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Lab Title:	Java Database Connectivity
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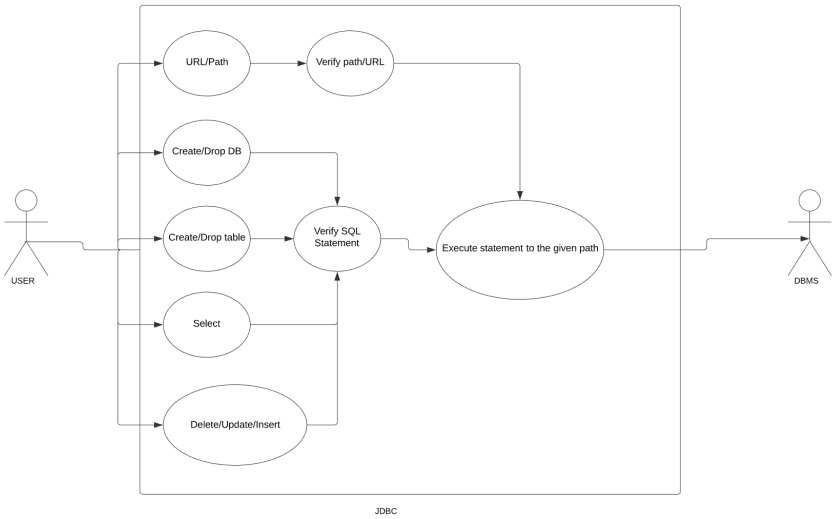
Computer and Systems Engineering Department

1 Introduction

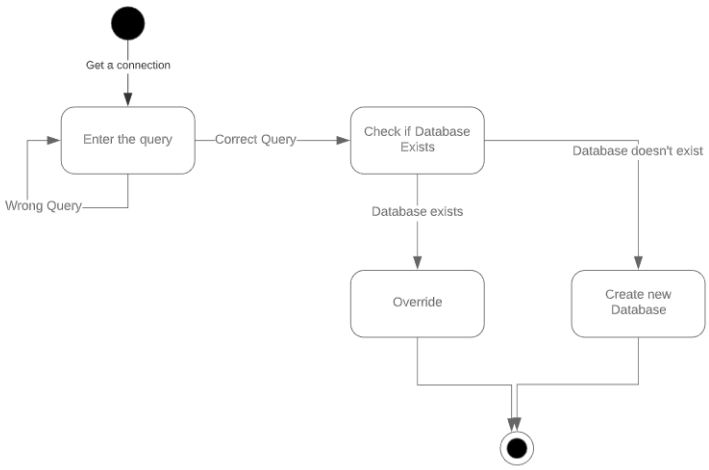
Java Database Connectivity (JDBC) provides Java developers with a standard API that is used to access databases, regardless of the driver and database product. JDBC presents a uniform interface to databases - change vendors and your applications only need to change their driver.

