

241-301, Computer Engineering Lab I
Semester 1, 2011-2012

3SA04, Introduction to JDBC

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Objectives

To teach the basics of JDBC, Java's relational database interface. We will concentrate on using JDBC to communicate with a Microsoft Access database with an ODBC interface.

Submission Information

Place a **hard copy** of your answers to the exercises at the end of this lab sheet in the relevant lab box outside the CoE office by **??**.

Do **not** submit an electronic version.

Score

Your final score will be based on the exercises at the end of this lab sheet and the exam. The exercises are marked out of 10, and the exam out of 10.

Background Information

Read the Powerpoint slides "Introduction to JDBC", available at <http://fivedots.coe.psu.ac.th/Software.coe/LAB/JDBC/>. I will go through these slides during the lab.

References

See "Introduction to JDBC", available at <http://fivedots.coe.psu.ac.th/Software.coe/LAB/JDBC/>, section 9, slides 41-42.

Lab Instructions

1. Check that Java is installed on your machine (I will explain how to do this in the lab). If it isn't installed then download the Java SDK (full) version from <http://java.coe.psu.ac.th/RefImp.html#J2SE>
2. Check that the `javac` and `java` tools work from the command line. I will explain how to do this in the lab.
3. Download the database (`Books.accdb` or `Books.mdb`) and two Java programs (`SimpleJDBC.java` and `TableDisplay.java`) to your machine from <http://fivedots.coe.psu.ac.th/Software.coe/LAB/JDBC/code>

`Books.accdb` is for Access 2007, and `Books.mdb` is the same database but for earlier versions of Access. From now on, I'll use `Books.accdb`, but `Books.mdb` is the same.

4. Open `Books.accdb` using Access. Look at the four tables, and understand the relationships between them. See the slides, section 8, slide 40.
5. Set up the ODBC interface to `Books.accdb`. See the slides, section 7, slides 33-39 for details.
6. Compile and run `simpJDBC.java` (see slide 25). Check that the output from running `simpJDBC.java` matches the output given in the slides.
7. Compile and run `TableDisplay.java`

Lab Questions

Place a **hard copy** of your answers to all the following exercises in the relevant lab box outside the CoE office. Do **not** submit an electronic version.

Exercises 1

Execute the following SQL queries against `Book.accdb`. Show the answers using screen shots of Access.

- a) `select * from Publishers`
- b) `select distinct EditionNumber from Titles`
- c) `select FirstName from Authors where YearBorn > 1961`
- d) `select Title from Titles where Title like '?+*'`
- e) `select distinct FirstName, LastName
from Authors inner join AuthorISBN
on Authors.AuthorID = AuthorISBN.AuthorID
Order by LastName, FirstName`

If you're not sure how to execute queries in Access 2007, then look at `sqlAccess2007.txt` at <http://fivedots.coe.psu.ac.th/Software.coe/LAB/JDBC/>

Exercises 2

- a) Write down the output generated by `TableDisplay.java`
- b) Explain **in words** what meta data is used in `TableDisplay.java`. Refer to methods (functions) in the program. Include **small** code fragments.

Exercises 3

Modify `TableDisplay.java` to process each of the following queries. Write down the Java code *fragments* containing the SQL for each of the queries. **Also**, include screen shots of the output that `TableDisplay` produces.

Do **not** include the entire `TableDisplay.java` program in your answers.

- a) Print the distinct edition numbers for all the book titles.
- b) Give the first name of the authors whose book titles begin with 'C'.

Hint: try 'c*' (* is the wildcard symbol, representing "any text"). In some older versions of Access, '%' is the wildcard symbol.

Do **not** use inner joins in your answer.

- c) Print all title names for books using the substring '++' anywhere in their titles.