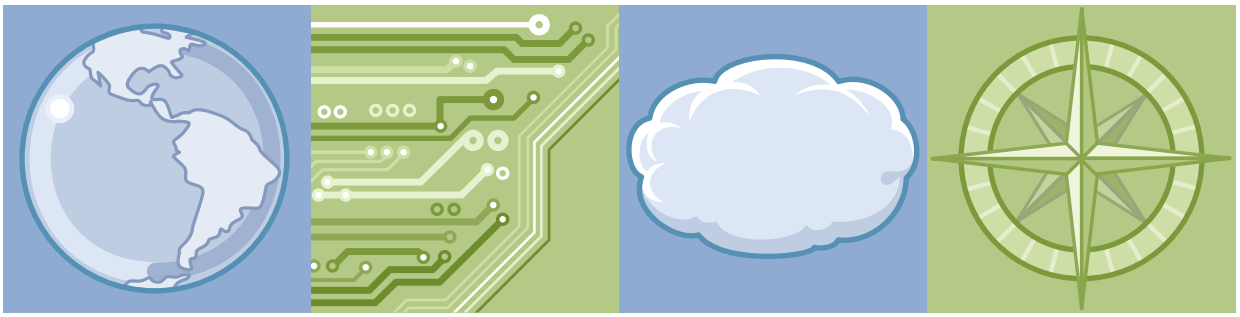
# IBM Training

## Lab Setup Guide

## Mobile Application Development with IBM Worklight V6.1

Course code WD601 ERC 1.0



WebSphere Education

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# Contents

 

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# Lab setup guide

## Overview

The purpose of this lab setup guide is to assist the classroom preparer in setting up the WD601 classroom lab environment.

If you intend to use IBM remote labs instead of manually setting up an environment, do not use this guide. Instead, refer to the *Training Partner Operations Guide* for directions to the IBM Remote Lab Platform (IRLP).

If you intend to manually set up an environment, use this guide. It is separated into the following parts:



The total setup time for this class is approximately <#> hours.

**WebSphere Education only**: In addition to this guide, you should also consult the appropriate operating system setup document. These documents are available in the Course Materials Vault under course code WEOSLSG.

**Important**

The classroom must be ready to run lab exercises before the first day of class. You might want to create a virtualized environment that you can maintain and reuse. *Test the entire setup thoroughly* to avoid problems during class time. If you experience problems and need assistance, contact the IBM Help Desk:

Toll-Free: 1-888-502-5511
International: 1-404-238-6000
Email: `insthelp@us.ibm.com`

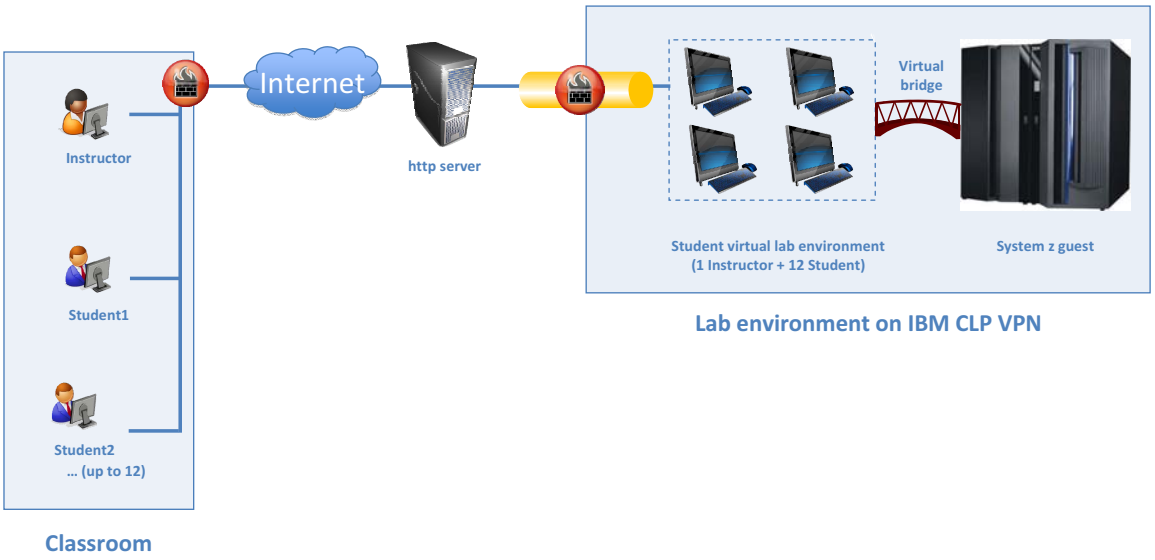



Figure 1. Illustration of lab environment

"Requirements" on page 3 provides a summary of the classroom setup by using system labels. A system label is a name for each unique system included in this classroom setup. The name identifies a specific system configuration throughout this document. If an instructor system has the same system label as a student system, they have identical setup requirements.

# Requirements

The following section provides information about how to manually create the lab environment that is needed to conduct the lab exercises in this course. As the classroom provider, you are responsible for providing the following configuration for this class. The instructor requires one configuration, and each student in the class requires a separate configuration. Depending on the course requirements, instructor and student configurations might be identical.

The total number of systems that are required for a class is the number of instructor systems plus the number of students and multiplied by the number of student systems that are required for each student.


