

---

# Simple DBMS & JDPC Project 2

Mahmoud Hassan Elhendy	4495
Abdelrahman Hesham	4509
Mark Ashraf	4529

---

## Table of contents :

1. Description
2. Features
3. Design Overview
4. UML Diagram
5. Description of the important functions/modules
6. User Manual
7. Sample Runs
8. Division of labour among group members .

---

## Description of the Program :

We have created a simple database management system that controls the organization, storage, management, and retrieval of data in a database.

## Features:

The program is designed to store the user's data and execute some operations on it :

1. Create new table
2. Drop table
3. Insert new rows
4. Delete at a specific condition
5. Select certain cells at a specific condition

The user can enter these commands in SQL (Structured Query Language), the program will validate the input & execute it or it will display an error message.

---

## Design Overview:

1. We used the interface mentioned in the Pdf (DataBase).
2. The interface is implemented by the Parser class ( Sql Class ), which is responsible of validating the user's input & implementing the interface's method & calling the functions mentioned in the action class.
3. Action class holds the methods (Create - Drop - Delete - Insert - Select ) which is responsible of executing operations on the DBMS.
4. NewJframe ( Simple GUI ).

In part two: ,

We have created Five classes that each one implements one of the interfaces mentioned in the Pdf

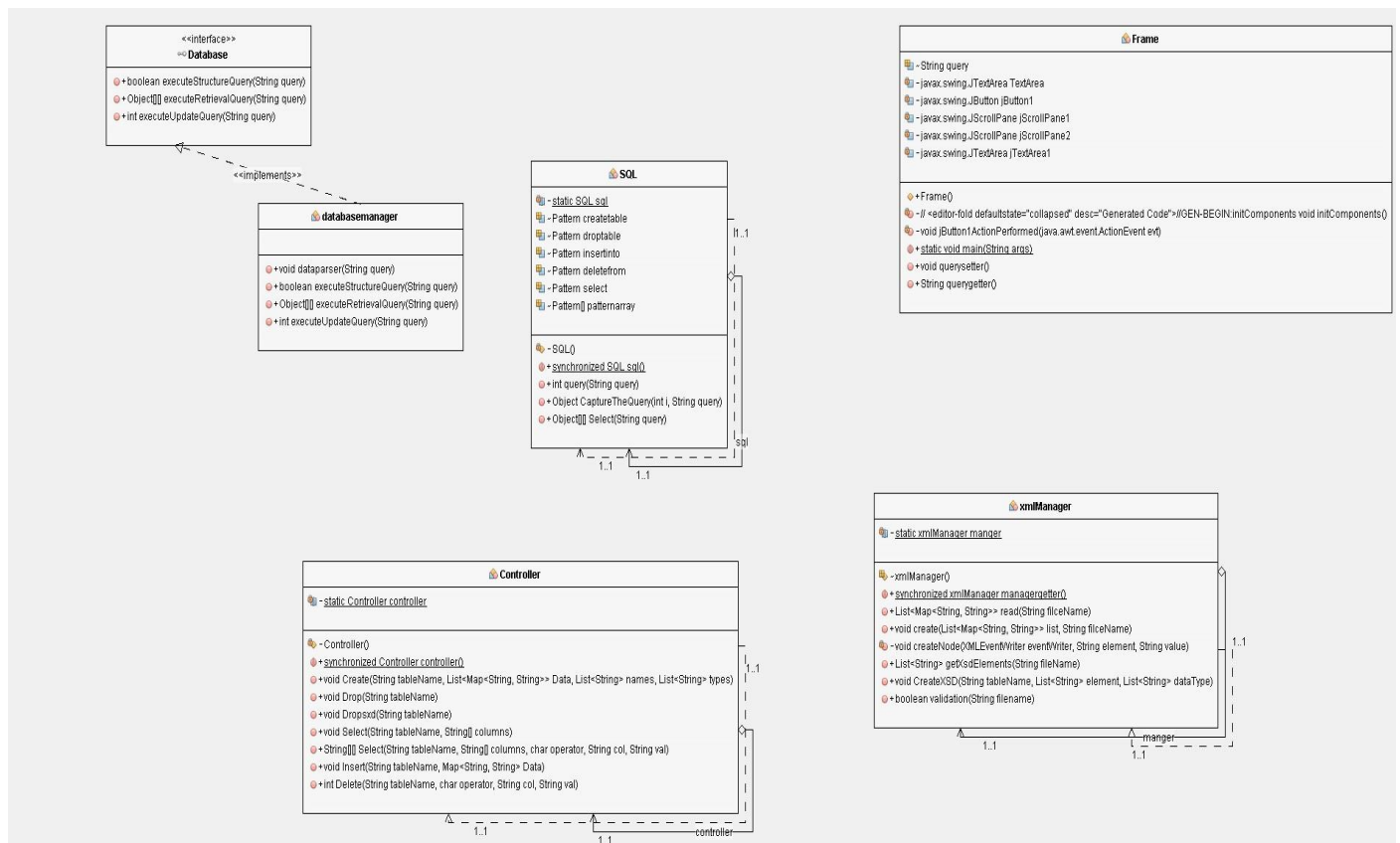
1. Driver
2. Connection
3. ResultSet
4. Statement
5. ResultSetMetaData

