Course name: Data Structure and Algorithms Lab
Code: CSS 352

Assignment 2 (SN)

Objectives:

a) **Learn the use of strings**
b) **Learn the sue of text files in C**
c) **Lean the use of recursive function**
d) **Learn dynamic allocation using malloc() and free()**

1. Write a C program that takes two integer values as input, displays its sum. [The integer value may be so large such that it exceeds the range of the max value of any integer data types.]
   Hint: you may store the integer input as a string.

2. Write a C program that takes two integer values as input, displays its product. [The integer value may be so large such that it exceeds the range of the max value of any integer data types.]
   Hint: you may store the integer input as a string. You may use the large addition function from the previous assignment. [**OPTIONAL**]

3. Write a C program that takes an input unindented C code file, reads its contents and write the indented code back as the same file name. [**OPTIONAL**]
   [Try using command line arguments to input the file name]

4. Write a C program to perform matrix multiplication. Use dynamic allocation 2-D arrays to store the matrices.
   [use malloc and free and make sure you explicitly clear the garbage after processing is done]

5. Write a C program to find the determinant of a matrix. Use dynamic allocation 2-D arrays to store the matrix.
   Hint: try to write a recursive function for computing determinant of a matrix

6. Write a C program to store the CGPA obtained by the students of different departments. Note that Institute is having a fixed number of Departments (i.e. the number of Depts are known prior to execution) but the number of students in each Dept is known in runtime. Moreover different Dept. have different student capacity. Compute the highest CGPA obtained in each Dept. and the highest CGPA among all Departments.
   Hint: Use dynamic allocation; use malloc and free and make sure you explicitly clear the garbage after processing is done