# Programming Projects, Programming Basics

**Project Objectives**

Students will write C++ programs to:

* Become familiar with C++ syntax and semantics.
* To use the iostream library to get interactive input and send results to the display
* To use the fstream library to read information from a file into memory and send data from memory to a file.

**Report Instructions**

Create a separate report for each program.

Read the problem requirements (provided at the end of this document).

Plan the project.

Write and test your code in the Visual Studio IDE.

Store your solution in a repository on GitHub.

When your project is ready to be graded write a project report with the following format:

* Name of program
* Your name
* Name of your partner (if you have one)
* Planning details to include the following information:
  + Identify user inputs.
  + Identify supplied constants.
  + Include processing notes in the form of an algorithm, pseudocode or flowchart (handwritten notes are OK but you must take a picture of them and put the picture in the report).
  + Describe the program output.
  + Describe test procedures and results to include specific data values used to test with and your expected results. Optionally, a picture of the output produced with identified test inputs can be provided.
* **Answer the following reflection questions:**

1. What did you find most challenging with this program?
2. What problems did you encounter and how did you solve them?
3. What did you learn from writing this program?

Your final project must be in .pdf format. Upload your project report(s) to the assignment in Canvas and submit. Put the URL(s) to your project repositories on GitHub in the textbox provided on the Canvas assignment.

**Coding Instructions**

In your code add comments at the beginning of the script that summarize the inputs, process, and outputs for this program.

**Program 1.** *(Chapter 2)*

To make a profit, a local store marks up the prices of its items by a certain percentage. Write a C++ program that reads the original price of the item sold, the percentage of the marked-up price, and the sales tax rate. The program then outputs the original price of the item, the percentage of the mark-up, the store’s selling price of the item, the amount of the sales tax, and the final price of the item. (The final price of the item is the selling price plus the sales tax.). Your program must prompt for the input and label the output. Compile and run your program with the following test data:

* Original price of item: $99.00
* Mark-up percentage: 60%
* Sales tax rate: 5.25%
* The final price of the item with tax should be $166.72

**Program 2.** *(Chapter 3)*

Three employees in a company are up for a special pay increase. Create a file in your project called **SalaryData.txt** and type in the following data:

**Miller Andrew 65789.87 5**

**Green Sheila 75892.56 6**

**Sethi Amit 74900.50 6.1**

Each input line consists of an employee’s last name, first name, current salary, and percent pay increase. For example, in the first input line, the last name of the employee is **Miller**, the first name is **Andrew**, the current salary is **65789.87**, and the pay increase is **5%**. Write a program that reads data from the specified file and stores the output in the file **SalaryOut.txt**. For each employee, the data must be output in the following form: **firstName lasName updatedSalary**. Format the output of decimal numbers to two decimal places.

**Extra Guidance for Program 2:**

**To create a data file in Visual Studio C++:**

1. Go to the File tab at the top and select New 🡪 File.
2. Select “Text file” in the pop up window and click on the Open button.
3. Your text file will appear in an edit window.
4. Type your data in as specified above. Leave a space between the items in the line and hit enter to get to the next line. Hit enter after the last entry to leave a blank line at the end of the file.
5. You will notice a yellow line to the left of your entries. That means the file has not been saved.
6. To save the file, go to the File menu again and click on the “Save TextFile.txt As”
7. A window will pop up that shows your consoleApplication1 (or whatever name you called it) with a list of the files in that folder.
8. Change the name of the file if you want and click on Save.
9. If you notice that you still have a yellow line to the left of your entries, go the File menu again and click on “Save TextFile.txt” (or whatever name you called it).
10. You should see a green line in your text file which means it has been saved is ready to use in your program.

**To view a data file that you created in your program:**

1. Go to the File menu and select File 🡪 Open 🡪 File.
2. If you only have one console application, you should see the list of files for that console application and the output file you made should be in that list.
3. Select the output file and click on Open.
4. The output file you made should show up in an edit window in your project.
5. If you are working on more than one console application, select the one you want and click on Open, then perform Step 3.