## Design decisions

We chose StAX parser for its event-based streaming, which allows us to store and obtain data in a procedural fashion. It is better at being memory-friendly for large databases unlike the DOM parser. It also has the built-in ability to write on and update .XML files unlike the SAX parser. Another reason is that we worked with modern standards, as the StAX parser with Schema files are newer technology than the others.

We have also depended heavily on Regular Expressions for query processing.

## UML Diagram :



---

## Description of the important functions/modules

- Create : Creates an xml file that has columns with data types.
- Drop : Deletes the table ( XML file & DTD file )
- Insert : Inserts a new row to the table
- Delete : Delete rows with a certain condition
- Select : selects cells in the table with a certain condition
- ExecuteStructureQuery : Takes Sql query that deletes & creates table .
- ExecuteRetrievalQuery : Returns selected records or an empty array if no records match.
- ExecuteUpdateQuery : Insert or update or delete the data

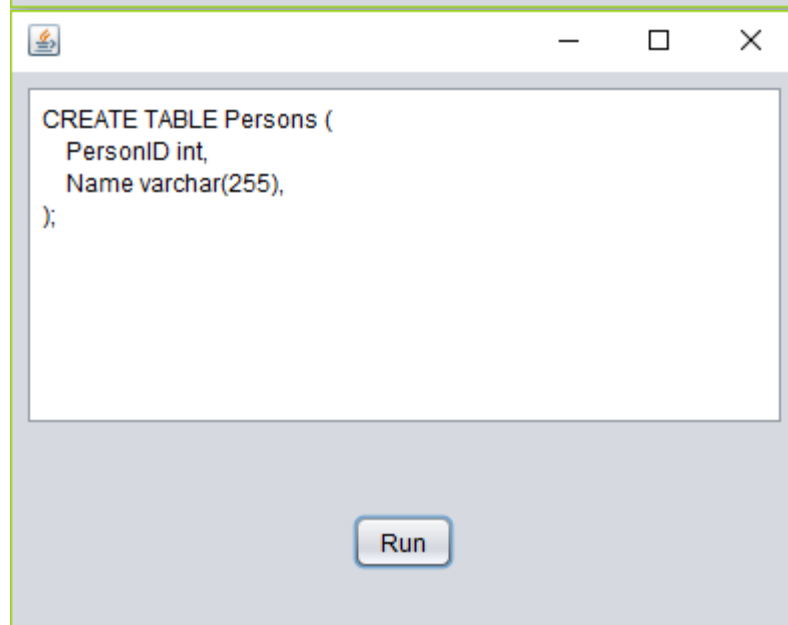
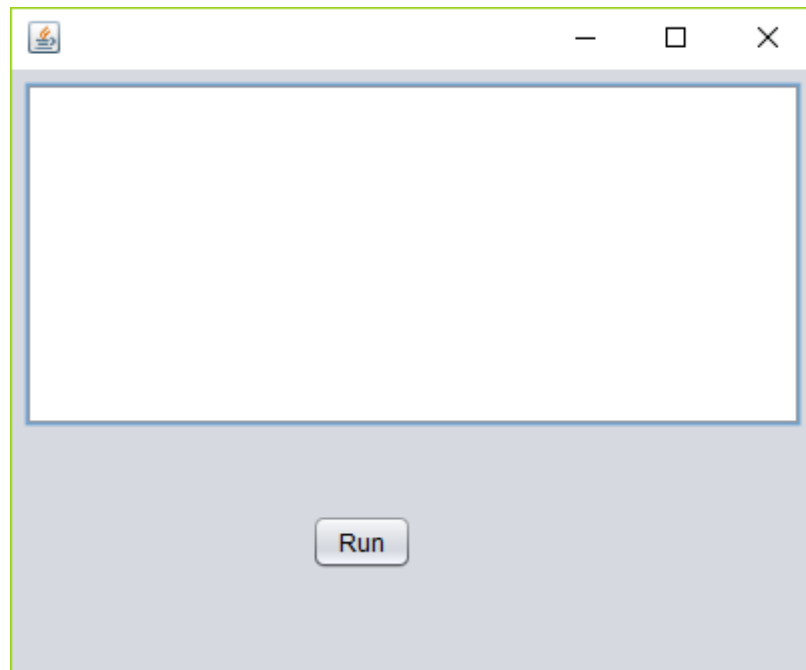
## User Manual

Enter your commands in Sql and press compile . A message will be shown at the bottom of the window , if it a successful operation otherwise the program will display a message with the syntax error

Note : Only these methods are available (Create - Drop - Delete from - Insert into-Select From )

---

## Sample Runs

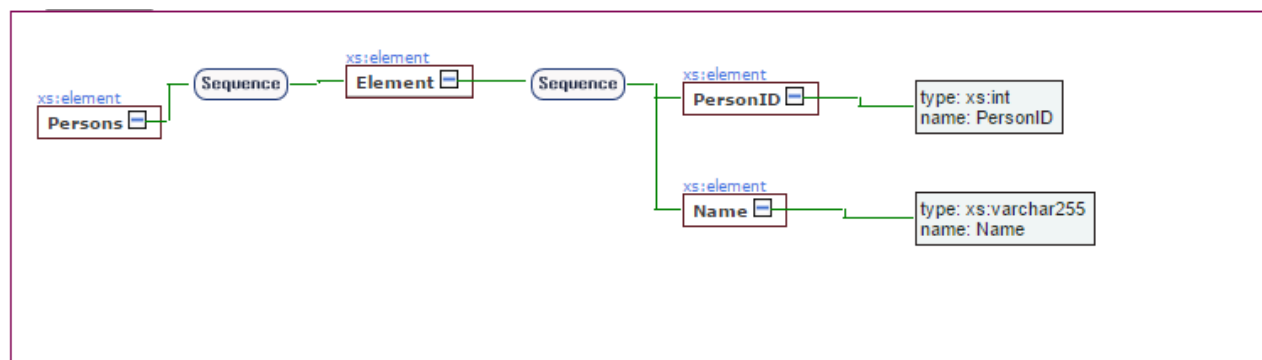


```
<?xml version="1.0" encoding="UTF-8"?>  
<Persons> </Persons>
```

```

<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" attributeFormDefault="unqualified" elementFormDefault="qualified">
  <xs:element name="Persons">
    <xs:complexType>
      <xs:sequence>
        <xs:element name="Element" maxOccurs="unbounded">
          <xs:complexType>
            <xs:sequence>
              <xs:element type="xs:int" name="PersonID"/></xs:element>
              <xs:element type="xs:varchar255" name="Name"/></xs:element>
            </xs:sequence>
          </xs:complexType>
        </xs:element>
      </xs:sequence>
    </xs:complexType>
  </xs:element>
</xs:schema>

```





---

### **Division of labor among group members:**

1. Abdulrahman: DBMS controller
2. Mahmoud: SQL and XML
3. Mark: Part 2 (JDBC)