Topic 4 Discussion 1

Explain why the average search time to find a record in a file is shorter for an indexed sequential file than for a sequential file.

Hello class,

The Sequential file organization stores the data in sequence order.  We can access the data sequentially and the data can be stored only at the end of the file(Difference Between Sequential, Indexed, and Relative Files in COBOL, 2021). Indexed file access is a method that incorporates the benefits of both sequential and direct file access. This method involves creating an index file that maps logical keys or data elements to their corresponding physical addresses within the file(El-Din Helmy, 2023).

Imagine searching for a specific book in a library. With a sequential file, you'd have to browse every single book on every shelf, a time-consuming process. This is like searching through a file from the beginning to the end.

An indexed sequential file is like having a library catalog. Instead of browsing every book, you can quickly look up the book's title in the catalog, which tells you its exact location. This is analogous to using an index to find a specific record in a file.

The index allows you to jump directly to the desired record, bypassing the need to scan the entire file sequentially. This makes indexed sequential files much faster for searching, especially in large files.

References:

El-Din Helmy, B. (2023, March 30). File Access: Sequential vs. Direct vs. Indexed | Baeldung on Computer Science. Www.baeldung.com. https://www.baeldung.com/cs/file-access

Difference Between Sequential, Indexed, and Relative Files in COBOL. (2021, September 4). GeeksforGeeks. https://www.geeksforgeeks.org/difference-between-sequential-indexed-and-relative-files-in-cobol/