Simple DBMS

DBMS SOFTWARE WHICH MANAGES DATABASES AND HANDLES SQL STATEMENTS ON THEM.

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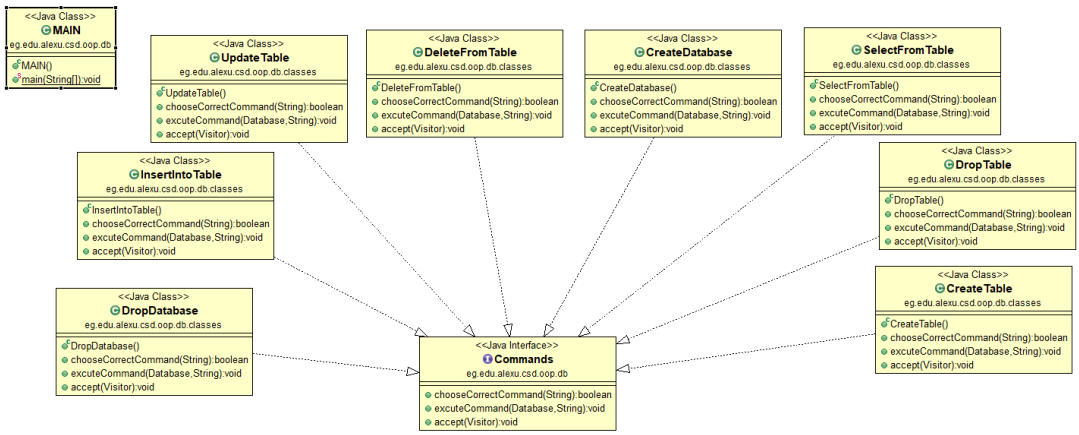
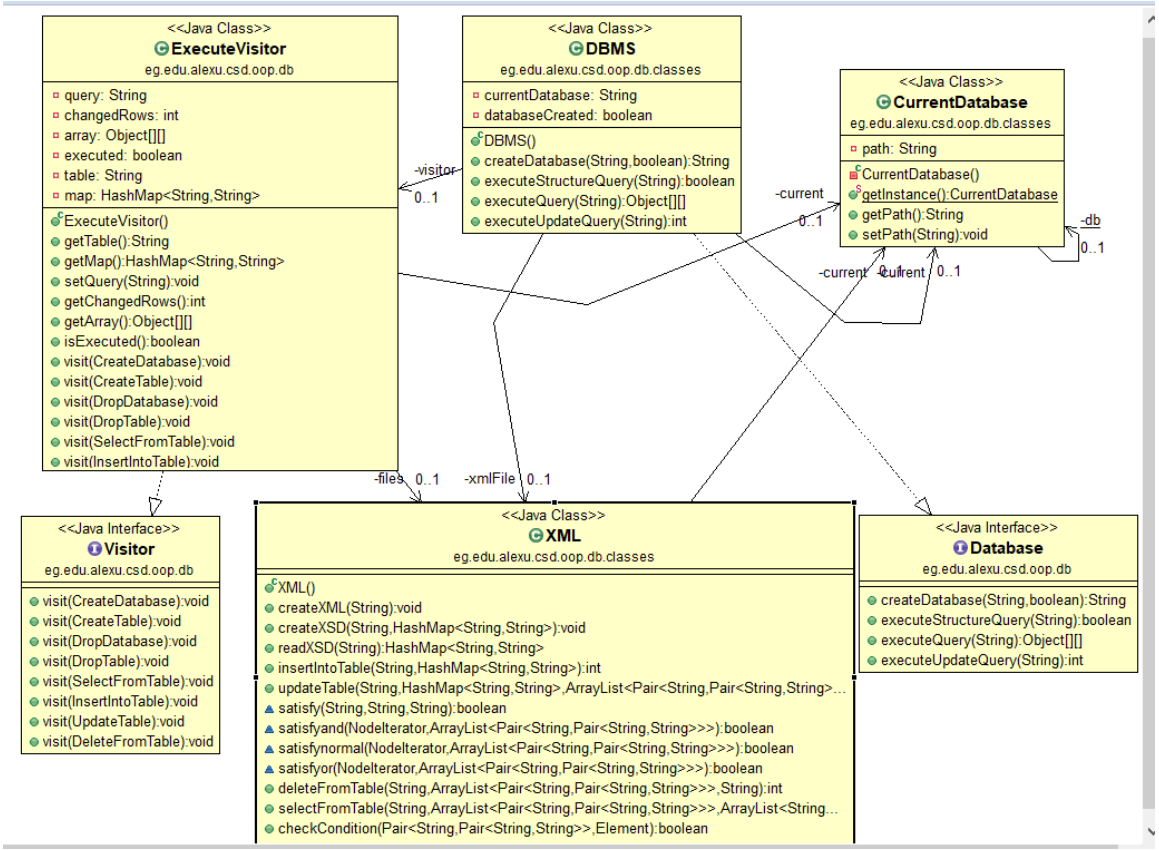
UML diagram





