**CIS 2110 Project 1**

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Problem Description:**

The Colorado Health Products Corporation (CHPC) sells personal protective gear to hospitals and medical practices (Physicians, Dentists, etc.) in Colorado, Wyoming, and New Mexico. CHPC needs a sales report of the sales for each day, and your job is to write program that will take sales data from the user, aggregate it, and produce a report.  The report should begin by asking the user to input the **state, sale date,** and **sales tax rate** for the given state- this data should then be displayed back to the user only once- this is the report “header”. Then the report will then display an output line for each sale showing the **sale ID,** the pre-tax **sale subTotal**, and the after-tax **sale amount** paid by the customer.   After all sales records are displayed a report summary is required to display the **total subtotal amount,** the **total post-tax sale amount** and the **average sale amount.** The summary must also identify the "sale with the highest post-tax sale amount" by displaying the **highest post-tax sale amount** and **associated sale ID**. In the event of **multiple instances** of the largest post-tax sale amount only the *first instance* should be reported. Note that the subtotal amount is the “listed price”- similar to a “Manufacturer’s suggested retail price”. The post-tax sale amount is the actual amount of the sale *after taxes have been applied*. The tax rate will vary by state, so it is an input field.

The state sales tax rate should be INPUT as a decimal. So- if sales tax is 11%, the user should input 0.11

All monetary **inputs** should be displayed with two decimal positions and should be expressed in dollars and cents (using the $ sign when appropriate).\*

All monetary **outputs** should be displayed with the decimal positions and should be expressed in dollars and cents (using the $ sign when appropriate).\*

The sales data for each state is entered as a batch process at the end of the day. Users of the program at **HCAC** will enter the data which consists of the *state*, *date* and *sales tax rate* (these three fields are input once) followed by each sales record containing the *sale ID* and *sale subtotal* amount.  Users will enter -1 as the sale ID when they want to exit the program and prompt the output of the final report (**total subtotal amount,** the **total post-tax sale amount,** the **average sale amount,** the **highest post-tax sale amount** and the **associated sale ID**.

The **average post-tax sale amount** is determined by dividing the total post-tax sale amount by the number of transactions that day.

\*Formatting considerations such as using dollar signs ($), percentage signs (%), and decimal places only need to be considered when you are actually programming- you do not need to consider these requirements when writing the human-level or program-level walk-throughs, the hierarchy chart, the flow-chart, or the pseudocode.

At this time, the program only needs to deal with a single state.  Each store has a $25,000 sale subtotal limit for any one sale. If a sale has a sale subtotal amount of more than $25,000, the program should prompt the user for a sale subtotal amount less than $25,000.

A subset of data for a typical day is given for you to test your models.

**CIS 2110 Project #1 Test Data**

|  |  |
| --- | --- |
| ***CHPC Daily Transactions*** | |
| **State:** | Colorado |
| **Date:** | **March 17, 2021** |
| **State tax rate:** | **4.5%** |
| **Sale ID** | Sale subtotal |
| **C111** | **1243.65** |
| **C222** | **4312.10** |
| **C333** | **6789.10** |
| **C444** | **1111.12** |
| **C555** | **7564** |
| **-1** |  |
|  |  |
|  |  |
|  |  |

**Deliverables for Project 1**

* Develop the **Implementation Model** using **Pseudocode** and make certain you:
* Have a **minimum of five modules** in your pseudocode (a deduction will occur if there are fewer than five modules).  It is recommended that you look at the Essential Model for this problem to help divide the logic into modules.
* Your project should be in Microsoft Word format.
* For an example of implementing pseudocode, be sure to watch my youtube video:

<https://youtu.be/DvJxAVs9tWE>

* **Project 1 should be submitted as a Microsoft Word.**

**Notes:**

1. If you have previous experience with programming concepts such as arrays and lists, please avoid using them in this problem. Stick with the concepts discussed SO FAR in this course. (There will be plenty of opportunity later in the course to demonstrate your sophistication).

**Tips for understanding project 1**

The "order of operations" of what is supposed to happen for the problem is as follows...

1) A user enters the state, the date, and the state sales tax rate. The sales tax rate would be different for each location.

2) The program will output the state, date, and sales tax rate.

3) The user will input the sale ID.

4) If the sale ID is -1, the program should output the summary numbers (the final report).

5) If the sale ID is NOT -1 (the kill flag), the program should prompt the user to input the sale subtotal for that sale.

6) The after-tax sale amount is equal to the subtotal amount multiplied by (1 + tax rate). So if the subtotal amount is $1000 and the tax rate is 5%, the transaction amount is equal to:

1000 \* (1 + 0.05) => 1000 \* 1.05 => $1050

7) The program should calculate relevant values (total subtotal amount, total after-tax sales amount, etc.)

8) The program should ask the user for the next sale ID (return to step 3 and start the process over again…)