**Example**

For instance, if the instructor requires 3 systems and 12 students require two systems each, you make the following calculation:

```
3 instructor systems + (12 students x 2 systems each) = 27 systems for the class
```

# Lab configuration overview

**Table 1: Configuration for instructor**

| System label | Machine type and processor | RAM | Hard disk | Display resolution | Operating system |
|---|---|---|---|---|---|
| Instructor | <2.5 GHz or faster Core 2 Duo> | <4 GB> | <60 GB> | <1024 x 768> | Windows Server 2008 R2 Standard Edition SP1 64-bit |
| | | | | | |

**Table 2: Configuration for each student**

| System label | Machine type and processor | RAM | Hard disk | Display resolution | Operating system |
|---|---|---|---|---|---|
| Student | <2.5 GHz or faster Core 2 Duo> | <4 GB> | <60 GB> | <1024 x 768> | Windows Server 2008 R2 Standard Edition SP1 64-bit |
| | | | | | |

# Network requirements

**Table 3: Required network configurations**

| Network configuration | Classroom requirement |
|---|---|
| Specify **isolated networks** or a **single network**. | Isolated networks |
| Specify whether **Internet access** is required. | Required |
| Specify whether a **DHCP server** is required. | Required |

**Table 3: Required network configurations**

| Network configuration | Classroom requirement |
|---|---|
| Specify whether fixed IP addresses should be assigned. | Not necessary |
| Specify whether **promiscuous mode** is required. | Not necessary |

## Software requirements

Obtain the following software before starting classroom setup. IBM software is available from IBM PartnerWorld at `www.ibm.com/partnerworld`. The classroom provider is responsible for obtaining software licenses for any non-IBM software.

**Table 4: Required software for class**

| Software product | Version | Operating systems | System labels that require software product |
|---|---|---|---|
| <Microsoft Windows Server 2008 R2 Standard Edition> | SP1 64 bit | | Instructor, Student |
| Oracle JDK 7 | update 45 or later | Windows 2008 64 bit | Instructor, Student |
| IBM DB2 | 9.7 | Windows 2008 64 bit | Instructor, Student |
| Eclipse | Kepler (4.3) | Windows 2008 64 bit | Instructor, Student |
| Mozilla Firefox | 17 or later | Windows 2008 64 bit | Instructor, Student |
| IBM Installation Manager | 1.6.2 | Windows 2008 64 bit | Instructor, Student |
| WebSphere Application Server ND | 8.5 | Windows 2008 64 bit | Instructor, Student |
| Worklight Server | 6.1 | Windows 2008 64 bit | Instructor, Student |
| Android SDK | 4.4 (API 19) | Windows 2008 64 bit | Instructor, Student |

## Host or server system requirements

This section does not apply to this course.

## IDs and passwords

Table 6 lists the various IDs that IBM suggests for this class and any requirements that they have. Some might be automatically created during the installation process.

**Table 5: ID names and login information**

| ID | User name | Password | Comment |
|---|---|---|---|
| WebSphere Application Server | `wasadmin` | `was1edu` | |

**Table 5: ID names and login information**

| ID | User name | Password | Comment |
|---|---|---|---|
| DB2 | `db2admin` | `Web1sphere` | |
| Worklight | `worklight` | `Web1sphere` | |

# Network setup instructions

This section does not apply to this course.

# Operating system setup instructions

Perform the following steps to install and customize the base operating system for each system in the class setup.

## Instructor

__ 1. Follow the instructions for **Student**.

## Student

Create a user that is named `worklight` with administrative privileges and password of **worklight**.

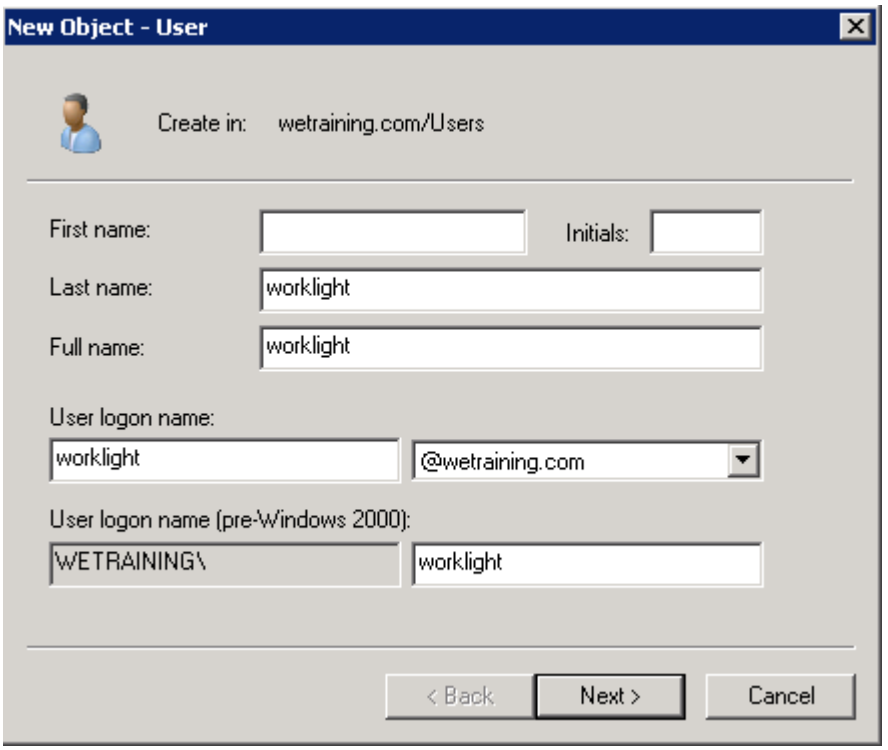
__ 1. Click **Start** and select **Administrative Tools > Active Directory Users and Computers**.

