

Jadavpur University
Session 2021-2022, Odd Semester
Computer Programming and Numerical Methods

Structure and File

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

Roll number, Name, Department, Course, Year of joining, Marks of 6 Subjects

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

- a. Write a function to print the data of a student whose roll number is given.
 - b. Write a function to create and store this information in a text file.
 - c. Write a function which prints in ascending order the rank list (Roll, Name, Department, Average) based on the average of 6 subjects.
2. Write a program in C for following tasks
 - a. Output of the code is the program itself.
 - b. Read a C source file having comments (between `/*` and `*/`) and copies it to another file leaving the comments.
 - c. Reads a C source file and determines the percentage of characters which are part of comments.
 - d. Reads a C source file and determines no of variables defined of each built in data types.
 - e. Copy one file to another where files names are passed as command line arguments.
3. Write a program in C to build a linked list and perform following tasks.
 - a. Write functions to add a new node at the beginning, at the end, or in the middle.
 - b. Write functions to delete a node and to traverse the list.
 - c. Write functions to implement stack with push and pop operations.
 - d. Write a function to reverse the list.
 - e. Write a function to sort the list.

- f. Write a function which reads a list of words from a file and sorts them in alphabetical order and displays them one word per line.
- 4. 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.
- 5. 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..