CS450 Fall 2023 Project 2

DUE: 11/17/2023 by 11:59PM

Project Description:

The objective of this assignment is to familiarize yourself with JDBC (Java Database Connectivity). We would like to design a command-line interface that allows users to access published ACL papers from 2016 and 2017. Two types of papers exist: short and long. Every paper has a unique PUBLICATIONID, with values ranging from 1 to 91.

Your task is to write a Java program to:

- Connect to your Oracle campus account.
- Execute the provided **paper.sql** script file to create and insert data into your database.
- Implement a command-line interface to search the database and update it referencing the **url.csv** file.

Your database contains these tables:

- PUBLICATIONS (PUBLICATIONID, TITLE, YEAR, TYPE, URL)
- AUTHORS (PUBLICATIONID, AUTHOR)

Foreign key: AUTHORS(PUBLICATIONID) references PUBLICATIONS(PUBLICATIONID);

Your command-line interface should include the following functionalities.

1. The user can view the contents of each table.
2. The user can search by PUBLICATIONID and return all attributes from PUBLICATIONS table, along with an additional field indicating the total number of authors for the paper in the search results.
3. The user can update a URL in the PUBLICATIONS table with the corresponding URL obtained from url.csv by providing the PUBLICATIONID. After the update, the resulting updated tuple should be displayed.
4. Your program should only exit when the user chooses to. This means that invalid inputs and so on should not cause the program to crash, but should instead display an error message if appropriate, and return to the menu.

When your program starts, prompt the user's Oracle username and password. **Please avoid hardcoding your login details in the final submitted version.** After a successful connection to the database, prompt the user for the path to the paper.sql script file to create and insert data into

the database from the script file. **If you choose to initially hard code the path for ease of testing, please remember to change it to prompt for a location before the final submission.** Once the database is prepared, present the user with the following menu and ask them to make a selection:

1. View table contents
2. Search by PUBLICATIONID
3. Update URL by PUBLICATIONID
4. Exit

Given the user's choice:

1. Ask which table they'd like to see:
    - PUBLICATIONS (Yes/No)
    - AUTHORS (Yes/No)
2. Ask for PUBLICATIONID
3. Ask for the path to url.csv, then ask for PUBLICATIONID
4. Exit the program

Note: If the user enters an option that is not valid, a message indicating the option is invalid should be displayed, and the menu is displayed again. The program should *not* exit unless option 4 is explicitly chosen.

Each field in the output should be aligned, and if necessary, truncate to shorter strings. Alternatively, you can separate each field with commas. If invalid inputs (or no inputs) are given, the program should print an error message and prompt for inputs again. If there are no results for your specified input, the program should print a message and return to the main menu. After executing an option, your program should automatically return to the main menu, unless the user selects option 4.

Extra credit: (10 Points)

Create a GUI interface or a web application and submit a demo video or give a demo to the GTA. Your interface should be user-friendly and capable of achieving the same functionalities specified for the command-line interface above.

The deliverable:

Submit your source file(s) and the script/screenshot of running each option from the menu.

Tips:

The file Student.java contains Java commands for loading the necessary driver and connecting to the Oracle database on campus (**Please make changes to the username and password**). It will display the following information after it compiles and runs successfully:

```
jdbc:oracle:thin:@artemis.vsnet.gmu.edu:1521/vse18c.vsnet.gmu.edu
Connected.
Database Product Name: Oracle
Database Product Version: Oracle Database 18c Enterprise Edition
Release 18.0.0.0.0 - Production
Version 18.6.0.0.0
Database Driver Name: Oracle JDBC driver
Database Driver Version: 18.3.0.0.0
```

Resources:

1. Quick start with JDBC
   https://www.oracle.com/database/technologies/develop-java-apps-using-jdbc.html
2. JDBC Tutorial
   https://docs.oracle.com/javase/tutorial/jdbc/basics/index.html
3. Oracle JDBC FAQ
   https://www.oracle.com/database/technologies/faq-jdbc.html
4. Execute SQL script using JDBC
   https://www.tutorialspoint.com/how-to-run-sql-script-using-jdbc
   https://github.com/mybatis/mybatis-3/releases/tag/mybatis-3.5.7