LABORATORY ASSIGNMENTS

FOR

DATABASE MANAGEMENT SYSTEM

CS204

Duration: 2 hours/week

(Internal Class: 25, External Exam: 25, Total: 50 marks)

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Lab Assignment: 3

Goal: To understand concept of index-sequential file processing.

Indexed sequential access file organization

• Indexed sequential access file combines both sequential file and direct access file organization.
• In indexed sequential access file, records are stored randomly on a direct access device such as magnetic disk by a primary key.
• This file have multiple keys. These keys can be alphanumeric in which the records are ordered is called primary key.
• The data can be access either sequentially or randomly using the index. The index is stored in a file and read into memory when the file is opened.

Advantages of Indexed sequential access file organization

• In indexed sequential access file, sequential file and random file access is possible.
• It accesses the records very fast if the index table is properly organized.
• The records can be inserted in the middle of the file.
• It provides quick access for sequential and direct processing.
• It reduces the degree of the sequential search.

Disadvantages of Indexed sequential access file organization

• Indexed sequential access file requires unique keys and periodic reorganization.
• It requires more storage space.
• It is less efficient in the use of storage space as compared to other file organizations based on the application requirement like batch operation.

Problem Statement:

1 In continuation with the earlier program A, write a 'c' program to manage student information who are admitted of B.tech-I, SVNIT as per their JEE Marks in one text file.
   - Students are stored as per their descending order of JEE marks.
   - Design the structure of students with fields Student ID, Fname, Lname, Age, Gender, City, JEE marks, etc. and prepare some test data of 20 students.

Prepare the menu options for the following operations:

1. Add a record in the sequential file of students.
2. Display list of students as per their ascending order of FNAME.
3. Create an index file on FNAME with file name: "Index_Fname.txt" consists of sorted Fname and the Record number in the student file.
4. Search for the student's FNAME using INDEX FILE ("Index_Fname.txt") and display the record from the student file directly by setting the file pointer to the position= record number * size of student structure.
5. a) Show the execution time to display city wise the records of students from the sequential file of student.
   b) Show the execution time to display city wise the records of students by creating the student's City using INDEX FILE ("Index_City.txt").
6. List all the student records of the file in ascending order of city and age using index and without index file of CITY and AGE.
7. Insert some more records in student file and update the index file of fanme to manage the ordered information.

Rubrics:

1. Are the appropriate fields considered for faculty and faculty-student structure or not?
2. Whether main operations are executed?
3. Whether submenu operations are executed?
4. Whether comments/documentation in the program is done?
5. Whether the indentation in the program is done?
6. Whether the appropriate error messages are displayed?
7. Whether the appropriate input formatting is managed by the program?
8. Whether the appropriate output formatting is managed by the program?
9. Whether the appropriate input is/inputs are taken from the user?
10. Any extra submenu is implemented or not?
