SQL Database

Report

Name: Yahia Mohamed Abdelaziz

ID: 71

Name: Youssef Mohamed Abdelfattah AlShaarawi

ID: 75

Name: Omar Shawky Abdelsalam

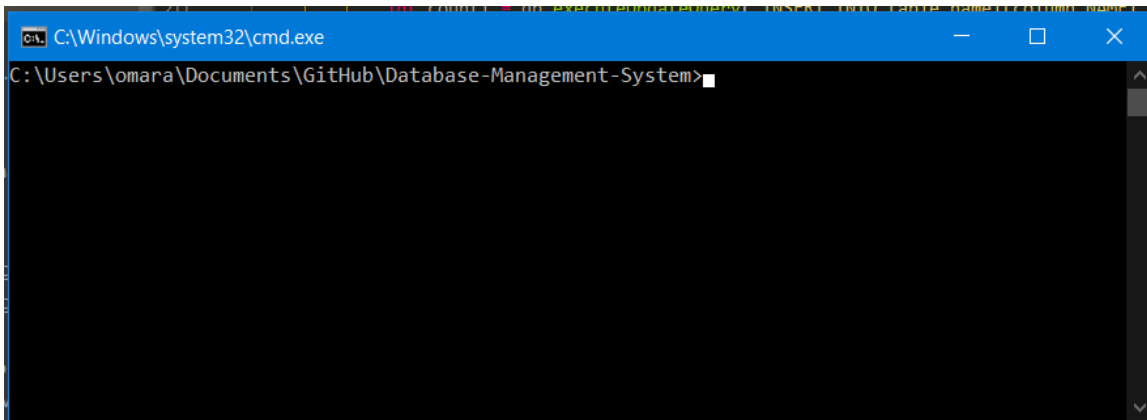**ID: 43**

Name: Mohamed Saad Ali Ali

ID: 54

Program Description :

Database management system (DBMS) that saves data in the form of tables Using SQL queries received from user.
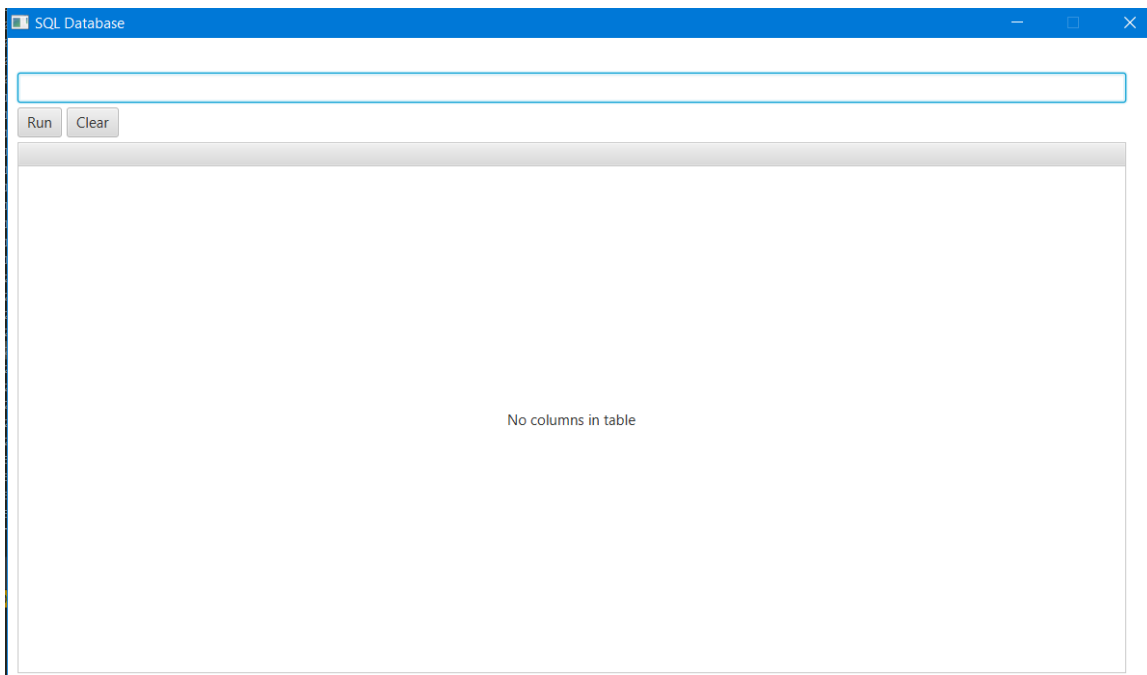
User Manual :

1- Opening Program :

a- When user opens program , There'd be two options ,

The first : Command line : Opens a CMD window ,User submits Queries by writing them and hitting enter .

