



ArchNav Installation Instructions

Cloud Computing

Table of Contents

1.	Introduction	3
2.	Software Requirements	3
a.	Install Java SDK.....	4
b.	Install MySQL Workbench and the MySQL Database	4
c.	Install MySQL Connector (Java)	9
d.	Install jDeveloper	9
e.	Install GlassFish and Glassfish Extensions with jDeveloper	14
f.	Install Oracle ADF Essentials (for jDeveloper and Glassfish)	18
g.	Install Maven.....	19
h.	Install Cygwin	20
i.	Install wget and git packages for Cygwin.....	20
j.	Install ApacheDS	22
k.	Install Directory Studio.....	24
l.	Install Fortress.....	25
m.	Install Tomcat.....	28
3.	Software Setups	34
a.	Setup the ArchNav Database	34
b.	Configure GlassFish for ADF Applications.....	43
c.	Import ApacheDS Schema.....	49
d.	Integrate Apache Fortress Core and ApacheDS.....	59
e.	Setup Fortress REST Application	61
f.	Setup Fortress Web.....	64
g.	Run Selenium Web Driver Integration Test	66
4.	Deploy ArchNav	67
a.	Build and Deploy ArchNav Security Application	67
b.	Configure Fortress to Include ArchNav Authentication and RBAC Details	69
c.	Build the ArchNav Application	75
d.	Import Archency Workspece into jDeveloper	78
e.	Configure Archency Project to Include Important Libraries.....	83
f.	Deploy ArchNav into GlassFish	88
g.	Test ArchNav.....	93

1. Introduction

This document steps through setting up the ArchNav application. There are several software pieces that need to be installed and this document steps through installing all required software. It is important to use the versions of each software piece that is specified in this document (see the section “Software Requirements” for a table of all software pieces and their respective versions).

2. Software Requirements

ArchNav is dependent on several technologies. Below is a table that includes a complete list of technology requirements. The versions below were confirmed to work with the latest version of the ArchNav code and must be the versions that are downloaded and installed.

Software Download	Version	Link
Java SE Development Kit	8u212	https://www.oracle.com/technetwork/java/javase/downloads/index.html
MySQL Workbench	8.0.16	https://dev.mysql.com/downloads/windows/installer/8.0.html
MySQL Connector (Java)	8.0.16 for MySQL 8.0.16	https://dev.mysql.com/downloads/connector/j/
jDeveloper	12.2.1.3.0	https://www.oracle.com/technetwork/developer-tools/jdev/downloads/index.html
WebLogic (integrated with jDeveloper)	12x	
Glassfish Extensions (for jDeveloper)	for JDeveloper 12.2.1.3.0	https://github.com/adfemg/glassfish-extension
Oracle ADF Essentials (for Glassfish)	for JDeveloper 12.2.1.3.0, and Glassfish 5.0.0	https://www.oracle.com/database/technologies/developer-tools/adf/adf-essentials.html
Glassfish	5.0.0	https://javaee.github.io/glassfish/download
Oracle ADF	for JDeveloper 12.2.1.3.0 and for Glassfish 5.0.0	https://www.oracle.com/technetwork/developer-tools/adf/downloads/index.html
Maven	3.6.1	https://maven.apache.org/download.cgi
Cygwin	3.0.7	https://www.cygwin.com/
wget and git packages (for Cygwin)		
Fortress	2.0.3	https://directory.apache.org/fortress/downloads.html
ApacheDS	2.0.0-AM25	https://directory.apache.org/apacheds/downloads.html
Directory Studio	2.0.0-M14	https://directory.apache.org/studio/
Tomcat	9.0.21	https://tomcat.apache.org/download-90.cgi

a. Install Java SDK

Visit the link <https://www.oracle.com/technetwork/java/javase/downloads/index.html> to download Java SDK (be sure to check the table above for the required version). From the above link, scroll down to “Java SE 8u211 / Java SE 8u212” and click “Download” for “JDK”. Select the correct download for your operating system. Click on the .exe, for example, jdk-8u212-windows-x86.exe, file and follow the wizard using the default settings.

b. Install MySQL Workbench and the MySQL Database

Download MySQL Workbench and MySQL Server

Visit the link <https://dev.mysql.com/downloads/windows/installer/8.0.html> to download the MySQL Workbench and the MySQL Database. The MySQL Database gets installed with the MySQL Workbench.

There are two download options to choose from. Different from the standard MySQL Installer, the smaller "web-community" version does not bundle any MySQL applications, but it will download the MySQL products you choose to install. If you have an online connection while running the MySQL Installer, choose the mysql-installer-web-community file (filename: mysql-installer-web-community-8.0.16.0.msi). If you do not have an online connection while running the MySQL Installer, choose the mysql-installer-community file (filename: mysql-installer-community-8.0.16.0.msi). For this installation the "web" installer was used.

Run the installation wizard

Launch the MySQL installation wizard and follow the steps below.

- For the “Optional MySQL Installer Upgrade Available: You will continue receiving product catalog updates if you do not apply the upgrade. Do you want to apply this upgrade now?” option, select “Yes” if you wish to receive automated options.
- For “Choosing a Setup Type”, select the “Full” version to install. This includes the following “Setup Type Description”:

“Installs the MySQL Server and the tools required for MySQL application development. This is useful if you intend to develop applications for an existing server.”
- For “Check Requirements”, the wizard will check for required software to be previously installed prior to installing MySQL Community Server. Click “Yes” to proceed as the wizard will try to remedy any installation check failures by downloading the appropriate required installs. The installer will check for the following:

- 1) MySQL for Excel 1.3.8 (a message you might see is: “Visual Studio 2010 Tools for Office Runtime is not installed”).

To proceed, there are two options: (1) click on “Execute” or (2) click “Next”. If there are any failed requirements, then click “Execute” to allow the wizard to download and install the dependency. To address the failed requirement, “Microsoft Visual Studio Tools for Office Runtime 2010” was installed.

- 2) MySQL for Visual Studio 1.2.8 (a message you might see is: “Visual Studio version 2012, 2013, 2015 or 2017 must be installed”). To address this failed requirement:

Go to <https://visualstudio.microsoft.com/vs/older-downloads/> to download older versions of Microsoft Visual Studio. Download the 2017 edition (the latest version is 2019, but the version of MySQL that is being installed requires version 2017).

To install Visual Studio 2017, follow the below steps:

- Expand “2017” and click on the “Download” button. You will be taken to a page that allows you to enter a “subscription” login or join a community. Join the free community and then select the 2017 download. If you don’t see it, in the same browser, refresh page.
- From the “Downloads” list, select “Visual Studio Community 2017 (version 15.9)” (no key is required).
- Click on the installer, which is an executable (.exe) file.
- The installer wizard will eventually get to a page of “Workloads” as additional installations. Do not select any of these, and at the bottom, click “Install”. You will be prompted with “Do you want to continue without workloads?” and click “Continue”.

Additional documentation on installing the required MySQL for Visual Studio can be found at:

<https://dev.mysql.com/doc/visual-studio/en/visual-studio-install.html>

- 3) Connector/Python (3.7) 8.0.16 (a message you might see is: “Python 3.7 (64-bit) is not installed”).

To proceed, there are two options: (1) click on “Execute” or (2) click “Next”. If there are any failed requirements, then click “Execute” to allow the wizard to download and install the dependency. To address the failed requirement, “Python 3.7 (64-bit)” was installed.

- After all failed requirements are resolved, to proceed with installing MySQL Community Server, click “Execute”.

- The “Installation” page will show a list of components that will be installed and a green checkmark that appears per component indicates successful installation of each component.
- Stepping through the installation wizard, you will be prompted for several product configurations. Configure the installation as follows:
 - 1) High Availability:
 - Select: “Standalone MySQL Server / Classic MySQL Replication”
 - 2) Type and Networking
 - Config Type: chose “Development Computer”
 - Connectivity: chose “TCP/IP”, Port “3306”
 - Accept all default settings on this page
 - Check “Show Advanced and Logging Options”
 - Click “Next”
 - 3) Authentication Method
 - Select the default: “Use Strong Password Encryption for Authentication (RECOMMENDED)”
 - Click “Next”
 - 4) Account and Roles
 - Set a password for the “root” user
 - 5) Windows Service
 - Accept the default settings and click “Next”
 - 6) Logging Options
 - Accept the default settings and click “Next”
 - 7) Advanced Options
 - Accept the default settings and click “Next”
 - 8) Apply Configuration
 - Click “Execute”
 - Click “Finish”
 - 9) Click “Next”

10) MySQL Router Configuration

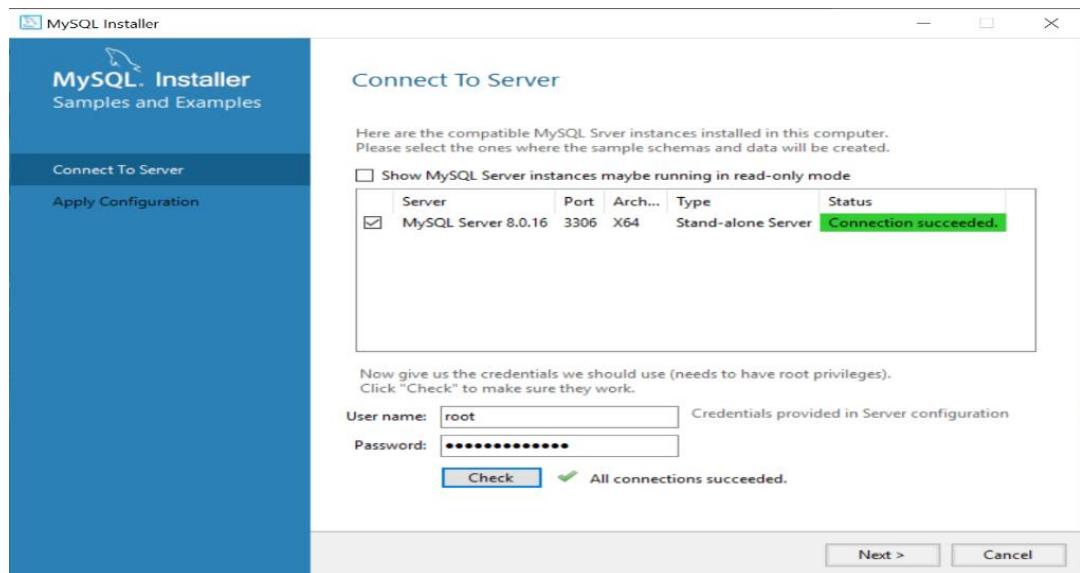
- Ignore for now → click “Finish”

11) Click “Next”

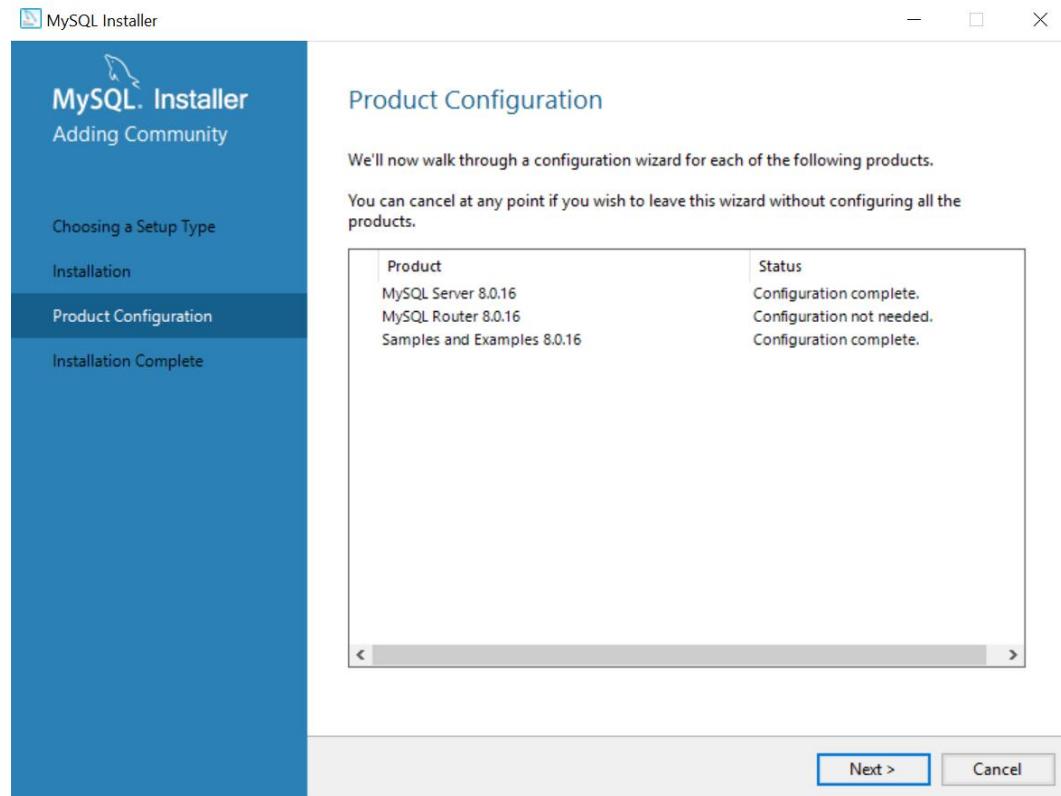
Connect to the MySQL Server using the MySQL Workbench and apply final setup configurations

To connect to the MySQL Server and apply the final setup configurations, follow the below steps:

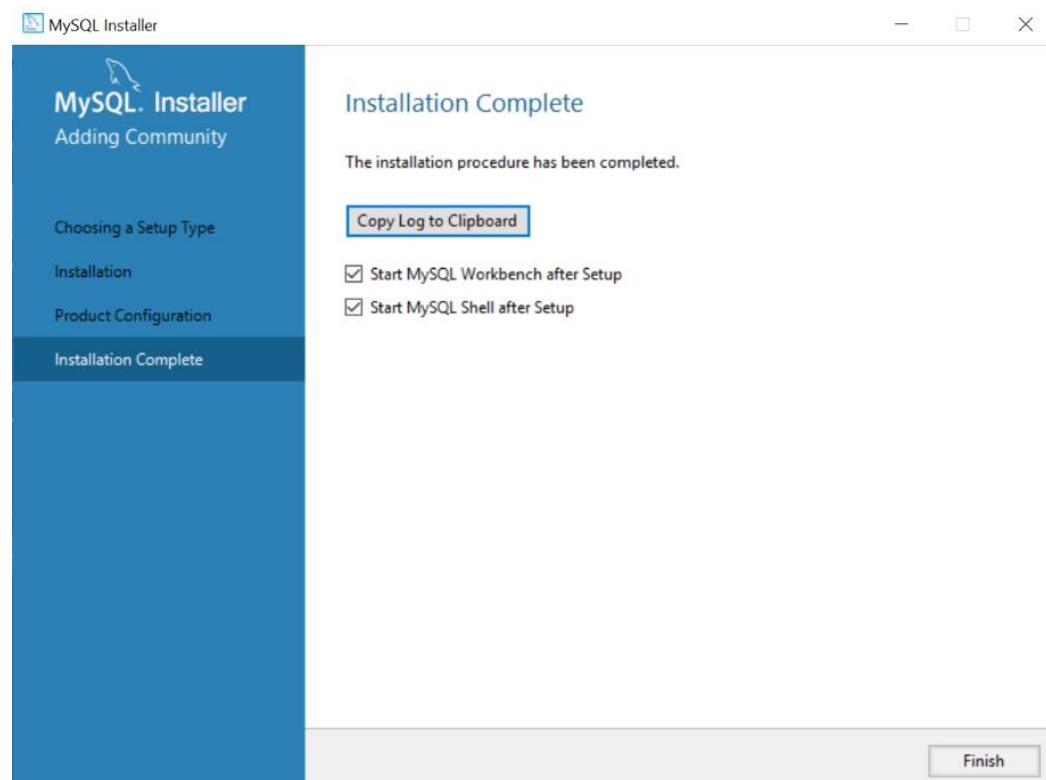
- Enter the password for the root user and click “Check” to test the connection to the database server and should get the following “Connection Succeeded” success message:



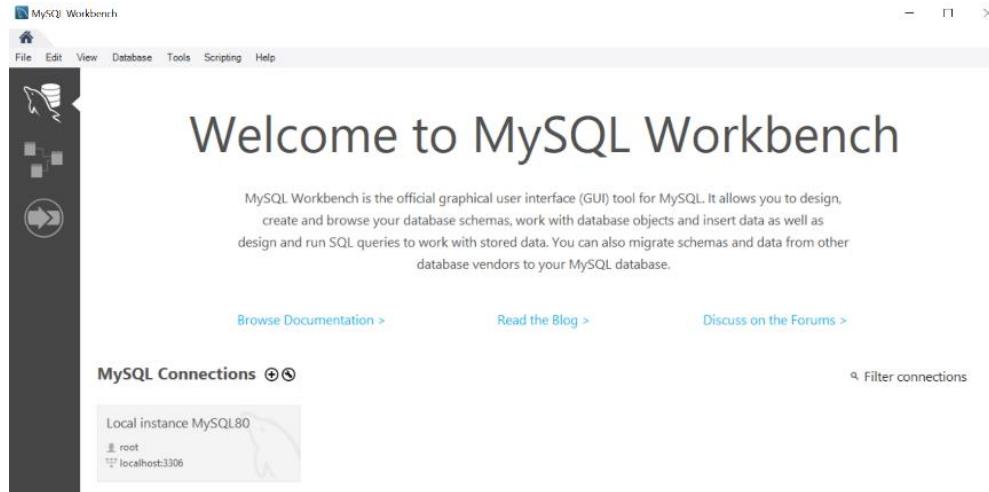
- Click “Next”
- Click “Execute”
- Click “Finish”
- The above steps should complete all of the “Product Configurations”. A “Product Configuration” page will display providing a status on whether the configurations were successful (see below).



- Click “Next”
- An “Installation Complete” should report that the installation is complete (see below).



- Click “Finish”
- The Workbench and MySQL terminal sesion should both be launched



c. Install MySQL Connector (Java)

The MySQL Connector (Java) should have installed automatically during the installation of MySQL Workbench and MySQL Server. In the case that the MySQL Connector (Java) was not installed, the following steps can be taken to install it.

Below is the MySQL Connector (Java) version information for the required version that is compatible with the version of MySQL Workbench, MySQL Server, and Java SDK that were installed.

Connector/J version	JDBC version	MySQL Server version	JRE Supported	JDK Required for Compilation	Status
8.0	4.2	5.6, 5.7, 8.0	1.8.x	1.8.x	General availability. Recommended version.

To install the MySQL Connector/J:

- Go to <https://dev.mysql.com/downloads/connector/j/> to download MySQL Connector/J (be sure to download the correct version).
- Unzip the .ZIP file. Place the connector into the directory where the application CLASSPATH points to.

d. Install jDeveloper

Additional information about installing jDeveloper can be found at the following links:
<https://docs.oracle.com/middleware/12213/jdev/install/GUID-311BD061-083E-403A-8FE7-4D78EEAFBCB45.htm#OJDIG174>

<https://docs.oracle.com/middleware/12213/jdev/install/GUID-311BD061-083E-403A-8FE7-4D78EEAFCB45.htm#OJDIG118>

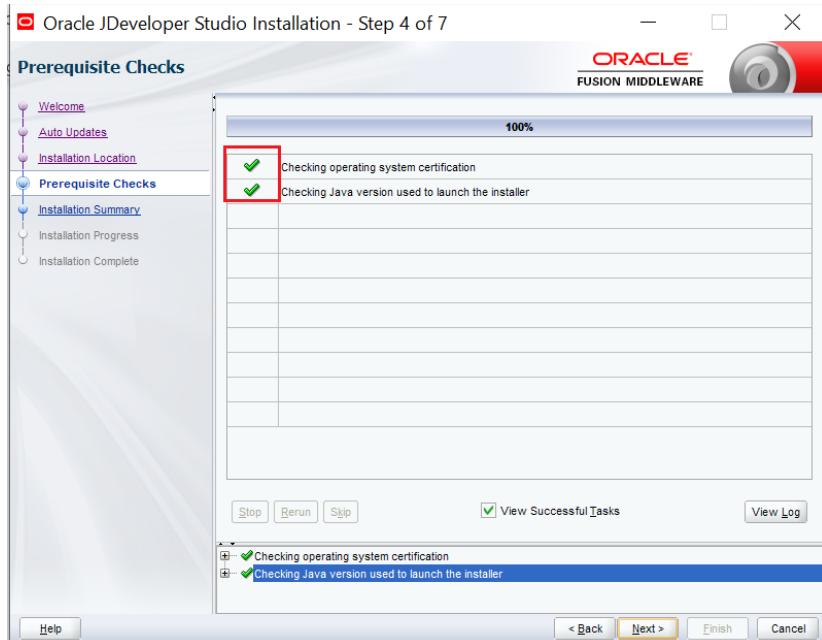
Installation of jDeveloper and related files

The “Oracle JDeveloper Studio Edition 12.2.1.3.0” edition is the complete version of JDeveloper with all the features and is the recommended version. This includes feathers for Oracle ADF applications. There are two files that are required to be downloaded and installed for the installation to be complete. Follow the steps below to install jDeveloper.

- The two files that needed downloaded are (1) File 1: jdev_suite_122130_win64.exe, (2) File 2: jdev_suite_122130_win64-2.zip.
- Installing File 1: jdev_suite_122130_win64.exe:
 - Launch the jdev_suite_122130_win64.exe (this step takes time for the installer to prepare and get started):
 - Click “Next” on the “Welcome” page.
 - Auto Updates: keep default: “Skip Auto Updates” and click “Next”
 - Keep default Oracle Home directory: “C:\Oracle\Middleware\Oracle_Home” (see warning below) (cannot be any spaces in the name of this directory), and click “Next”.

WARNING: be sure the path where JDeveloper is installed does NOT include the subdirectory of “Oracle_Home” since we are doing an upgrade from the original ArchNav and there are library dependencies on this directory structure – install directly into: C:\Oracle\Middleware

- Click “Next” on the “Prerequisite Checks” screen assuming the prerequisite checks are all successful indicated by a green check.



- In the “Installation Summary” page, review the summary of components that will be installed, and then click “Install”.
- After the installation completes, click on “Finish”.
- Installing File 2: jdev_suite_122130_win64-2.zip.
 - Although the documentation provides the below message, this step can be skipped for now.

Oracle JDeveloper Studio Edition 12.2.1.3.0

This download is the complete version of JDeveloper with all the features. This is the recommended Download.

