**ITCS 1212L**

**Lab 2**

**Sequence, Flowcharts, Identifiers, Fundamental data types, Declaration of variables, Initialization of variables, assignment operators, arithmetic operators, compound assignments, increase and decrease, standard input and output**

1. Develop a program that will determine the area and perimeter of a rectangle. The length and width can be given as constants. (LENGTH=8 WIDTH=3).Compile and run your program. Continue to work on it until you get the following output.

The area of the rectangle is 24

The perimeter of the rectangle is 22

1. Create a console project, Type in this source code exactly as written below. Then compile, link and run it. The code has some logical errors you would have to fix. **Draw a flowchart for this program.**

/\*

Program: calculateTip.cpp

Date: put today’s date here

Programmers: Your name and your partner’s name

Purpose: This program asks the user for the price of a meal and the percent of tip to be left. It then calculates the tip and displays the price of the meal, the amount of the tip and the total cost

\*/

#include<iostream>

using namespace std;

int main( ) {

//this section declares all needed variables

float mealPrice;

float tipPercent;

float tipAmount;

float totalCost;

//cin is used to read input from the user into a variable

//prompt the user for values for the input variables cout << “Enter the price of the meal you purchased: “; cin >> mealPrice;

cout << “Enter the tip percent you wish to leave:“;

cin >> tipPercent;

cout << “The amount of tip is:“ << tipAmount;

//process - notice the use of the assignment operator- it works from right to left

tipPercent = tipPercent \* .01; //move the decimal two places to left

tipAmount = mealPrice \* tipPercent; // calculate the amount of tip

//print output to screen using cout

cout << “The meal price you entered:“ << mealPrice << endl;

cout << “The amount of tip:“ << tipAmount << endl;

cout << “The total cost: $“ << totalCost << endl;

totalCost = mealPrice + tipAmount;

return 0;

}

Test the program above with data you can easily figure out in your head. Like a $20 meal with a 15% tip would be a tip of $3 and a total price of $23. Run several sets of test data.

1. Create a console project, Write a program you can use to calculate the mileage on a trip. Use the example you typed in above to declare variables, read input, and perform arithmetic operations. The user will enter the miles driven and the gallons of gasoline used. The program will calculate the gas mileage and print the results to the screen.

Before you start writing any C++ code, answer these questions:

Input: (what data does the user enter)

Process: (what calculations does you program have to do)

Output: (what results will you print)

Use meaningful variables names and lots of comments. Again, test with simple values you can do in your head.

*Make sure your TA checks your program before you go on to the next step.*

# Sales Price

Write and test a program that calculates the sales price on an item in a clothing store. The user inputs the original price of the item and the discount percent. The program then calculates the savings and the new price. Then a 7% sales tax is added to the item. The program displays the final price before tax and after tax.

For example: an item lists for $30

The sale is 20% off

The output is: Cost of item after discount: $24

Amount of tax is: $1.68

Final Price is: $25.68

Again, use the proper sequence; test the program several times by using values you can calculate by hand. Use meaningful variable names and lots of comments. Write answers for these three sections before you write any C++ code. **Draw a flowchart to plan your program.**

Input:

Process:

Output:

**Make sure your TA checks your program.**

# 5- Vacation Days and Hours

Write a program that asks the user to enter how many days’ vacation they took (integer). The program will print how many weeks and days this is. (Use the modulus operator %)

Sample Input:

How many vacation days did you take: 10

Sample Output:

That is 1 week and 3 days.

Provide answers to these three sections before you write any code.

Input:

Process:

Output: