# CS265: Advanced Programming Techniques

Spring 2022

*Assignment #1*

**What to do**

* This assignment is called “Compute the invoice grand total and tax due”
* You must develop everything on the Drexel tux.cs.drexel.edu servers

**Requirements**

Write a C program, named a1.c, to solve the following problem.

You are the developer of an online shop and you are working with the shopping cart module that holds the customer’s online order. The online order contains multiple products that may be shipped to different states. Your job is to write a C program that reads the order in the shopping cart and calculates both the grand total due and the total tax due.

The order / shopping cart information should be made available to your program via a command line argument. An example order file has been provided with the assignment. The format of the file should be

productName, quantity, unitPrice, state

Each line item represents the sale of a product at a given quantity and unit price that will ship to a given state. Your program should assume that there could be spaces, between any token in the file, meaning that attributes may be surrounded by spaces to the left or to the right (see the example file provided). You should eliminate leading and trailing spaces from the tokens.

Each product in the order may be shipped to a different address and therefore it is subject to a different sales tax. The tax rate information should be made available to your program via a second command line argument. An example file tax\_rate.txt has been provided with the assignment. The format of each line in the file is

state,state\_abbr,sales\_tax

For example

Pennsylvania,PA,6.000%

Please note that for this file there are no trailing or leading spaces surrounding the tokens, and there is no need to write code to remove them.

There should be two ways of invoking your program

a1

and

a1 order\_file tax\_rate\_file invoice\_file

Your program should read the input files order\_file and tax\_rate\_file, make all necessary calculations and generate an output file named invoice\_file.

If there are no command line arguments, the program should assume the following default file names

order.txt

tax\_rate.txt

invoice.txt

The program should read the order file and tax rate file. For each product it should compute the subtotal (price \* quantity) as well as the tax due for that product. It should also provide the grand total for the entire order (sum of all the subtotals) as well as the total tax due (sum of all taxes). Your output should be written to a file and could look like this:

Product Price Quantity State Tax Subtotal

----------------------------------------------------------------

Knife 125.00 1 PA 7.50 132.50

Colander 25.95 2 NJ 3.44 55.34..

..

Total Tax Due: XXXXX

Grand Total: YYYY

**Tips**

* You may assume that the filenames are no longer that a number of your choice, say 100 characters.
* You may assume that each line in the files is no longer than a number of your choice, say no larger than 256 characters.
* You may assume that the number of states is 52 (as given in the file).
* You may assume that an order may contain no more than a number of products, say no more than 100 products.

**What to submit**

Submit the C program a1.c in Blackboard.