Important Note - both files are required for each platform to complete the installation.
 Windows (2.1GB)[file1](#), [file2](#)
 Linux (2.1GB)[file1](#), [file2](#)
 Generic/Others(2.1GB)[file1](#), [file2](#)

Add the JDeveloper GlassFish extensions

The GlassFish application server is used by ArchNav and so there are some GlassFish extensions that must be installed into JDeveloper. To do this, follow the below steps.

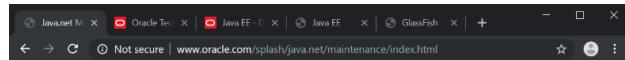
- Oracle JDeveloper Third Party Extensions - GlassFish Extension for JDev 12c can be downloaded from:
https://www.oracle.com/ocom/groups/public/@otn/documents/webcontent/130_355.xml
- The GlassFish extension for JDeveloper 12c can be downloaded from:
https://www.oracle.com/ocom/groups/public/@otn/documents/webcontent/130_355.xml#com.javanme.gfext
- Download the JDeveloper GlassFish extension version 1.0.1:

Details for GlassFish Extension For JDev 12c

This extension provides menu options that allow you to start/stop/debug and administer a GlassFish server directly from inside JDeveloper 12c. It is based on the source code provided by Shay Shmeltzer @JDevShay from his GlassFish Extension for JDeveloper 11g. Supports Win/Linux/Mac.

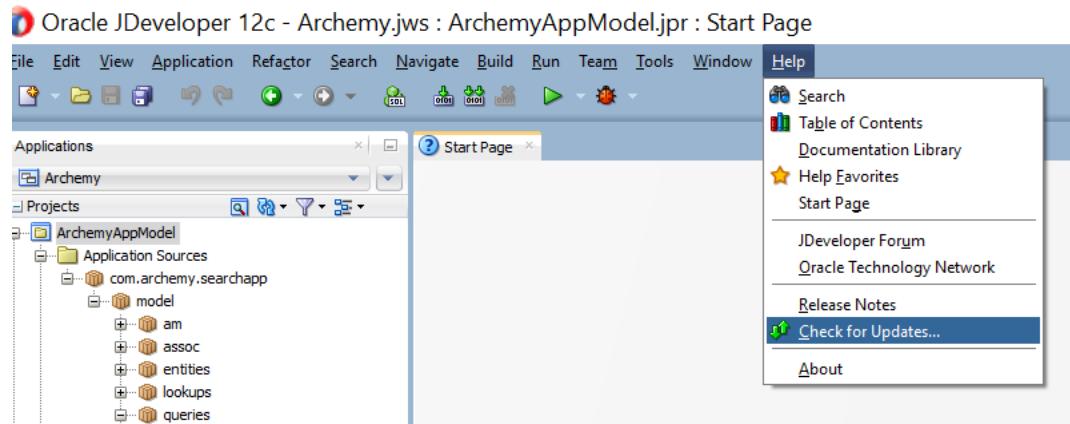
Version	Requirements	Links
1.0.0	oracle.jdeveloper (min=12.1.2.0.0, max=12.1.2.99.99)	Download
1.0.1	oracle.jdeveloper (min=12.1.2.0.0, max=12.2.9.9)	Download

- After clicking on the “Download” hyperlink, redirected to the below page but none of these links lead to the glassfish extension download for JDeveloper 12c.

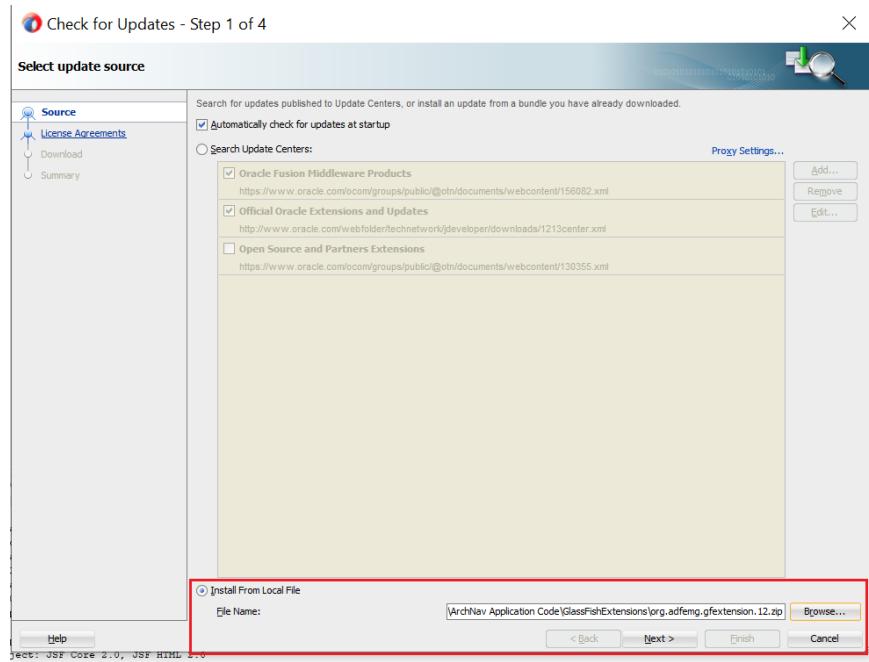


We're sorry the java.net site has closed.
Most Open Source projects previously hosted on java.net have been relocated. Please contact the corresponding project administrator for relocation information.
For Java related projects:
<http://www.oracle.com/technetwork/java/index.html>
For Java EE-related projects: <https://javaee.github.io>
For other migrated Java.net projects:
<https://javaee.github.io/other-migrated-projects.html>
For FAQ please go to
<https://community.oracle.com/community/java/avanet-forge-sunset>
For any other questions or issues contact:
java_administrator_grp@oracle.com

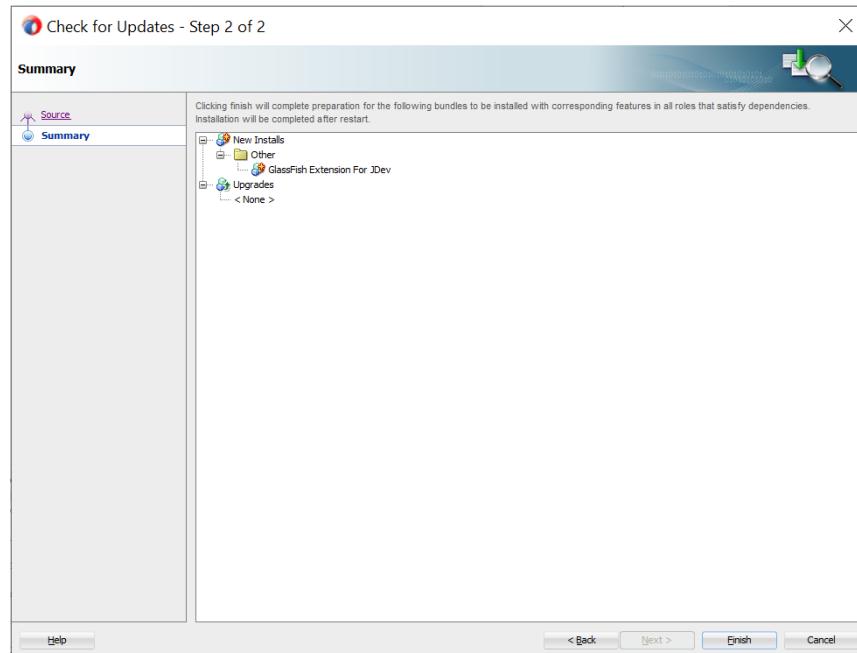
- After much search, found the glassfish extension for JDeveloper 12c at this link:
<https://github.com/adfemg/glassfish-extension>
- The file downloaded from the link in step 2 directly above is "org.adfemg.gfextension.12.zip".
- In JDeveloper, go to Help → Check for Updates.



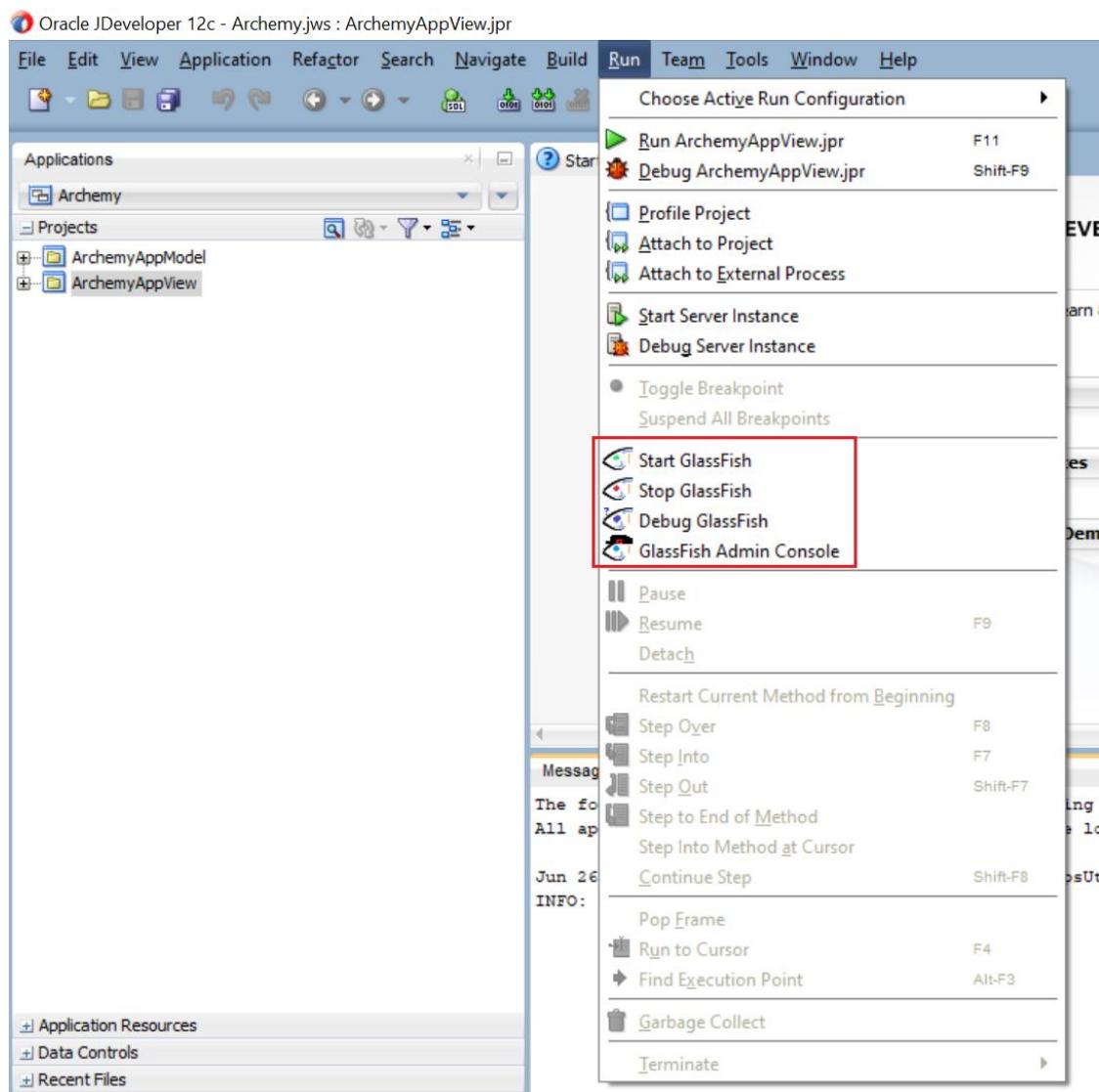
- Select "Install From Local File" and browse for the file that was downloaded in step 2 above. Click "Next".



- JDeveloper will show a summary of what will be installed before the installation. Click “Finish” and restart the JDeveloper to complete the installation.



- After JDeveloper restarts, a new section of buttons is added to the toolbar as well as inside the “Run” menu that contain the Glassfish Extension buttons:



- Before using the GlassFish extension, configure the paths to the GlassFish server installation (do this step after installing the GlassFish server and so see the section on installing GlassFish below).

e. Install GlassFish and Glassfish Extensions with jDeveloper

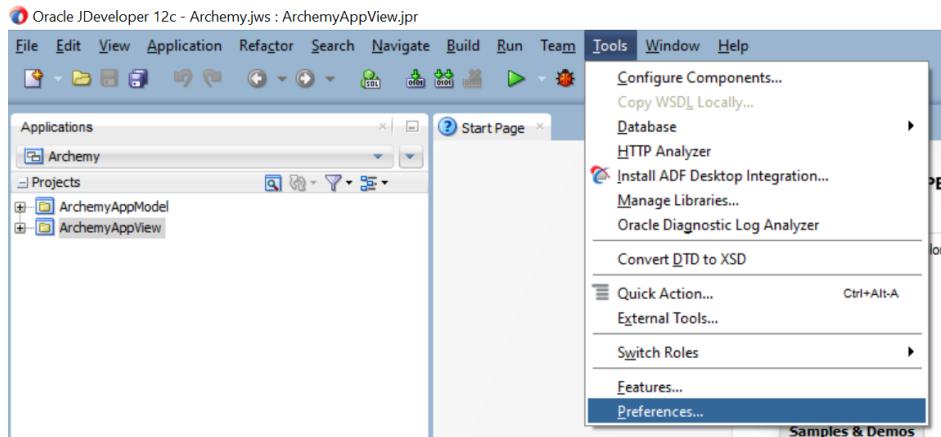
Install GlassFish

As was mentioned above, GlassFish is an application server required to run ArchNav. To install GlassFish, follow the steps below.

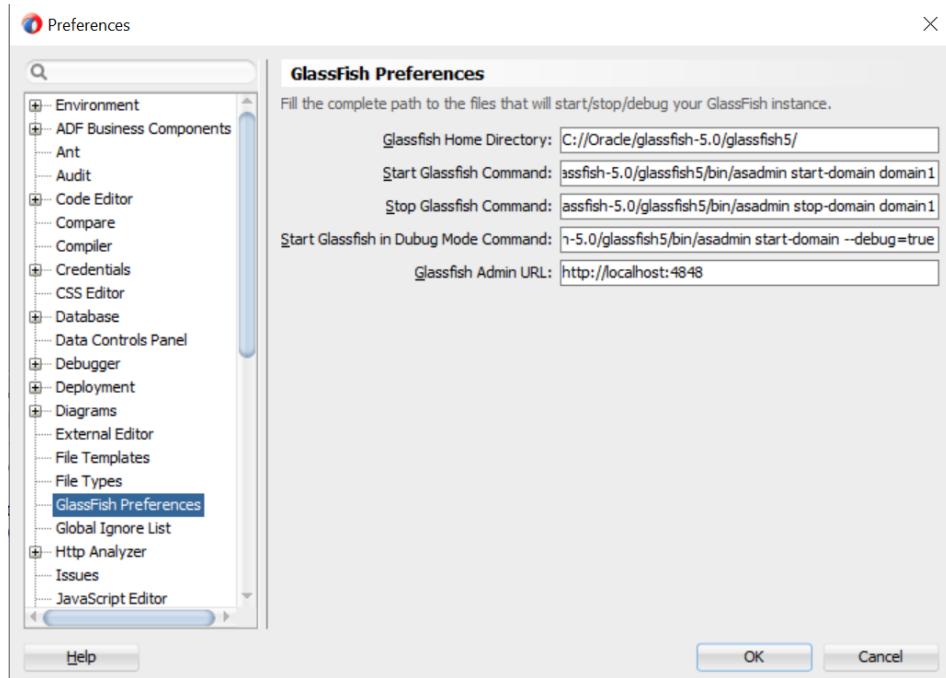
- Download Glassfish – choose “GlassFish 5.0 – Full Platform” from <https://javaee.github.io/glassfish/download>
- The file that gets downloaded will be a ZIP file – glassfish=5.0.zip.
- Change to the directory where the file was downloaded and unzip the file.
- GlassFish Server 5.0 is extracted into a new glassfish5 directory under the current directory. This glassfish5 directory is the as-install-parent directory that will be used in the start and stop commands.

Install GlassFish Extensions in jDeveloper

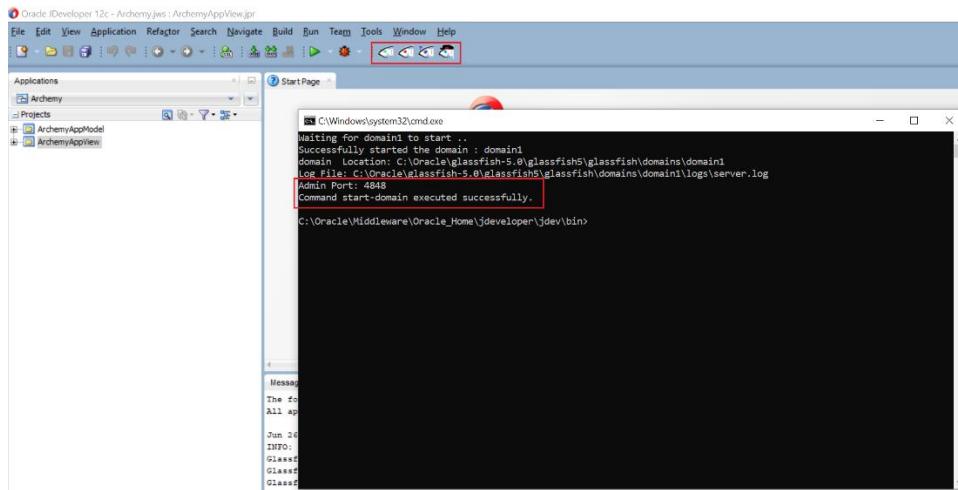
- After installing the GlassFish Server, in JDeveloper, configure the paths to the GlassFish server installation so can start and stop the GlassFish server from JDeveloper:
 - In JDeveloper, go to Tools → Preferences → Glassfish Preferences:



- Add the path to the GlassFish preferences. These will be used by the GlassFish buttons in the JDeveloper toolbar and Run menu:



- Click “OK”.
- Test that GlassFish can be started and stopped from JDeveloper by clicking on the “Start GlassFish” button (the left-most fish head button in the screenshot below):



- Starting and stopping the GlassFish server will appear in the message logs in JDeveloper:

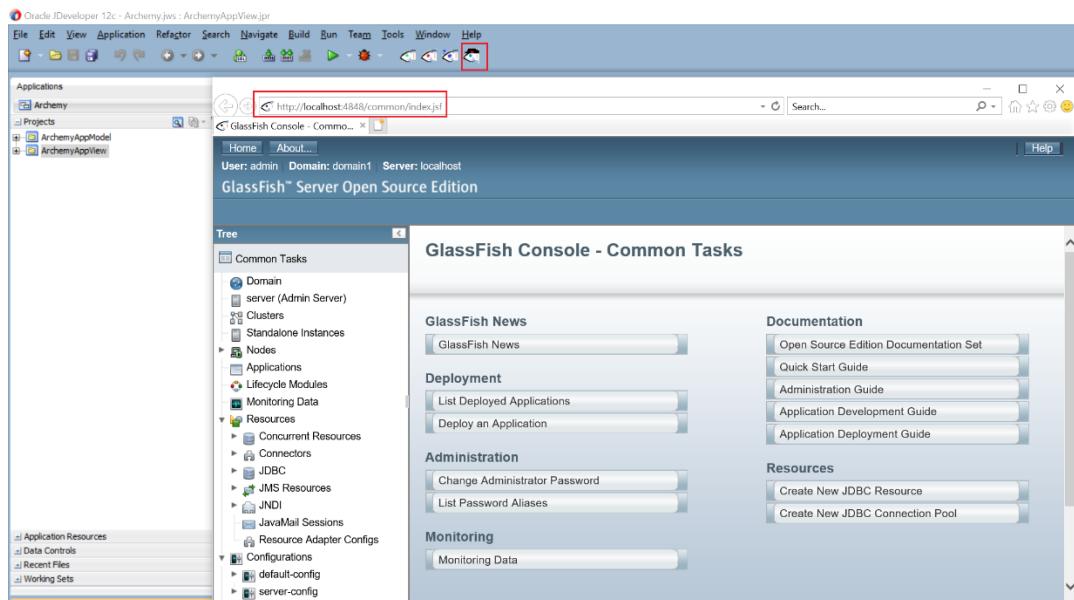
```

Messages - Log
The following messages were generated while migrating Applications, Default Project Settings (applications.xml):
All application and project data will remain in the locations in which they were created by the previous install.

Jun 26, 2019 6:00:20 PM oracle.security.jps.util.JpsUtil disableAudit
INFO: JpsUtil: isAuditDisabled set to true
Glassfish is Starting
Glassfish Stopped
Glassfish is Starting
Glassfish Administrator is Starting
Glassfish Stopped

```

- The “Stop GlassFish” button is second from the left. The third button from the left is the “Debug GlassFish” button. Finally, the fourth button is the button to launch the “GlassFish Admin Console”. The GlassFish Admin Console will be launched in a browser window (see screenshot below):



- GlassFish can also be started and stopped manually:
 - Open a command window (Windows Dos will work).
 - Navigate to one directory up from the as-install-parent directory:

```

C:\Command Prompt
C:\Oracle\glassfish-5.0>dir
Volume in drive C is OS
Volume Serial Number is E05C-5660

Directory of C:\Oracle\glassfish-5.0

06/26/2019  06:38 PM    <DIR>          .
06/26/2019  06:38 PM    <DIR>          ..
06/26/2019  06:39 PM    <DIR>          glassfish5
          0 File(s)           0 bytes
          3 Dir(s)   416,300,060,672 bytes free

C:\Oracle\glassfish-5.0>

```

- Start the GlassFish Server by typing the command:

```
glassfish5\bin\asadmin start-domain domain1
```

The screenshot shows a Windows Command Prompt window titled "Command Prompt". The path is "C:\Oracle\glassfish-5.0>". The user runs the command "dir" to list the contents of the directory, which includes ".","..", and a "glassfish5" folder. Then, the user runs "C:\Oracle\glassfish-5.0>glassfish5\bin\asadmin start-domain domain1". The output shows the domain starting successfully, providing details about the domain location (C:\Oracle\glassfish-5.0\glassfish5\glassfish\domains\domain1), log file (C:\Oracle\glassfish-5.0\glassfish5\glassfish\domains\domain1\logs\server.log), and admin port (4848). A red box highlights the command and its successful execution.

- After GlassFish is started, you can launch the GlassFish Admin Console by going to a browser and typing the URL: <http://localhost:4848>
- Stop the GlassFish Server by typing the following command:

```
glassfish5\bin\asadmin stop-domain domain1
```

f. Install Oracle ADF Essentials (for jDeveloper and Glassfish)

The ArchNav application uses ADF Essentials and so ADF Essentials that are compatible with GlassFish must be installed. To do this, follow the below steps.