__ 2. **Open** the domain name that you require, `wetraining.com`, and right-click **Users**.

__ 3. Select **New > User**.

__ 4. In the New Object - User dialog, type the following information:

__ a. Last name: `worklight` (Full name is filled automatically)




__ b. User logon name: `worklight`

__ 5. Click **Next**.

__ 6. For *password*, type `Web1sphere` in both fields.

__ 7. Check *only* **Password never expires**.

__ 8. Click **Next** and **Finish**.

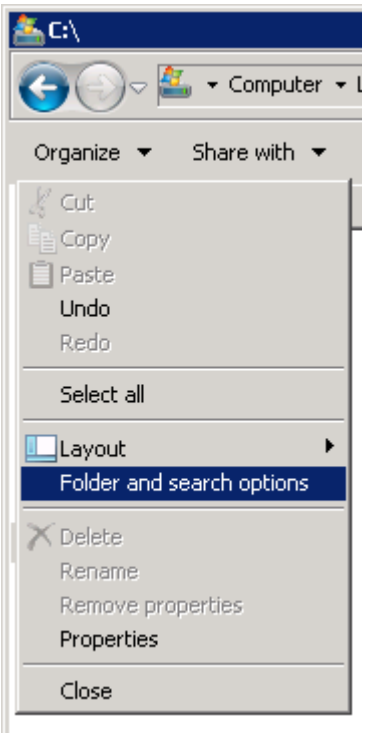
__ 9. **Close** the Active Directory Users and Computers dialog.

## Set up folder permissions

__ 1. Open a **Windows Explorer**.

__ 2. Click **Local Disk (C:)**.

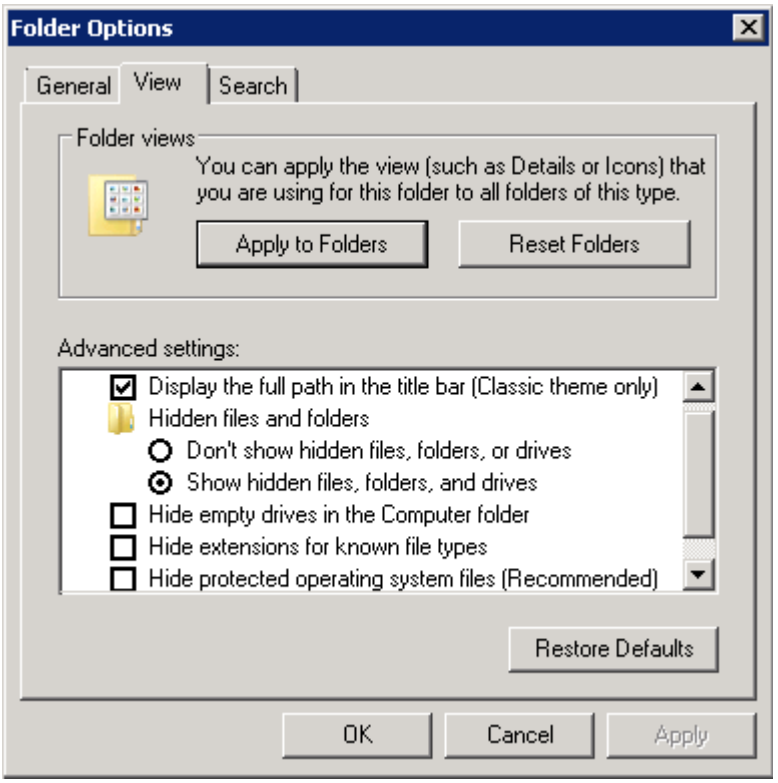
__ 3. From the **Organize** menu, select **Folder and search options**.



__ 4. Click the **View** tab and change the settings as follows:

- Display the full path in the title bar (Classic theme only): **Checked**
- Hidden files and folders: Select **Show hidden files, folders, and drives**




__ 5. Close the Folder Options dialog.

## *Copy the lab files*

__ 1. Extract `WD601_ERC1.0_LABFILES.ZIP` to `C:\`.

__ 2. Verify that there is now a `C:\LabFiles` folder, which includes three subfolders: `Resources`, `Software`, and `Solutions`.

# Software setup instructions

Perform the following steps to install and customize software that is required in addition to the operating system.

## Instructor

__ 1. Follow the instructions for **Student**.

## Student

### *Install Oracle JDK 7*

__ 1. Download the JDK from the Oracle download site at:
`http://www.oracle.com/technetwork/java/javase/downloads/index.html`

**Note**

Make sure that you install the latest version of JDK 7.

__ 2. Follow the installation instructions at:
`http://docs.oracle.com/javase/7/docs/webnotes/install/index.html`

__ 3. Create the PATH variables:

__ a. Click **Start**, and then right-click **Computer** and select **Properties**.

__ b. Click **Advanced system settings** > **Environment Variables**.

__ c. Under **System variables**, scroll down to **Path**.

__ d. Select **Path** and click **Edit...**

__ e. Scroll to the end of the **Variable value** field and add the following (including the leading semi-colon (`;`)
`;C:\Program Files\Java\jdk1.7.0_`*xx*`\bin`

**Note**

For the *xx*, substitute whatever version number you downloaded (at the time of writing, the latest number was 51).

__ f. Click **OK** three times to close the dialogs.

### *Install Eclipse Kepler (v4.2)*

__ 1. Download the Eclipse IDE for Java EE Developers Windows 64-bit from the project download site at: `http://www.eclipse.org/downloads/packages/release/kepler/sr2`

__ 2. Extract the compressed file that is called `eclipse-jee-kepler-SR2-win32-x86_64.zip` to: `C:\`

__ 3. Create a shortcut to `C:\eclipse\eclipse.exe`, and place it on the Windows desktop. Name it: `Eclipse - Juno`

## Install Firefox (v17 or later)

__ 1. Open an Internet Explorer browser window to: `http://www.mozilla.org/en-US/firefox/new/`

__ 2. Click **Firefox Free Download**.

__ 3. Follow the instructions that are provided on the page to download and run the Firefox setup wizard.

## Install IBM Installation Manager (v1.5.3)

__ 1. Download the IBM Installation Manager archive file `InstalMgr1.6.2_WIN_X86_WAS_8.5.5.zip` (part number `CIK26ML`) and extract it to: `C:\IBM Installation Manager`

__ 2. Open a command prompt to the directory where you extracted the compressed file and run the command: `install.exe`

__ 3. Follow the installer wizard pages and accept the default values to install Installation Manager.

__ 4. When the installation is complete, close all windows.

## Install DB2 Enterprise Server Edition (v9.7)

__ 1. Download `DB2_WSE_97_Win_x86-64.exe` (part number `CZ1IDML`).

__ 2. Double-click the `.exe` file to launch the self-extractor.

__ 3. From the DB2 product package location, run `setup.exe` to launch the DB2 Setup Launchpad.

__ 4. In the Welcome page, select **Install a Product**.

__ 5. In the Install a Product page, under DB2 Workgroup Server Edition Version 9.7, click I**nstall New**.

__ 6. In the DB2 Setup wizard's Welcome page, click **Next**.

__ 7. Accept the agreement terms and click **Next**.

__ 8. Select **Typical** as the installation type and click **Next**.

__ 9. Select **Install DB2 Workgroup Server Edition on this computer** and click **Next**.

__ 10. Accept the default installation folder (`C:\Program Files\IBM\SQLLIB\`) and click **Next**.

__ 11. Accept the default values for Domain (**None - use local user account**) and User name (**db2admin**), and type `Web1sphere` in the Password and Confirm password fields (note the uppercase "W").

__ 12. In the *Configure DB2 instances* page, make sure that **DB2** is selected and click **Next**.

__ 13. In the *Prepare the DB2 tools catalog* page, click **Next** (do not select the check box).

__ 14. In the *Set up notifications* page, clear the **Set up your DB2 server to send notification** check box and click **Next**.

__ 15. In the *Enable operating system security for DB2 objects* page, clear the **Enable operating system security** check box and click **Next**.

__ 16. In the Start copying files page, click **Install**. The installation process is started.

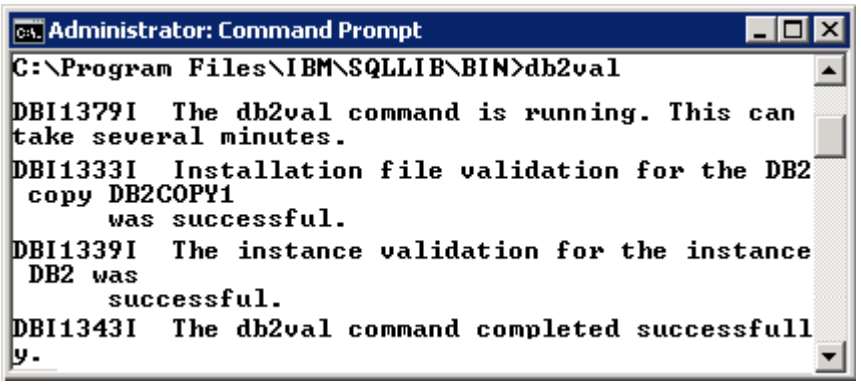
__ 17. In the Setup is complete page, click **Finish**.

__ 18. Close the **First Steps** window.

## *Verifying the DB2 installation*

__ 1. Open a command prompt and navigate to `C:\Program Files\IBM\SQLLIB\BIN`.

__ 2. Type the following command: `db2val`
After a moment you see a report:




__ 3. The DB2 installation was successful. **Close** the command prompt.

## *Creating the Worklight Server databases*

Create the **WRKLGHT** core and **WLREPORT** reporting databases, and also the **APPCNTR** database. Grant CONNECT permission to them to the **worklight** user ID. A script that you can run by using the DB2 Command Line Processor is provided to create the databases.

__ 1. Open a DB2 command window: Click **Start** and select **All Programs > IBM DB2 > DB2COPY1 (Default) > Command Line Tools > Command Window**.

