24.5 Setting Up a Java DB Database [1]

1. If you're using JDK 9 with this chapter, see the note in Section 24.1 about downloading and installing Apache Derby. You'll also need to update the instructions in Section 24.5, based on Apache Derby's installation folder on your computer.

This chapter's examples use the pure Java database **Java DB**, which is installed with Oracle's JDK on Windows, macOS and Linux. Before you can execute this chapter's applications, you must set up in Java DB the `books` database that's used in Sections 24.6–24.8 and the `addressbook` database that's used in Section 24.9.

For this chapter, you'll be using the embedded version of Java DB. This means that the database you manipulate in each example must be located in that example's folder. This chapter's examples are located in two subfolders of the `ch24` examples folder—`books_examples` and `addressbook_example`. Java DB may also act as a server that can receive database requests over a network, but that is beyond this chapter's scope.

JDK Installation Folders

The Java DB software is located in the `db` subdirectory of your JDK's installation directory. The directories listed below

are for Oracle's JDK 8 update 112:

- 32-bit JDK on Windows: `C:\Program Files (x86)\Java\jdk1.8.0_112`
- 64-bit JDK on Windows: `C:\Program Files\Java\jdk1.8.0_112`
- macOS:

  `/Library/Java/JavaVirtualMachines/jdk1.8.0_112.jdk/Contents/Home`
- Ubuntu Linux: `/usr/lib/jvm/java-8-oracle`

For Linux, the install location depends on the installer you use and possibly the version of Linux that you use. We used Ubuntu Linux for testing purposes.

Depending on your platform, the JDK installation folder's name might differ if you're using a different JDK version. In the following instructions, you should update the JDK installation folder's name based on the JDK version you're using.

Java DB Configuration

Java DB comes with several files that enable you to configure and run it. Before executing these files from a command window, you must set the environment variable `JAVA_HOME` to refer to the JDK's exact installation directory listed above (or the location where you installed the JDK if it differs from those listed above). See the Before You Begin section of this book for information on setting environment variables.

24.5.1 Creating the Chapter’s Databases on Windows

After setting the `JAVA_HOME` environment variable, perform the following steps:

1. Run Notepad as an administrator. To do this on Windows 7, select **Start > All Programs > Accessories**, right click Notepad and select **Run as administrator**. On Windows 10, search for Notepad, right click it in the search results and select **Advanced** in the app bar, then select **Run as administrator**.
2. From Notepad, open the batch file `setEmbeddedCP.bat` that is located in the JDK installation folder’s `db\bin` folder.
3. Locate the line

   ```
   @rem set DERBY_INSTALL=
   ```

   and change it to

   ```
   @set DERBY_INSTALL=%JAVA_HOME%\db
   ```

   Save your changes and close this file.
4. Open a Command Prompt window and change to the JDK installation folder’s `db\bin` folder. Then, type `setEmbeddedCP.bat` and press *Enter* to set the environment variables required by Java DB.
5. Use the `cd` command to change to this chapter’s examples folder, then to the subfolder `books_examples`. This folder contains a SQL script `books.sql` that builds the `books` database.
6. Execute the following command (with the quote marks) to start the Java DB command-line tool—the double quotes are necessary because the path

that the environment variable `%JAVA_HOME%` represents contains a space.

```
"%JAVA_HOME%\db\bin\ij"
```

7. At the `ij>` prompt type the following command and press *Enter* to create the `books` database in the current directory and to create the user `deitel` with the password `deitel` for accessing the database:

```
connect 'jdbc:derby:books;create=true;user=deit
   password=deitel';
```

8. To create the database table and insert sample data in it, we've provided the file `books.sql` in this example's directory. To execute this SQL script, type

```
run 'books.sql';
```

   Once you create the database, you can execute the SQL statements presented in Section 24.4 to confirm their execution. Each command you enter at the `ij>` prompt must be terminated with a semicolon (`;`).

9. Change directories to the `addressbook_example` subfolder of the `ch24` examples folder, which contains the SQL script `addressbook.sql` that builds the `addressbook` database. Repeat *Steps 6–9*. In each step, replace `books` with `addressbook`.

10. To terminate the Java DB command-line tool, type

```
exit;
```

You're now ready to execute this chapter's examples.

24.5.2 Creating the

Chapter's Databases on macOS

After setting the `JAVA_HOME` environment variable, perform the following steps:

1. Open a Terminal, then type:

   ```
   DERBY_HOME=/Library/Java/JavaVirtualMachines/jd
      Contents/Home/db
   ```

   and press *Enter*. Then type

   ```
   export DERBY_HOME
   ```

   and press *Enter*. This specifies where Java DB is located on your Mac.

2. In the Terminal window, change directories to the JDK installation folder's `db/ bin` folder. Then, type `./setEmbeddedCP` and press *Enter* to set the environment variables required by Java DB.

3. In the Terminal window, use the `cd` command to change to the `books_examples` directory. This directory contains a SQL script `books.sql` that builds the `books` database.

4. Execute the following command to start the command-line tool for interacting with Java DB:

   ```
   $JAVA_HOME/db/bin/ij
   ```

5. Perform *Steps 7–9* of Section 24.5.1 to create the `books` database.

You're now ready to execute this chapter's examples.

24.5.3 Creating the Chapter’s Databases on Linux

After setting the `JAVA_HOME` environment variable, perform the following steps:

1. Open a shell window.
2. Perform the steps in Section 24.5.2, but in *Step 1*, set `DERBY_HOME` to

   ```
   DERBY_HOME=YourLinuxJDKInstallationFolder/db
   ```

   On our Ubuntu Linux system, this was:

   ```
   DERBY_HOME=/usr/lib/jvm/java-7-oracle/db
   ```

You’re now ready to execute this chapter’s examples.