- Download ADF from:
<https://www.oracle.com/technetwork/developer-tools/adf/downloads/index.html>
- Select “Oracle ADF Essentials” to download and choose version 12.2.1.3:

Oracle ADF Downloads

From this page you can download Oracle ADF related software. Please make sure to choose the right sub-version of software that matches the one of your JDeveloper and WebLogic servers. For more information on version compatibility please see the certification information on the JDeveloper documentation page.

Important security notice - Make sure you install critical patch updates for the software you download - [information here](#).

To get a complete development environment for Oracle ADF please download [Oracle JDeveloper 12c](#) - this will include everything you need in order to build and test Oracle ADF applications. If you prefer to use Eclipse based IDE for your development download [Oracle Enterprise Pack for Eclipse](#) that provides support for ADF Faces and ADF Controller development.

Note - Oracle ADF 11.1.2.* Application Development Runtimes are provided as a patch for the complete Oracle ADF Runtime and is available through Oracle Support. Read the release notes for your specific version for further information.

This is the FMW Infrastructure and it functions as both the ADF Runtime distribution as well as a prerequisite for other FMW products.

Application Development Runtime

12.2.1.3 [Download File](#)

This is an independent installation which does not get installed over earlier versions. Detailed installation steps for Oracle Application Development Runtime are available in the [Install Guide](#).

Prerequisites & Recommended Install Process

Oracle ADF Essentials

12.2.1.3 [Download File](#)

Oracle ADF Essentials is a free packaging of key technologies from the Oracle Application Development Framework that can be used to develop and deploy applications without licensing costs. For more information see the [Oracle ADF Essentials home page](#).

Oracle ADF Faces Components Demo

- Navigate to where the file (adf-essentials.zip) was downloaded and unzip the file.
- To install the ADF libraries, copy the files from the unzipped directory to the following glassfish directory (where the GlassFish Server was installed).

<glassfish>\domains\domain1\lib\

NOTE: all sub-directories must be removed before deploying.

The GlassFish directory should be:

<glassfish> directory = "C:\Oracle\glassfish-5.0\glassfish5\glassfish"

g. Install Maven

To install Maven, follow the steps below.

- To download Maven, go to the link:
<https://maven.apache.org/download.cgi>

Other useful links are:

<https://www.mkyong.com/maven/how-to-install-maven-in-windows/>
<https://stackoverflow.com/questions/7593229/maven-wrong-local-pom-and-versioning-issue>
<https://maven.apache.org/guides/getting-started/maven-in-five-minutes.html>
<https://maven.apache.org/install.html>

- Unzip the apache-maven-3.6.1-bin.zip into the desired directory (C dir)
- Add the maven bin directory (C:\apache-maven-3.6.1\bin) to the PATH environment variable

h. Install Cygwin

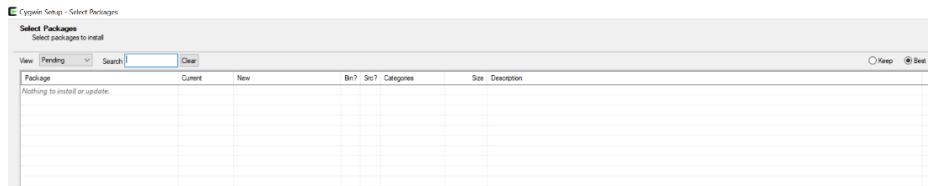
To install Cygwin, follow the steps below.

- Visit <https://www.cygwin.com/> and download the latest Cygwin installer (filename: setup-x86_64.exe)
- Use Basic installation:
 - Follow the installer wizard

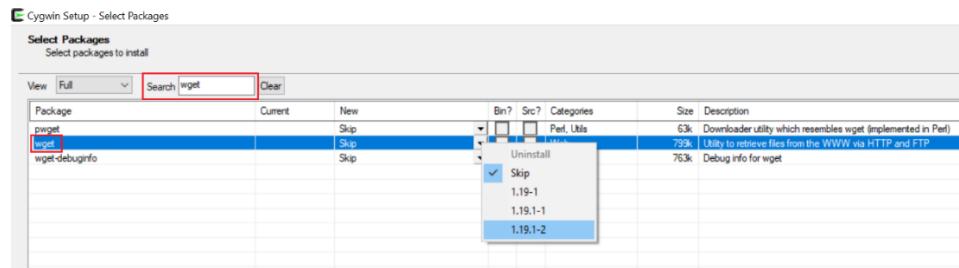
i. Install wget and git packages for Cygwin

To install wget and git packages, follow the steps below.

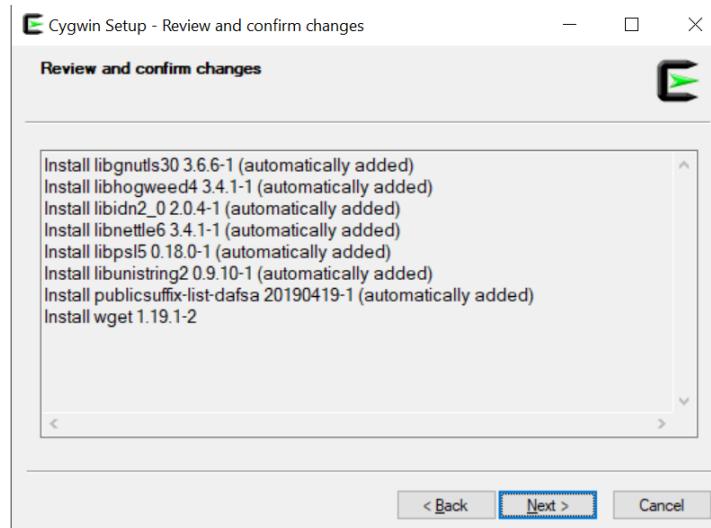
- Visit <https://www.cygwin.com/> and download the latest Cygwin installer (filename: setup-x86_64.exe)
- Basic installation
 - Follow the installer wizard
- Add wget and git packages
 - Re-run the installer to install “wget”
 - Step through the wizard until get to the page:



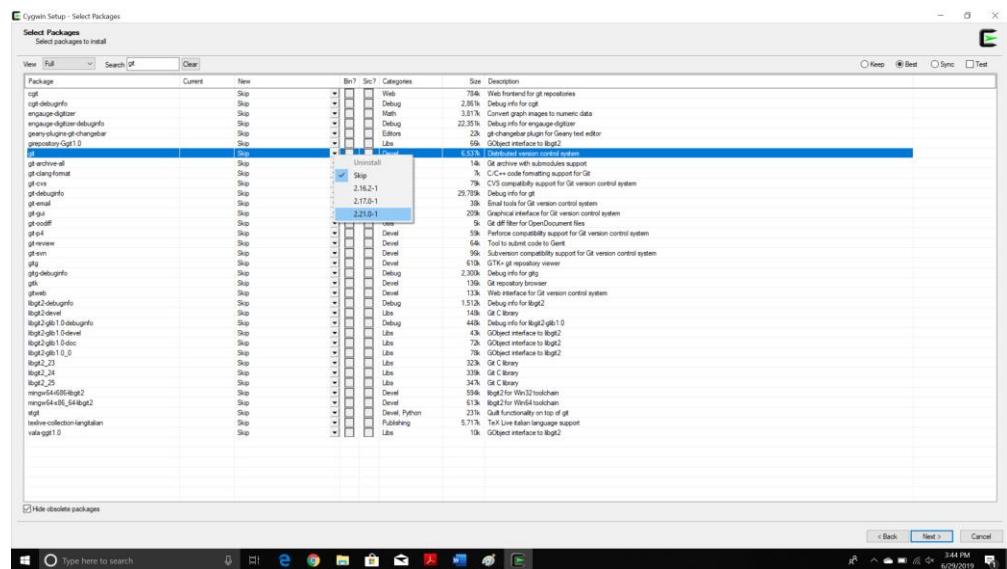
- Search for “wget” and click on “Skip” to select the appropriate version and then click “Next”



- Review the summary of the packages to be installed and click “Next”:



- After “wget” installs, click “Finish”
- Re-run the installer to install “git”
- Search for “git” and repeat the steps as when installed “wget”

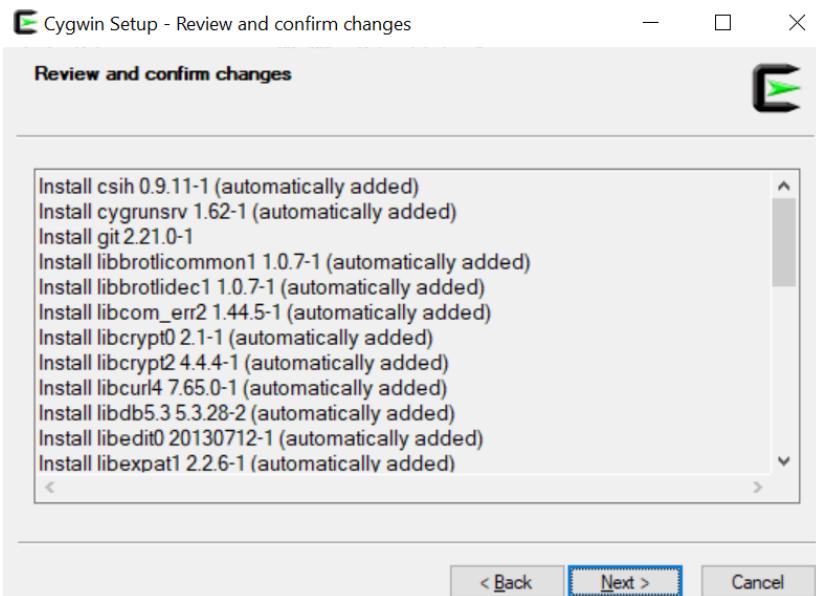


Cygwin Setup - Select Packages

Select Packages
Select packages to install

View Full ▾ Search **git** Clear

Package	Current	New	Bin?	Src?	Categories	Size	Description
cgit	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Web	784k	Web frontend for git repositories
cgit-debuginfo	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Debug	2,861k	Debug info for cgit
engauge-digitizer	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Math	3,817k	Convert graph images to numeric data
engauge-digitizer-debuginfo	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Debug	22,351k	Debug info for engauge-digitizer
geany-plugins-git-changebar	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Editors	22k	git-changebar plugin for Geany text editor
gitrepository-Git1.0	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Libs	69k	GitObject interface to libgit2
git	2.21.0-1	✓	✓	✓	Devel	6,537k	Distributed version control system
git-archive-all	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	14k	Git archive with submodules support
git-clang-format	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	7k	C/C++ code formatting support for Git
git-cvs	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	79k	CVS compatibility support for Git version control system
git-debuginfo	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Debug	29,789k	Debug info for git
git-email	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	38k	Email tools for Git version control system
git-gui	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	209k	Graphical interface for Git version control system
git-gui	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	5k	Git diff filter for OpenDocument files
git-difft	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	59k	Perforce compatibility support for Git version control system
git-q4	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	64k	Tool to submit code to Gerrit
git-review	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	99k	Subversion compatibility support for Git version control system
git-avm	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	610k	GTK+ git repository viewer
gitg	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	2,300k	Debug info for gitg
gitk	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	136k	Git repository browser
gitweb	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	133k	Web interface for Git version control system
libgit2-debuginfo	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Debug	1,512k	Debug info for libgit2
libgit2-devel	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Libs	148k	Git C library
libgit2-glib1.0-debuginfo	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Debug	448k	Debug info for libgit2-glib1.0
libgit2-glib1.0-devel	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Libs	43k	GitObject interface to libgit2
libgit2-glib1.0-doc	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Libs	72k	GitObject interface to libgit2
libgit2-glib1.0_0	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Libs	78k	GitObject interface to libgit2
libgit2_23	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Libs	323k	Git C library
libgit2_24	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Libs	339k	Git C library
libgit2_25	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Libs	347k	Git C library
mingw64-686-libgit2	Skip		<input type="checkbox"/>	<input type="checkbox"/>	Devel	594k	libgit2 for Win32 toolchain



j. Install ApacheDS

To install Fortress, follow the below steps.

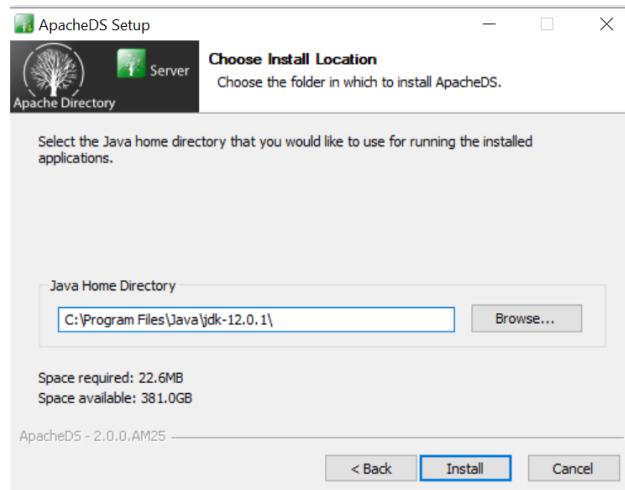
Some helpful links that provide addition installation information are:

<https://directory.apache.org/fortress/installation.html>

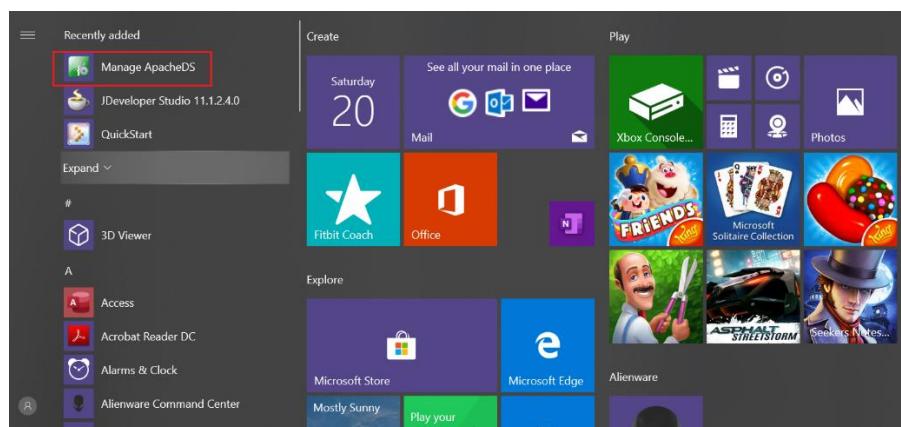
<https://github.com/apache/directory-fortress-core/blob/master/README-QUICKSTART-APACHEDS.md>

- Download ApacheDS:

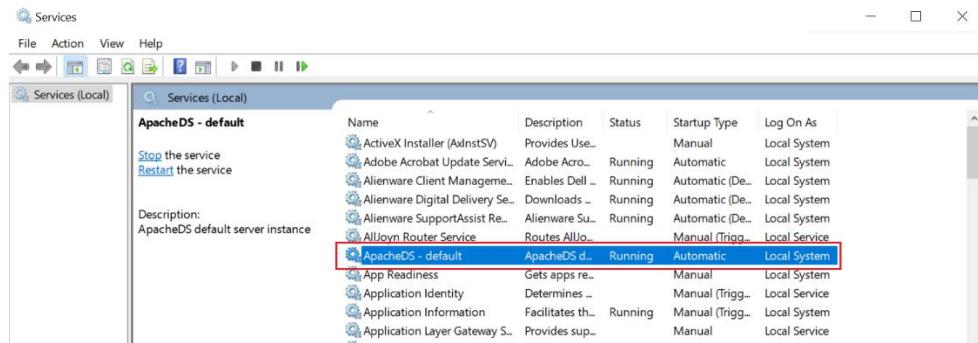
- Under “Section 2” of the install guide (<https://github.com/apache/directory-fortress-core/blob/master/README-QUICKSTART-APACHEDS.md>) the link to ApacheDS points to a Linux version. To download ApacheDS for Windows, go to the below link. Be sure the version is the same, which is “apacheds-2.0.0.AM25”: <https://directory.apache.org/apacheds/download/download-windows.html>
- First, download the apacheds for windows.
- Launch the apacheds-2.0.0.AM25.exe file
- Set the ApacheDS installation directory in C:\Program Files\ApacheDS\. By default, it wants to install into C:\Program Files (x86)\ApacheDS\ but this causes issues with Windows trying to startup the ApacheDS server throwing the error: “windows could not start the service on local computer error 1067”.
- Step through the install wizard, and specify the Java Home directory:



- To confirm that ApacheDS was installed properly and can run it:
 - Go to Windows Start menu and click on “Manage ApacheDS”:



- The “Services” window should see “ApacheDS” with a status of “running”:



NOTE: the ApacheDS gets corrupted a lot. The service shuts down and cannot restart it – get an error. To fix, need to re-install this. First, use the Uninstall.exe executable, located in C:\Program Files (x86)\ApacheDS\, to uninstall ApacheDS. After the uninstall process completes, the “instances” directory remains. This has to be deleted as well. If not, the re-install will still produce the same error that is produced from the corrupted files. Because have to delete “instances” and do a clean re-install, must re-configure all the fortress stuff.

Some additional links that can be helpful with installing ApacheDS are:

<https://directory.apache.org/apacheds/advanced-ug/5.2-start-stop.html>
<https://directory.apache.org/apacheds/advanced-ug/5.2-start-stop.html#on-windows>
<https://directory.apache.org/apacheds/advanced-ug/5.2-start-stop.html#522-windows-installer-exe>
 (ApacheDS basic user guide: <https://directory.apache.org/apacheds/basic-user-guide.html>)
 (ApacheDS advanced user guide: <https://directory.apache.org/apacheds/advanced-user-guide.html>)

k. Install Directory Studio

Directory Studio is a tool that makes it easier to connect to and browse LDAP connections in ApacheDS.

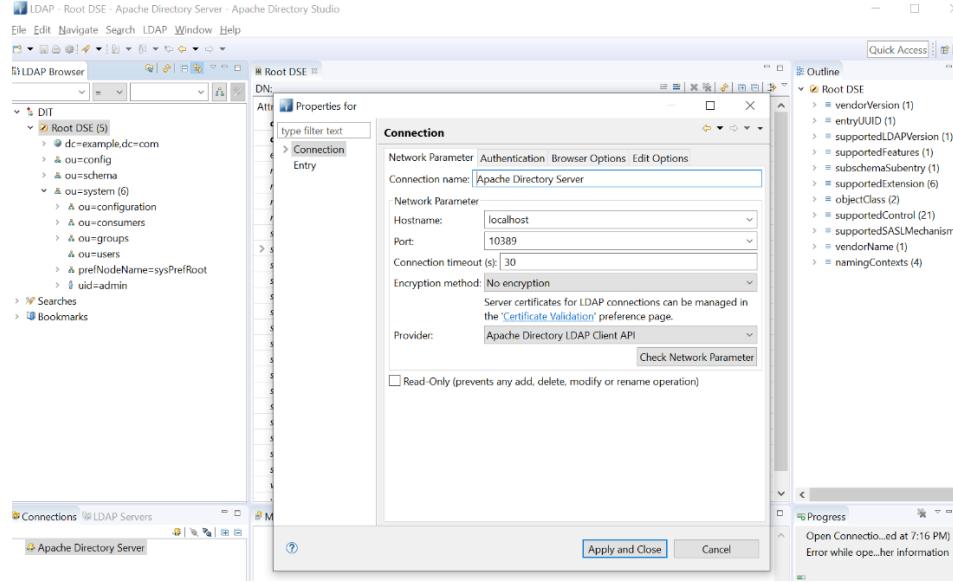
Some helpful links for installing and configuring Directory Studio

<https://directory.apache.org/studio/>
 For windows: <https://directory.apache.org/studio/download/download-windows.html>
 User guide to create a new connection: https://directory.apache.org/studio/users-guide/2.0.0.v20180908-M14/ldap_browser/gettingstarted_create_connection.html)
 (full user guide TOC: https://directory.apache.org/studio/users-guide/2.0.0.v20180908-M14/ldap_browser/ and <https://directory.apache.org/studio/users-guide.html>)

- Configuring the port number in the Apache DS:
 - Fortress Core will be configured to connect to ApacheDS as its LDAP server. The connection details to Apache (including host, port) will need to be configured in Fortress to connect to ApacheDS. The default port to ApacheDS is in the screenshot below, which

can be accessed by right-clicking on the LDAP connection in Apache Directory Studio and then clicking on “Connection” in the left frame (resource:

<https://directory.apache.org/apacheds/basic-ug/1.4.1-changing-server-port.html>):



I. Install Fortress

To install Fortress, follow the below steps.