USER GUIDE

User must enter SQL Commands to deal with project.

- First the user should create a database or use a database which he's already created using the SQL statement "CREATE DATABASE database_name" without double quotes.
- Then the user will be able to create or use already existed tables using the following SQL statements (all statements are case insensitive) :
    1- To create a new table "CREATE TABLE table_name(col1 type, col2 type, ...)", where type is int or varchar.
    2- To select something from a table "SELECT col1, col2, ... FROM table_name", and you can replace the column names with " * " to select all columns and you can add a condition simply by adding "WHERE col = value".
    3- To insert a row into a table "INSERT INTO table_name (col1, col2, ...) VALUES (value1, value2, ...)", and you can remove the column names.
    4- To delete a row from a table "DELETE FROM table_name WHERE col = value", you can delete all records from a table simply by removing the "WHERE" clause.
    5- To update a table with new values "UPDATE table_name SET col1 = value1, col2 = value2, ...", and you can add a condition simply by adding "WHERE col = value".
    6- To drop a table "DROP TABLE table_name".
    7- To drop a database "DROP DATABASE database_name".

These all the commands the program support

1-
```
CREATE DATABASE databasename
```

2-
```
DROP DATABASE databasename
```

3-
```
CREATE TABLE table_name (
    column1 datatype,
    column2 datatype,
    column3 datatype,
   ....
)
```

4-
```
DROP TABLE table_name
```

5-
```
INSERT INTO table_name (column1, column2, column3, ...)
VALUES (value1, value2, value3, ...)
```

6-
```
INSERT INTO table_name
VALUES (value1, value2, value3, ...)
```

7-
```
UPDATE table_name
SET column1 = value1, column2 = value2, ...
WHERE condition
```

8-
```
UPDATE table_name
SET column1 = value1, column2 = value2, ...
WHERE condition1 AND condition2
```

9-
```
UPDATE table_name
SET column1 = value1, column2 = value2, ...
WHERE condition1 OR condition2
```

10-
```
DELETE FROM table_name WHERE condition
```

11-
```
DELETE * FROM table_name WHERE condition
```

12-
```
DELETE column1, column2, ...
 FROM table_name WHERE condition
```

13-
```
SELECT column1, column2, ...
FROM table_name
```

14-
```
SELECT * FROM table_name
```

15-
```
SELECT column1, column2, ...
FROM table_name WHERE condition
```

16-
```
SELECT column1, column2, ...
FROM table_name
WHERE condition1 OR condition2 OR condition3 ...
```

17-
```
SELECT column1, column2, ...
FROM table_name
WHERE condition1 AND condition2 AND condition3 ...
```

18-
```
SELECT column1, column2, ...
FROM table_name
WHERE NOT condition
```

19-
```
DELETE column1, column2, ...
FROM table_name
WHERE NOT condition
```

20-
```
DELETE column1, column2, ...
FROM table_name
WHERE condition1 OR condition2 OR condition3 ...
```

21-
```
DELETE column1, column2, ...
FROM table_name
WHERE condition1 AND condition2 AND condition3 ...
```

ASSUMPTION:

•The statements handled are in the form of the well-known SQL statements any differences will be considered a wrong input.

