CS1428 Lab 01h

# Name: Section:

Write your name at the top of this sheet. Answer the following questions and turn in this sheet before the end of class. You may use your instructor’s web materials, your book or an internet resource to answer these questions. (100 pts)

Throughout the semester, we will be building a program that runs other, basic programs that I will provide for you. Today we will start a basic skeleton program.

1. (10 pts) Every C++ program starts out with the same basic form. What are the parts of this basic format? What is the name of the function that all C++ functions must include?

Preprocessor directive program scope a main function

Compiler directive (namespace)

main

program terminator

1. (10 pts) Evaluate the following expressions. Write the answers on this work sheet (You may show your work for partial credit). Do **NOT** use the computer to evaluate these expressions:
   1. 10 % 456

10

* 1. 12 % 3

0

* 1. 16 % 5

1

* 1. 0% 456

0

1. (10 pts) Evaluate the following expressions exactly as the computer would evaluate them. (You may show your work for partial credit).Do **NOT** use the computer to evaluate these expressions. Pay attention for floating point vs. integer division AND order of operations!
2. 12 / 2 – 4

2

1. 7/3

2

1. 6.0/4

1.5

1. (6 + 17) % 2 – 1

0

1. 14 / (11 / 4)

7

1. (10 pts) Consider the following C++ code snippet:

int cars = 10;

int trucks = 2;

int busses = 1;

int vans = 5;

int count = 2;

cars += busses;

trucks += trucks + busses;

busses += 3;

++busses;

vans = vans/ count;

After execution, what are the values stored in:

cars: 11

busses: 5

trucks: 5

vans: 2

(not required)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| cars | busses | trucks | vans | count |
| 10 | 1 | 2 | 5 | 2 |
| 11 | 4 | 5 | 2 |  |
|  | 5 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. (10 pts) The mini-programs I give you will use simple integers to represent the various things the program you write can do. For instance, the number 0 will mean “add”. Each instruction in the mini-programs will have 3 extra pieces of integer data along with it. How do you declare 4 integer variables named **instruction**, **data0**, **data1**, and **data2**? Declare an additional *string* variable named **source.**

int instruction, data0, data1, data2; or int instruction; int data0; int data1; int data2;

string source;

1. (5 pts) How would you set the value of **instruction** to 0, **data0** to 5, **data1** to 4, and **data2** to 2?

instruction = 0; data0 = 5; data1 = 4; data2 = 2;

1. (10 pts) How would you assign the sum, difference, product, modulo, and quotient of **data1** and **data2** to the variable named **data0**? (Do each as a separate statement)

data0 = data1 + data2; data0 = data1 - data2; data0 = data1 \* data2;

data0 = data1 / data2; data0 = data1 % data2;

1. (10 pts) Lets say we wanted to use named constants to represent the various things our program can do. Declare the following named constants with the given values: (All are integer constants)  
   OP\_ADD is 0 OP\_SUBTRACT is 1 OP\_MULTIPLY is 2 OP\_DIVIDE is 3

OP\_MOD is 4 OP\_EXPONENT is 5 OP\_READ is 6 OP\_WRITE is 7

const int OP\_ADD = 0; const int OP\_SUBTRACT = 1; const int OP\_MULTIPLY = 2;

const int OP\_DIVIDE = 3; const int OP\_MOD = 4; const int OP\_EXPONENT = 5;

const int OP\_READ = 6; const int OP\_WRITE = 7;

1. (25 pts) You will need to make a program **lab01h.cpp** that combines what you have done in questions 1 through 5. Make sure you have the proper comment header, includes, using namespace compiler directive, and main function.

At the top of your main function, include the named constants you declared in question 5.

In your main function you will need to declare the 4 integer variables you did in question 2. You will also need to prompt the user for the values of each variable, and then store the value they input into the appropriate variable.

You will also need to perform the 5 calculations in question 4 and after performing each one, output the result of the calculation to the screen on its own line.

Ensure that your program compiles and produces correct output.

**(\*\*Make sure to include the standard header [**[**http://www.cs.txstate.edu/~masone/tipsTricks/styleGuidelines.php**](http://www.cs.txstate.edu/~masone/tipsTricks/styleGuidelines.php)**] and to name the file correctly\*\*)**