Useful links: A step-by-step tutorial to build Apache Fortress Core (<https://directory.apache.org/fortress/gendocs/latest/apidocs/org/apache/directory/fortress/core/doc-files/apache-fortress-core.html>)

(user guide: <https://directory.apache.org/fortress/user-guide.html>)
(Overview: <https://directory.apache.org/fortress/> and <https://directory.apache.org/fortress/overview.html>)

- Launch the installer executable and follow the wizard.
- Download and install Apache Fortress Core:
 - Use wget <http://www.apache.org/dist/directory/fortress/dist/2.0.3/fortress-core-2.0.3-source-release.zip>

```

l1g20@Archeyy-JLG /cygdrive/d/Archeyy/Archeyy Solutions And Tools/Archeyy Platform/ArchNav Tool/ArchNav Upgrade - June 2019/Software Downloads/Fortress
$ cd Software\ Downloads/
l1g20@Archeyy-JLG /cygdrive/d/Archeyy/Archeyy Solutions And Tools/Archeyy Platform/ArchNav Tool/ArchNav Upgrade - June 2019/Software Downloads
$ dir
ADFEssentials Cygwin DirectoryStudio GlassFish JDeveloper Maven Tomcat
ApacheDS Database Fortress Java JDevGlassFishExtension MySQLConnectors Visual\ Studio
l1g20@Archeyy-JLG /cygdrive/d/Archeyy/Archeyy Solutions And Tools/Archeyy Platform/ArchNav Tool/ArchNav Upgrade - June 2019/Software Downloads
$ cd Fortress/
l1g20@Archeyy-JLG /cygdrive/d/Archeyy/Archeyy Solutions And Tools/Archeyy Platform/ArchNav Tool/ArchNav Upgrade - June 2019/Software Downloads/Fortress
$ dir
apacheds-2.0.0.AM25-64bit.bin fortress-core-2.0.3.jar
l1g20@Archeyy-JLG /cygdrive/d/Archeyy/Archeyy Solutions And Tools/Archeyy Platform/ArchNav Tool/ArchNav Upgrade - June 2019/Software Downloads/Fortress
$ wget http://www.apache.org/dist/directory/fortress/dist/2.0.3/fortress-core-2.0.3-source-release.zip
--2019-07-20 19:40:43-- http://www.apache.org/dist/directory/fortress/dist/2.0.3/fortress-core-2.0.3-source-release.zip
Resolving www.apache.org (www.apache.org)... 40.79.78.1, 95.216.24.32, 2a01:4f9:2a:185f::2
Connecting to www.apache.org (www.apache.org)|40.79.78.1|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3701402 (3.5M) [application/zip]
Saving to: 'fortress-core-2.0.3-source-release.zip'

fortress-core-2.0.3-source-release 100%[=====] 3.53M 7.27MB/s in 0.5s
2019-07-20 19:40:43 (7.27 MB/s) - 'fortress-core-2.0.3-source-release.zip' saved [3701402/3701402]

l1g20@Archeyy-JLG /cygdrive/d/Archeyy/Archeyy Solutions And Tools/Archeyy Platform/ArchNav Tool/ArchNav Upgrade - June 2019/Software Downloads/Fortress
$ |

```

- unzip fortress-core-2.0.3-source-release.zip.
 - cd fortress-core-2.0.3 (placed into C directory).
- Prepare the package:
 - cp build.properties.example build.properties:
 - The following properties were already configured (NOTE: the default port for ApacheDS LDAP server is 10389 and so this is already configured although the installation guide specifies “389” for the port. Look at the above installation of ApacheDS and configuring the port through Apache Directory Studio above)
- ```
This is default, tells fortress what type of ldap server in use:
ldap.server.type=apacheds
```
- ```
# These parameters point fortress to LDAP host:
ldap.host=localhost
ldap.port=10389
```
- Build Fortress Core
 - Open Cygwin, go to the root directory of fortress (C:\fortress-core-2.0.3\) and type “mvn install”
 - NOTE: not all JDK versions include the correct packages to build Fortress Core. JDK 12 does not include certain required packages and so the build will fail:

```

/cygdrive/c/fortress-core-2.0.3
:
exist
[ERROR] /c:/fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/UserAudit.java:[24,33] package javax.xml.bind.annotation does not exist
[ERROR] /c:/fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/UserAudit.java:[25,33] package javax.xml.bind.annotation does not exist
[ERROR] /c:/fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/UserAudit.java:[26,33] package javax.xml.bind.annotation does not exist
[ERROR] /c:/fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/UserAudit.java:[47,2] cannot find symbol
symbol: class XmRootElement
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/UserAudit.java:[48,2] cannot find symbol
symbol: class XmAccessorType
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/UserAudit.java:[49,2] cannot find symbol
symbol: class XmType
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/AuthZ.java:[23,33] package javax.xml.bind.annotation does not exist
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/AuthZ.java:[24,33] package javax.xml.bind.annotation does not exist
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/AuthZ.java:[25,33] package javax.xml.bind.annotation does not exist
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/AuthZ.java:[26,33] package javax.xml.bind.annotation does not exist
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/AuthZ.java:[52,2] cannot find symbol
symbol: class XmRootElement
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/AuthZ.java:[53,2] cannot find symbol
symbol: class XmAccessorType
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/AuthZ.java:[54,2] cannot find symbol
symbol: class XmType
[ERROR] /c:/Fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/bind.java:[23,33] package javax.xml.bind.annotation does not exist
[INFO] 100 errors
[INFO] -----
[INFO] -----
[INFO] BUILD FAILURE
[INFO] -----
[INFO] Total time: 48.427 s
[INFO] Finished at: 2019-07-20T19:58:17-04:00
[INFO] 
[INFO] Failed to execute goal org.apache.maven.plugins:maven-compiler-plugin:3.8:compile (default-compile) on project fortress-core: Compilation failure
[INFO] 
[INFO] Caused by: Compilation failure:
[ERROR] /c:/fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/Session.java:[22,33] package javax.xml.bind.annotation does not exist
[ERROR] /c:/fortress-core-2.0.3/src/main/java/org/apache/directory/fortress/core/model/Session.java:[23,33] package javax.xml.bind.annotation does not exist

```

- Running “mvn -version” not only tells the version of Maven being used, but also what JDK version it is using:

```

jlg20@Archemy-JLG /cygdrive/c/fortress-core-2.0.3
$ ^C
jlg20@Archemy-JLG /cygdrive/c/fortress-core-2.0.3
$ mvn -version
Apache Maven 3.6.1 (d66c9c0b3152b2e69ee9bac180bb8fcc8e6af555; 2019-04-04T15:00:29-04:00)
Maven home: C:\apache-maven-3.6.1
Java version: 12.0.1, vendor: Oracle Corporation, runtime: C:\Program Files\Java\jdk-12.0.1
Default locale: en_US, platform encoding: Cp1252
OS name: "windows 10", version: "10.0", arch: "amd64", family: "windows"
jlg20@Archemy-JLG /cygdrive/c/fortress-core-2.0.3
$ 

```

- Make sure the JAVA_HOME environment variable (see SYSTEM) is set to the proper JDK – must be set to JDK 8 since javax.xml.bind is a required package that is no longer available in JDK 12 (also deprecated in JDK versions later than JDK 8 – resource: <https://stackoverflow.com/questions/52502189/java-11-package-javax-xml-bind-does-not-exist>
also see: <http://openjdk.java.net/jeps/320#Java-EE-modules>)
- After pointing Maven to JDK 8 (set JAVA_HOME Env variable), re-run “mvn install” and this time the build should be successful:

```

[c:\cygdrive\c\fortress-core-2.0.3]
[c:\cygdrive\c\fortress-core-2.0.3] $ mvn clean install -DskipTests
[INFO] Scanning for projects...
[INFO]
[INFO] --- maven-clean-plugin:3.1.0:clean (default-clean) @ fortress-core ---
[INFO] [INFO] --- maven-install-plugin:3.0.2:install (default-install) @ fortress-core ---
[INFO] Downloading from central: https://repo.maven.apache.org/maven/shared/maven-shared-components/2.1/maven-shared-components-2.1.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/shared/maven-shared-components/2.1/maven-shared-components-2.1.pom (5.1 kB at 165 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/maven-parent/25/maven-parent-25.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/maven-parent/25/maven-parent-25.pom (37 kB at 79 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/maven-parent-util/3.0.0/maven-parent-util-3.0.0.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/maven-parent-util/3.0.0/maven-parent-util-3.0.0.pom (5.6 kB at 174 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/codehaus/plexus/plexus-archiver/2.9.1/plexus-archiver-2.9.1.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/codehaus/plexus/plexus-archiver/2.9.1/plexus-archiver-2.9.1.pom (21.9 kB at 4.4 kB at 141 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-io/2.4.1/plexus-io-2.4.1.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-io/2.4.1/plexus-io-2.4.1.pom (3.7 kB at 79 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/commons/commons-compress/1.9/commons-compress-1.9.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/commons/commons-compress/1.9/commons-compress-1.9.pom (11 kB at 357 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/org/apache/commons/commons-interpolation/1.21/commons-interpolation-1.21.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/org/apache/commons/commons-interpolation/1.21/commons-interpolation-1.21.pom (1.5 kB at 50 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.pom (4.8 kB at 155 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.pom (4.9 kB at 159 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/commons/commons-compress/1.10/commons-compress-1.10.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/commons/commons-compress/1.10/commons-compress-1.10.pom (13 kB at 267 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/commons/commons-parent/38/commons-parent-38.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/commons/commons-parent/38/commons-parent-38.pom (62 kB at 1.3 MB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.jar (155 kB at 661 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.jar (177 kB at 664 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/3.0.3/plexus-archiver-3.0.3.jar (245 kB at 522 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/commons/commons-compress/1.10/commons-compress-1.10.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/commons/commons-compress/1.10/commons-compress-1.10.pom (400 kB at 734 kB/s)
[INFO] [INFO] Building jar: c:\Fortress-core-2.0.3\target\Fortress-core-2.0.3-sources.jar
[INFO] [INFO] [INFO] --- mvn-install-plugin:3.2.1:install (default-install) @ fortress-core ---
[INFO] Downloading from central: https://repo.maven.apache.org/maven/shared/maven-shared-utils/0.4/maven-shared-utils-0.4.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/shared/maven-shared-utils/0.4/maven-shared-utils-0.4.pom (4.0 kB at 126 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/maven-archiver/3.0.0/maven-archiver-3.0.0.pom
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/maven-archiver/3.0.0/maven-archiver-3.0.0.pom (23 kB at 160 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/shared/maven-shared-utils/3.0.22/maven-shared-utils-3.0.22.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/shared/maven-shared-utils/3.0.22/maven-shared-utils-3.0.22.jar (15 kB at 1.6 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven/commons/commons-parent-util/0.4/commons-parent-util-0.4.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/commons/commons-parent-util/0.4/commons-parent-util-0.4.jar (155 kB at 766 kB/s)
[INFO] [INFO] Installing c:\Fortress-core-2.0.3\target\Fortress-core-2.0.3.jar to c:\Users\jlg20\m2\repository\org\apache\directory\fortress\fortress-core\2.0.3\fortress-core-2.0.3.jar
[INFO] [INFO] Installing c:\Fortress-core-2.0.3\target\Fortress-core-2.0.3-sources.jar to c:\Users\jlg20\m2\repository\org\apache\directory\fortress\fortress-core\2.0.3\fortress-core-2.0.3-sources.jar
[INFO] [INFO] Installing c:\Fortress-core-2.0.3\target\Fortress-core-2.0.3-test.jar to c:\Users\jlg20\m2\repository\org\apache\directory\fortress\fortress-core\2.0.3\fortress-core-2.0.3-tests.jar
[INFO] [INFO] BUILD SUCCESS
[INFO] [INFO] -----
[INFO] [INFO] Total time: < 1.077 s
[INFO] [INFO] Finished at: 2020-04-04T14:50:04Z
[INFO] [INFO] -----
[INFO] [INFO] -----

```

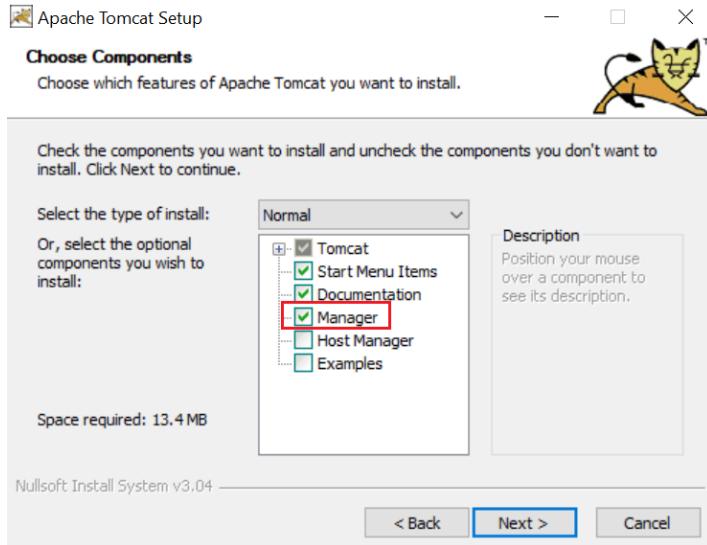
m. Install Tomcat

Tomcat is an application server where Fortress is deployed and so it must be installed. To do this, follow the below steps.

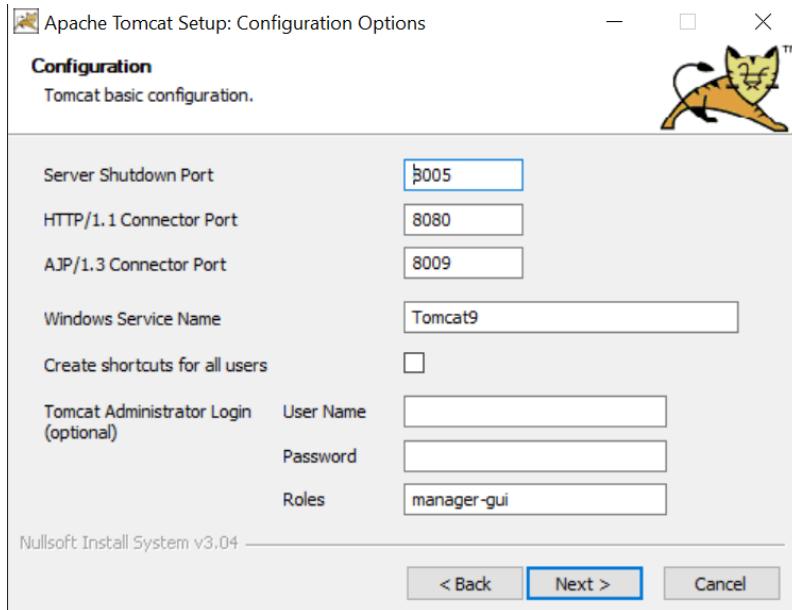
- Install Apache Tomcat (install guide: <http://tomcat.apache.org/tomcat-9.0-doc/setup.html>) and (download link: <https://tomcat.apache.org/download-90.cgi>):
 - Download the executable installer:

The screenshot shows the Apache Tomcat download page. The left sidebar has links for Tomcat 9, 8, 7, Connectors, Native, Taglibs, Archives, Documentation (Tomcat 9.0 selected), Problems, Get Involved, Media, and a Twitter link. The main content area has tabs for Mirrors, 9.0.22 (selected), and Binary Distributions. The 9.0.22 tab displays a list of distributions including Core (zip, tar.gz, 32-bit Windows zip, 64-bit Windows zip, 32-bit/64-bit Windows Service Installer), Full documentation (tar.gz), Deployer (zip, tar.gz), Embedded (tar.gz, zip), and Source Code Distributions (tar.gz, zip). A red box highlights the '32-bit/64-bit Windows Service Installer' link under the Core distributions.

- Run the executable installer and step through the wizard:
 - Make sure the “Manager” app is included in the installation:



- Accept the default ports (NOTE: leave the “Tomcat Administrator Login” credentials blank – this will be added later):

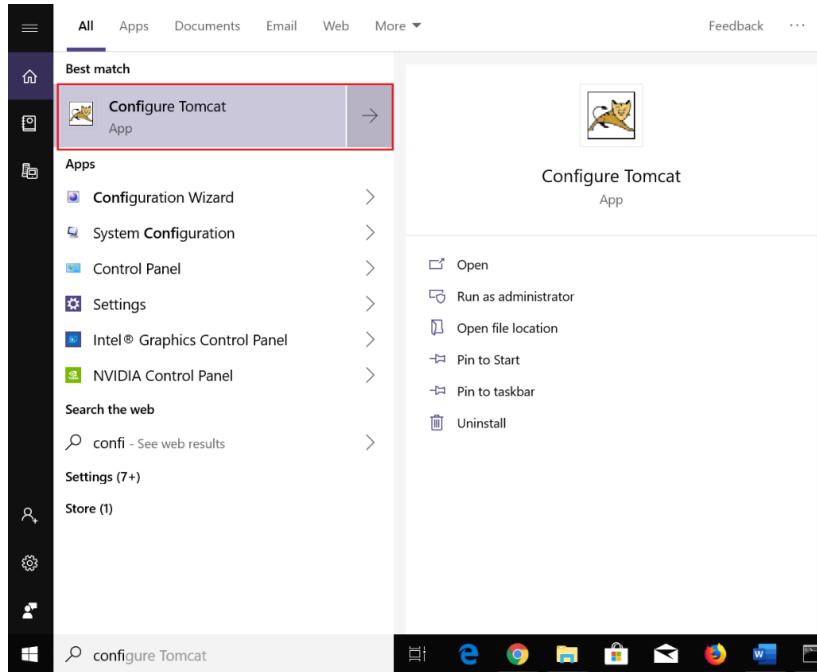


- Installs into directory:

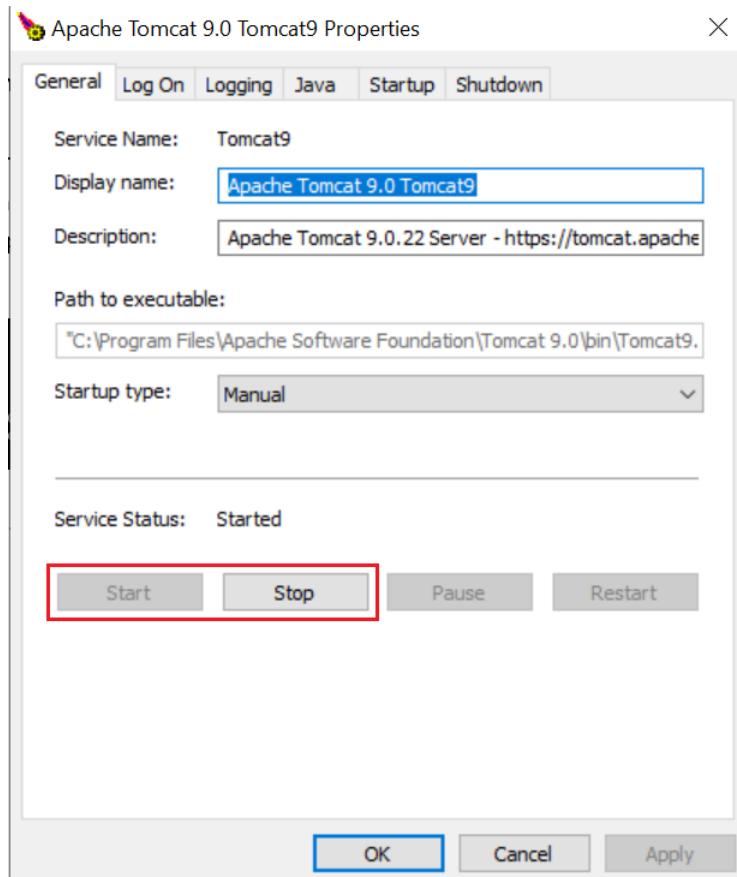
C:\Program Files\Apache Software Foundation\Tomcat 9.0

- Unzip apache-tomcat-9.0.21-windows-x64.zip in the C directory.
- To test run Tomcat.

- (preferred method): Under Windows Start Menu, select “Configure Tomcat”:



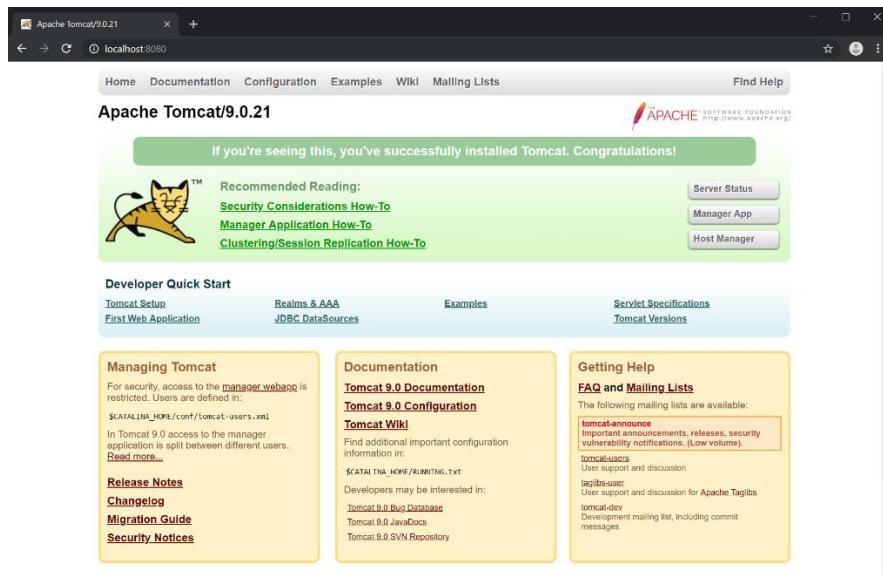
- Use the below to “Start” or “Stop” Tomcat:



- An alternative method to start/stop Tomcat is: using Cygwin, navigate to the apache-tomcat root directory.
- Type the command: “./bin/catalina.sh start” (to stop Tomcat use command: “./bin/catalina.sh stop”).
- Tomcat will startup:

```
j1g20@Archemy-JLG /cygdrive/c/apache-tomcat-9.0.21
$ ./bin/catalina.sh start
Using CATALINA_BASE:  C:\apache-tomcat-9.0.21
Using CATALINA_HOME:  C:\apache-tomcat-9.0.21
Using CATALINA_TMPDIR: C:\apache-tomcat-9.0.21\temp
Using JRE_HOME:        C:\Program Files\Java\jdk1.8.0_212
Using CLASSPATH:       C:\apache-tomcat-9.0.21\bin\bootstrap.jar;C:\apache-tomcat-9.0.21\bin\tomcat-juli.jar
Tomcat started.
```

- Confirm by launching the Tomcat Admin Console at <http://localhost:8080>



- Download and integrate Fortress Realm to Tomcat:
 - Using Cygwin, download Fortress Realm (JAR file) with the command: “wget <http://repo.maven.apache.org/maven2/org/apache/directory/fortress/fortress-realm-proxy/2.0.3/fortress-realm-proxy-2.0.3.jar>”.
 - Copy the fortress-realm-proxy-2.0.3.jar file to the Tomcat lib directory (C:\apache-tomcat-9.0.21\lib\).
- To get access to the Manager app, add required users to the tomcat-users.xml file (located in C:\Program Files\Apache Software Foundation\Tomcat 9.0\conf\):


```
<role rolename="manager-script"/>
<role rolename="manager-gui"/>
<user username="tcmanager" password="m@nager123" roles="manager-script"/>
<user username="tcmanagergui" password="m@nager123" roles="manager-gui"/>
```

- Configure LDAP in Tomcat:

- Edit the Catalina.bat script (located in directory C:\Program Files\Apache Software Foundation\Tomcat 9.0\bin\) adding the following text in exactly the place indicated in the below screenshot:

Command to add:

