

CSCI 5408
DATA MANAGEMENT AND
WAREHOUSING

GROUP PROJECT
(DBMS_BUILDER-1)

Gitlab Link: https://git.cs.dal.ca/prashanthv/csci5408_tiny_db.git

Module -1

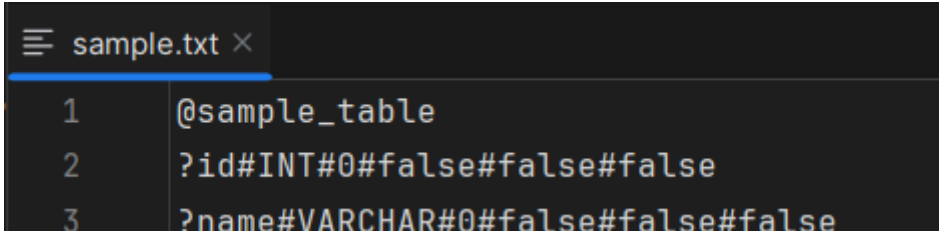
Data Structures used:

Arrays are chosen for their simplicity and efficiency in handling linear data. Arrays provide fast access to elements using indices, which is beneficial for quick lookups and modifications. They are also memory-efficient when dealing with a fixed size of elements.

HashMap is used to provide efficient storage and retrieval of data through key-value pairs. They offer constant time complexity for insertions, deletions, and lookups, making them highly efficient for managing data where quick access and updates are required. This is particularly useful for operations like database transactions, where data needs to be accessed and modified frequently. Hash maps also handle dynamic resizing more efficiently compared to arrays, allowing the data structure to grow as needed without a significant performance impact.

Custom File Format:

Here, we use a simple plain text file to store the data and metadata for this TinyDB project. Different delimiters are used to differentiate the data from each other. For example, "@" is used to denote the table name, and "?" is used to indicate each column and its properties. Additionally, "#" is used to separate multiple data items in one line. For instance, to store a user ID and its password, we store them as userID#password in one line.



```
sample.txt x
1 @sample_table
2 ?id#INT#0#false#false#false
3 ?name#VARCHAR#0#false#false#false
```

Figure 1: Show the sample .txt file of the database name sample.