The second : GUI interface : Opens a GUI , JavaFx based window , User submits Queries by Writing them in Text field ,then chooses Run

2- Queries :

a- Select :

I. Description :

The SELECT statement is used to select data(Certain Rows and Columns) from a database and preview them to the user .

II. Syntax :

Basic Syntax :

SELECT column1, column2, ... FROM table_name where Conditions Order by column_names ;

- Displays Column data of some rows from a table if a row satisfies the conditions exist after where clause.

- eg : SELECT population FROM Customers WHERE Country='Mexico'Order by Country desc, City, id asc ;

  here it will display column named "Population" from some rows of table 'Customers'
   if the column named "Country" of this row has data equivalent to 'Mexico' .

III. Query additional Options :

- If user replaced Column Section by Astrix Symbol '*' , if the row satisfied Condition that exists after where clause , Program will display all columns' data of this row

Database: w

`select * from y`

Run | Clear

name	type	age
hello	arecool	20
xz	vr	17
abc	tre	34
hello	x	NULL
hello	x	NULL
hello	hi	15
hello	hi	15
hello	hi	20

Adding Where Conditions:

Database: w

`select * from y where name = 'hello'`

Run | Clear

name	type	age	
hello	arecool	20	
hello	x	NULL	
hello	x	NULL	
hello	hi	15	
hello	hi	15	
hello	hi	20	

Adding Order By:

Database: yahia

```
select * from yahia order by v|
```

[Run] [Clear]

name	v	
hello	15	
hello	15	
hello	18	
hello	19	

b- <u>Insert into :</u>

I. <u>Description :</u>

Inserts new Data row by row into the table .

II. <u>Syntax :</u>

Basic Syntax :

INSERT INTO table_name (column1, column2, ...) VALUES (value1, value2...);

- Insert a new row into the table with values (value1 , value2,…) into columns (column1,column2,…) respectively .
  Eg: insert into students (name , age) values ('omar',16);

  It will insert row with columns name = 'omar' , age = 16 into Students table ;

III. **Query additional Options :**

- If user removed Columns brackets , new values will be inserted into columns that exist in the table in ascending order with respect to their order of appearing in the table .

- Columns of type varchar will only apply values of form 'Value' , while Columns of type int will only apply values of form (Number) with out the brackets .

c- **Update :**

I. **Description :**

The UPDATE statement is used to modify the existing data in a table.

II. **Syntax :**

Basic Syntax :

UPDATE table_name SET column1 = value1, column2 = value2, ...WHERE condition;

- Updates Columns (column1 , column2) with values (value1,value2) respectively if it satisfies condition after where clause .

Eg : UPDATE Students SET age = 16, name = 'omar' , ...WHERE age=15 | name = 'yehia';

This will update a row if satisfies the condition that column age = 15 or column name = 'yehia' ,replacing it's content with age =16 and name ='omar' .

III. Query additional Options :

- If where clause wasn't provided , program will update all rows in table with values that exist after set clause .

- Columns of type varchar will only apply values of form 'Value' , while Columns of type int will only apply values of form (Number) without the brackets .

- after where clause multiple conditions could be applied separated with AND\OR logic statement where AND has a priority of being preformed over the OR .

d- Delete from :

I. Description :

The DELETE statement is used to delete existing data in a table.

II. Syntax :

Basic Syntax :

DELETE FROM table_name WHERE condition;

- Deletes from the table Rows which satisfies condition after where clause .

Eg : delete from Students where age = 15 ;

This will delete a row if Values of age column is 15 ;

III. **Query additional Options :**

- If where clause wasn't provided , program will delete all rows in table

- Columns of type varchar will only apply values of form 'Value' , while Columns of type int will only apply values of form (Number) without the brackets .

- after where clause multiple conditions could be applied separated with AND\OR logic statement where AND has a priority of being preformed over the OR .

e- **What Lies after Where Clause :**
- multiple conditions could be applied separated with AND\OR logic statement where AND has a priority of being preformed over the OR.

Allowed Conditions :

1- Column_name Between value1 AND value2 ;
Returns true if a Column_name's value more than value1 and less than value2
(N.B : for INT type it compares it's numerical value ,while for VARCHAR type it compares it's lexicographical order of it's characters)

2- Column_name IN ('Value1','Value2','Value3' ,….)
Returns true if a Colum_name's value exists exactly like certain value in the set provided between the brackets.

3- Column_name {=,<=,>=,!=/<>,>,<} Value ;
Applies the arithmetic operation provided from the set of operators mentioned before and returns true it satisfies this operation .
(Both != and <> means (not equal to) and can both be used)

Used Design Patters:

- **Façade Design Pattern: To Make Adding more functionality to the database easier.**
- **Strategy: Adding Other Behaviors for File Management or Datatypes for columns Easier.**
- **Singleton: So, No Other Database Instances Are running to prevent conflicting queries**

UML Diagram: