COS 135 Individual Assignment 3

Due: Monday 02/14/22 End of the day

This assignment has 2 sections. Please submit a .zip file with answers for part #1 (use the answering template attached) and source code/s.

Part #1 (50pts) use the answering template attached. Refer to the C operator precedence guide in last page.

1. (20 pts.) Calculate the result of each expression using the provided variables (consider them as individual statements). Place a decimal point in your answer to indicate a double value (ex. 2.0).

```
double x = 2.1;
double y = 1.2;
int m = 12;
int n = 2;
```

I. x + y * 2.0 – 1.2

II. m * n + m % n

III. 1 / n % m

IV. n / m + 2.0

V. 3 * 7 – 1 + m * n

VI. 15.0 + x / y / y

VII. n++ * 4 / 3

VIII. x + m * n - 1

IX. 33 % 7 – (1 + x) * n

X. (3.0/4.0) + (1/2)

2. (10 pts.) Write each math equation in C statements.

```
double x, y, z, w;
```

I. $w = \dfrac{x^3}{y^2(z + x)}$

II. $w = x + 2y + \dfrac{z - x}{3.0}$

III. $w = x^2 + y^2 + z^2$

IV. $w = x^4 \% 5 * \dfrac{-z - y - x}{4z} * y^2$

V. $w = x^2 * y^2 * z^4$

3. (20 pts.) Compute the Boolean value (1 or 0) of each condition.

```
int x = 5, y = 10, z = 0;
```

I. x + y >= y – 4

II. x == 5 || y > z && x > 10

III. ! (x == z)

IV. y != 6 && y < x * 2

V. x < y && y < 20

VI. x * x < y || 2 * y == 14

VII. (x == 5 || y > 0) && x > 10

VIII. z

IX. x + y * (z + 2) > 25

X. ! ! (x == 5)

Part #2 (50pts): write a C program for the following task and submit your source code (you must submit the .c file)

Write a C program to save (hard code) following information in variables (select appropriate datatypes for each). You have purchased 2 pieces of each item from the store. Output a sample receipt showing store name, individual prices, 10% of GST, and the total (you may design a suitable receipt format to output). Always maintain the precision with two decimal points. Choose appropriate identifiers for variable names.

Information to be stored in variables:
Store name: **The Z Store**
Price for item 1: $**21.45**
Price for item 2: $**10.00**
Price for item 3: $**14.90**
Price for item 4: $**33.50**

Program output:

Welcome to The Z Store

Item 1	$21.45	x2	$42.90
Item 2	$10.00	x2	$20.00
Item 3	$14.90	x2	$29.80
Item 4	$33.50	x2	$67.00

Item total: $159.7

GST: $15.97
Total: $175.67

C Operator precedence

Precedence	Operator	Description	Associativity
1	::	Scope resolution	Left-to-right
2	++ --	Suffix/postfix increment and decrement	
	()	Function call	
	[]	Array subscripting	
	.	Element selection by reference	
	->	Element selection through pointer	
3	++ --	Prefix increment and decrement	Right-to-left
	+ -	Unary plus and minus	
	! ~	Logical NOT and bitwise NOT	
	(*type*)	Type cast	
	*	Indirection (dereference)	
	&	Address-of	
	sizeof	Size-of	
	new, new[]	Dynamic memory allocation	
	delete, delete[]	Dynamic memory deallocation	
4	.* ->*	Pointer to member	Left-to-right
5	* / %	Multiplication, division, and remainder	
6	+ -	Addition and subtraction	
7	<< >>	Bitwise left shift and right shift	
8	< <=	For relational operators < and ≤ respectively	
	> >=	For relational operators > and ≥ respectively	
9	== !=	For relational = and ≠ respectively	
10	&	Bitwise AND	
11	^	Bitwise XOR (exclusive or)	
12	|	Bitwise OR (inclusive or)	
13	&&	Logical AND	
14	||	Logical OR	
15	?:	Ternary conditional[1]	Right-to-left
	=	Direct assignment (provided by default for C++ classes)	
	+= -=	Assignment by sum and difference	
	*= /= %=	Assignment by product, quotient, and remainder	
	<<= >>=	Assignment by bitwise left shift and right shift	
	&= ^= |=	Assignment by bitwise AND, XOR, and OR	
16	throw	Throw operator (for exceptions)	
17	,	Comma	Left-to-right