**CPCS-302 (Sections CS1 & CS3)**

**Group Project Part 3 (SQL Query Validator using JavaCC):**

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| --- | --- |
| **CLO: 10** | **SO: 2** |

**Assigned Date: Sunday November 17, 2024**

**Due Date: Thursday November 28, 2024 till 11:59 Mid Night**

* Write a JavaCC program to validate a simplified subset of SQL queries related to SELECT, INSERT, UPDATE and DELETE commands.

**Hints:**

* Write TOKEN definitions for all keywords used in these query commands like SELECT, FROM, WHERE, INSERT, INTO, VALUES, UPDATE, SET, DELETE, COMMA, LPARENTHESIS, RPARENTHESIS, EQUAL etc.
* Also write TOKEN definition for ‘identifier’ containing one or more lower and/or upper case letters, which will be used to write the command names, column names, table names, condition etc.
* Also write TOKEN definition for ‘value’ which matches any one or more digits and any string enclosed within single quotes which will be used in condition, assignment list (to be used after SET in UPDATE command)
* Call the following method from ‘main’ class

void query() : {

selectQuery() | insertQuery() | updateQuery() | deleteQuery()

}

* Then write the statements for selectQuery(), insertQuery() , updateQuery()and deleteQuery()methods

This parser should validate basic SQL syntax for commands like **SELECT**, **INSERT**, **UPDATE**, and **DELETE**.

The SQL queries subset includes:

* **SELECT**: Validates SELECT column1, column2 FROM table WHERE condition
* **INSERT**: Validates INSERT INTO table (column1, column2) VALUES (value1, value2)
* **UPDATE**: Validates UPDATE table SET column = value WHERE condition
* **DELETE**: Validates DELETE FROM table WHERE condition

**Input SQL Query and Validate**:

* Enter a SQL query in the console followed by ; and press **Enter** to end input and validate.

### Examples:

* **SELECT Query**:

Enter any query:

SELECT name, age FROM users WHERE age = 30;

**Output**:

Valid SQL Query

* **INSERT Query**:

Enter any query:

INSERT INTO users (name, age) VALUES ('Nabeel', 30);

**Output**:

Valid SQL Query

* **UPDATE Query**:

Enter any query:

UPDATE users SET name = ‘Azhar’, age = 31 WHERE name = 'Nabeel';

**Output**:

Valid SQL Query

* **DELETE Query**:

Enter any query:

DELETE FROM users WHERE name = 'Nabeel';

**Output**:

Valid SQL Query

#### **Invalid SQL Query Examples:**

* **Incorrect Query**:

Enter any query:

SELECT name age FROM users;

**Output**:

Invalid SQL Query: Encountered "age" at line 1, column 13.

Was expecting: "," ...

**Important Note:**

**Group Project Part 3** has been uploaded in “Group Project” option of Blackboard. Its due date is **Thursday November 28, 2024 till 11:59 PM**. You can also upload the solution (whole project) by Friday November 29, 2024 till 11:59 PM with 25% deduction of marks and by Saturday November 30, 2024 till 11:59 PM with 50% deduction of marks. **After this date, no submission will be accepted.**