Assignment 9 Database Security

Objectives

- Set up a secure user account management system for JustLee.
- This lab we will be creating a login system for users. We want to ensure passwords are stored securely, and that our database is safe from SQL Injection attacks. Additionally, after 5 failed attempts, the account should lock, and users can no longer login.

Instructions

Setting up Tables

Before we can create a user account system, we need to create a table in our bookstore database to hold all the users' login information. As discussed in class, to hold users we will need a table, which we will call **JLUSERS,** with 4 fields: Their **userid**, their **salt**, their **failedLoginCount**, and their password **hash**. The **userid** can be stored as **varchar2**, but the salt and output of the hash function is a byte[]. To store this, we will need the type of the field to be **RAW**. The RAW datatype is used like varchar, but for strings of bytes instead of strings of characters – it must still be given a size corresponding to the total number of bytes.

Java Application

Create a Java application that implements the provided interfaces. See the inline javadoc for details about what each method should do. Since the `IJLSecurity` implementation will need to access the database, be sure to pass the username and password read from the command line (i.e., user input).

The concrete implementation of `IJLSecurity`, `JLSecurity` must implement the following members:

- `private IUser getUser(String userName)`
    - Gets an `IUser` object populated from the database table JLUSERS
- `private void UpdateDB(IUser user)`
    - Sends the `IUser` Object to the database table JLUSERS
    - If the `IUser` already exists in the database it should simply be updated

Additionally, the class should establish a connection with the database that is reused for its lifetime.

Create a class called `App` that contains a main method. This main should have an interface to prompt the user to either create an account or login. Note, this UI should be a command line interface. If the user attempts to login too many times with the incorrect password, they should be prevented from logging in further.

Deliverable

You must submit a zip of both the Java code and the SQL code needed to prepare the database. The Java code must have the UI described above, where I can interact with the database. I will ensure JustLEE DB is setup clean ahead of time.