CL1002 – Programming Fundamentals Lab

Exercise # 06

Note:

- Submit a pdf file containing all of your C code with all possible screenshots of every task outputs on Google Classroom.
- Copied task will be awarded **zero** marks.
- Note that these lab task marks could be graded through a viva in lab.
- Please submit your file in this format (roll-no-name) i.e (22P-8743-Zain.pdf).

Problem: 1

Write a C program that prints the following patterns separately one below the other.

Use nested for loop to generate the patterns.

Sample Output:

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

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

Problem: 2

Write a C function to construct the following pattern, using a for loop. User should enter a symbol e.g *,^,@,- etc, and your function should a pattern like this of that symbol

Sample Output:

```
Enter symbol #

#
##
###
####
#####
####
###
##
#
```

```
Enter symbol *

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

Problem: 3

Write a Program that takes ‘n’ and ‘x’ from user and computes the following series.

Note: don’t use built in pow function.

$$s = \sum_{k=0}^{n} x^k / k!$$

Sample Output

```
Enter the value for n 5
Enter the value for x 3
18.4
```

Problem: 4

A “Perfect” number is a positive whole number that is the sum of its proper divisors (including 1 and excluding the number itself). For example, the proper divisors of 6 are 1, 2, 3 and 1 + 2 + 3 = 6. So, 6 is a perfect number. Similarly, 28 is also a perfect number.

Write a program that displays first 4 perfect numbers.

Sample Run:

6 is a perfect number

1+2+3=6

28 is a perfect number

1+2+4+7+14=28

Additional Task

Problem: 5

Write a C function to construct the following pattern, using a for loop. User should enter a symbol e.g *,^,@,- etc, the number of rows and your function should a pattern like this of that symbol.
Sample Output:

```
Enter the number of rows 5
Enter symbol $
     $
    $$$
   $$$$$
  $$$$$$$
 $$$$$$$$$
```

```
Enter the number of rows 7
Enter symbol @
       @
      @@@
     @@@@@
    @@@@@@@
   @@@@@@@@@
  @@@@@@@@@@@
 @@@@@@@@@@@@@
```

Problem: 6

Write a C function to construct the following pattern, using a loop.

Sample Output

```
Enter the number of rows: 7
            0
           1 1
          2 2 2
         3 3 3 3
        4 4 4 4 4
       5 5 5 5 5 5
      6 6 6 6 6 6 6
     7 7 7 7 7 7 7 7
      6 6 6 6 6 6 6
       5 5 5 5 5 5
        4 4 4 4 4
         3 3 3 3
          2 2 2
           1 1
            0
```