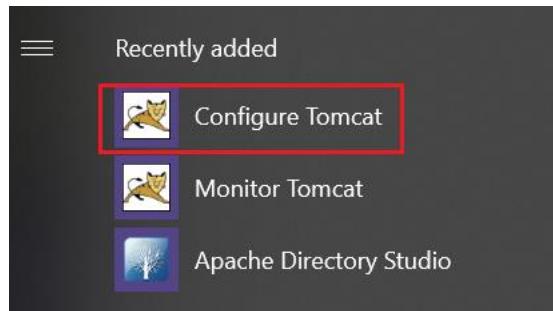
```
rem Target LDAP server coordinates
set "JAVA_OPTS=%JAVA_OPTS% -
Dfortress.admin.user=uid=admin,ou=system -
Dfortress.admin.pw=secret -
Dfortress.config.root=ou=Config,dc=example,dc=com -
Dfortress.port=10389"
```

```

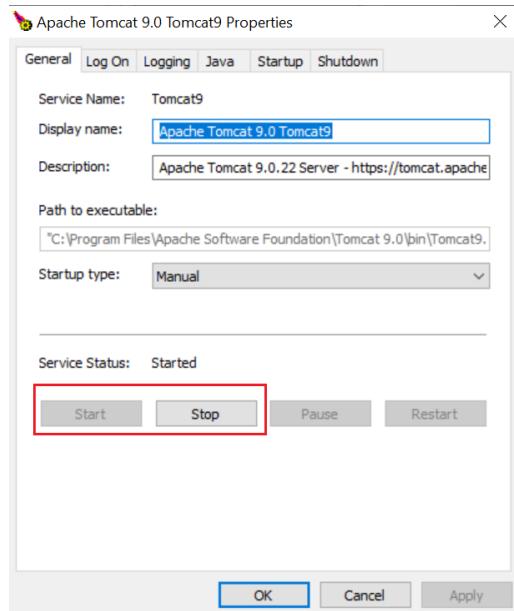
251 # Register custom URL handlers
252 # Do this here so custom URL handles (specifically 'was:...') can be used in the security policy
253 # JAVA_OPTS=%JAVA_OPTS% -Djava.protocol.handler.pkgs=org.apache.catalina.webresources
254
255 # Set julii LogManager config file if it is present and an override has not been issued
256 #if [ -z "$LOGGING_CONFIG" ]; then
257 #  if [ -r "$CATALINA_BASE/conf/logging.properties" ]; then
258 #    LOGGING_CONFIG="-java.util.logging.config.file=$CATALINA_BASE/conf/logging.properties"
259 #  else
260 #    # mozilla 45505
261 #    LOGGING_CONFIG="-Dnpn"
262 #  fi
263 #fi
264
265 #if [ -z "$LOGGING_MANAGER" ]; then
266 #  LOGGING_MANAGER="-Djava.util.logging.manager=org.apache.juli.ClassLoaderLogManager"
267 #fi
268
269 # Set UMASK unless it has been overridden
270 #if [ -z "$UMASK" ]; then
271 #  UMASK="027"
272 #fi
273 umask $UMASK
274
275 # Target LDAP server coordinates
276 JAVA_OPTS=%JAVA_OPTS% -Dfortress.admin.user=uid=admin,ou=system -Dfortress.admin.pw=secret -Dfortress.config.root=ou=Config,dc=example,dc=com -Dfortress.port=10389
277
278 # Java 6 no longer supports the java.endorsed.dirs
279 # system property. Only try to use it if
280 # JAVA_ENDORSED_DIRS was explicitly set
281 # or CATALINA_HOME/endorsed exists.
282 ENDORSED_PROP=ignore.endorsed.dirs
283 if [ -n "$JAVA_ENDORSED_DIRS" ]; then
284   ENDORSED_PROP=$java.endorsed.dirs
285 fi
286 if [ -d "$CATALINA_HOME/endorsed" ]; then
287   ENDORSED_PROP=$java.endorsed.dirs
288 fi

```

- Startup Apache Tomcat and access the Tomcat Web Application Manager console:
 - Go to the Windows StartUp menu and select “Configure Tomcat”:



- Toggle starting and stopping Tomcat with “Start” and “Stop,” respectively:



- Test access to the Manager application by launching the Apache Tomcat console (<http://localhost:8080>) and clicking on the “Manager App” button:

- Login using the tcmanagergui username and password that was configured in the tomcat-users.xml file:

The screenshot shows the Apache Tomcat Web Application Manager interface. At the top, there's a banner with the Apache logo and the text "THE APACHE SOFTWARE FOUNDATION". Below the banner, the title "Tomcat Web Application Manager" is displayed. A message box says "Message: OK". The main area has tabs for "Manager", "List Applications", "HTML Manager Help", "Manager Help", and "Server Status".

Applications

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/manager	None specified	Tomcat Manager Application	true	2	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

Deploy

Deploy directory or WAR file located on server

Context Path:

Version (for parallel deployment):

XML Configuration file path:

WAR or Directory path:

3. Software Setups

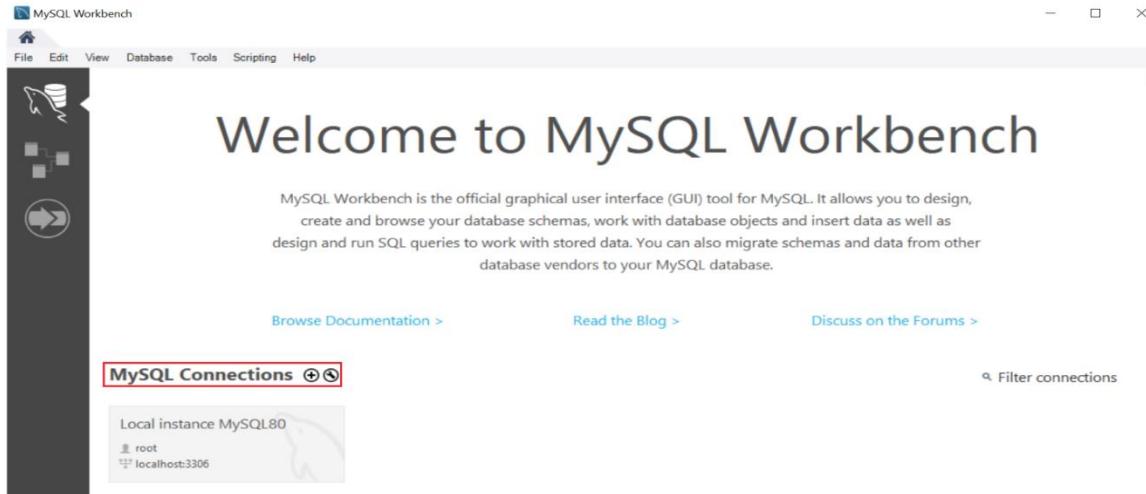
Several of the software applications that were downloaded require setup in order to run ArchNav. See below for details on how to setup each software application.

a. Setup the ArchNav Database

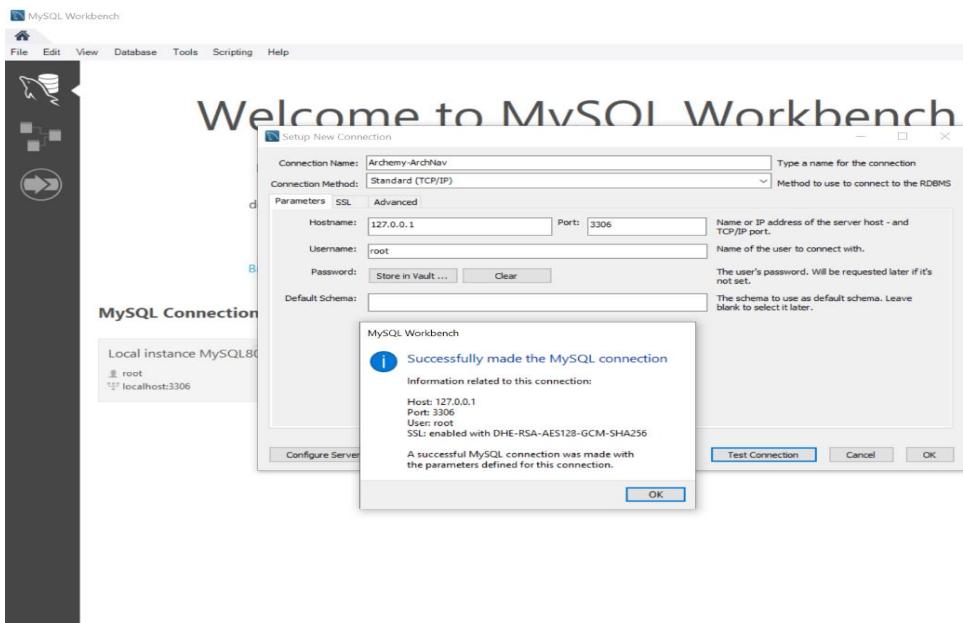
The MySQL Workbench can be used to setup the ArchNav database. Follow the below steps to complete this setup.

Create a new MySQL Connection for the ArchNav database

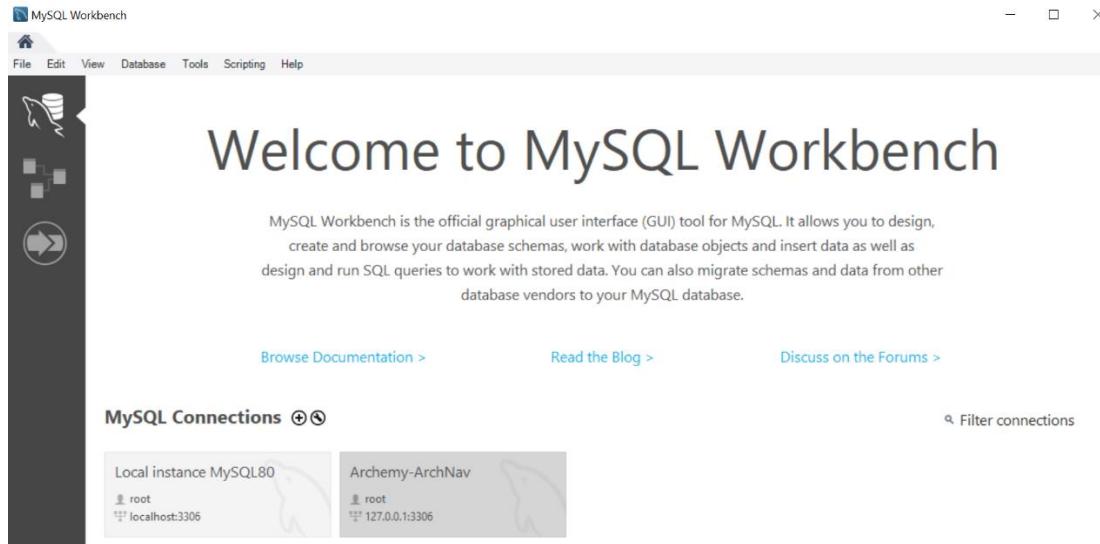
- Create a new MySQL connection for the ArchNav database. In the MySQL Workbench, click on “MySQL Connections”:



- Click on the **+** to create a new MySQL connection
- Enter the following information (see configuration and text connection results below):
 - Connection Name: for this new connection, using "**Archemy-ArchNav**"
 - Connection Method: "**TCP/IP**"
 - Hostname: "**127.0.0.1**"
 - Port: "**3306**"
 - Username: "**root**"
- Test the connection by clicking on the "**Test Connection**" button:



- After the new MySQL connection is created, there should be a separate button for that connection on the "**Welcome to MySQL Workbench**" homepage:



Import the ArchNav Schema into the new MySQL database

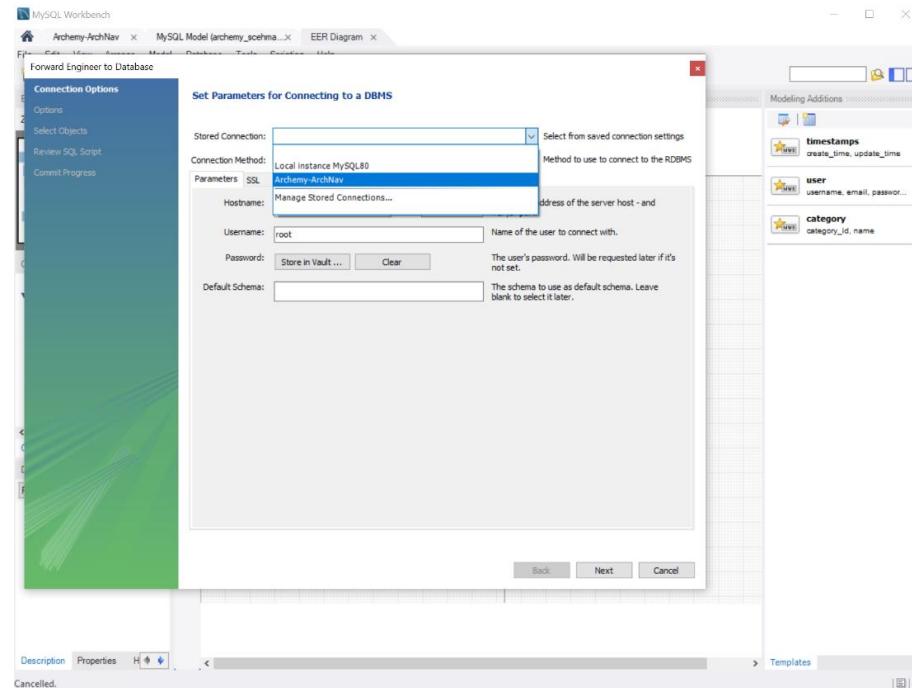
The first step is to import the database schema used for the ArchNav database. To do this, follow the below steps.

- Click on the new MySQL Connection Archemy-ArchNav.
- Import the archemy schema (this assumes you have an open connection with the new MySQL connection created in the steps above (in this case, the Archemy-ArchNav MySQL Connection).
 - In the application code directory, look for the directory “DB Model” and confirm that the archemy_schema.mwb file exists.
 - Go to the MySQL Workbench, in the open Archem-ArchNav connection and perform the following steps:
 - From the top navbar in the MySQL Workbench, go to *File → Open Model*.
 - Navigate to the “DB Model” directory and select the “archemy_schema.mwb” file and click “Open”. The schema will load in the Workbench.

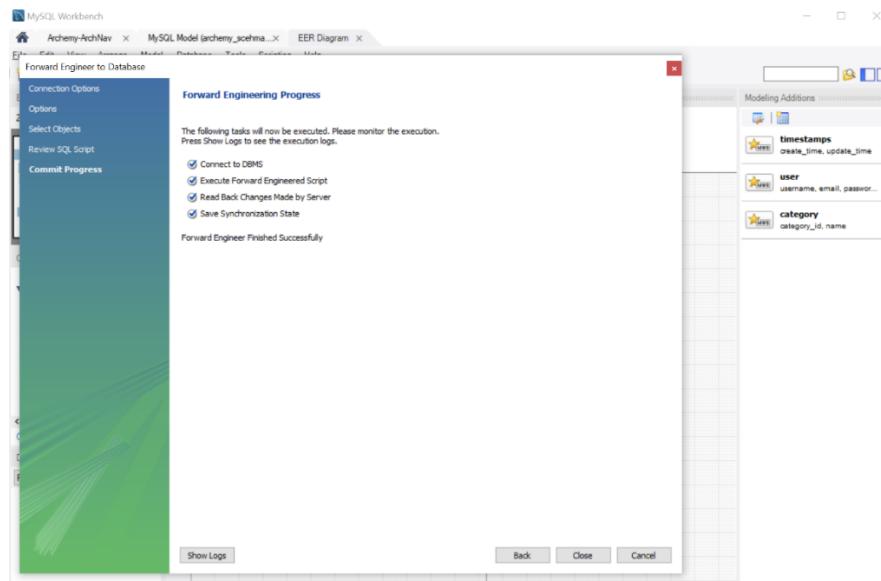
Export the Archemy-schema

Once the database schema was imported into MySQL Workbench, it must be exported to MySQL Server so it can be used. To do this, follow the below steps.

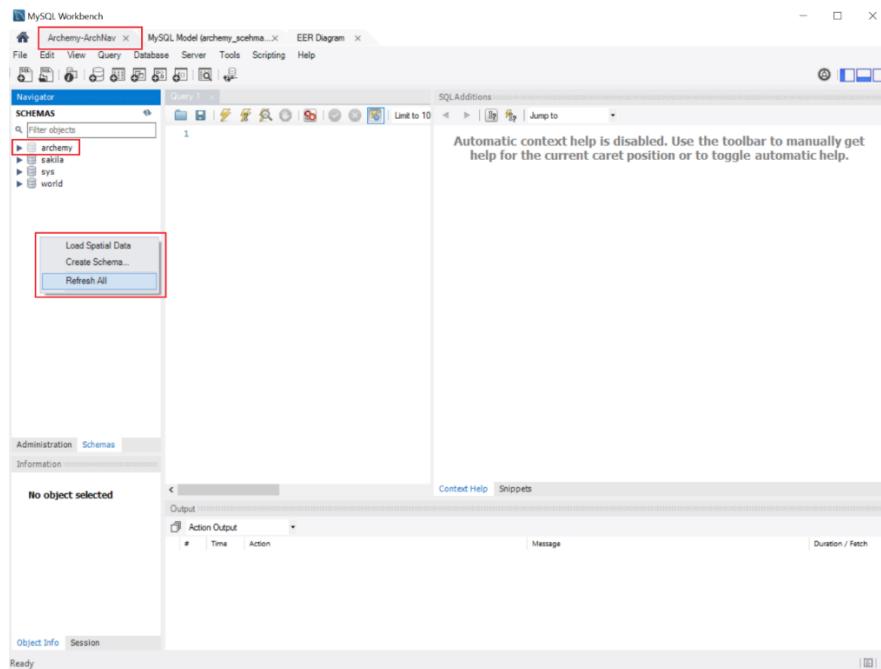
- From the top navbar in the MySQL Workbench, go to Database → Forward Engineer.
- Select the Archemy-ArchNav Stored Connection.

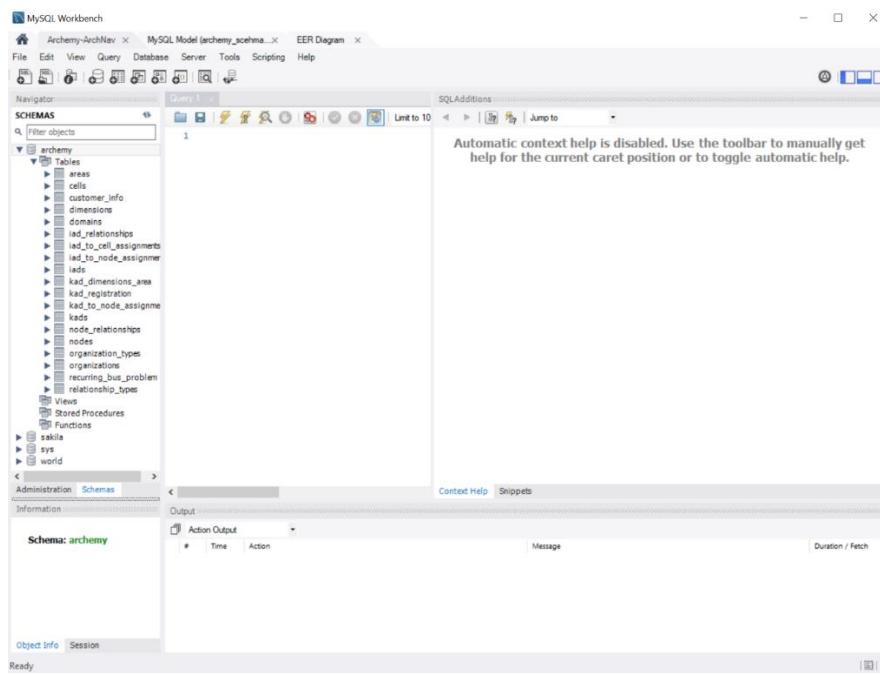


- Select the default configurations for the rest of the fields.
- Click on “Next”.
- In the next page “Set Options for Database to be Created”, keep the default settings and click “Next”.
- You will be prompted to enter the password for “root” and so enter this password.
- In the next page “Set Objects to Forward Engineer” select the default settings and click “Next”.
- In the next page “Review the SQL Script to be Executed” scroll through the script, and if “OK” then click “Next”.
- You will again be prompted to enter the root password, and so provide it.
- The forward engineering process will execute and the following success confirmation → the archemy-schema was successfully exported to the Archemy-ArchNav MySQL Server.



- Click “Close”.
- Confirm the archemy-schema was properly exported into the Archemy-ArchNav:
 - Select the “Archemy-ArchNav” tab.
 - Right-click in the “Schemas” frame, and select “Refresh All” and the “archemy” schema should appear in the list (see the two screenshots below):





Import the ArchNav stored procedures

The ArchNav database makes use of stored procedures. Follow the below steps to import the stored procedures.

- Navigate to the following directory:
“`~\App\ArchemyAppModel\src\com\alchemy\searchapp\model\sql\`” and confirm that the `procedures.sql` file exists
- Open the `procedures.sql` file in an editor (e.g., Notepad++).
- Copy the contents of `procedures.sql` into the MySQL Workbench Query editor:

```

MySQL Workbench
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
archemy
Tables
areas
cells
customer_info
dimensions
domains
iad_relationships
iad_to_cell_assignments
iad_to_node_assignments
iads
kad_dimensions_area
kad_registration
kad_to_node_assignments
kads
node_relationships
nodes
organization_types
organizations
recurring_bus_problem
relationship_types
Views
Stored Procedures
Functions
sakila
sys
world
Administration Schemas
Information
Schema: archemy
Object Info Session
Readv

```

The screenshot shows the MySQL Workbench interface with the 'Query 1' tab selected. The 'Output' pane displays the results of the executed SQL code. The code consists of two stored procedures: 'archemy.insert_into_kad' and 'archemy.insert_into_kad_dim_area'. Both procedures take several parameters (e.g., kad_name, kad_link, kad_public_link, domain_id, business_problem) and return a kad_id. The 'Output' pane shows two entries indicating successful creation of the procedures.

```

Query 1
Delimiter $$ Limit to 1000 rows
1
2  create procedure archemy.insert_into_kad(
3      IN kad_name varchar(100),
4      IN kad_link varchar(300),
5      IN kad_public_link varchar(300),
6      IN domain_id int(11),
7      IN business_problem Integer,
8      OUT kad_id int(11)
9
10 BEGIN
11     insert into kads(kad_name,domain_id,kad_link,kad_link_public,RECURRING_BUS_PROBLEM_ID)
12     values (kad_name,domain_id,kad_link,kad_public_link,business_problem);
13     select last_insert_id() into kad_id;
14 END $$
Delimiter ;
17
18 create procedure archemy.insert_into_kad_dim_area(
19     IN in_kad_id Integer,
20     IN in_area_id Integer,
21     IN in_area_child_id Integer,
22     IN in_dimension_id Integer
23 )
24
25 Delimiter $$

Action Output
# Time Action
1 22:36:48 create procedure archemy.insert_into_kad(IN kad_name varchar(100), IN kad_link varchar(300), IN kad_public_link varchar(300), IN domain_id int(11), IN business_problem Integer, OUT kad_id int(11))
2 22:36:48 create procedure archemy.insert_into_kad_dim_area(IN in_kad_id Integer, IN in_area_id Integer, IN in_area_child_id Integer, IN in_dimension_id Integer)

Message
0 row(s) affected
0 row(s) affected

```

- Execute the procedures SQL code by clicking on the far-left lightning bolt button (see screenshot above). The below screenshot will show the action output following the execution of the procedures SQL. The action output states that the procedures were created.

