CMPE 108 - Experiment 2
Sequential Programming

OBJECTIVES:

- Understand how to edit, compile and execute C computer codes.
- Understand C programming: sequential code structure.

NOTES:

- You should prepare the preliminary work before coming to the laboratory session and bring soft copies of the preliminary work with you.
- Before writing a computer code, you should do the following steps:
  1) understand and analyze the problem,
  2) develop an algorithm and/or flowchart,
  3) convert the algorithm and/or the flowchart into a C code.

PRELIMINARY WORK:

Assume that in the following program fragments, variables are int type.
Write separate C programs to evaluate the given program fragments and show the outputs produced by each of the program fragments by writing the results in the corresponding boxes.

Part a-)

```
i= 5;
j = i * 3 - 2 ;
printf(" i=%d j=%d \n", i, j);
```

Part b-)

```
m=4; n= 3
j = m / m % m * m + n * 4;
printf(" m=%d n=%d j=%d\n", m, n, j);
```

Part c-)

```
m = 3 * (n = 3);
m *= n+1;
j = m + n;
printf(" m=%d n=%d j=%d\n", m, n, j);
```

Part d-)

```
x = 2; j = 8; m=2; n=1;
j = 1 + (m %= 1 + (n /= -1 + x));
printf(" m=%d n=%d j=%d x=%d\n",m,n,j,x);
```

Part e-)

```
a= 3; b=5;
printf("Result=%d\n", a++ + --b +2 );
printf("a=%d b=%d\n", a, b);
```

TASKS during the LAB hours:

1. Write a program that produces the following output using **printf** function. Note: you only need to use asterisk (*) and space characters.

```
*
**
***
****
 ***
  **
   *
```

2. Write a C program to calculate the area of a rectangle. The program should prompt the user to enter the width and height of the rectangle, and then calculate and print the area of the rectangle.

3. Read two points (two x and y values; x1, x2, y1, y2). Using these values calculate and display the line that passes through those points in the following form.

```
y = Ax + B
```

You may use following formula to calculate A and B values.

$$A = \frac{y2 - y1}{x2 - x1}$$

$$B = y2 - x2 * A$$

Sample output:

```
y = 5x + 4
```

4. Write a C program that asks the user to enter a three digit number, then prints the number with its digits reversed. A session with the program should have the following appearance:

```
Enter a two-digit number: 281
The reversal is:  182
```

Hint: If `n` is an integer, then `n%10` is the last digit in `n` and `n/10` is `n` with the last digit removed.