COS 135 Individual Assignment Week 3

Due: Friday 02/15/19 End of the day

This assignment has 2 sections (part #1 and part #2) in **6 pages**. Please submit a .zip file with answers (**use the answering template attached for part #1**) and source code/s for part #2.

Part #1 (60pts) Select or write the most appropriate answer (please use the answering template provided).

1. The following are primitive data types in C:

a. char[], long, short, double
b. *char, double, long, *float
c. pointer, int, float, long
d. int, short, long int, float

2. Assuming the #include <stdio.h> directive is in the C program, which statement will print the following?

5.0 to the power 3 is 125.00

(a) printf("%f to the power %f is %f\n", 5.00, 3, 125.0);
(b) printf("%3f to the power %1i is %6f\n", 5.00, 3, 125.0);
(c) printf("%3.1f to the power %i is %6.2f\n", 5.00, 3, 125.0);
(d) printf("%i to the power %i is %i\n", 5, 3, 125);

3. What is the value of the following expression in C?

(13 / 4 * 3) % 5 + 1

(a) 5.75
(b) 1.4875
(c) 5
(d) The expression is not valid

4. For what values of integer i is the following expression non-zero?

```
i > 5 && !(i >= 17)
```

(a) 5, 6, 7, ... , 16, 17
(b) 6, 7, 8, ... , 16, 17
(c) 5, 6, 7, ... , 15, 16
(d) 6, 7, 8, ... , 15, 16

5. Consider the following program fragment:

```
int b = 1;

int calculate(int c)
{
    c *= 2; b = 0;
    return 3;
}

int main()
{
    int a = 5, b = 7, c = 2;
    c = calculate(a);
    /* HERE */
}
```

What are the values of a, b and c when execution reaches **/* HERE */**?

(a) a is 10, b is 7, c is 2
(b) a is 10, b is 1, c is 3
(c) a is 5, b is 0, c is 2
(d) a is 5, b is 7, c is 3

6. (20 pts.) Calculate the value 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. int(3.0/4.0) + double(1/2)

7. (10 pts.) Write each math expression in C and assign to variable **w**.

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

8. (10 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 (40pts): write C programs for following tasks and submit your source code/s

(a) Write a C program to input temperature in Fahrenheit and convert to Celsius. The output should **only show maximum three decimal points**.

Example:
User's **input**

Enter temperature in Fahrenheit = **200**

Output
Temperature in Celsius = 93.333 C

Use following mathematical formula for temperature conversion:

F = (1.8 * C) + 32

Where,

F = Temperature in Fahrenheit

C = Temperature in degree Celsius

(b) Write a C program to input width and length of a rectangle. Then compute and output the area of the given rectangle.

Example:
User's **input**

Enter width = **12**
Enter length = **6**

Output
Area of the rectangle = 72

(c) Write a C program to input the store name and prices of 5 items you are going to purchase from a store. Then output a sample receipt showing store name, individual prices, 10% of GST, and the total (you may design a suitable receipt format to output).

Example:
User's **input**

Enter store name = **ABC Store**
Enter price for item 1 = $**11.75**
Enter price for item 2 = $**20.00**
Enter price for item 3 = $**35.00**
Enter price for item 4 = $**23.50**
Enter price for item 5 = $**8.50**

Output:

Welcome to
ABC Store

Item 1	$11.75
Item 2	$20.00
Item 3	$35.00
Item 4	$23.50
Item 5	$8.50
Item total:	$98.75
GST:	$9.87
Total:	$108.62