__ 2. In the *DB2CLP* command window, type the following command to execute the `CreateDatabases.txt` script in the `<software>` folder:

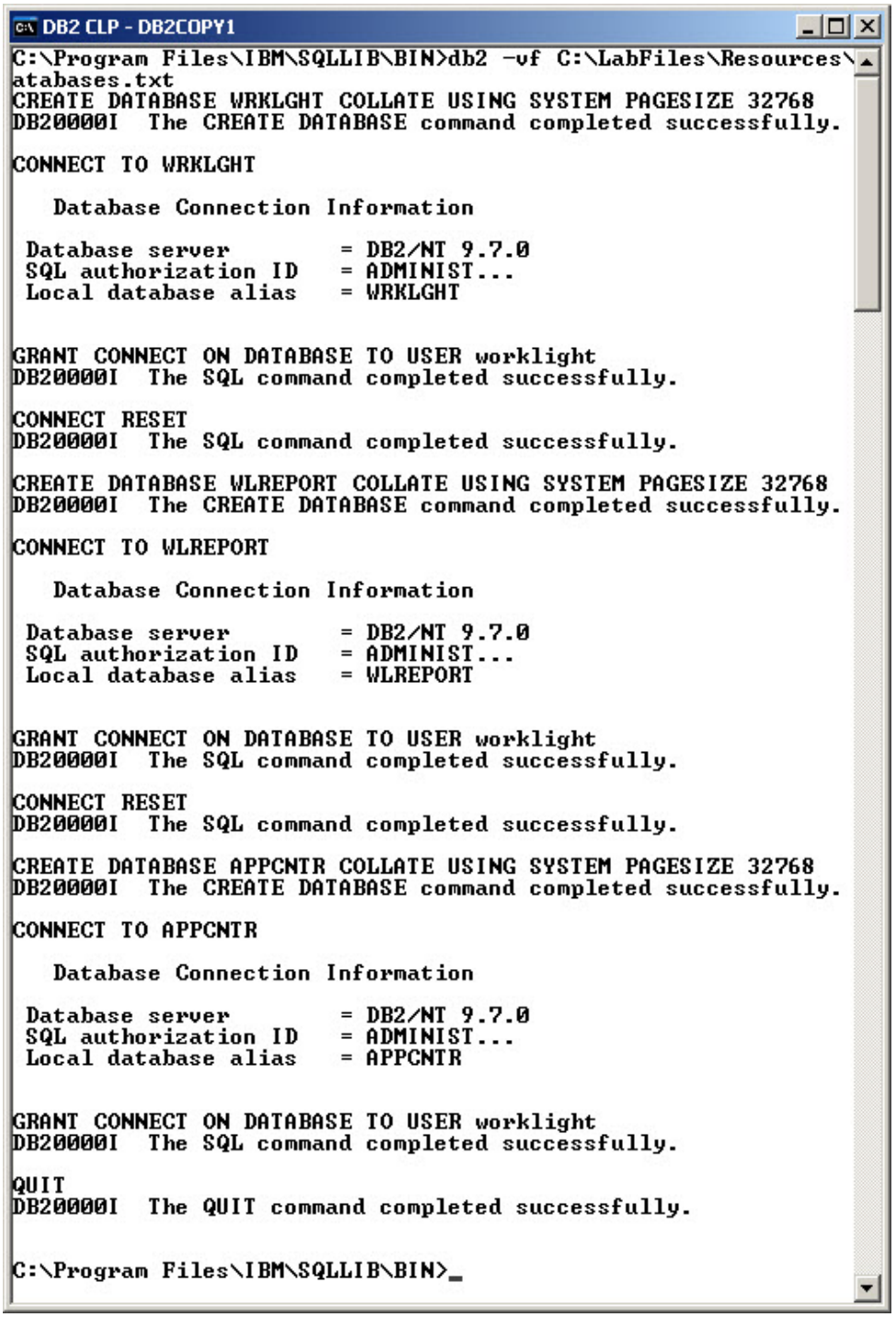
```
db2 -vf <software>\CreateDatabases.txt
```

__ 3. Wait until the script completes execution, which can take up to 10 minutes. When it is finished, the DB2 command window displays the successful completion messages that are shown here.

**Note**

If there is a problem with running the script, you can type (or paste) the lines one at a time into the prompt.



__ 4. **Close** the DB2 command window.

## *Install WebSphere Application Server Network Deployment (v8.5)*

__ 1. Download the three parts for **IBM WebSphere Application Server Network Deployment V8.5 for Multiplatform Multilingual**. Part numbers are `CI6Y3ML`, `CI6Y4ML`, and `CI6Y5ML`, and the archive file name is `WAS_ND_V8.5_X_OF_3`, where **`X`** is 1, 2, or 3.

