

Note: This document is developed based on NetBeans IDE 8.2, if there is any discrepancies in the newer version of NetBeans IDE, please let the tutor know.

Assumptions

I have assumed that you do not have “Java – JDK” and “NetBeans” on your machines.

Aim

This lab aims to guide you through setting up the software required for Enterprise Development.

Software

You will need to download and set up the following software

1. JDK version 1.8.0 (e.g. jdk1.8.0_191, jdk1.8.0_202, or later)
2. NetBeans IDE **version 8.2**
3. GlassFish Server Open Source Edition version 4.1.1 (bundled with NetBeans)
4. “Java DB” (or Derby) - the database server that comes with GlassFish (bundled with GlassFish)

URL for the required software

1. JDK – <https://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html>
2. NetBeans – <https://netbeans.org/downloads/8.2>

Note: Apache NetBeans 9.0 and 10.0 does not support the GlassFish server 5. Apache NetBeans 11.0 (available on April 4, 2019) only has limited support for JavaEE development. Recent NetBeans 11.2 supports JavaEE 8 and GlassFish server 5, but JavaEE library and GlassFish are not bundled with NetBeans yet. So we recommend that we use **NetBeans 8.2**

Overview of the Tasks

In this Lab, you will learn to perform the following tasks in writing JDBC programs:

- LT1. Install JDK
- LT2. Setup JDK policy for database connection (modifying the relevant java security policy)
- LT3. Install NetBeans
- LT4. Setup NetBeans and GlassFish (bundled with NetBeans)
- LT5. Setup Java DB (bundled with NetBeans)

Lab Tasks

This Lab should be run on MS Windows Platform

Check if you have already installed jdk: if you have `jdk1.8.0_xxx` & `jre1.8.0_xxx` under the folder “C:\Program Files\java\”, if so, go to LT2.

LT1. Install JDK and set up environment variables for Java Compiler

- LT1.1. Download JDK from the url listed above (just select the JDK, no need for Server JRE and JRE)
- LT1.2. Install JDK and note the folders where JDK and JRE are installed (You need to use these folders in LT1.3). Call these `${JDK_ROOT}` and `${JRE_ROOT}`

Note: An example of JDK (JRE) folder on Windows is

“C:\Program Files\java\jdk1.8.0_202(jre1.8.0_202)”

Note: An example of JDK folder on Mac is

“/Library/Java/JavaVirtualMachines/jdk1.8.0_202.jdk/Contents/Home/”

- LT1.3. Set up environment variable for Java compiler
 - a. Open “Control Panel”
 - b. Select “System and Security” > “System”
 - c. Click “Advanced System Settings”

- d. In the "System Properties" window, click on "Environment Variables"
- e. In the "Environment Variables" window, choose "Path" in "System variables" text box
- f. Click "Edit..."
- g. In the "Edit System Variable", enter "\${JDK_ROOT}\bin;\${JDK_ROOT}\jre\bin" in the "Variable value:" text field. i.e. For Windows, enter
`C:\Program Files\Java\jdk1.8.0_202\bin;`
`C:\Program Files\Java\jdk1.8.0_202\jre\bin"`
 Note: The delimiter for the "Path" variable in MS Windows is ";".
- h. Click "OK" ("Edit System Variable") > "OK" ("Environment Variables") > "OK" ("System Properties")
- i. Close "Control Panel"

LT2. Set up your JDK policy for database connection

- LT2.1. Navigate to your installation folder of your JDK \${JDK_ROOT}
- LT2.2. Navigate to "\${JDK_ROOT}\jre\lib\security\"
 e.g. go to "C:\Program Files\Java\jdk1.8.0_202\jre\lib\security\"
- LT2.3. Add the following lines to the beginning of the file "java.policy" just before the line "// Standard extensions ...". (Make sure you have a backup copy of the file for restoration, in case you mess up the original file)

```
// add for learning Enterprise Development

grant {
    // List of granted permissions
    permission java.net.SocketPermission "localhost:1527", "listen,resolve";
};
```

Note: You can add these lines at the end of the file. But it is easier to find it at the beginning.

- LT2.4. Save the file (e.g. you may use notepad++ by "Run as administrator")

LT3. Install NetBeans

- LT3.1. Download NetBeans from the url listed above (either JavaEE or All; others won't work)
- LT3.2. Install NetBeans

LT4. Set up NetBeans and its bundled GlassFish Server

- LT4.1. Run NetBeans
- LT4.2. Close the "Start Page"
- LT4.3. Select the "Services" tab in NetBeans (if you cannot see the "Services" tab, select "Window" > "Services" from the pull down menu)
- LT4.4. Expand on "Servers"
 Note 1: NetBeans will activate "Java EE and Web ..." after your action
 Note 2: Once finished, NetBeans will have "GlassFish Server 4.1.1" ready for you
- LT4.5. Right click on "GlassFish Server 4.1.1" and select "Properties"
- LT4.6. Note the "Installation Location" (under "Common" tag) of the GlassFish Server (You need this in future learning task). Call this \${GLASSFISH_ROOT}

LT5. Set up NetBeans' bundled Java DB Server

- LT5.1. Run NetBeans (if you have not done so)
- LT5.2. Select "Service" tab in NetBeans
- LT5.3. Expand on "Databases"
 Note: You will see "Java DB", "Drivers" and "jdbc:derby//..."
- LT5.4. Expand on "Java DB"
 Note: There are many databases there but none of them are integrated with GlassFish Server. You will create one in the next task.
- LT5.5. Right click on "Java DB" and select "Create Database..."
- LT5.6. In the "Create Java DB Database" window, enter the following information
 - a. Database Name: sun-appserv-samples (This is the default database name for GlassFish Server, make sure that Java DB does not have this database before you proceed. You need to create this to proceed with your subsequent lab classes. Do not create other DB names. IT WILL NOT WORK except that you want to search the Internet and fix things up yourself! You are **warned**.)

- b. User Name: APP
- c. Password: APP
- d. Confirm Password: APP
- e. Click "OK"

Note 1: NetBeans creates the database "sun-appserv-samples" under "Java DB".

Note 2: NetBeans also creates the database connection "jdbc:derby://localhost:1527/sun-appserv-samples [APP on APP]". Currently, it is not connected and hence, the icon is in a "broken" state.