Programming Project #2: Database Files and Indexing

CS-6360 Database Design

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TEAM #BLUE

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We implemented a rudimentary database engine called DavisBase based on simplified file per table variation on the SQLite format. Each database table is physically stored as a separate single file and is subdivided into logical sections of fixed equal size called pages and our implementation supports a page size of 512 bytes. DavisBase data is encoded in two different kinds of files—tables files and index files. Tables and Indices are both represented by a single DB file. Each DB file is comprised of one or more *pages* (a virtual subdivision of the file). All pages of a file are the same size.

- Each page in a Table file is a node in a B+ tree, either interior or leaf.
- Each page in an Index file is a node in a B tree, either interior or leaf.

Supported Queries:

1) SHOW TABLES;

2) CREATE TABLE <TABLE_NAME> (ROW_ID INT , <COLUMN_NAME 1> <DATA_TYPE>, ..., <COLUMN_NAME n> <DATA_TYPE>) ;

create table student (row_id int,name text unique,department text not null,rollno int);

3) INSERT INTO <TABLE_NAME> (<COLUMN_NAME 1> , <COLUMN_NAME 2> , <COLUMN_NAME n>) VALUES (<VALUES 1> , <VALUES 2>, ..., <VALUES n>) ;

insert into student(row_id,name,department,rollno) values(2,Arya,cs,2);

insert into student(row_id,name,department,rollno) values(3,Bran ,cs,3);

4) SELECT * FROM <TABLE_NAME> WHERE <CONDITION> ;

select * from student ;

select * from student where row_id = 2 ;

select * from student where rollno= 1 ;

select * from student where name = arya;

5) UPDATE <TABLE_NAME> SET <COLUMN_NAME> = <VALUE> WHERE <CONDITION>

update student set name = sansa where rollno= 2 ;

6) CREATE INDEX ON <TABLE_NAME> (<COLUMN_NAME>) ;

create index on student(rollno) ;

7) DELETE FROM <TABLE_NAME> WHERE <COLUMN_NAME> = <VALUE> ;

delete from student where row_id = 2 ;

8) DROP TABLE <TABLE_NAME> ;

drop table student;

9)HELP;

10)EXIT;