__ 2. **Extract** the three archive files to: `C:\WAS_install`

__ 3. Open **Start > All Programs > IBM Installation Manager**, and click **IBM Installation Manager**.

__ 4. Open **File > Preferences**.

__ 5. In the left pane, verify that Repositories is selected; then click **Add Repository**.

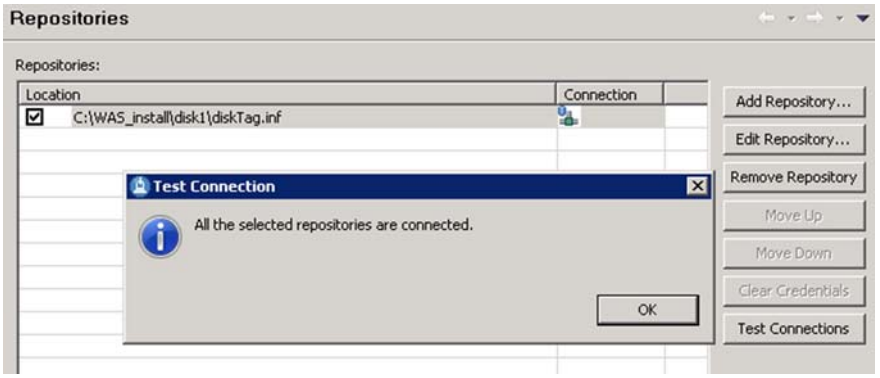
__ 6. In the dialog that appears, click **Browse**.

__ 7. Navigate to the files you extracted and open the folder `C:\WAS_install\disk1`.

__ 8. Select **diskTag.inf** and click **Open**.

__ 9. Click **OK** to return to the Preferences dialog.

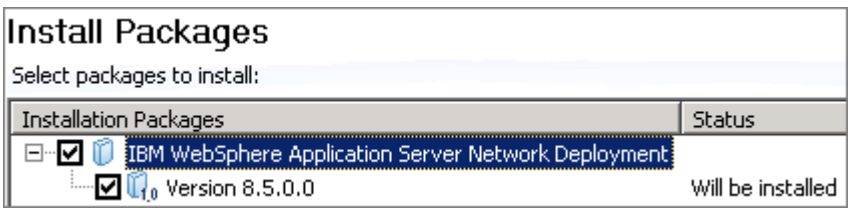
__ 10. Verify that the repository is recognized by clicking **Test Connections**. You see a confirmation dialog:




__ 11. Click **OK** twice to close the preferences window.

__ 12. In the Installation Manager window, click **Install**.

__ 13. In the Install Packages page, **check** the box for IBM WebSphere Application Server Network Deployment:




__ 14. Click **Next**.

__ 15. Accept the terms in the license agreement and click **Next** again.

__ 16. Verify that the Shared Resources Directory path points to `C:\Program Files (x86)\IBM\IMShared`. You can ignore the waning about the administrative privileges.

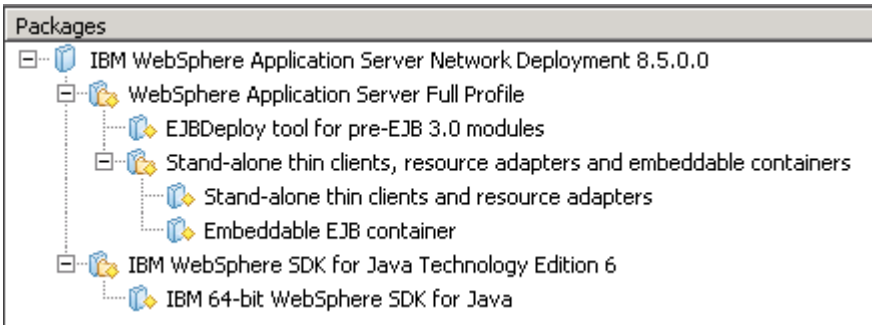
__ 17. Click **Next**.

__ 18. Click **Next** on the page for the new package group.

__ 19. In the *Select the translations to install* page, only English should be selected (the default). Click **Next**.

__ 20. In the second *Select the features to install* page, accept the defaults and click **Next**.

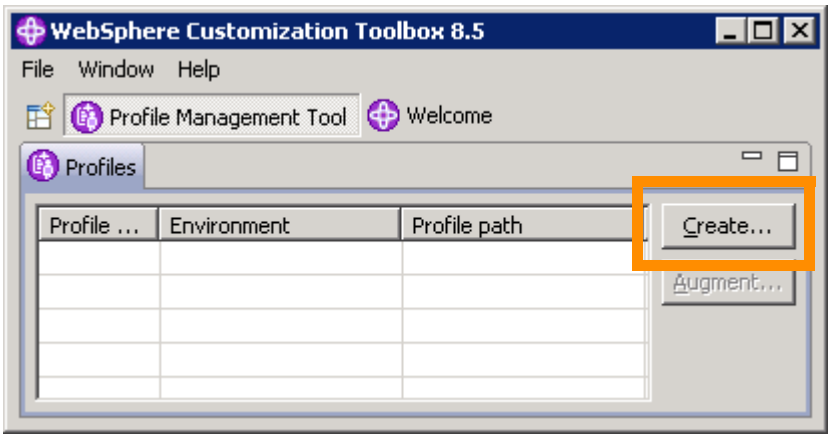
__ 21. You are now to the *Review the summary information* page:




__ 22. Click Install.

__ 23. In the *following package was installed* page, make sure that **Profile Management Tool to create a profile** is selected (the default selection) and click **Finish**.

