Mahidol University

ITCS 201 – Fundamentals of Programming
Week 2: Lab Assignments

Name: _____ ID: _____

Due: today or in a lab session next week

Instructions:

- Marking lab assignments will be done in the lab
- **Compile** and **Run** your program
- **Show** and **Explain** the output and your code to the lecturer or the lab assistance.

---------- **Lab Assignments** ----------

Lab 1: Identify all the bugs in the following code, fix it, and re-compile to produce the output.

```
#include <stdio.h>
#include <math.h>

int main()
{
    int size = 10;
    for (row = 0; row < size; row++)
    {
        for (int col = 0; col <= 4*size; col++)
        {
            float dist1 = sqrt(pow(row - size, 2) + pow(col - size, 2));
            float dist2 = sqrt(pow(row - size, 2) + pow(col - 3*size, 2));

            if (dist1 < size + 0.5 || dist2 < size + 0.5)
                printf("*");
            else
                printf(" ");
        }
        printf(\n);
    }

    for (int row = 1; row < 2*size; row++)
    {
        for (int col = 0; col < row; col++)
            printf(" ");
        for (int col = 0; col < 4*size + 1 - 2*row col++)
            printf("*");
            printf("\n")
}
```

Lab 2: Write a program to assigned value 59.5 to variable name “me” as a float. Declare another variable name “you” as a float and assign the value of your weight. Next, declare average variable as a float to store the average value of the variables you and me. Then using one `printf()` for each line, print the following. The numbers are printed using the values of the variables. The last line starts on a tab position.

Expected output:

```
My weight is  59.50
You weight are  65.00
        We are around 62.25
```

Lab 3: Write a program that stores the integer value 5 in the variable **num1** and the integer value 8 in the variable **num2** (make sure to declare these two variables as integers). Have your program calculate the summation of these numbers and their average in the floating format. The summation should be stored in the variable named **sum** and the average in the variable named **avg**.

Expected output:

```
num1=5, num2=8
AVG=6.0000
SUM=13.0000
```

Bonus Lab 1: Enter and execute the following C program.

```
#include <stdio.h>

int main() {
 printf("The first letter of the alphabet is %c", 'a');
 printf("\nThe decimal code for this letter is %d", 'a');
 printf("\nThe code for an uppercase %c is %d\n", 'A', 'A');

   return 0;
}
```

Try to understand the output and modify your program to do the following:

- Choose 3 more alphabets from the first three characters of your first name.
- Print them out with their decimal codes.
- Explain why ‘a’ and ‘A’ produce different decimal codes?

Expected output: (??? is what your program needs to print out)

```
The first letter of the alphabet is a
The decimal code for this letter is 97
The code for an uppercase A is 65
My letter#1 is ??? (note: print out your 1st alphabet)
The decimal code for this letter is ???
The code for an uppercase ???is ???
My letter#2 is ??? (note: print out your 2nd alphabet)
The decimal code for this letter is ???
The code for an uppercase ???is ???
My letter#3 is ??? (note: print out your 3rd alphabet)
The decimal code for this letter is ???
The code for an uppercase ???is ???
```