Project Name

Author(s): Steven Byrne
Doc Version: 1.0.0
Software Version: 1.0
Git URL: NA
Language Used: C

D-Doc / Code **Cash Register**

DSU Assignment for CSC-150: Create a program that takes a single item's price and quantity being purchased then calculate and output: The tax (6%), sub-total, total due (with a message),

DETAILED SUMMARY

Final Design Plan (high level)

A welcome message is displayed to the user along with request for the price of the item (float)

If price given is less than 0 or not a valid float

Prompt the user to supply proper input, restart the loop.

Otherwise, ask for the quantity of the items being purchased.

If the quantity given is less than 0 or not a valid int.

Prompt the user to supply proper input, restart the loop (asking for price).

If input is valid, calculate and display the subtotal, tax, and total.

Ask the user if they want to continue or quit.

Major Concerns [C] & Features [F] listed below.

- **[C] Use of scanf() is unsecured**
- **[C] Not protection from C recognized input, like INF**
- **[C] Printf() is unsecured to buffer overflow attacks**
- **[F] Input is an INT for Qty**
- **[F] Input is a FLOAT for Unit Price**

- **[F] Use variable tax rate (6%) to calculate tax and display to user**
- **[F] Calculate and display sub-total (no tax) as FLOAT**
- **[F] Calculate and display the final total including tax as FLOAT.**

Requirements

Requires input for quantity is an int greater than 0.

Requires input for item price as a float to 2 decimal places.

Requires C with GNU compiler.

HOW TO/USAGE

How To/Usage

Compiling:

Run: gcc -o p1a p1a.c

Running:

Logon to the Linux server using putty.

Run: ./p1a

Input & Output Examples

The following input produces the following output when all criteria are met for the assignment.

OUTPUT	## ## ######### Welcome to Cashier 3000 ######### ## Please enter the price of the item:
INPUT	5.40
OUTPUT	Enter the quantity you are purchasing:
INPUT	5
OUTPUT	Item Cost (sub-total): 27.00 Tax Collected (Tax): 1.62 Total (Tax and Items): 28.62 Would you like to calculate another item (0) or exit (1-9)?

Source Code (Paste-able)

The C Language Compilable Code

#include <stdio.h>

#include <stdlib.h>

/*H***

* FILENAME :   main.c   DESIGN REF: D-Doc / Cashier

*

* DESCRIPTION :

```
 *      DSU PROGRAMMING ASSIGNMENT 1, WEEK 2, PROGRAM IS REQUIRED TO TAKE AN
 PRICE AS AN INPUT (FLOAT)

 *      AND QUANTITY PURCHASED (INT) AND CALCUATE/DISPLAY THE SUB-TOTAL, TAX, AND
 TOTAL.

 *

 * NOTES :

 *      This file is part of a DSU assignment completed on 05/28/2020

 *      GNU Licensing applied, see more where you got this file or at https://github.com/sbyrne255

 *      There are known security vulnerabilities with this code, note-ably the use of scanf without
 buffer overflow protections

 *      There is no protection against input related attacks. The input of INF will result in the output
 being INF.

 *

 * AUTHOR :    Steven Byrne      START DATE :    27 May 20

 *

 *****************************************************************H*/
int main()
{
    //Used to track quantity of current item being listed.

    int qty;

    //Used to track price of current item being listed.

    float unit_price;

    //Price for all items combined (no tax)

    float price;

    //Tax rate (1 is 100%)

    float tax_rate = 0.06;
```

```c
    //Used for exit condition.

    int exit = 0;


    //Intro to program

    printf("#############################################\n");

    printf("#############################################\n");

    printf("#########  Welcome to Cashier 3000  #########\n");

    printf("#############################################\n");


    do{

        printf("Please enter the price of the item: ");

        if((scanf("%f", &unit_price) == 1) && (unit_price > 0)){

            printf("Enter the quantity you are purchasing: ");

            if(scanf("%d", &qty) == 1 && (qty > 0)){

                price = qty * unit_price;

                printf("    Item Cost (sub-total): %.2f\n", price);

                printf("    Tax Collected (Tax): %.2f\n", (tax_rate * price) );

                printf("    Total (Tax and Items): %.2f\n", price + (price*tax_rate));


                printf("Would you like to calculate another item (0) or exit (1-9)? \n");

                scanf("%d", &exit);

            } else {

                printf("Please enter a valid price...\n   Prices should be formatted as: 1.29 without special
characters (except the decimal). \n   Prices must be greater than 0.\n");

                int ch;
```

```
        while ((ch = getchar()) != '\n' && ch != EOF);

        continue;

    }

} else {

    printf("Please enter a valid price...\n   Prices should be formatted as: 1.29 without special
characters (except the decimal). \n   Prices must be greater than 0.\n");

    int ch;

    while ((ch = getchar()) != '\n' && ch != EOF);

    continue;

    }

}

while(exit == 0);

}
```