  - a. a location in memory where stream data is stored after it's read or written
  - b. a location on disk where stream data is stored after it's read or written
  - c. a location in memory where stream data is stored as it's read or written
  - d. a location on disk where stream data is stored as it's read or written
3. ♠ Create a program that reads the sales for 12 months from a file and calculates the total yearly sales as well as the average monthly sales. The user can enter 'm', 'y', or 'x' as commands to view the sales, yearly summary, or exit the program, respectively. Place your solution file(s) in folder lab3\_q3 for submission.

### Console

```
Monthly Sales

COMMAND MENU
m - View monthly sales
y - View yearly summary
x - Exit program

Command: m

MONTHLY SALES
Jan      14317.41
Feb      3903.32
Mar      1073.01
Apr      3463.28
May      2429.52
Jun      4324.70
Jul      9762.31
Aug      25578.39
```

```
Sep      2437.95
Oct      6735.63
Nov       288.11
Dec      2497.49
```

Command: a

Invalid command. Try again.

Command: y

YEARLY SUMMARY

Yearly total: 76811.12

Monthly average: 6400.93

Command: x

Bye!

## Specifications

- I've provide a tab-delimited file named `monthly_sales.txt` that contains the month and sales data shown above.
- Round the results of the monthly average to a maximum of 2 decimal digits and make sure that a minimum of 2 decimal digits are displayed on the console.
- Right-align the columns that display the monthly sales, the yearly total, and the monthly average.

## Note for Xcode users

- To get this to work correctly on your system, you can set a full path to the file in your code, or you can change the working directory for the Xcode project to the directory that contains the text file.
- To change the working directory for the Xcode project, open the project and select the Product→Scheme→Edit Scheme item. Then, select the Run category, check the Use Custom Working Directory box, and specify the working directory.

4. ♣ Read *Chapter 7: How to code functions*.
5. ♣ Read *Chapter 8: How to test, debug, and deploy a program*.
6. ◇ What line number of the following code contains an error and what type of error is it?

```
1. double sales_tax(amt) {
2.     double sale = amt + (amt * .06);
3.     return amt;
4. }
5.
6. int main() {
7.     cout << "Welcome to the 6% tax calculator!\n";
8.     double total;
9.     cout << "Please enter the total amount: ";
10.    cin >> total;
11.    cout << "The total amount after tax is: " << sales_tax(total);
12. }
```

- a. line 1, runtime error
- b. line 1, syntax error
- c. line 3, syntax error
- d. line 11, logic error