The screenshot shows the MySQL Workbench interface with the 'Query 1' tab selected. The 'Output' pane displays the results of the executed SQL code. The code is identical to the one in the previous screenshot. The 'Output' pane highlights the two entries indicating successful creation of the procedures with green checkmarks.

```

Query 1
Delimiter $$ Limit to 1000 rows
1
2  create procedure archemy.insert_into_kad(
3      IN kad_name varchar(100),
4      IN kad_link varchar(300),
5      IN kad_public_link varchar(300),
6      IN domain_id int(11),
7      IN business_problem Integer,
8      OUT kad_id int(11)
9
10 BEGIN
11     insert into kads(kad_name,domain_id,kad_link,kad_link_public,RECURRING_BUS_PROBLEM_ID)
12     values (kad_name,domain_id,kad_link,kad_public_link,business_problem);
13     select last_insert_id() into kad_id;
14 END $$
Delimiter ;
17
18 create procedure archemy.insert_into_kad_dim_area(
19     IN in_kad_id Integer,
20     IN in_area_id Integer,
21     IN in_area_child_id Integer,
22     IN in_dimension_id Integer
23 )
24
25 Delimiter $$

Action Output
# Time Action
1 22:36:48 create procedure archemy.insert_into_kad(IN kad_name varchar(100), IN kad_link varchar(300), IN kad_public_link varchar(300), IN domain_id int(11), IN business_problem Integer, OUT kad_id int(11))
2 22:36:48 create procedure archemy.insert_into_kad_dim_area(IN in_kad_id Integer, IN in_area_id Integer, IN in_area_child_id Integer, IN in_dimension_id Integer)

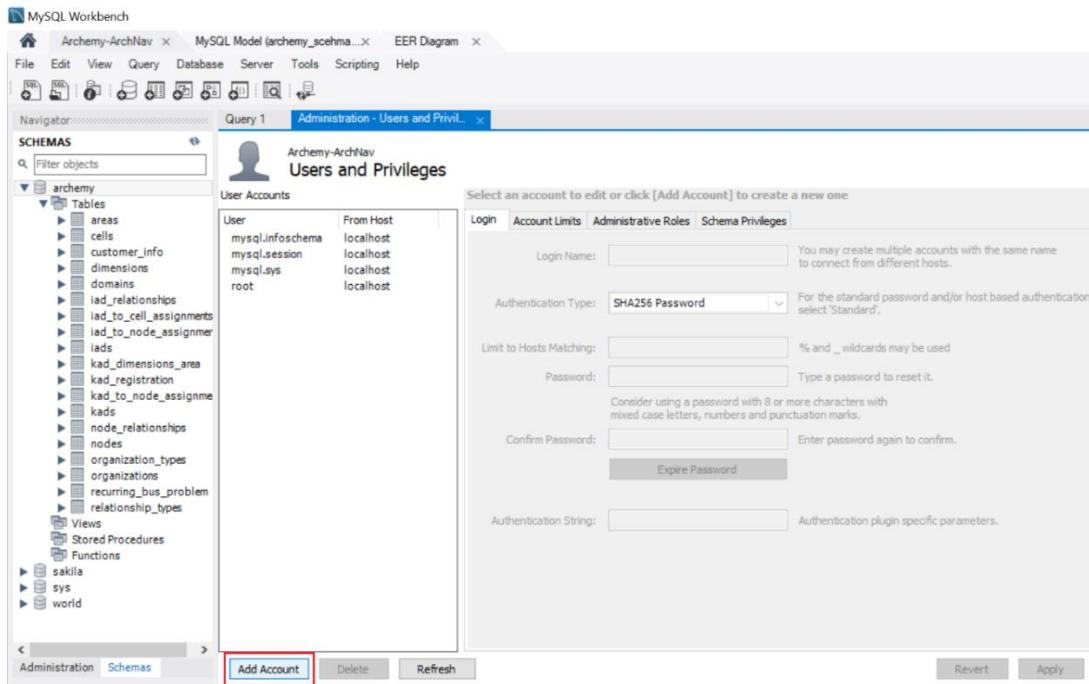
Message
0 row(s) affected
0 row(s) affected

```

Create the Archemy database user

The ArchNav application uses the “archemy” database user to connect to the ArchNav database. This database user must exist for the ArchNav to be able to connect to the database.

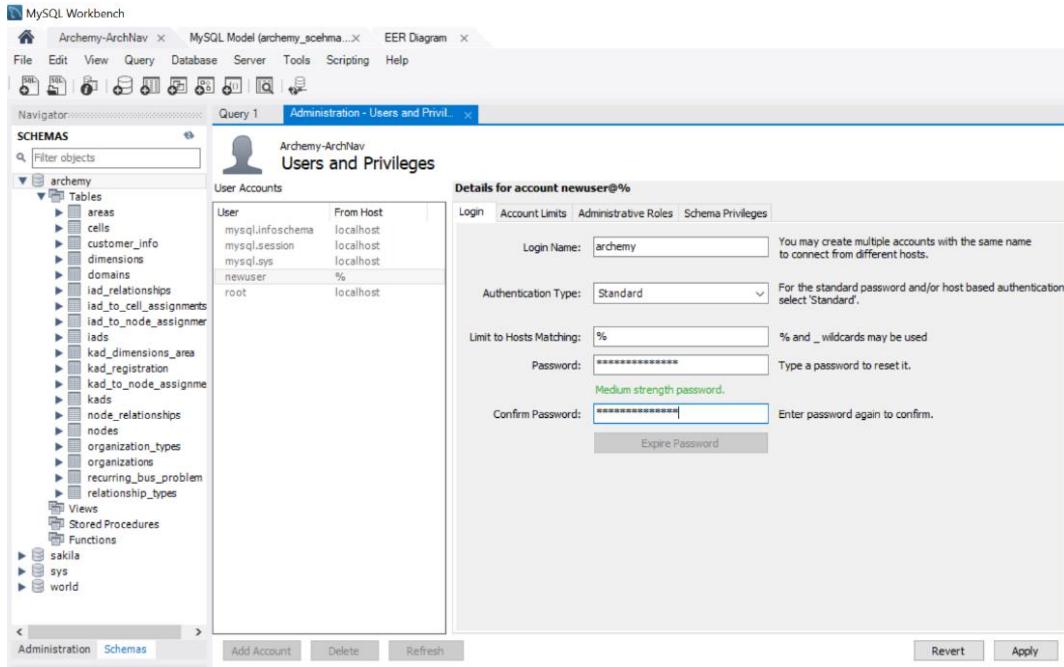
- From the top navbar in the MySQL Workbench, go to Server → Users and Privileges.
- In the “Users and Privileges” frame, click on the “Add Account” button (see screenshot below):



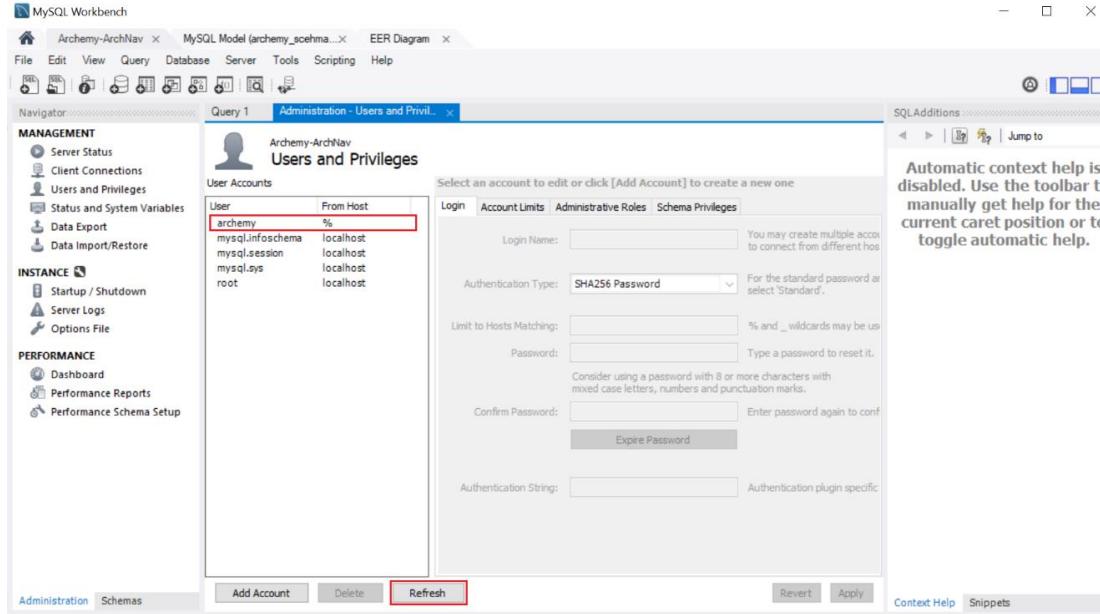
- Enter the following information:
 - Username: “archemy”.
 - Password: create a password and keep track of it.
 - Leave the default settings for the rest of the fields.

NOTE: the percent sign “%” character for the “Limit to Hosts Matchup” matches zero or more characters and so “localhost” will be a match.

- Click “Apply”



- To confirm the user was successfully created, click the “Refresh” button and the user “archemy” should appear in the left frame of the “Users and Privileges” page:



Import the ArchNav data

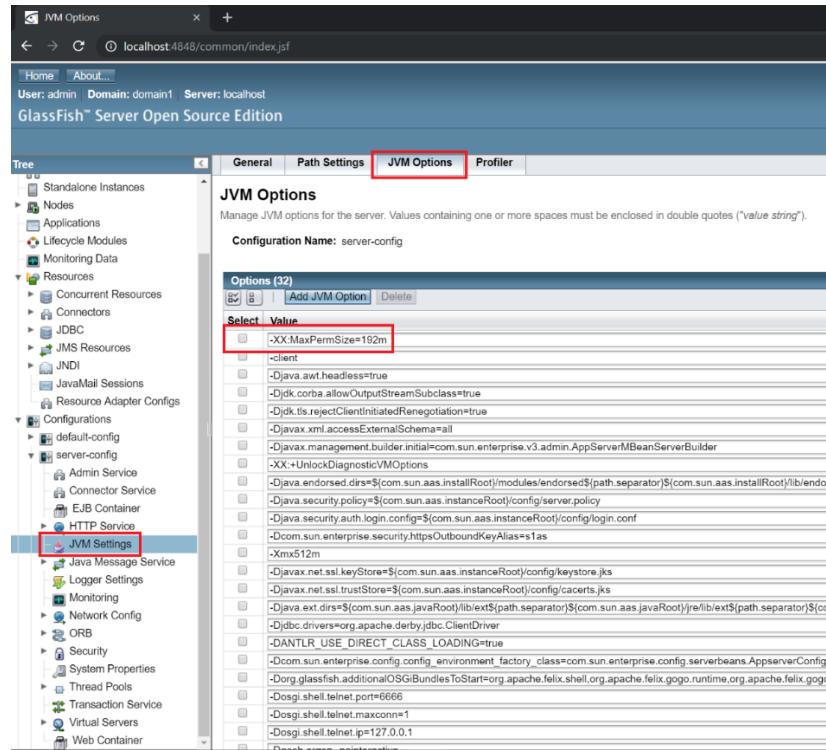
To import the ArchNav database data navigate to the Data sub-directory. Load the DatabaseImport.sql file into the MySQL Workbench and run the script.

b. Configure GlassFish for ADF Applications

Configure GlassFish

To configure GlassFish for ADF applications, follow the below steps.

- In the GlassFish admin console, increase the JVM MaxPermSize to 512m:
 - Click on server-config → JVM Settings.
 - Click on the “JVM Options” tab.
 - Update the -XX-MaxPermSize value by increasing it to 512m (see below):



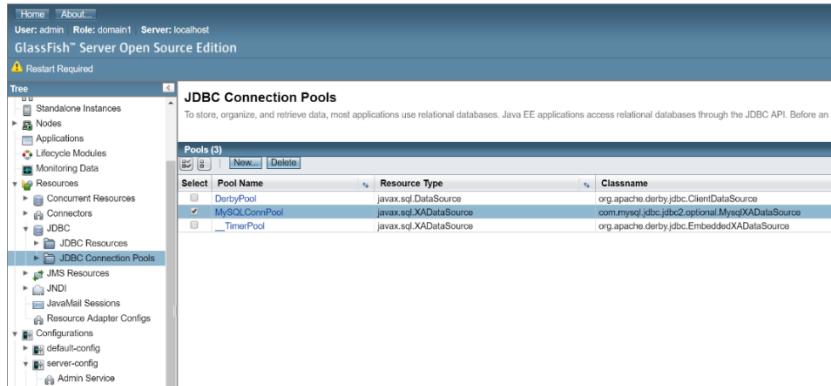
- Add **-Doracle.mds.cache=simple** as a DVM Option:

The screenshot shows the GlassFish administration console. The left sidebar has a tree view with nodes like Standalone Instances, Nodes, Applications, Lifecycle Modules, Monitoring Data, Resources (selected), JDBC, JMS Resources, JNDI, JavaMail Sessions, Resource Adapter Configs, Configurations, default-config, server-config (selected), Admin Service, Connector Service, EJB Container, HTTP Service, and JVM Settings. The right panel is titled 'JVM Options' with the sub-instruction 'Manage JVM options for the server. Values containing one or more spaces must be enclosed in double quotes ("value string"). Configuration Name: server-config'. It lists 'Options (33)' with a table where each row has a checkbox, 'Value', and a detailed description. One option, '-Doracle.mds.cache=simple', is highlighted with a red box. A red box also highlights the 'Add JVM Option' button at the top of the list.

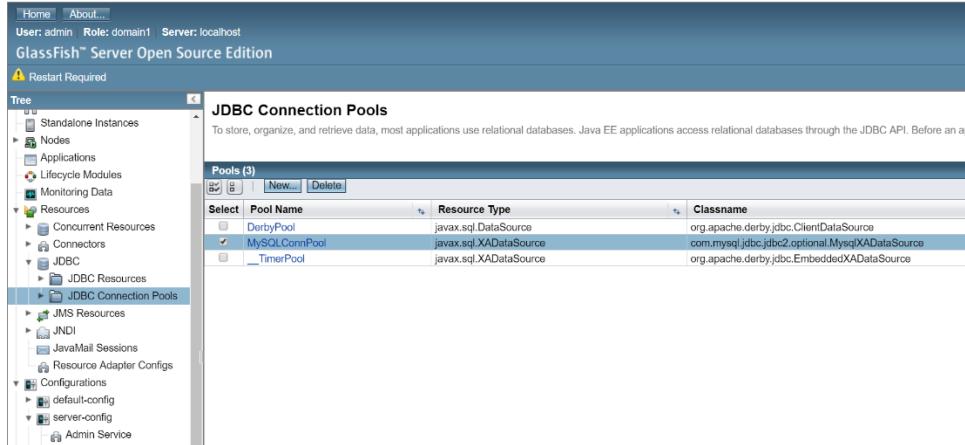
- Add a new connection pool for MySQL:
 - Navigate to Resources → JDBC → JDBC Connection Pools.
 - Click on “New” to create a new connection pool and provide the following information:
 - Pool Name = “MySQLConnPool”.
 - Resource Type = “javax.sql.XADataSource”.
 - Database Driver Vendor = “MySQL”:

The screenshot shows the 'New JDBC Connection Pool (Step 1 of 2)' configuration page. The left sidebar is identical to the previous screenshot. The right panel has a title 'New JDBC Connection Pool (Step 1 of 2)' with the sub-instruction 'Identify the general settings for the connection pool.' It contains a 'General Settings' section with fields: 'Pool Name:' (set to 'MySQLConnPool'), 'Resource Type:' (set to 'javax.sql.XADataSource'), and 'Database Driver Vendor:' (set to 'MySQL'). Below these are sections for 'introspect:' (with an 'Enabled' checkbox) and 'Additional Properties' (with a 'Next Step' button). A red box highlights the 'JDBC Connection Pools' node in the sidebar and the 'Enabled' checkbox in the 'introspect:' section.

- Click “Next”.
- On the second page, keep all default settings and click “Finish”.
- The connection pool will be created:

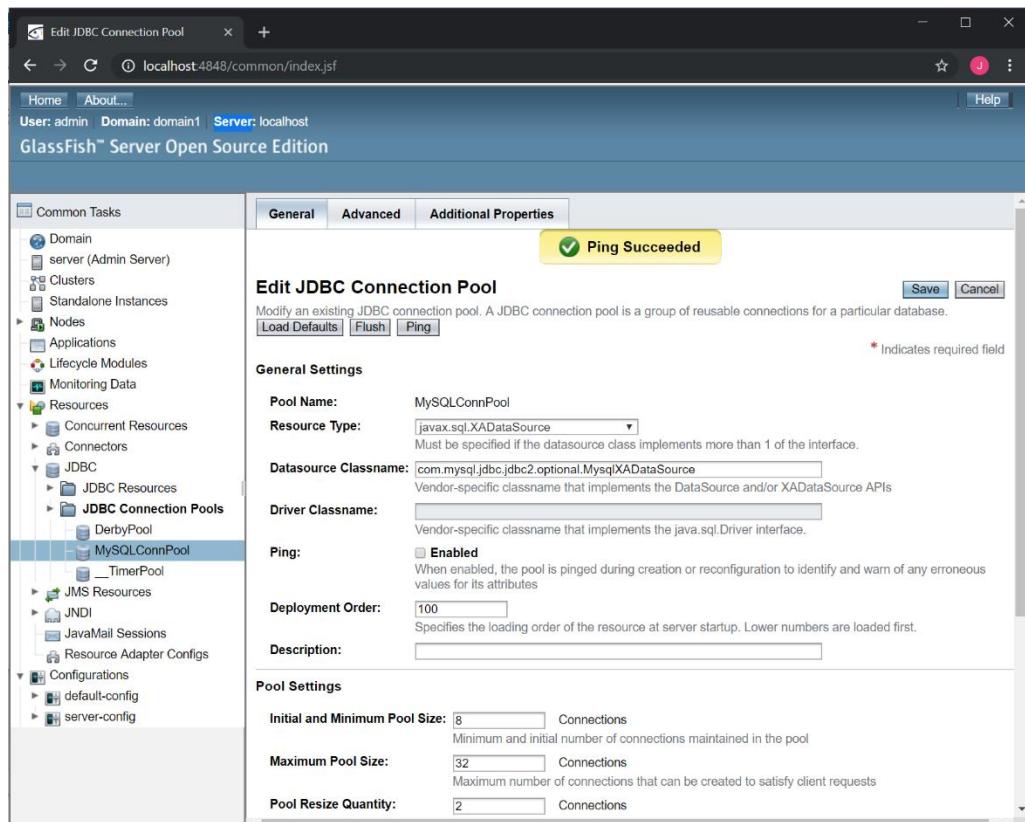


- Click “Next”.
- On the second page, keep all default settings and click “Finish”.
- The connection pool will be created:



- Under the “Advanced Properties” tab, fill the following for properties (create a table for this):
 - Port = “3306” (should already be filled in)
 - ServerName = “localhost”
 - DatabaseName = “archemy”
 - User = “archemy”
 - Password = <some_password>
- Click “Save”.
- After saving the property values, click on the new MySQL connection pool and test the connection to the database by clicking on the “Ping” button. (NOTE: in order to get a successful ping, make sure the above properties are correctly configured. Also, make sure the correct JDBC driver for MySQL is placed into the correct domain directory for Glassfish: mysql-connector-java-5.1.47-bin.jar should be placed into the directory:

C:\Oracle\glassfish-5.0\glassfish5\glassfish\domains\domain1\lib\).



- Create a new JDBC Resource to use with the MySQL connection pool.

Select	JNDI Name	Logical JNDI Name	Enabled	Connection Pool	Description
<input type="checkbox"/>	jdbc/_TimerPool		<input checked="" type="checkbox"/>	_TimerPool	
<input type="checkbox"/>	jdbc/_default	java:comp/DefaultDataSource	<input checked="" type="checkbox"/>	DerbyPool	

- Click on “New”.
- Fill in JNDI Name, select Pool Name:

New JDBC Resource

JNDI Name: *

Pool Name: Create Pools page to create new pools

Description:

Status: Enabled

Additional Properties (0)

Select	Name	Value	Description
No items found.			

- Click “OK”.

Set GlassFish on a different port

The GlassFish and Tomcat application servers are both configured to use the HTTP port of 8080 by default. It is better to leave the Tomcat application server configured to use port 8080, and so the GlassFish HTTP port must be configured to use a different port. To do this, follow the steps below.

- Launch the admin console (assuming the Glassfish server is started).
- Navigate to Network Config → Network Listeners → http-listener-1:

Select	Name	Port #	Protocol	Thread Pool	Enabled
<input type="checkbox"/>	admin-listener	4848	admin-listener	admin-thread-pool	true
<input type="checkbox"/>	http-listener-1	8080	http-listener-1	http-thread-pool	true
<input type="checkbox"/>	http-listener-2	8181	http-listener-2	http-thread-pool	true

- Change the port from 8080 to 9999:

New values successfully saved.

