CISC 1600-L01 Computer Science I

Instructor: Vincent Mierlak — Spring 2019

Homework Assignment 3
Due on February 11, 2019 by 11:30 AM

Instructions

- There is only 1 part to this assignment; please follow the instructions carefully.

- Name your source code file `bookstore_ship.cpp` and submit it on Blackboard.

The Very Small Computer Science Bookstore — With Shipping!

The management of the Very Small Computer Science Bookstore was very pleased with the customer order program you wrote. Now they have requested that you to extend the program to include shipping costs.

1. Shipping

Shipping costs are calculated based on the total weight of the customer's order. The table below shows each title, its price, and the weight of a single copy:

Title	Price	Weight
Data Structures	78.87	2.50#
Computer Architecture	95.49	1.75#
Compilers	89.99	1.25#

The default option for shipping is **Ground**. For customers in a rush, the bookstore offers two expedited shipping options: **Two-Day** and **Next-Day** service.

The cost for expedited shipping is a multiple of the appropriate Ground Rate:

$$\text{Two-Day Shipping Cost} = \text{Ground Rate} \times 2$$
$$\text{Next-Day Shipping Cost} = \text{Ground Rate} \times 5$$

Shipping Fee Schedule

Weight Class	Ground	Two-Day	Next-Day
under 5 lbs.	5.99	11.98	29.95
between 5 and 10 lbs.	7.99	15.98	39.95
over 10 lbs.	9.99	19.98	49.95

2.   Customer Options

The customer should be given the following options:

1. **Ground vs. Expedited Shipping.** The customer should be given the option to choose expedited shipping; if the customer declines expedited shipping, then use the default ground rate.

2. **Two-Day vs. Next-Day Service.** If the customer chooses expedited shipping, then they should be given the option to choose either two-day service or next-day service.

3. **Re-Do The Shipping Choice.** Once you calculate the cost of shipping based on the customer's choices, you should give the customer the option of accepting that cost or re-doing the selection of shipping options.

4. **Pay for the order vs. Canceling the order.** After calculating the total cost of the order, including shipping fees, the customer should be given the option of either paying for the order in full or canceling the order.

a)   Specifications

Your program must do the following (new specifications are in **bold**):

1. Display a welcome message

2. Collect the following information from the customer:

   - a first name and a last name
   - the number of Data Structures textbooks to purchase
   - the number of Computer Architecture textbooks to purchase
   - the number of Compilers textbooks to purchase

3. **Tell the customer how much the order weighs**

4. **Display the cost of Ground, Two-Day, and Next-Day shipping on their order**

5. **Give the customer the option of choosing one of the expedited shipping methods, indicating that Ground service is the default**

6. **Based on the customer's choice, display the total cost of shipping**

7. **Give the customer the option of accepting the shipping fees, or re-doing the shipping selection.**

8. Calculate and display the total amount due, including New York State sales tax of 8.875%. **We will not charge sales tax on the shipping fees, so add the cost of shipping after calculating the cost of the order with tax.**

9. Prompt the customer for the amount he or she will pay. **If the customers enters an amount that is less than owed, give the customer the option of either entering a new amount, or canceling the order.**

10. **If the customer gives sufficient payment**, display an invoice that contains the following information:

- the customer's full name
- the title, quantity ordered, unit price, and total cost for each textbook title (this information should appear on a single line, one line for each book)
- the total cost before adding sales tax
- the sales tax due on this order
- **the total shipping cost**
- the total amount due
- the amount of money collected as payment from the customer
- the amount of exact change owed to the customer

11. **If the customer chooses to cancel the order, display an appropriate message and end the program**; otherwise display a personalized goodbye message

b)   Assumptions About User Input

You can assume that the customer will:

- provide one first name and one last name
- buy at least 1 textbook

c)   Grading Guidelines

To get full credit, your code must:

- compile on `erdos`
- meet the program's specifications
- have a comment header at the top with your name, course number, assignment number, and date
- have sensible variable names
- observe proper indentation and coding style
- contain comments