

Assignment 03

ADVANCED DATABASE ORGANIZATION

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RECORD MANAGER:

The main aim of this assignment is to implement the record manager. The purpose of the record manager is to handle the tables present in the database. It handles the database tables using fixed schemas. The record manager scans the records present in the database table along with performing other functions such as – inserting records, deleting records, updating records in the table. The record manager scans the records with the help of a search condition. The search condition checks the records from the table and returns the respective records that matches with the provided condition.

FUNCTIONS:

The purpose of these functions/methods is to initialize, shutdown the record manager, tables related functions such as – creating, opening, closing and deleting tables and record related functions – inserting a record, deleting a record, updating records, get the records, free the records. Along with these, there are other few functions – start scanning, close scanning, create schema, free schema.

1. initRecordManager: This function helps to initialize the record manager. It returns RC_OK once the records get initialized.
2. shutdownRecordManager: The shutdownRecordManager function helps to shutdown the record manager and returns RC_OK once the record manager shuts down.

TABLE FUNCTIONS:

3. createTable: This function helps to create a table based on the 'name' and 'schema' and it also creates a page file.
4. openTable: The openTable function helps to open a table based on 'name' once the buffer pool is initialized.
5. closeTable: This function helps to close the table once the buffer pool is shut down.

This is done by using the shutdownBufferPool function. Once the shutdownBufferPool function is called, the buffer pool is made free.

6. deleteTable: The deleteTable deletes the table in the database and destroys the page file.
7. getNumTuples: The getNumTuples function when is called in the record manager program, it returns the number of records which is tuple in the database table.

RECORD FUNCTIONS:

The record functions helps to retrieve the record, insert a new record, delete or update already existing record.

8. insertRecord: The insertRecord function helps to insert a new record in the database table.
9. deleteRecord: This function deletes a record from the table. It has a record ID and it saves the data of the page back to the disk .
10. updateRecord: This function helps to update the record in the database table with a new record. The data is placed to a new record once it is copied.
11. getRecord: This function consists of a record ID and record pointer. The record pointer helps to find the record size from the schema.

SCAN FUNCTIONS:

12. startScan: This method helps to scan the data in the memory.
13. next: This helps to scan the next record. The records will be scanned till it finds a matching tuple in the data and if it doesn't find any matching tuples then it fails in execution thus returning an error message in the code.
14. closeScan: Once all the scanning operation is completed, it closes through this function.

SCHEMA FUNCTIONS:

The schema functions helps to execute the schemas by executing a newly created schema and to get the size of the record. It also free up the space that is consumed by the schema.

- 15.createSchema: This function helps to create a new schema in the memory.
- 16.getRecordSize: The getRecordSize function helps to find the size of a record in the schema.
- 17.freeSchema: The space in the memory occupied by a schema has to be made free with the help of freeSchema function.

ATTRIBUTE FUNCTIONS:

There are two types of attribute functions we will use in our record manager. The get attribute and the set attribute.

- 18. getAttr: This function helps to get the attribute from the record in the given schema.
- 19. setAttr: This function helps to set the attribute in the given schema.
- 20. createRecord: This function helps to create a record in the schema. Once the record is created, we obtain the record size and returns RC_OK once it performs the operations successfully.
- 21. freeRecord: This function helps to free the space allocated by the record in the memory.

How to run the Script

**For compilation: \$ make

**For Running: \$ make run

**To revert:

\$ make clean