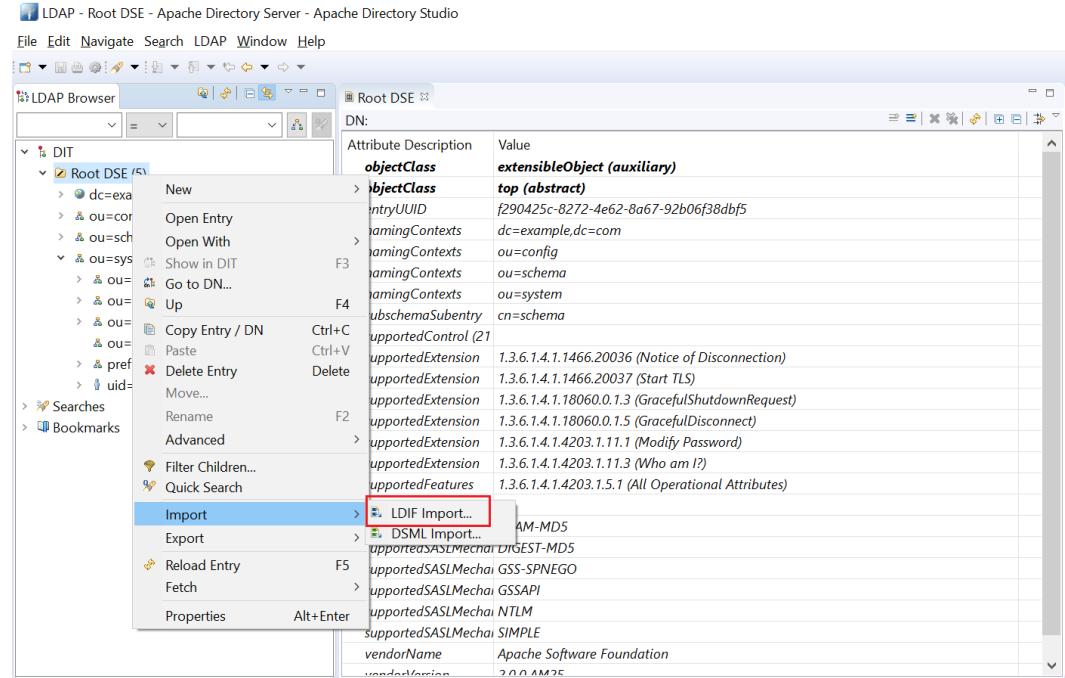
Name:	http-listener-1
Protocol:	http-listener-1
Status:	<input checked="" type="checkbox"/> Enabled
Security:	<input type="checkbox"/> Enabled
JK Listener:	<input type="checkbox"/> Enabled
Port:	9999
Address:	0.0.0.0
Transport:	tcp
Thread Pool:	http-thread-pool

- Stop and restart the GlassFish application server.

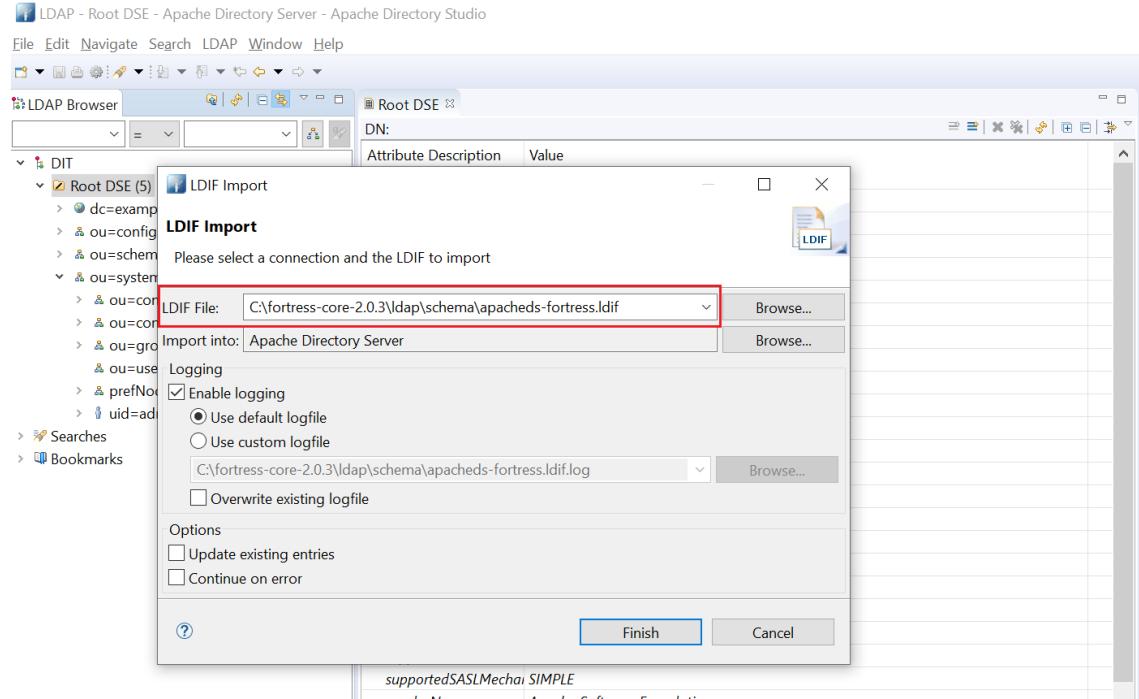
c. Import ApacheDS Schema

To import the ApacheDS schema, follow the below steps.

- In Apache Directory Studio, right-click on “Root DSE (5)” in left frame.
- Select Import → LDIF Import.



- Navigate to the LDIF file:



- The ApacheDS schema will appear after successfully imported:

Attribute Description	Value
objectclass	metaSchema (structural)
objectclass	top (abstract)
cn	fortress
m-dependencies	core
m-dependencies	system

- Also, the following log will confirm the Fortress Schema import was successful:

```
#DATE 2019-07-21T00:36:33.918
dn: cn=fortress, ou=schema
changetype: add
m-dependencies: system
m-dependencies: core
objectclass: metaSchema
```

```

objectclass: top
cn: fortress

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:33.932
dn: ou=attributetypes, cn=fortress, ou=schema
changetype: add
ou: attributetypes
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:33.949
dn: m-oid=1.3.6.1.4.1.18060.17.1.1, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Permission Name
m-name: ftPermName
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.1

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:33.968
dn: m-oid=1.3.6.1.4.1.18060.17.1.2, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Permission Operation Name
m-name: ftOpNm
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.2

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:33.983
dn: m-oid=1.3.6.1.4.1.18060.17.1.3, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Permission Object Name
m-name: ftObjNm
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.3

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:33.999
dn: m-oid=1.3.6.1.4.1.18060.17.1.4, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Permission Object ID
m-name: ftObjId
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.4

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.008
dn: m-oid=1.3.6.1.4.1.18060.17.1.5, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Role Name
m-name: ftRoleName
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.5

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.029
dn: m-oid=1.3.6.1.4.1.18060.17.1.6, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.27
m-description: Fortress TimeOut
m-name: ftTimeOut
m-ordering: integerOrderingMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: integerMatch
m-oid: 1.3.6.1.4.1.18060.17.1.6

#!RESULT OK
#!CONNECTION ldap://localhost:10389

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#!DATE 2019-07-21T00:36:34.043
dn: m-oid=1.3.6.1.4.1.18060.17.1.7, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Group Names
m-name: ftGroups
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.7

#!RESULT OK
#CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.059
dn: m-oid=1.3.6.1.4.1.18060.17.1.8, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Role Names
m-name: ftRoles
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.8

#!RESULT OK
#CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.069
dn: m-oid=1.3.6.1.4.1.18060.17.1.9, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress User IDs
m-name: ftUsers
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.9

#!RESULT OK
#CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.079
dn: m-oid=1.3.6.1.4.1.18060.17.1.10, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Properties
m-name: ftProps
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.10

#!RESULT OK
#CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.099
dn: m-oid=1.3.6.1.4.1.18060.17.1.11, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Type Name
m-name: ftType
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.11

#!RESULT OK
#CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.109
dn: m-oid=1.3.6.1.4.1.18060.17.1.12, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Entity Unique ID
m-name: ftId
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.12

#!RESULT OK
#CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.123
dn: m-oid=1.3.6.1.4.1.18060.17.1.13, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress User Temporal Constraint
m-name: ftCstr
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.13

#!RESULT OK
#CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.138
dn: m-oid=1.3.6.1.4.1.18060.17.1.14, ou=attributetypes, cn=fortress, ou=schema

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changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress User Role Assignments
m-name: fTRA
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.14

#!RESULT OK
#ICONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.149
dn: m-oid=1.3.6.1.4.1.18060.17.1.15, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress User Role Constraints
m-name: fTRC
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.15

#!RESULT OK
#ICONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.169
dn: m-oid=1.3.6.1.4.1.18060.17.1.16, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Separation of Duties Set Name
m-name: ftSethName
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.16

#!RESULT OK
#ICONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.179
dn: m-oid=1.3.6.1.4.1.18060.17.1.17, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.27
m-description: Fortress Separation of Duties Set Cardinality
m-name: ftSetCardinality
m-ordering: integerOrderingMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: integerMatch
m-oid: 1.3.6.1.4.1.18060.17.1.17

#!RESULT OK
#ICONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.194
dn: m-oid=1.3.6.1.4.1.18060.17.1.18, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Child to Parent Relationships
m-name: ftRels
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.18

#!RESULT OK
#ICONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.199
dn: m-oid=1.3.6.1.4.1.18060.17.1.19, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress User Organizational Unit Pool
m-name: ftOUS
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.19

#!RESULT OK
#ICONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.218
dn: m-oid=1.3.6.1.4.1.18060.17.1.20, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Permission Organizational Unit Pool
m-name: ftOP
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.20

#!RESULT OK
#ICONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.232
dn: m-oid=1.3.6.1.4.1.18060.17.1.21, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Admin Role Constraints

```

```

m-name: ftARC
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.21

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.243
dn: m-oid=1.3.6.1.4.1.18060.17.1.22, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Admin Role Assignments
m-name: ftARA
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.22

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.259
dn: m-oid=1.3.6.1.4.1.18060.17.1.23, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Role Hierarchy Range
m-name: ftRange
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.23

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.269
dn: m-oid=1.3.6.1.4.1.18060.17.1.24, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Audit Modifier Internal UserID
m-name: ftModifier
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.24

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.279
dn: m-oid=1.3.6.1.4.1.18060.17.1.25, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Audit Modifier Operation Code
m-name: ftModCode
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.25

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.294
dn: m-oid=1.3.6.1.4.1.18060.17.1.26, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Audit Modifier Unique ID
m-name: ftModId
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.26

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.303
dn: m-oid=1.3.6.1.4.1.18060.17.1.27, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.7
m-description: Fortress System User
m-name: ftSystem
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: booleanMatch
m-oid: 1.3.6.1.4.1.18060.17.1.27

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.318
dn: m-oid=1.3.6.1.4.1.18060.17.1.28, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.5
m-description: Fortress Parent Nodes
m-name: ftParents

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m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.28

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.332
dn: m-oid=1.3.6.1.4.1.18060.17.1.29, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: LDAP Group protocol attribute
m-name: configProtocol
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.29

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.338
dn: m-oid=1.3.6.1.4.1.18060.17.1.30, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: LDAP Group config properties
m-name: configParameter
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.30

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.358
dn: m-oid=1.3.6.1.4.1.18060.17.1.31, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Permission Attribute Constraints
m-name: ftPA
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.31

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.368
dn: m-oid=1.3.6.1.4.1.18060.17.1.32, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Permission Attribute Set
m-name: ftPASet
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.32

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.384
dn: m-oid=1.3.6.1.4.1.18060.17.1.33, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Permission Attribute Set Default Operator
m-name: ftPASetDefaultOperator
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.33

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.399
dn: m-oid=1.3.6.1.4.1.18060.17.1.34, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Permission Attribute Set Type
m-name: ftPASetType
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.34

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.415
dn: m-oid=1.3.6.1.4.1.18060.17.1.35, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Permission Attribute Data Type
m-name: ftPADATAtype
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop

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objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.35

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.415
dn: m-oid=1.3.6.1.4.1.18060.17.1.36, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Permission Attribute Set Default Value
m-name: ftPAdDefaultValue
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.36

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.433
dn: m-oid=1.3.6.1.4.1.18060.17.1.37, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Permission Attribute Default Strategy
m-name: ftPAdDefaultStrategy
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-singleValue: TRUE
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.37

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.448
dn: m-oid=1.3.6.1.4.1.18060.17.1.38, ou=attributetypes, cn=fortress, ou=schema
changetype: add
m-syntax: 1.3.6.1.4.1.1466.115.121.1.15
m-description: Fortress Permission Attribute Valid Values
m-name: ftPAValidVals
m-substr: caseIgnoreSubstringsMatch
objectclass: metaAttributeType
objectclass: metaTop
objectclass: top
m-equality: caseIgnoreMatch
m-oid: 1.3.6.1.4.1.18060.17.1.38

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.448
dn: ou=comparators, cn=fortress, ou=schema
changetype: add
ou: comparators
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.464
dn: ou=ditcontentrules, cn=fortress, ou=schema
changetype: add
ou: ditcontentrules
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.464
dn: ou=ditstructurerules, cn=fortress, ou=schema
changetype: add
ou: ditstructurerules
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.464
dn: ou=matchingrules, cn=fortress, ou=schema
changetype: add
ou: matchingrules
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.480
dn: ou=matchingruleuse, cn=fortress, ou=schema
changetype: add
ou: matchingruleuse
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.480
dn: ou=nameforms, cn=fortress, ou=schema
changetype: add
ou: nameforms
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.480
dn: ou=normalizers, cn=fortress, ou=schema

```

```

changetype: add
ou: normalizers
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.495
dn: ou=objectclasses, cn=fortress, ou=schema
changetype: add
ou: objectClasses
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.511
dn: m-oid=1.3.6.1.4.1.18060.17.2.1, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: description
m-may: ftCstr
m-may: ftParents
m-description: Fortress Role Structural Object Class
m-name: ftRls
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: organizationalrole
m-oid: 1.3.6.1.4.1.18060.17.2.1
m-must: ftId
m-must: ftRoleName

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.511
dn: m-oid=1.3.6.1.4.1.18060.17.2.2, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftType
m-description: Fortress Permission Object Class
m-name: ftObject
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: organizationalunit
m-oid: 1.3.6.1.4.1.18060.17.2.2
m-must: ftId
m-must: ftObjNm

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.526
dn: m-oid=1.3.6.1.4.1.18060.17.2.3, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftObjId
m-may: ftRoles
m-may: ftUsers
m-may: ftType
m-may: ftPASet
m-description: Fortress Permission Operation Structural Object Class
m-name: ftOperation
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: organizationalrole
m-oid: 1.3.6.1.4.1.18060.17.2.3
m-must: ftId
m-must: ftPermName
m-must: ftObjNm
m-must: ftOpNm

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.542
dn: m-oid=1.3.6.1.4.1.18060.17.2.4, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftRoles
m-may: description
m-description: Fortress Role Static Separation of Duty Set Structural Object Class
m-name: ftSSDSet
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: organizationalrole
m-oid: 1.3.6.1.4.1.18060.17.2.4
m-must: ftId
m-must: ftSetName
m-must: ftSetCardinality

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.542
dn: m-oid=1.3.6.1.4.1.18060.17.2.5, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftRoles
m-may: description
m-description: Fortress Role Dynamic Separation of Duty Set Structural Object Class
m-name: ftDSDSets
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: organizationalrole
m-oid: 1.3.6.1.4.1.18060.17.2.5
m-must: ftId
m-must: ftSetName
m-must: ftSetCardinality

#!RESULT OK
#!CONNECTION ldap://localhost:10389

```

```

#!DATE 2019-07-21T00:36:34.558
dn: m-oid=1.3.6.1.4.1.18060.17.2.6, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftParents
m-description: Fortress OrgUnit Structural Object Class
m-name: ftOrgUnit
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: organizationalunit
m-oid: 1.3.6.1.4.1.18060.17.2.6
m-must: ftId

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.573
dn: m-oid=1.3.6.1.4.1.18060.17.2.7, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftRels
m-may: description
m-description: Fortress Hierarchy Structural Object Class
m-name: ftHier
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: organizationalrole
m-oid: 1.3.6.1.4.1.18060.17.2.7
m-must: cn

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.589
dn: m-oid=1.3.6.1.4.1.18060.17.2.8, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: configParameter
m-may: ftProps
m-description: LDAP Configuration Group
m-name: configGroup
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: groupOfNames
m-oid: 1.3.6.1.4.1.18060.17.2.8
m-must: configProtocol
m-must: ftType

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.605
dn: m-oid=1.3.6.1.4.1.18060.17.2.9, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftPA
m-may: ftPASetType
m-may: description
m-description: Fortress Attribute Set Structural Object Class
m-name: ftAttributeSet
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: organizationalunit
m-oid: 1.3.6.1.4.1.18060.17.2.9
m-must: ftId
m-must: ftPASet
m-must: cn

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.605
dn: m-oid=1.3.6.1.4.1.18060.17.2.10, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftPADATAtype
m-may: ftPADefaultValue
m-may: ftPADefaultStrategy
m-may: ftPADefaultOperator
m-may: ftPValidVals
m-may: description
m-description: Fortress Attribute Structural Object Class
m-name: ftAttribute
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-supObjectClass: organizationalrole
m-oid: 1.3.6.1.4.1.18060.17.2.10
m-must: ftId
m-must: ftPASet
m-must: ftPA
m-must: cn

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.620
dn: m-oid=1.3.6.1.4.1.18060.17.3.1, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftRC
m-may: ftRA
m-may: ftARC
m-may: ftARA
m-may: ftCstr
m-may: ftSystem
m-description: Fortress User Attribute AUX Object Class
m-name: ftUserAttrs
m-typeObjectClass: AUXILIARY
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-oid: 1.3.6.1.4.1.18060.17.3.1
m-must: ftId

#!RESULT OK
#!CONNECTION ldap://localhost:10389

```

```

#!DATE 2019-07-21T00:36:34.636
dn: m-oid=1.3.6.1.4.1.18060.17.3.2, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftProps
m-description: Fortress Properties AUX Object Class
m-name: ftProperties
m-typeObjectClass: AUXILIARY
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-oid: 1.3.6.1.4.1.18060.17.3.2

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.651
dn: m-oid=1.3.6.1.4.1.18060.17.3.3, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftOSU
m-may: ftOSP
m-may: ftRange
m-description: Fortress Pools AUX Object Class
m-name: ftPools
m-typeObjectClass: AUXILIARY
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-oid: 1.3.6.1.4.1.18060.17.3.3

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.651
dn: m-oid=1.3.6.1.4.1.18060.17.3.4, ou=objectclasses, cn=fortress, ou=schema
changetype: add
m-may: ftModifier
m-may: ftModCode
m-may: ftModId
m-description: Fortress Modifiers AUX Object Class
m-name: ftMods
m-typeObjectClass: AUXILIARY
objectclass: metaObjectClass
objectclass: metaTop
objectclass: top
m-oid: 1.3.6.1.4.1.18060.17.3.4

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.667
dn: ou=syntaxcheckers, cn=fortress, ou=schema
changetype: add
ou: syntaxcheckers
objectclass: organizationalUnit
objectclass: top

#!RESULT OK
#!CONNECTION ldap://localhost:10389
#!DATE 2019-07-21T00:36:34.667
dn: ou=syntaxes, cn=fortress, ou=schema
changetype: add
ou: syntaxes
objectclass: organizationalUnit
objectclass: top

```

d. Integrate Apache Fortress Core and ApacheDS

To integrate Fortress and ApacheDS, follow the below steps.

- Use Cygwin and run the command in the Fortress root directory: “mvn install -Dload.file=./ldap/setup/refreshLDAPData.xml”:
 - Should get a build success:

```

/cygdrive/c/fortress-core-2.0.3
init:
init-fortress-config-remote:
[INFO] Executed tasks
[INFO]
[INFO] --- maven-jar-plugin:3.0.2:jar (default-jar) @ fortress-core ---
[INFO] Building jar: C:\fortress-core-2.0.3\target\fortress-core-2.0.3.jar
[INFO]
[INFO] --- maven-site-plugin:3.4:attach-descriptor (attach-descriptor) @ fortress-core ---
[INFO]
[INFO] --- maven-jar-plugin:3.0.2:test-jar (default) @ fortress-core ---
[INFO] Building jar: C:\fortress-core-2.0.3\target\fortress-core-2.0.3-tests.jar
[INFO]
[INFO] --- tools-maven-plugin:1.4:verify-legal-files (verify-legal-files) @ fortress-core ---
[INFO] Checking legal files in: fortress-core-2.0.3.jar
[INFO] Checking legal files in: fortress-core-2.0.3-tests.jar
[INFO]
[INFO] --- maven-source-plugin:3.0.0:jar-no-fork (attach-sources) @ fortress-core ---
[INFO] Building jar: C:\fortress-core-2.0.3\target\fortress-core-2.0.3-sources.jar
[INFO]
[INFO] --- maven-install-plugin:2.5.2:install (default-install) @ fortress-core ---
[INFO] Installing C:\fortress-core-2.0.3\target\fortress-core-2.0.3.jar to C:/Users/jlg20/.m2/repository/org/apache/directory/fortress/fortress-core/2.0.3/fortress-core-2.0.3.jar
[INFO] Installing C:\fortress-core-2.0.3\pom.xml to C:/Users/jlg20/.m2/repository/org/apache/directory/fortress/fortress-core/2.0.3/fortress-core-2.0.3.pom
[INFO] Installing C:\fortress-core-2.0.3\target\fortress-core-2.0.3-tests.jar to C:/Users/jlg20/.m2/repository/org/apache/directory/fortress/fortress-core/2.0.3/fortress-core-2.0.3-tests.jar
[INFO] Installing C:\fortress-core-2.0.3\target\fortress-core-2.0.3-sources.jar to C:/Users/jlg20/.m2/repository/org/apache/directory/fortress/fortress-core/2.0.3/fortress-core-2.0.3-sources.jar
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 10.154 s
[INFO] Finished at: 2019-07-20T20:44:33-04:00
[INFO]

```

- Use Cygwin and run the following command from the Fortress root directory: “mvn install -Dload.file=./ldap/setup/DelegatedAdminManagerLoad.xml”:
 - Should get a build success:

```

/cygdrive/c/fortress-core-2.0.3
init:
init-fortress-config-remote:
[INFO] Executed tasks
[INFO]
[INFO] --- maven-jar-plugin:3.0.2:jar (default-jar) @ fortress-core ---
[INFO] Building jar: C:\fortress-core-2.0.3\target\fortress-core-2.0.3.jar
[INFO]
[INFO] --- maven-site-plugin:3.4:attach-descriptor (attach-descriptor) @ fortress-core ---
[INFO]
[INFO] --- maven-jar-plugin:3.0.2:test-jar (default) @ fortress-core ---
[INFO] Building jar: C:\fortress-core-2.0.3\target\fortress-core-2.0.3-tests.jar
[INFO]
[INFO] --- tools-maven-plugin:1.4:verify-legal-files (verify-legal-files) @ fortress-core ---
[INFO] Checking legal files in: fortress-core-2.0.3.jar
[INFO] Checking legal files in: fortress-core-2.0.3-tests.jar
[INFO]
[INFO] --- maven-source-plugin:3.0.0:jar-no-fork (attach-sources) @ fortress-core ---
[INFO] Building jar: C:\fortress-core-2.0.3\target\fortress-core-2.0.3-sources.jar
[INFO]
[INFO] --- maven-install-plugin:2.5.2:install (default-install) @ fortress-core ---
[INFO] Installing C:\fortress-core-2.0.3\target\fortress-core-2.0.3.jar to C:/Users/jlg20/.m2/repository/org/apache/directory/fortress/fortress-core/2.0.3/fortress-core-2.0.3.jar
[INFO] Installing C:\fortress-core-2.0.3\pom.xml to C:/Users/jlg20/.m2/repository/org/apache/directory/fortress/fortress-core/2.0.3/fortress-core-2.0.3.pom
[INFO] Installing C:\fortress-core-2.0.3\target\fortress-core-2.0.3-tests.jar to C:/Users/jlg20/.m2/repository/org/apache/directory/fortress/fortress-core/2.0.3/fortress-core-2.0.3-tests.jar
[INFO] Installing C:\fortress-core-2.0.3\target\fortress-core-2.0.3-sources.jar to C:/Users/jlg20/.m2/repository/org/apache/directory/fortress/fortress-core/2.0.3/fortress-core-2.0.3-sources.jar
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 11.838 s
[INFO] Finished at: 2019-07-20T20:54:52-04:00
[INFO]

```

NOTE: skipped step “Make a backup copy of pom.xml and then edit it. Find and change the jgrapht-core version to 0.9.2 (for jdk 7.x compatibility)” from original installation guide since the jgrapht-core version in the upgraded Fortress Core is a later version.