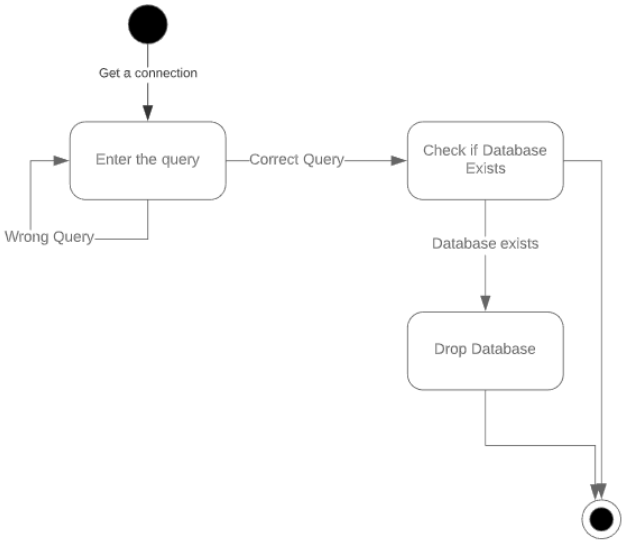
2 UML Diagrams

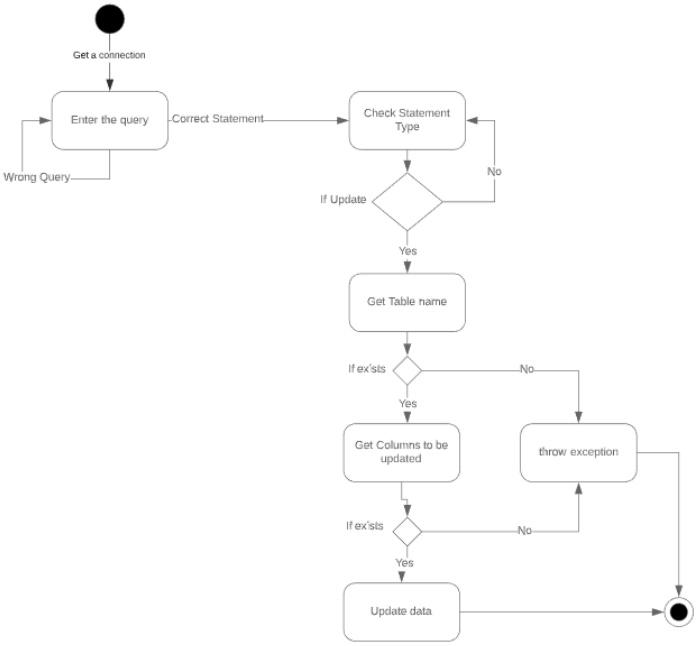
2.1 Use Case



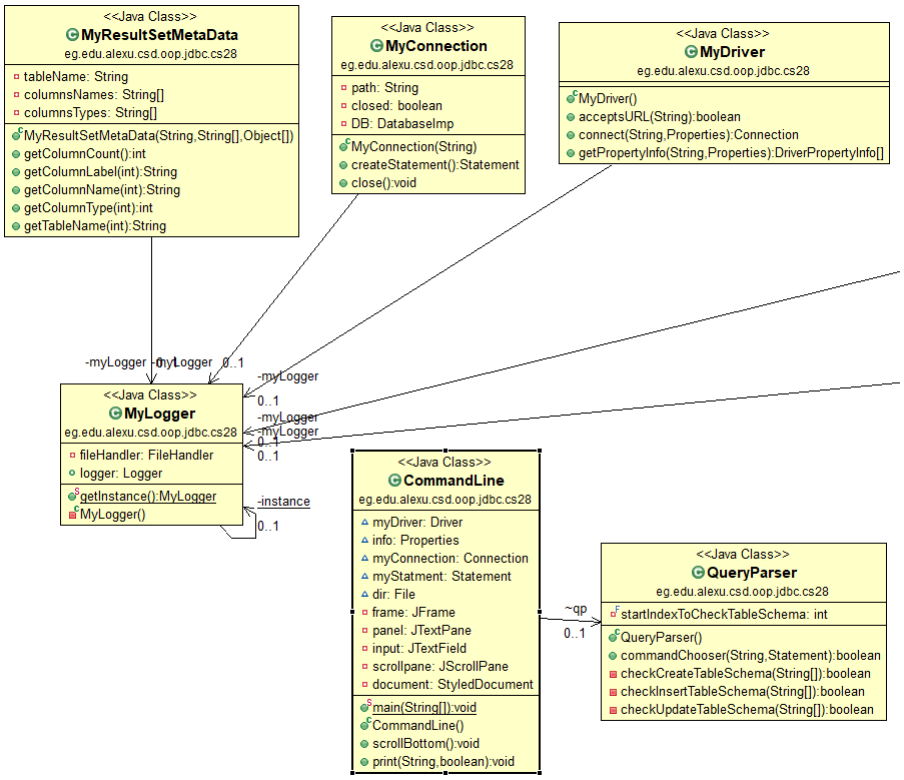
2.2 State Diagrams

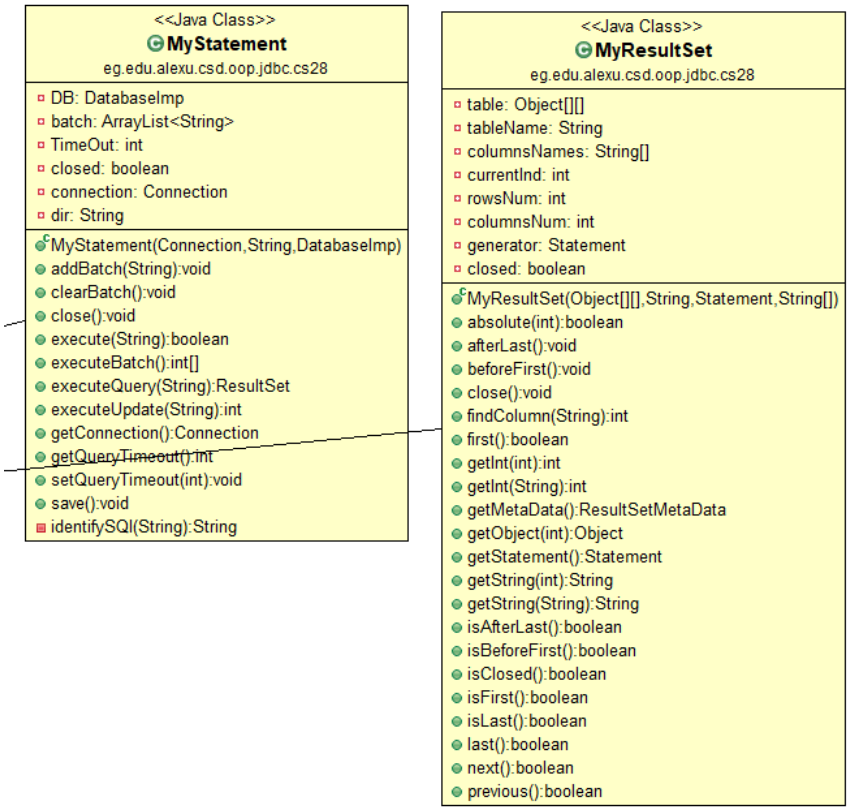



Get a connection
Enter the query
Correct Query
Check if Database Exists
Wrong Query
Database exists
Drop Database

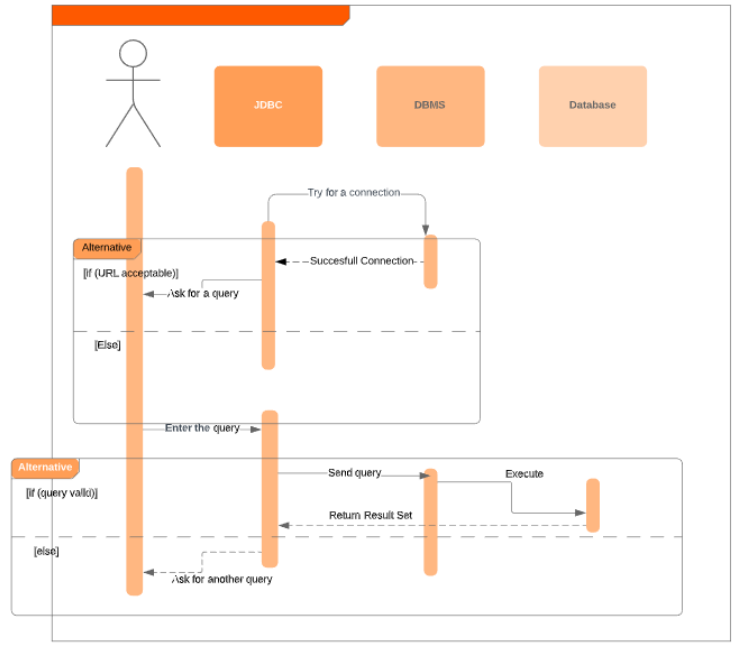

Get a connection
Enter the query
Correct Statement
Check Statement Type
Wrong Query
No
If Update
Yes
Get Table name
If ex'sts
No
Yes
Get Columns to be updated
throw exception
If ex'sts
No
Yes
Update data

2.3 Detailed Class Diagram





2.4 Sequence Diagram



3 Design

****Design decisions are bold****
Assumptions are italic

3.1 Driver

1. For establishing a connection it needs to check if the URL is acceptable according to the format "jdbc:xmldb://localhost" and that properties contains valid path.

2. It collects the property info through the key set of Properties.

3.2 Connection

1. Once a successful connection is established it creates an instance of the driver implementation which is sent to the statement for executing queries by create Statement.

2. It contains a Boolean which indicates if the connection is open or closed.

3.3 Taking Queries from User

- SQL queries are sent to class QueryParser which checks the validity of the statement.

- Valid statements are sent to the appropriate method.

