

**Database Design**  
**CS 6360.003(Spring 2020)**  
**SQL Programming Project 2: Project Report**  
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**Aim:** To create a rudimentary Database engine based on MySQL and SQLite which uses B+ tree/B tree data structure for pages in Table and Index files.

**Functionalities of the project:**

Different SQL commands have been implemented as a part of this project and they're as shown below with output screenshots:

**1. HELP** command to show the various commands and menu:

```
DavisBasePrompt (1) [Java Application] C:\Program Files\Java\jdk1.8.0_112\bin\javaw.exe (06-May-2020, 7:37:41 pm)
-----
Welcome to DavisBase
DavisBase Version v1.0
© 2020 Aasia Afreen

Type 'help;' to display supported commands.
-----
davisql> help;
*****
SUPPORTED COMMANDS
All commands below are case insensitive

      USE database_name;           Changes current database.
      CREATE DATABASE database_name; Creates an empty database.
      SHOW DATABASES;             Displays all databases.
      DROP DATABASE database_name; Deletes a database.
      SHOW TABLES;              Displays all tables in current database.
      CREATE TABLE table_name (   Creates a table in current database.
          <column_name> <datatype> [PRIMARY KEY | NOT NULL]
          ...);
      DROP TABLE table_name;      Deletes a table data and its schema.
      SELECT <column_list> FROM table_name Display records whose rowid is <id>.
          [WHERE rowid = <value>];
      INSERT INTO table_name        Inserts a record into the table.
          [(<column1>, ...)] VALUES (<value1>, <value2>, ...);
          [WHERE condition];
      HELP;                       Displays help information
      EXIT;                       Exits the program

*****
davisql> |
```

**2. DDL Commands:**

- a. **Create Database** command: Used to create a database
- b. **Create Table** Command: Used to create a table
- c. **Show Databases** command: To show the databases
- d. **Show tables** command: To show the tables

- e. **Drop Database** Command: To drop the tables
- f. **Drop Database** Command: To drop the database

DavisBasePrompt (1) [Java Application] C:\Program Files\Java\jdk1.8.0\_112\bin\javaw.exe (06-May-2020, 7:54:18 pm)

-----  
 Welcome to DavisBase  
 DavisBase Version v1.0  
 © 2020 Aasia Afreen

Type 'help;' to display supported commands.  
 -----

davisql> use COMPANY;  
 Database changed  
 davisql> create table EMPLOYEE (Id INT PRIMARY KEY, Name TEXT, Bdate DATE);  
 Query Successful  
 1 row affected

davisql> show tables;

| table_name |
|------------|
| employee   |

-----  
 Query Successful  
 1 row in set

davisql> |

DavisBasePrompt (1) [Java Application] C:\Program Files\Java\jdk1.8.0\_112\bin\javaw.exe (06-May-2020, 7:52:33 pm)

-----  
 Welcome to DavisBase  
 DavisBase Version v1.0  
 © 2020 Aasia Afreen

Type 'help;' to display supported commands.  
 -----

davisql> create database COMPANY;  
 Query Successful  
 1 row affected

davisql> show databases;

| Database |
|----------|
| catalog  |
| company  |

-----  
 Query Successful  
 2 rows in set

davisql> use COMPANY;  
 Database changed  
 davisql> |

```
Problems @ Javadoc Declaration Console
DavisBasePrompt (1) [Java Application] C:\Program Files\Java\jdk1.8.0_112\bin\javaw.exe (06-May-2020, 10:48:00 pm)
5 rows in set

davisql> select id,name from employee;

+-----+
| id | name |
+-----+
| 1 | mohsin |
| 2 | aasia |
| 3 | aisha |
| 4 | alex |
| 5 | sameer |
+-----+
Query Successful
5 rows in set

davisql> drop table employee;
Query Successful
1 row affected

davisql> show tables;
Empty Set
davisql> drop database company;
Query Successful
1 row affected

davisql> show databases;

+-----+
| Database |
+-----+
| catalog |
+-----+
Query Successful
1 row in set

davisql> |
```

