

CSE 5A

Introduction to Programming I (C)

Homework 1

Read Chapters 1, 2, & 3

Due: Friday, October 5 by 6:00pm

All programming assignments must be done **INDIVIDUALLY** by all members of the class. Start early to ensure you have enough time to submit your program before the deadline.

All assignments will be automatically collected from your computer account at precisely 6:00 pm on the due date shown above. These due dates and the time will be rigidly applied. An assignment that is not in place at 6:00pm on the due date will not be collected and therefore will not be graded, receiving a score of 0. If you have any questions/problems with the turn-in, see one of the tutors, TA, or the instructor.

All your programs must be neat and legible. Indent and comment your programs as shown in the text and as described in class. Make sure to thoroughly understand the assignment before you start on it. It is a good idea to verify your understanding of the problem with the tutors, TA, or instructor. For maximum credit, read and follow the style rules given in the **CSE 5A Program Grading** document (<http://www.gregmiranda.com/wp-content/uploads/2018/08/CSE-5A-Program-Grading.pdf>).

Account Setup:

- 1) Find your account name, cs5afXX: <https://sdacs.ucsd.edu/~icc/index.php>
- 2) Remember your cs5afXX login name, e.g. "cs5afaa".
- 3) Use Global Password Change Tool: <http://acms.ucsd.edu/students/gpasswd.html>

Getting Started

In the lab, log into the Windows computer using your cs5af account (not your UCSD account).

Using Visual Studio 2017, create a new project (File->New->Project...) and select the Visual C++ Empty Project. Change the **Name** of the project to HW1 (note the uppercase HW1). Change the **Location** of the project to your cs5af Home Directory (the Documents folder of your cs5af account). After changing the name and the location, click on the OK button.

In the Solutions Explorer window, create a new file by right clicking on the HW1 solution and selecting Add->New Item... from the context menu. Next, select C++ File (.cpp). Change the **Name** of the file to hw1.c. You do not need to change the location, it should default to your HW1 folder inside the HW1 project (Documents\HW1\HW1\). After changing the name, click the Add button. Make sure to save everything (File->Save All).

Link to a video for creating a new project and source file: <http://www.gregmiranda.com/cse5a-new-project>

Feel free to ask the tutors on duty in the lab for help.

Program Description

Homework 1 (hw1.c) will be a simple program that reads in some information: the first letter of the student's name, # of pizzas to order, cost of each pizza using char, int, and double data types. The sub-total is calculated by multiplying the #

of pizzas by the cost. The total is calculated by multiplying the sub-total by the sales tax rate and adding that value to the sub-total.

Type char is used for the variable to hold the first letter of the student's name. Type int is used for the variable to hold the number of pizzas to order. Type double is used to store the cost, sub-total, and total.

Symbolic constant "SALES_TAX_RATE" is used to calculate the final total of the student's pizza order.

Type in the following program. **Modify** it as follows:

- Add code to get the input for the cost of each pizza using **scanf()**. Uncomment the **printf()** code to output the number of pizzas ordered and the cost of each pizza.
- Add code to calculate the sub-total for the pizza order as data type **double**. Display the sub-total with **printf()** using **"%lf"** for type double. Display the sub-total with 2 places of precision. (sub-total = number * cost)
- Add code to calculate the total for the pizza order as data type **double**. Display the total with **printf()** using **"%lf"** for type double. Display the total with 2 places of precision. (total = sub-total + (sub-total * sales tax rate))
- Edit the comments to show these modifications.

Make sure you have your name and cs5af account number in the header comment of h1.c (see below).

Note: replace "XX" in the Login: "cs5afXX" with your unique login name.

```
/*
 * Name: Jane-Joe Student
 * Login: cs5afXX
 * Date: Month Day, Year
 * File: hw1.c
 * Sources of Help:

 * General description of the program ...
 */

#pragma warning(disable:4996) //Disable security warnings
#include <stdio.h>

#define SALES_TAX_RATE .0775 //Sales tax rate for La Jolla

/*
 * General description of the main function ...
 */
int main()
{
    char firstInitial; //First initial of student's name
    int numberOfPizzas; //Number of pizzas to order
    //Add cost, sub-total, and total

    printf("Enter the first letter of your first name: ");
    firstInitial = getchar(); //Read single character input

    printf("Enter the # of pizzas to order: ");
    scanf("%d", &numberOfPizzas); //Read integer input
    getchar(); //Read <ENTER> key
```

```

//Add pizza cost input

//Calculate total for the pizza order

printf("\nHello, %c!\n", firstInitial);
/* printf("You ordered %d pizzas for $%.2lf each.\n", numberOfPizzas, cost); */

printf("\nPress ENTER to quit!");           //Quit message
getchar();                                 //Wait for input, freeze screen
return 0;
}

```

Before you modify the program, your output should look like this:

```

Enter the first letter of your first name: G
Enter the # of pizzas to order: 5

Hello, G!

Press ENTER to quit!

```

Note:

- The type char was used for a single character, first initial of the student
- The type integer was used for a whole number, the number of pizzas
- The type double was used for a real number, the cost of each pizza.
- The formatting of real numbers was used to print out decimal notation showing the decimal point and 2 places of precision with trailing zeros using “.2lf”.

After you modify the program, your output should look like this:

```

Enter the first letter of your first name: G
Enter the # of pizzas to order: 5
Enter the cost for a single pizza: 12.5

Hello, G!
You ordered 5 pizzas for $12.50 each.
Pizza order sub-total: $62.50
Pizza order total: $67.34

Press ENTER to quit!

```

The data requested by the program will be a single character, one whole number, and one real number, each on a separate line. Here is sample input that would be used by the graders:

```

G
5
12.5

```

You can download an example executable for Homework 1 from the following link:

<http://www.gregmiranda.com/cse5a-hw1-sample>

Verify you saved your work in the cs5af HOME directory.