__ 24. In the Profile Management Tool in the WebSphere Customization Toolbox 8.0 window, click **Create**.




__ 25. In the Environment Selection page, verify that **Application server** is selected and click **Next**.

__ 26. In the Profile Creation Options page, verify that **Typical profile creation** is selected and click **Next**.

__ 27. In the Administrative Security page:

__ a. Select **Enable administrative security**.

__ b. Type `wasadmin` in the User name field.

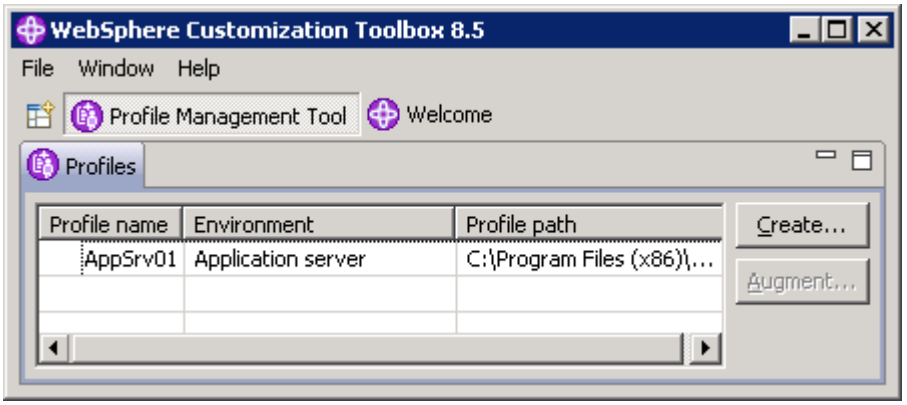
__ c. Type `was1edu` in the Password and Confirm password fields.

__ d. Click **Next**.

__ 28. In the Profile Creation Summary page, click **Create**.

__ 29. In the Profile Creation Complete page, verify that the **Launch the First steps console** box is checked and click **Finish**.

__ 30. The new profile is listed:




__ 31. Close the dialog.

## Verifying the WebSphere Application Server installation

__ 1. In the First steps console, click **Installation verification**. The server1 server in profile AppSrv01 is started, and a number of verification tests are executed. You see the following (at the end of a long list of reports) when the test is completed:

- >ADMU3200I: Server launched. Waiting for initialization status.
- >ADMU3000I: Server server1 open for e-business; process id is *xxxx.*
- Server port number is: 9080
- IVTL0010I: Connecting to the ws2008r2x64 WebSphere Application Server on port: 9080
- IVTL0015I: WebSphere Application Server ws2008r2x64 is running on port: 9080 for profile AppSrv01
- Testing server using the following...
- … (*several other lines of tests*)
- IVTL0070I: The Installation Verification Tool verification succeeded.
- IVTL0080I: The installation verification is complete.

__ 2. **Close** First Steps.

## *Install Worklight Server Version 6.1*

__ 1. The Worklight Server is also installed through the Installation manager. Extract `imf_6.1.0.offering.disk1.zip` to any convenient place.

__ 2. In the Installation Manager, click **File**, and select **Preferences**.

__ 3. Click **Add Repository**; then **Browse** to *<unzipped>* **> Worklight > disk1**.

__ 4. Select **diskTag.inf** and click **Open**.

__ 5. Click **OK** to return to the Preferences window.

__ 6. Verify that the repository can be read correctly by clicking **Test Connection**.

__ 7. Close the Test Connection dialog and the Preferences window by clicking **OK** twice.

__ 8. Back in the Installation Manager, click **Install**.

__ 9. There are now 10 dialogs to respond to. Click **Next** after each step:

1) In *Select packages to install*, select **IBM Worklight Server**.
2) In the *Licensing agreement*, select **I accept the terms**...
3) Verify that **Create a new package group** is selected, and that the installation directory path is **C:\Program Files\IBM\Worklight**.
4) There is only one feature to install. Accept the default.
5) Verify that **Yes** is selected for *Install the IBM Application Center*.
6) Select **IBM DB2**.
7) For the DB2 database settings, type the host name `localhost` and then **Browse** to `C:\Program Files\IBM\SQLLIB\java` and select **db2jcc4.jar**. Click **Open**.
8) In *Database server additional properties*, type: user name `worklight` and password `Web1sphere`
9) Click **Next** three times.
10) Select **WebSphere Application Server**.
11) Browse to the installation directory at `C:\Program Files (x86)\IBM\WebSphere\AppServer` and type the Administrator password: `was1edu`
12) For the operating system user name, keep the default `WETRAINING` and type: `worklight`
13) Click **Next** twice, and then **Install**.

__ 10. Close the Installation Manager.

## *Verify the installation of the Worklight Server*

__ 1. Open a browser to `https://localhost:9043/ibm/console` (WebSphere Integrated Solutions Console).

__ 2. Log on as `wasadmin`, with password `was1edu`.

__ 3. Navigate to **Applications > Application Types > WebSphere enterprise applications**.

__ 4. Verify that you can see these two applications:

- IBM Application Center Console
- IBM Application Center Services

__ 5. Type the URL: `http://localhost:9080/appcenterconsole`

__ 6. Verify that the Application Center opens.

## Install Derby (v10.9 or later)

__ 1. Download the Derby compressed file from:
`https://db.apache.org/derby/derby_downloads.html`

__ 2. Click the link for the latest official release.

**Note**

At the time of writing, the latest version was `db-derby-10.10.1.1-bin.zip`.