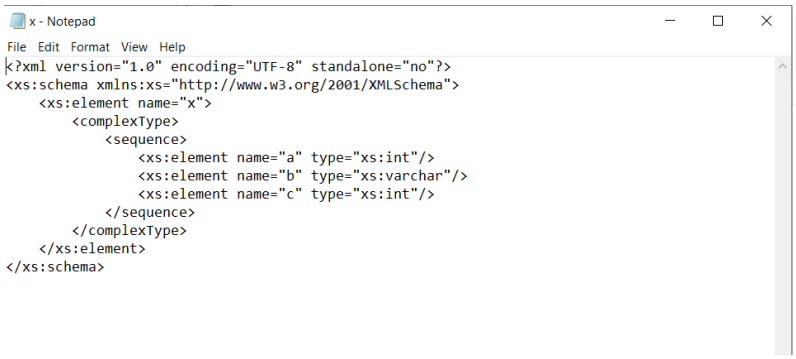
• If the type of the column is varchar, the value should be between single quotes.

Design Patterns:

Visitor design pattern : The whole application is structured using the visitor design pattern.

TEST SCENARIO WITH SNAPSHOTS

```
ENTER SQL COMMAND LINE OR -1 TO EXIT
create database tests
DataBase Created successfully
Current Database is : tests
create table x(a int, b varchar, c int)
x successfully created
insert into x values (4, 'value', 5)
Number of changed rows is : 1
insert into x(a, b, c) values (8, 'value2', 9)
Number of changed rows is : 1
insert into x(b, c) values ('value3', 15)
Number of changed rows is : 1
```




```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<x>

    <row>

        <a>4</a>

        <b>value</b>

        <c>5</c>

    </row>

    <row>

        <a>8</a>

        <b>value2</b>

        <c>9</c>

    </row>

    <row>
        <a>null</a>
        <b>value3</b>
        <c>15</c>
    </row>
</x>
```

```
update x set a=4 where c > 5
Number of changed rows is: 2

update x set a=20 where not c=15
Number of changed rows is: 2
update x set b='nun' where a=20 and c=9
Number of changed rows is: 1
update x set c=100 where a > 20 or c > 9
Number of changed rows is: 1
```

```
<row>
    <a>20</a>
    <b>value</b>
    <c>5</c>
</row>
<row>
    <a>20</a>
    <b>value2</b>
    <c>9</c>
</row>
<row>
    <a>4</a>
    <b>value3</b>
    <c>15</c>
</row>
```

```
delete from x where a=4
Number of deleted rows is : 1
```

```
<row>
    <a>20</a>
    <b>nun</b>
    <c>9</c>
</row>
<row>
    <a>20</a>
    <b>value</b>
    <c>5</c>
</row>
```

```
insert into x values (800, 'values', 1000)
Number of changed rows is : 1
select * from x
a   b   c
20   value   5
20   nun   9
800   values   1000
select a, c from x
a   c
20   5
20   9
800   1000
select * from x where a > 20
a   b   c
800   values   1000
select b, c from x where not a=800
b   c
value   5
nun   9
select * from x where a=20 and c > 4
a   b   c
20   value   5
20   nun   9
select * from x where b='value' or a=800
a   b   c
20   value   5
800   values   1000
```

```
drop table x
x successfully Dropped!
drop database tests
tests successfully Dropped!
```

DESIGN DESCRIBITION

It's a sample DBMS project deal with sql commands so allow user to create his own database and create tables inside it and insert actual data to these tables and modify them by delete, update and select.