COS30041 Creating Secure and Scalable Software [Java EE]

Pass Task 2.1 Programming with Database Connectivity using JDBC

Time Frame: Weeks 2 – 3

Suggested to start and complete in Week 2

Submission Due: Week 3, Thu, 6:30pm

Overview

In this task, you are required to program data access object that can access the content of a database table. You are also required to demonstrate your work is of good quality.

Purpose	To demonstrate your ability to develop quality application that connects to database
Tasks	1. Learn to write an application that can access the data stored in a database table 2. Extend the application developed in 1 above so that it can now handle all the actual CRUD operations 3. Program a client application to test the program developed in 2 above 4. Answer questions related to the design of the application
Pre-req Task[1]	Pass Task 1.1
Follow-up Task[2]	Pass Task 3.1
Suggested Time	1 hour if you know the stuff well 4 - 5 hours if you need to read the concepts and know how to establish database connections
Resources	Lecture 02 Database Connectivity; Java EE – JDBC
Feedback	Ask your tutor for feedback
Next task	Pass Task 3.1

Pass Task 2.1 Submission Details and Assessment Criteria

You must create your own document (pdf) in **portrait** mode[3], which you will upload to Doubtfire, with the following details:

- Your name and student id
- Your tutor's name
- Your own responses to the tasks according to the corresponding instructions (see below)

Tasks and Instructions

Task 1. Complete Lab_02_Database_Connectivity

Task 2. Add the following methods in the MyDB.java class in Lab_02_Database_Connectivity that supports the CRUD operations of MYUSER using JDBC

1. "`boolean createRecord(Myuser myuser)`" – accepts a Myuser object and checks whether the actual record exists in the database. If the record does not exist, it will create a new record in MYUSER database with the information in the Myuser object and return `true`. Otherwise, it returns `false` (and does not create the record).
2. "`Myuser getRecord(String userId)`" – accepts a String object whose value is the userId of a record to be searched. If the record can be found, it returns a Myuser object that stores the information of the actual database record. Otherwise, it returns a "`null`" object.

[1]You need to complete the pre-requisite task before doing this task.

[2]You need to complete this task in order to do the follow-up task because the follow-up task depends on your answer in this one.

[3]Landscape mode pdf does not work properly in Doubtfire.

3. "`boolean updateRecord(Myuser myuser)`" – accepts a Myuser object and checks whether the actual record exists in the database. If it does, it will update the information of the record with the current information stored in the Myuser object and return `true`. Otherwise, it returns `false` without doing anything.
4. "`boolean deleteRecord(String userId)`" – accepts a String object whose value is the userId of a record to be deleted. If the record can be found, it removes the record in the database and return true. Otherwise, it returns false.

Task 3. Develop a client program that requests the methods you developed in Task 2 as a test harness.

Note: The client program can be a desktop application (either console or with GUI). Console application is the simplest. Or, it can be a web application (but this is too much work at the moment).

Task 4. Answer the following question:

In this lab, all classes developed by you sit in one machine, but let us assume the following:

The client programs (SetUpMyUser.java and any other programs that you developed for requesting the CRUD operations of Myuser DB table) sit on one machine (Machine A), MyDB sits on another machine (Machine B), and the Java DB sits on a third machine (Machine C).

4.1. What is the role of the Myuser class? DAO / DTO / both? Justify your answer.
4.1.1. In case, the "Myuser" class is not a DAO. Then, it must be "MyDB" taking the role of a DAO. Why? Justify your answer. [Hint: What constitutes a DAO? Is it just the name or the services it provides?]
4.2. In Machine A, if a program (e.g. SetUpMyUser) calls "`myuser.setName("ABC")`", will this change the corresponding value in the database server? Why or Why not?
4.3. In Machine B, if MyDB calls "`myuser.setName("ABC")`", will this change the corresponding value in the database server? Why or Why not?

Submission Task
Once completed, you need to submit a pdf file that contains all your work (e.g. selected code segments – show me the key stuff and some screen dumps of your testing)

Demonstration
You may be asked to demonstrate your assignment in the lab. You should be able to do this and explain your code when asked in the lab session.