__ 3. Click **db-derby-10.10.1.1-bin.zip** and **Save** the file.

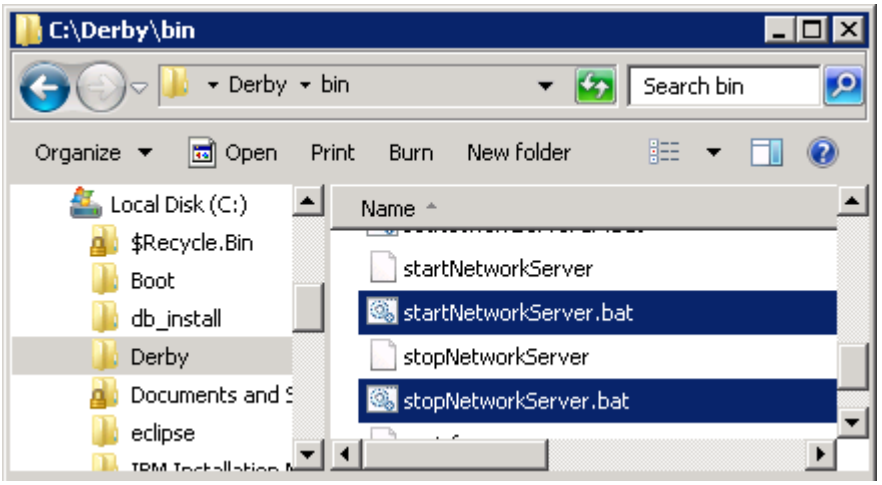
__ 4. When it finishes downloading, right-click the file and select **Open Containing Folder**.

__ 5. Right-click the file in its folder and select **Extract All...**

__ 6. Change the directory to `C:\` and click **Extract**.

__ 7. The files are extracted to a folder that has the same name as the archive file (in this case, `db-derby-10.10.1.1-bin`). Change this name to: `Derby`

__ 8. Open **Derby > bin** and highlight **startNetworkServer.bat** and **stopNetworkServer.bat**.




__ 9. Right-click and select **Send to > Desktop (Create Shortcut)**.

__ 10. Drag the two shortcut icons to the desktop.

__ 11. Rename them: `startNetworkServer` and `stopNetworkServer`

__ 12. Create an environment variable for Derby.

__ a. From the Start menu, right-click the **Computer** icon and select **Properties**.

__ b. Click **Advanced system settings**.

__ c. Click **Environment Variables**.

__ d. Under System variables, click **New**.

__ e. Add the variable name `DERBY_HOME` and the value `C:\Derby`.

__ f. Click **OK**.

__ g. Select **Path** and click **Edit**.

__ h. At the end of the path, add `;C:\Derby\bin;C:\Derby\lib` (do not forget the leading semicolon).

__ i. Click **OK** three times to close the dialogs.

__ j. Close the control panel.

## *Create the worklight-training database*

__ 1. Double-click the **Eclipse Juno** shortcut on the desktop. When the workspace Launcher dialog appears, type `C:\db_install\workspace` and click **OK**.

__ 2. Close the Welcome view.

__ 3. Right-click in the Project Explorer and select **Import > Import...**

__ 4. Expand **General** and select **Existing Projects into Workspace**.

__ 5. Click **Next**.

__ 6. Click **Select archive file**; then browse to `<`*`software`*`>\Create_Derby.zip`, and click **Open**.

__ 7. Click **Finish**. The project appears in the Explorer view.

__ 8. Expand **CreateDB > src > derby.setup**.

__ 9. Right-click **DBSetup.java** and select **Run As > Java Application**.

__ 10. Open the Console view. You should see: a list of executed files, followed by a statement that *n* SQL statements were executed, and finally, a read test that returns all the values that were written to the tables (accounts, account transactions, and users).

__ 11. **Close** Eclipse.

# Additional setup

This section does not apply to this course.

# Verification procedures

Use the following information to verify the installation and configuration of the student and instructor lab environments.

## Instructor

__ 1. Follow the same instructions as for **Student**.

## Student

__ 1. To verify the installation, run Exercise 1 on one computer.

# Testing the lab exercises

Complete all of the lab exercises in the Student Exercises Guide provided with the course, and verify that they produce the expected results.

The instructor, or someone else with skills in the products that are involved, should conduct these tests; the lab setup technician might not be qualified.

**Important**

You should completely verify all of the lab exercises whenever you build the environment as described in this document. If you create the environment by restoring a backup copy, you should run enough of the exercises to demonstrate that the copy was properly restored.

The lab exercises were tested in the development environment that is described in this guide. You should test each exercise in your own lab environment to confirm the setup. Failure to complete an end-to-end test of the labs might result in unexpected behavior during class.

Be sure to allocate enough time to complete these instructions. **The classroom must be ready to run lab exercises before the first day of class**.

# Performance notes

Verify that every lab workstation meets or exceeds the minimum hardware requirements. Insufficient processor speed, memory, or disk space can affect the performance of the lab system.

Consider shutting down any running software on the workstation that is not needed or might be using system resources.

Security or anti-virus software can affect system performance, especially during the installation of the environment.

Firewalls or proxy servers in the network can cause connectivity and performance issues. If possible, consider disconnecting the lab workstations from the network.

Disconnect any open file shares, external USB drives, or disks that are connected to the workstation.