Structure and File

(Any five assignments)

1. Create a structure to specify data on students given below:

   Roll number, Name, Department, Course, Year of joining

   Assume that there are not more than 100 students in the college.

   a. Write a function to print the names of all students who joined in a particular year.

   b. Write a function to print the data of a student whose roll number is given.

2. Write a program in C to create and store information in a text file.

3. Write a program in C whose output is the program itself.

4. Write a program which accepts names, rolls and marks of 10 students in 6 subjects stores it in an array of structures. Write a separate function which prints in ascending order the rank list (roll, name, average) based on the average of 6 subjects.

5. Write a program to build a linked list of integers. Write functions to add a new node at the beginning, at the end, or in the middle. Also write functions to delete a node and to traverse the list. **[OPTIONAL]**

6. Write a program to implement a stack using linked list. Write functions to push and pop elements. **[OPTIONAL]**

7. Write a program which allows you to do addition and subtraction of two integers which can be upto 40 decimal digits long (call it as huge integers). Create your own representation of huge integers and it should use as minimum space as possible. **[OPTIONAL]**

8. Write a program to create a Telephone Directory application, which will have options for

   a. Add Contact (Name and Telephone No.)

   b. Delete Contact

   c. Search (By Name)

   d. Browse

   Contact Information should be stored in a text file in a readable format. Allow multiple telephone numbers against a single contact name. **[OPTIONAL]**

9. Write a program to copy one file to another where files names are passed as command line arguments.

10. Write a program which reads a list of words from a file and sorts them in alphabetical order and displays them one word per line. **[OPTIONAL]**

11. Write a program which read a C source file having comments (between /* and */) and copies it another file leaving the comments.

12. Write a C program which reverses a given link list (pointer to head node is given). Assume suitable definition of link list nodes. **[OPTIONAL]**

13. Write a C program which reads a C source file and determines percentage of characters which are part of comments.

14. Write a C program which reads a C source file and determines no of variables defined of each built in data types. **[OPTIONAL]**

15. Write a program to sort some numbers in ascending order. The numbers are to be input from a file named ‘input.txt’. The output should be written in a file named ‘output.txt’. Use bubble sort algorithm and dynamic memory allocation for implementation.