Assignment No .10

Problem statement:

Department maintains a student information. The file contains roll number, name, division and address. Allow user to add, delete information of student. Display information of particular employee. If record of student does not exist an appropriate message is displayed. If it is, then the system displays the student details. Use sequential file to main the data

Theory:

File structure–

A file is a collection of records which are related to each other. The size of file is limited by the size of memory and storage medium.

Two characteristics determine how the file is organised:

1. **File Activity:**

It specifies that percent of actual records proceeds in single run. If a small percent of record is accessed at any given time, the file should be organized on disk for the direct access in contrast.

If a fare percentage of records affected regularly than storing the file on tape would be more efficient & less costly.

2. **File Volatility:**

It addresses the properties of record changes. File records with many changes are highly volatile means the disk design will be more efficient than tape.

File organisation –

A file is organised to ensure that records are available for processing. It should be designed with the activity and volatility information and the nature of storage media, Other consideration are cost of file media, enquiry, requirements of users and file's privacy, integrity, security and confidentiality.

There are four methods for organising files-

1. Sequential organisation

2. Indexed Sequential organisation
3. Inverted list organisation
4. Direct access organisation
5. Chaining

Sequential organization:

Sequential organization means storing and sorting in physical, contiguous blocks within files on tape or disk. Records are also in sequence within each block. To access a record previous records within the block are scanned. In a sequential organization, records can be added only at the end of the file. It is not possible to insert a record in the middle of the file without rewriting the file.

In a sequential file update, transaction records are in the same sequence as in the master file. Records from both the files are matched, one record at a time, resulting in an updated master file. In a personal computer with two disk drives, the master file is loaded on a diskette into drive A, while the transaction file is loaded on another diskette into drive B. Updating the master file transfers data from drive B to A controlled by the software in memory.

Advantages:

1. Simple to design.
2. Easy to program
3. Variable length and blocked records available
4. Best use of storage space

Disadvantages

1. Records cannot be added at the middle of the file.

Algorithm: Insert Record

1. Allocate Memory for new record S1
2. Get details for new record S1.
3. Open target file in append mode.
4. Write Record in target file at the end.
5. Close file.

Display Records

1.Open Existing File in read mode(ios::in)

2.Print headings for record tabs.

3.Read one record at a time.

4.Repeat step 3 till end of the file

5.Close the file.

Search Record:

1.Open file in read mode.

2.Enter target roll number to search.

3.Read one record form file.

If roll no matches with target roll no then

Print record details as record found and stop searching.

4.Repeat step 3 till last record or till record not found.

5.Print message if no such record present.

Delete Record

1.Open Existing file in read mode

2.Create new empty file temp.txt in write mode.

3.Enter roll number to be deleted.

4.Read record from original file.

If roll number of read record doesn't matches with target roll number -Write it in temp.txt

If roll number matches then ignore that record.

5.Repeat step 4 till end of file.

6.Close both files.

7.Remove original file.

8.Rename temp.txt with original file name.

Conclusion:

Thus, we studied sequential file organization which is easy to implement where record are stored sequentially as they entered insertion in middle is not possible.