3.4 SQL Statements Execution

- Execute Structure Queries:

    1. Send the SQL statement to the method responsible for structure queries in the DBMS.

- Execute Select Queries:

    1. Send the SQL statement to the method responsible for select queries in the DBMS.

- Execute Update Queries:

    1. Send the SQL statement to the method responsible for update queries in the DBMS.

3.5 Result Set

- After executing a select query successfully and the return is not null.

- A result set object is created with these information send to the constructor:

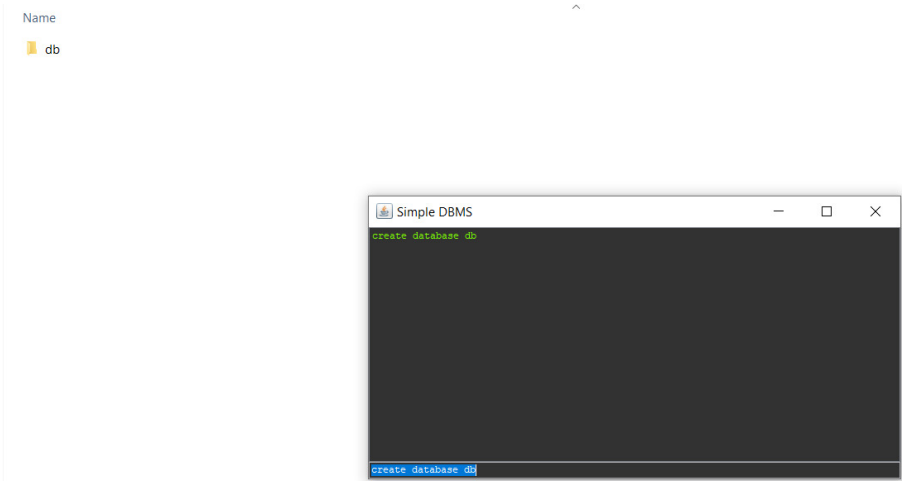
    1. A 2D array of objects which contain the table data.
    2. The table name.

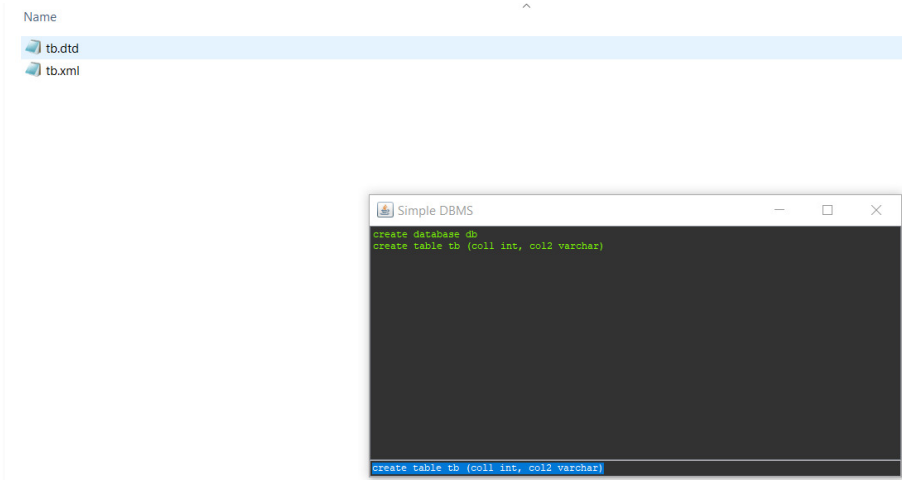
3. An array of the columns' names.

- One of the methods of the result set class creates an object of result set meta data and these information are passed to the constructor:

  1. The table name.
  2. An array of the columns' names.
  3. A row from the table itself.

4 Sample Runs

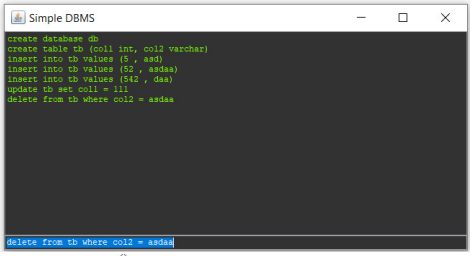




tb.xml - Notepad

File Edit Format View Help

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<!DOCTYPE table SYSTEM "tb.dtd">
<table col1="int" col2="varchar">
<row>
<col1>111</col1>
<col2>asd</col2>
</row>
<row>
<col1>111</col1>
<col2>daa</col2>
</row>
</table>
```



Name

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