CSCE 206 Spring 2020 Lab Assignment: #3

Submission Deadline: 23:59, March 8th 2020 (Sunday).

1. Follow the submission guidelines in the below link and make the submission through eCampus. https://prathiksha1995.github.io/CSCE206//Submission.html
2. Add comments to your code including your name, UIN and the class section you are in with block comments to the head of your code file.

Question 1. Special Numeric (25 points)

A special numeric has three digits and holds a property that it is exactly equal to the summation of the cubes of each digit. For example, 370 is special numeric.

$$370 = 3^3 + 7^3 + 0^3$$

Write a C program to explore these special integers from 100 to 999 and display all of them on the screen. You can use **for** loop. Name your program file Hw3_q1_code.c

Question 2. Pattern (25 points)

Take an integer n as input from the user and display the following pattern. Name your program file Hw3_q2_code.c

Example input and output: (Text in purple is what the program should print on the screen to instruct the user, text in black is what the user types in or the program outputs).

Enter the value of n: 3

1

22

333

Enter the value of n: 5

1

22

333

4444

55555

Question 3. Recursion Sum (50 points)

A Summation formula is defined as:

$$sum(n, k) \triangleq n^0 + n^1 + n^2 + \cdots + n^k$$

For example:

$$sum(10, 4) \triangleq 10^0 + 10^1 + 10^2 + 10^3 + 10^4 = 11111$$

Write a C program to ask user to input a **decimal** n and an **integer** k and return the correct summation following the formula defined above. The C program is required to use **Recursion function (a function calling itself, 30 points)** for this purpose. It is required to use **Recursion** to evaluate the power of n. Name your file Hw3_q3_code.c.

Hint: Write a custom power function using recursion learned in class (you are **not allowed** to use **pow** in **math.h** library).

Example input and output: (Text in purple is what the program should print on the screen to instruct the user, text in black is what the user types in or the program outputs).

Please input n = 6.5

Please input k = 5

Sum = 13712.34375.

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please input n = 10
please input k = 4
Sum = 11111.000000
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```
please input n = 6.5
please input k = 5
Sum = 13712.343750
```