**CS2010 Lab 2: Ordering Pizza 5 pts**

**Due: Friday, January 19, 2018**

### For this lab, you are allowed to work with a partner to complete the assignment, following the steps listed below. You should each turn in your Program Development Sheet in the class but turn in only one copy of the .cpp file on Canvas for the two of you.

### 1. Each of you should fill in the information on the Program Development Sheet for the problem described.

### 2. Then trade papers with your partner. Check each other's steps and make modifications as needed if any steps are unclear or out of order.

3. **Write the C++ statements.** The program shown on pg. 9, 10 in your textbook would be a good example to follow. Write the variable declarations, choosing a name and data type for each one. Then write the C++ statements for the steps in your algorithm. Think about what C++ statement can be used for each step and carefully check the syntax for each one.

### Note: You may do this step on paper or combine it with the next step and type the statements on the computer. While one of you is writing or typing the other person should be contributing suggestions, checking syntax, helping to find and fix errors, etc.

4.Create a new C++ project folder in Visual Studio using both of your last names and Lab2 for the project name (e.g., **MortonLawry\_Lab2**). Add a .cpp file to the project with the same name and the file extension **.cpp** (e.g., **MortonLawry\_Lab2.cpp**).

5. Put your names, class time and today's date in comments at the very beginning of the code. Hint: A comment line starts with two slashes (e.g., // This is a comment) or "/\*" and "\*/" can be used for multi-line comments.

6. **Type your program on the computer**.

7. **Debug your program** – Run your program and correct any errors found in your code.

8. **Test your program** – Run your program several times with different pizza sizes. Compare the output to your calculated results. Are they the same?

9**. Turn in your program** – If you plan to go on and do the Bonus, wait and turn in your .cpp file after finishing that part. If not, exit Visual Studio and turn in your **.cpp file** on Canvas now.

### 10. Bonus – 1 point. Now that you know how many slices per pizza, figure out how many pizzas to order. Make the modifications described below to your algorithm and your program to calculate this. Consider additional inputs and outputs and calculations you may need.

a.Ask for the number of people who will be at the party as well as the radius of the pizzas to be ordered (assume all pizzas will be the same size).

b. Calculate and display the number of pizzas you need to order for your party if each person attending is expected to eat an average of three slices.

c. Once your program is complete, exit Visual Studio and turn in your **.cpp file** on Canvas.

### CS2010 Lab 2 Grade Sheet

### Due: Fri., January 19, 2018

For this lab assignment please turn in one copy of your **.cpp file** on Canvas. **Turn in this sheet before leaving the lab today**.

**Section: 1003**

**Your Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Partner Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_ (2) Program Development Sheet turned in - list of inputs and outputs and steps in algorithm complete.

\_\_\_\_\_\_\_ (3) .cpp file turned in on Canvas, program includes all requirements, runs without error and produces correct output.

\_\_\_\_\_\_\_ (1) **Bonus!** Modifications to algorithm and program correct.

**\_\_\_\_\_\_\_** **(5) Total Points (6 with bonus)**

**CS2010** **Program Development Sheet - Lab 2**

**Your Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Partner Name** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**1. Understand the problem** – You are ordering pizza for a party and need a program to calculate the number of slices a pizza of any size can be divided into. The program should:

•Ask the user for the radius of the pizza in inches (input).

• Calculate the area of the pizza and the number of slices that can be cut from a pizza of that size

(processing).

• Display a message showing the area of the pizza and the number of slices (output).

To calculate the number of slices that may be taken from the pizza, you need the following facts:

• The area of the pizza is calculated with the formula: Area = πr2 where *r* is the radius of the pizza.

Use 3.14159 as the value of pi so the area will equal 3.14159 \* radius \* radius.

• Each slice should have an area of 14.125 inches so to calculate the number of slices, simply divide the area of the pizza (calculated in the previous step) by 14.125.

Use this information to fill in the area and number of slices for the pizza sizes shown.

**Radius of pizza**: 6 inches **Area of pizza**: \_\_\_\_\_\_\_\_\_\_ **Number of slices**: \_\_\_\_\_\_\_\_\_\_

**Radius of pizza**: 8 inches **Area of pizza**: \_\_\_\_\_\_\_\_\_\_ **Number of slices**: \_\_\_\_\_\_\_\_\_\_

**2. Design (plan the solution to the problem)**

**a. List inputs** (values your program will read from the keyboard) **and outputs** (information your program should display on the screen)**.** When you write your C++ program, you will need to define a variable for each of these inputs and outputs.

Inputs Outputs

**b. Write the algorithm** – the list of steps needed to solve the problem. No C++ statements please!

- Input steps (e.g., consider which values are needed as inputs and determine data types of those values)

- Processing steps (e.g., calculations- what/how need to be calculated?)

- Output steps (e.g., what should be shown as outputs?)