### 3. DML Commands:

- a. **Insert Into Table** command: To insert new values into the database

The Primary Key constraint has also been handled as shown in the screenshots below.

```
Problems @ Javadoc Declaration Console
DavisBasePrompt (1) [Java Application] C:\Program Files\Java\jdk1.8.0_112\bin\javaw.exe (06-May-2020, 10:48:00 pm)

Welcome to DavisBase
DavisBase Version v1.0
© 2020 Aasia Afreen

Type 'help;' to display supported commands.

davisql> use company;
Database changed
davisql> insert into employee values (1,'Mohsin','1996-04-29');
Query Successful
1 row affected

davisql> insert into employee values (2,'Aasia','1996-12-09');
Query Successful
1 row affected

davisql> select * from employee;

+----+-----+-----+
| id | name  | bdate |
+----+-----+-----+
| 1  | mohsin | 1996-04-29 |
| 2  | aasia  | 1996-12-09 |
+----+-----+-----+
Query Successful
2 rows in set

davisql> |
```

```
Problems @ Javadoc Declaration Console
DavisBasePrompt (1) [Java Application] C:\Program Files\Java\jdk1.8.0_112\bin\javaw.exe (06-May-2020, 10:48:00 pm)

Welcome to DavisBase
DavisBase Version v1.0
© 2020 Aasia Afreen

Type 'help;' to display supported commands.

davisql> use company;
Database changed
davisql> insert into employee values (1,'Mohsin','1996-04-29');
Query Successful
1 row affected

davisql> insert into employee values (2,'Aasia','1996-12-09');
Query Successful
1 row affected

davisql> select * from employee;

+----+-----+-----+
| id | name  | bdate |
+----+-----+-----+
| 1  | mohsin | 1996-04-29 |
| 2  | aasia  | 1996-12-09 |
+----+-----+-----+
Query Successful
2 rows in set

davisql> insert into employee values (2,'Afreen','1996-12-09');
ERROR(110P): Duplicate entry '2' for key 'PRIMARY'
davisql> |
```

#### 4. VDL Commands:

- Select \* from table query:** to select all rows from a table
- Select \* from table where <attribute>=<value> query:** to select specific rows based on the conditional operators in where clause like '<', '>', '='.
- Select <attribute list> from tablename:** to select specific columns from a table

```
Problems @ Javadoc Declaration Console
DavisBasePrompt (1) [Java Application] C:\Program Files\Java\jdk1.8.0_112\bin\javaw.exe (06-May-2020, 10:48:00 pm)

*****
davisql> select * from employee;

+---+-----+-----+
| id | name  | bdate   |
+---+-----+-----+
| 1  | mohsin | 1996-04-29 |
| 2  | aasia  | 1996-12-09 |
| 3  | aisha  | 2023-08-21 |
| 4  | alex   | 2000-06-20 |
| 5  | sameer | 1923-03-09 |
+---+-----+-----+
Query Successful
5 rows in set

davisql> select * from employee where id=2;

+---+-----+-----+
| id | name  | bdate   |
+---+-----+-----+
| 2  | aasia  | 1996-12-09 |
+---+-----+-----+
Query Successful
1 row in set

davisql> select * from employee where name='mohsin';

+---+-----+-----+
| id | name  | bdate   |
+---+-----+-----+
| 1  | mohsin | 1996-04-29 |
+---+-----+-----+
Query Successful
1 row in set

davisql> |
```



```
Problems @ Javadoc Declaration Console
DavisBasePrompt (1) [Java Application] C:\Program Files\Java\jdk1.8.0_112\bin\javaw.exe (06-May-2020, 10:48:00 pm)

+-----+
| id | name | bdate |
+-----+
| 1 | mohsin | 1996-04-29 |
+-----+
Query Successful
1 row in set

davisql> select name from employee;

+-----+
| name |
+-----+
| mohsin |
| aasia |
| aisha |
| alex |
| sameer |
+-----+
Query Successful
5 rows in set

davisql> select id,name from employee;

+-----+
| id | name |
+-----+
| 1 | mohsin |
| 2 | aasia |
| 3 | aisha |
| 4 | alex |
| 5 | sameer |
+-----+
Query Successful
5 rows in set

davisql> |
```

5. **EXIT command:** to exit the database

```
davisql> show databases;

+-----+
| Database |
+-----+
| catalog |
+-----+
Query Successful
1 row in set

davisql> exit;
Exiting Database...|
```