- Test the Apache Fortress Core / Apache DS integration:
 - In Cygwin, run the following command from the Fortress root directory: “mvn -Dtest=FortressJUnitTest test”.
 - Should get a build success:

```

2019-07-20 21:02:000 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:02:007 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:02:008 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:02:009 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:02:010 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:02:011 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:02:011 INFO UserDAO:1834 - deleteResetFlag user [jtsTU5User24] no such attribute:pwdReset
2019-07-20 21:02:011 INFO LogUtil:64 - PWSAFEW23 PLCY TP1 USR TU5
2019-07-20 21:02:012 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:02:012 INFO LogUtil:64 - PWSAFEW24 PLCY TP1 USR TU5
2019-07-20 21:02:012 INFO UserDAO:1834 - deleteResetFlag user [jtsTU5User26] no such attribute:pwdReset
NUMBER OF ADDS: 1010
NUMBER OF BINDS: 1130
NUMBER OF DELETES: 0
NUMBER OF MODS: 4133
NUMBER OF READS: 19728
NUMBER OF SEARCHES: 7045
Tests run: 128, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 253.032 sec - in org.apache.directory.fortress.core.impl.FortressJUnitTest
Results :
Tests run: 128, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- maven-antrun-plugin:1.8:run (default) @ fortress-core ---
[INFO] Executing tasks
fortress-load:
[INFO] Executed tasks
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 04:19 min
[INFO] Finished at: 2019-07-20T21:02:13-04:00
[INFO] -----

```

- Rerun the same test command to verify that the teardown APIs are working properly: “mvn -Dtest=FortressJUnitTest test”.
- Should get a build success with a larger number of tests run (compare the results from the previous run):

```

2019-07-20 21:10:044 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:10:045 INFO LogUtil:64 - PWMUST20 PLCY TP1 USR TU5
2019-07-20 21:10:045 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:10:046 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:10:046 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:10:047 INFO LogUtil:64 - PWALLOW22 PLCY TP1 USR TU5
2019-07-20 21:10:047 INFO UserDAO:1834 - deleteResetFlag user [jtsTU5User24] no such attribute:pwdReset
2019-07-20 21:10:047 INFO LogUtil:64 - PWSAFEW23 PLCY TP1 USR TU5
2019-07-20 21:10:047 INFO LogUtil:64 - org.apache.directory.fortress.core.impl.TestTools.sleep for len=1000
2019-07-20 21:10:048 INFO LogUtil:64 - PWSAFEW24 PLCY TP1 USR TU5
2019-07-20 21:10:048 INFO UserDAO:1834 - deleteResetFlag user [jtsTU5User26] no such attribute:pwdReset
NUMBER OF ADDS: 998
NUMBER OF BINDS: 1130
NUMBER OF DELETES: 1355
NUMBER OF MODS: 8387
NUMBER OF READS: 26709
NUMBER OF SEARCHES: 9582
Tests run: 162, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 329.33 sec - in org.apache.directory.fortress.core.impl.FortressJUnitTest
Results :
Tests run: 162, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- maven-antrun-plugin:1.8:run (default) @ fortress-core ---
[INFO] Executing tasks
fortress-load:
[INFO] Executed tasks
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 05:34 min
[INFO] Finished at: 2019-07-20T21:10:49-04:00
[INFO] -----

```

e. Setup Fortress REST Application

Before setting up the Fortress REST application, both Fortress Web and Fortress Rest need to be downloaded. The mvn command for each should be run within the main directory of the corresponding package installation. For example, the Rest package directory contains a sub-subdirectory and the .pom file is in:

```
./src/main/resources/FortressRestServerPolicy.xml tomcat:deploy
```

To run download Fortress Web and Fortress Rest, follow the below steps.

- Run the following wget commands to download fortress-realm, fortress-rest, fortress-web:

Command:

wget

<http://apache.cs.utah.edu//directory/fortress/dist/2.0.3/fortress-realm-2.0.3-source-release.zip>

Command:

wget

<http://apache.cs.utah.edu//directory/fortress/dist/2.0.3/fortress-rest-2.0.3-source-release.zip>

Command:

wget

<http://apache.cs.utah.edu//directory/fortress/dist/2.0.3/fortress-web-2.0.3-source-release.zip>

- Unzip both Fortress REST and Fortress Web at the same level as Fortress Core (C: directory).
 - Perform Fortress REST test policy load and deploy to Tomcat:
 - Copy the fortress.properties file from C:\fortress-core-2.0.3\config\ to C:\fortress-rest-2.0.3\src\main\resources\
 - Navigate to the root directory for Fortress REST:
C:\fortress-rest-2.0.3\
 - Run command:

- Run command:

```
"mvn install -DloadFile=../src/main/resources/FortressRestServerPolicy.xml tomcat:deploy"
```

- Should get a build success and fortress-rest should be deployed in tomcat:

```
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-artifact-manager/2.0.8/maven-artifact-manager-2.0.8.jar (57 kB at 192 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-model/2.0.8/maven-model-2.0.8.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-profile/2.0.8/maven-profile-2.0.8.jar (88 kB at 250 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-plugin-registry/2.0.8/maven-plugin-registry-2.0.8.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-plugin-registry/2.0.8/maven-plugin-registry-2.0.8.jar (29 kB at 51 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-project/2.0.8/maven-project-2.0.8.jar (117 kB at 195 kB/s)
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-profile/2.0.8/maven-profile-2.0.8.jar (35 kB at 59 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-settings/2.0.8/maven-settings-2.0.8.jar (49 kB at 71 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/catalina/6.0.29/catalina-6.0.29.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper/6.0.29/jasper-6.0.29.jar (49 kB at 123 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-el/6.0.29/jasper-el-6.0.29.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/annotations-api/6.0.29/annotations-api-6.0.29.jar (15 kB at 17 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/catalina/6.0.29/catalina-6.0.29.jar (15 kB at 17 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper/6.0.29/jasper-6.0.29.jar (29 kB at 27 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-el/6.0.29/jasper-el-6.0.29.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/catalina/6.0.29/catalina-6.0.29.jar (1.2 MB at 1.1 MB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/el/6.0.29/el-6.0.29.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/archiver/1.0-alpha-7/jar (142 kB at 127 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper/6.0.29/jasper-6.0.29.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-el/6.0.29/jasper-el-6.0.29.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-el/6.0.29/jasper-el-6.0.29.jar (164 kB at 137 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/catalina-ha/6.0.29/catalina-ha-6.0.29.jar (130 kB at 95 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-jdt/6.0.29/jasper-jdt-6.0.29.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-jdt/6.0.29/jasper-jdt-6.0.29.jar (23 kB at 23 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jsp-api/6.0.29/jsp-api-6.0.29.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-el/6.0.29/jasper-el-6.0.29.jar (109 kB at 70 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-el/6.0.29/jasper-el-6.0.29.jar (109 kB at 70 kB/s)
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jsp-api/6.0.29/jsp-api-6.0.29.jar (77 kB at 48 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/coyote/6.0.29/coyote-6.0.29.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/coyote/6.0.29/coyote-6.0.29.jar (1.4 MB at 864 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/servlet-api/6.0.29/servlet-api-6.0.29.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/servlet-api/6.0.29/servlet-api-6.0.29.jar (88 kB at 51 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/tribes/6.0.29/tribes-6.0.29.jar (238 kB at 134 kB/s)
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/tribes/6.0.29/tribes-6.0.29.jar (238 kB at 134 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/bcpc/6.0.29/bcpc-6.0.29.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/bcpc/6.0.29/bcpc-6.0.29.jar (250 kB at 103 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper/6.0.29/jasper-6.0.29.jar (525 kB at 186 kB/s)
[INFO] Deploying application at context path [/fortress-rest-2.0.3]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 01:02 min
[INFO] Finished at: 2019-07-22T16:42:44+04:00
```

Manager					
List Applications		HTML Manager Help		Manager Help	
Applications					
Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/fortress-rest-2.0.3	None specified	Fortress Rest Server	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/fortress-web	None specified	Fortress Web Admin	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/manager	None specified	Tomcat Manager Application	true	1	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes

- After fortress-rest was already deployed to tomcat, and do another build and redeploy – can break the command into two different steps:
 - To rebuild fortress-rest (from root directory), use command:

"mvn install -Dload.file=../src/main/resources/FortressRestServerPolicy.xml"

```
jlg20@Archemy-JLG /cygdrive/c/fortress-rest-2.0.3
$ mvn install -Dload.file=../src/main/resources/FortressRestServerPolicy.xml |
```

- You should get a "Build Success":

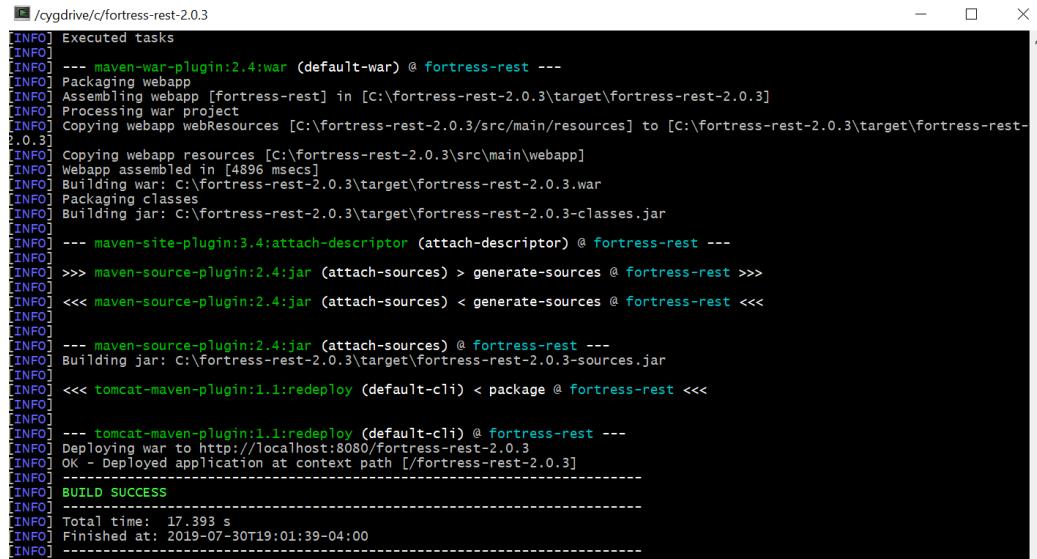
```
[INFO] Copying webapp resources [C:\fortress-rest-2.0.3\src\main\webapp]
[INFO] Webapp assembled in [4842 msec]
[INFO] Building war: C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3.war
[INFO] Packaging classes
[INFO] Building jar: C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3-classes.jar
[INFO] --- maven-site-plugin:3.4:attach-descriptor (attach-descriptor) @ fortress-rest ---
[INFO] >>> maven-source-plugin:2.4:jar (attach-sources) > generate-sources @ fortress-rest >>
[INFO] <<< maven-source-plugin:2.4:jar (attach-sources) < generate-sources @ fortress-rest <<<
[INFO]
[INFO] --- maven-source-plugin:2.4:jar (attach-sources) @ fortress-rest ---
[INFO] Building jar: C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3-sources.jar
[INFO]
[INFO] --- tools-maven-plugin:1.4:verify-legal-files (verify-legal-files) @ fortress-rest ---
[INFO] Checking legal files in: fortress-rest-2.0.3.war
[INFO] Checking legal files in: fortress-rest-2.0.3-classes.jar
[INFO] Checking legal files in: fortress-rest-2.0.3-sources.jar
[INFO]
[INFO] --- maven-install-plugin:2.5.2:install (default-install) @ fortress-rest ---
[INFO] Installing C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3.war to C:\Users\jlg20\.m2\repository\org\apache\directory\fortress\fortress-rest\2.0.3\fortress-rest-2.0.3.war
[INFO] Installing C:\fortress-rest-2.0.3\pom.xml to C:\Users\jlg20\.m2\repository\org\apache\directory\fortress\fortress-rest\2.0.3\fortress-rest-2.0.3.pom
[INFO] Installing C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3-classes.jar to C:\Users\jlg20\.m2\repository\org\apache\directory\fortress\fortress-rest\2.0.3\fortress-rest-2.0.3-classes.jar
[INFO] Installing C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3-sources.jar to C:\Users\jlg20\.m2\repository\org\apache\directory\fortress\fortress-rest\2.0.3\fortress-rest-2.0.3-sources.jar
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 12.962 s
[INFO] Finished at: 2019-07-30T19:00:34-04:00
[INFO] -----
```

- To redeploy (don't use the tomcat:deploy command) – to redeploy, must use the following command: "mvn tomcat:redeploy":

```
jlg20@Archemy-JLG /cygdrive/c/fortress-rest-2.0.3
$ mvn tomcat:redeploy |
```

(resource: <https://directory.apache.org/fortress/gendocs/latest/apidocs/org/apache/directory/fortress/core/doc-files/apache-fortress-rest.html>)

- You should get a “Build Success”:



```
/cygdrive/c/fortress-rest-2.0.3
[INFO] Executed tasks
[INFO]
[INFO] --- maven-war-plugin:2.4:war (default-war) @ fortress-rest ---
[INFO] Packaging webapp
[INFO] Assembling webapp [fortress-rest] in [C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3]
[INFO] Processing war project
[INFO] Copying webapp webResources [C:\fortress-rest-2.0.3\src\main\resources] to [C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3]
[INFO] Copying webapp resources [C:\fortress-rest-2.0.3\src\main\webapp]
[INFO] Webapp assembled in [4896 msecs]
[INFO] Building war: C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3.war
[INFO] Packaging classes
[INFO] Building jar: C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3-classes.jar
[INFO]
[INFO] --- maven-site-plugin:3.4:attach-descriptor (attach-descriptor) @ fortress-rest ---
[INFO]
[INFO] >>> maven-source-plugin:2.4:jar (attach-sources) > generate-sources @ fortress-rest >>>
[INFO]
[INFO] <<< maven-source-plugin:2.4:jar (attach-sources) < generate-sources @ fortress-rest <<<
[INFO]
[INFO]
[INFO] --- maven-source-plugin:2.4:jar (attach-sources) @ fortress-rest ---
[INFO] Building jar: C:\fortress-rest-2.0.3\target\fortress-rest-2.0.3-sources.jar
[INFO]
[INFO] <<< tomcat-maven-plugin:1.1:redeploy (default-cli) < package @ fortress-rest <<<
[INFO]
[INFO]
[INFO] --- tomcat-maven-plugin:1.1:redeploy (default-cli) @ fortress-rest ---
[INFO] Deploying war to http://localhost:8080/fortress-rest-2.0.3
[INFO] OK - Deployed application at context path [/fortress-rest-2.0.3]
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 17.393 s
[INFO] Finished at: 2019-07-30T19:01:39-04:00
[INFO]
```

f. Setup Fortress Web

To setup Fortress Web, follow the below steps.

- Copy the fortress.properties file from C:\fortress-core-2.0.3\config\ to C:\fortress-web-2.0.3\src\main\resources\
- Navigate to the root directory for Fortress web (C:\fortress-web-2.0.3\) and run the command

“mvn install -Dload.file=../src/main/resources/FortressWebDemoUsers.xml tomcat:deploy”

- You should get a build success, and fortress-web should be deployed in tomcat:

```

[INFO] /cygdrive/c/fortress-web-2.0.3
[INFO] Downloaded From central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-el/6.0.16/jasper-el-6.0.16.pom (1.3 kB at 28 kB/s)
[INFO] Downloaded From central: https://repo.maven.apache.org/maven2/org/apache/tomcat/dbcp/6.0.16/dbcp-6.0.16.pom (1.1 kB at 22 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-plugin-api/2.0/maven-plugin-api-2.0.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-artifact/2.0/maven-artifact-2.0.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-repository-metadata/2.0/maven-repository-metadata-2.0.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-artifact-manager/2.0/maven-artifact-manager-2.0.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-artifact-manager/2.0.1/maven-artifact-manager-2.0.1.jar (10 kB at 71 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/catalina/6.0.16/catalina-6.0.16.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-repository-metadata/2.0.1/maven-repository-metadata-2.0.1.jar (21 kB at 106 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-repository-metadata/2.0.1.1/maven-repository-metadata-2.0.1.1.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/juli/6.0.16/juli-6.0.16.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-artifact-manager/2.0.1.1/maven-artifact-manager-2.0.1.1.jar (51 kB at 212 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/annotations-api/6.0.16/annotations-api-6.0.16.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-artifact/2.0.1/maven-artifact-2.0.1.jar (79 kB at 294 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/tribes/6.0.16/tribes-6.0.16.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/catalina/6.0.16/catalina-6.0.16.jar (1.1 MB at 2.2 MB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/annotations-api/6.0.16/annotations-api-6.0.16.jar (10 kB at 18 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/annotations-api/6.0.16/annotations-api-6.0.16.jar (195 kB at 338 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/catalina-ha/6.0.16/catalina-ha-6.0.16.jar (123 kB at 179 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/annotations-api/6.0.16/annotations-api-6.0.16.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jsp-api/6.0.16/jsp-api-6.0.16.jar (28 kB at 31 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jsp-api/6.0.16/jsp-api-6.0.16.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper-el/6.0.16/jasper-el-6.0.16.jar (102 kB at 110 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jsp-api/6.0.16/jsp-api-6.0.16.jar (2 kB at 68 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/coyote/6.0.16/coyote-6.0.16.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper/6.0.16/jasper-6.0.16.jar (1.4 MB at 1.3 MB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/tribes/6.0.16/tribes-6.0.16.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/catalina-ha/6.0.16/catalina-ha-6.0.16.jar (198 kB at 115 kB/s)
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/tomcat/jasper/6.0.16/jasper-6.0.16.jar (511 kB at 227 kB/s)
[INFO] [INFO] Deploying war to http://localhost:8080/fortress-web
[INFO] or [INFO] Deployed successfully at context path [fortress-web]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 02:08 min
[INFO] Finished at: 2019-07-22T16:54:44-04:00
[INFO] -----

```

Applications					
Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy
/fortress-rest-2.0.3	None specified	Fortress Rest Server	true	0	Start Stop Reload Undeploy
fortress-web	None specified	Fortress Web Admin	true	0	Start Stop Reload Undeploy
/manager	None specified	Tomcat Manager Application	true	1	Start Stop Reload Undeploy

- After fortress-web was already deployed to tomcat, and do another build and redeploy – can break the command into two different steps:
 - To rebuild fortress-rest (from root directory), use command: “mvn install -Dload.file=../src/main/resources/FortressWebDemoUsers.xml”:

```

jlg20@Archemy-JLG /cygdrive/c/
$ cd fortress-web-2.0.3/
jlg20@Archemy-JLG /cygdrive/c/fortress-web-2.0.3
$ mvn install -Dload.file=../src/main/resources/FortressWebDemoUsers.xml

```

- You should get a “Build Success”:

```
[INFO] Copying webapp resources [C:\fortress-web-2.0.3\src\main\webapp]
[INFO] Webapp assembled in [6887 mssecs]
[INFO] Building war: C:\fortress-web-2.0.3\target\fortress-web-2.0.3.war
[INFO] Packaging classes
[INFO] Building jar: C:\fortress-web-2.0.3\target\fortress-web-2.0.3-classes.jar
[INFO]
[INFO] >>> maven-source-plugin:2.4:jar (attach-sources) > generate-sources @ fortress-web >>
[INFO]
[INFO] <<< maven-source-plugin:2.4:jar (attach-sources) < generate-sources @ fortress-web <<<
[INFO]
[INFO] --- maven-source-plugin:2.4:jar (attach-sources) @ fortress-web ---
[INFO] Building jar: C:\fortress-web-2.0.3\target\fortress-web-2.0.3-sources.jar
[INFO]
[INFO] --- maven-site-plugin:3.4:attach-descriptor (attach-descriptor) @ fortress-web ---
[INFO]
[INFO] --- tools-maven-plugin:1.4:verify-legal-files (verify-legal-files) @ fortress-web ---
[INFO] Checking legal files in: fortress-web-2.0.3.war
[INFO] Checking legal files in: fortress-web-2.0.3-classes.jar
[INFO] Checking legal files in: fortress-web-2.0.3-sources.jar
[INFO]
[INFO] --- maven-install-plugin:2.5.2:install (default-install) @ fortress-web ---
[INFO] Installing C:\fortress-web-2.0.3\target\fortress-web-2.0.3.war to C:\Users\jlg20\.m2\repository\org\apache\directory\fortress\fortress-web\2.0.3\fortress-web-2.0.3.war
[INFO] Installing c:\fortress-web-2.0.3\pom.xml to C:\Users\jlg20\.m2\repository\org\apache\directory\fortress\fortress-web\2.0.3\fortress-web-2.0.3.pom
[INFO] Installing c:\fortress-web-2.0.3\target\fortress-web-2.0.3-classes.jar to C:\Users\jlg20\.m2\repository\org\apache\directory\fortress\fortress-web\2.0.3\fortress-web-2.0.3-classes.jar
[INFO] Installing c:\fortress-web-2.0.3\target\fortress-web-2.0.3-sources.jar to C:\Users\jlg20\.m2\repository\org\apache\directory\fortress\fortress-web\2.0.3\fortress-web-2.0.3-sources.jar
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 19.907 s
[INFO] Finished at: 2019-07-30T19:08:59-04:00
[INFO] -----
```

- To redeploy (don't use the tomcat:deploy command) – to redeploy, must use the following command: “mvn tomcat:redeploy”:

```
jlg20@Archemy-JLG /cygdrive/c/fortress-web-2.0.3
$ mvn tomcat:redeploy
```

- Should get a “Build Success”:

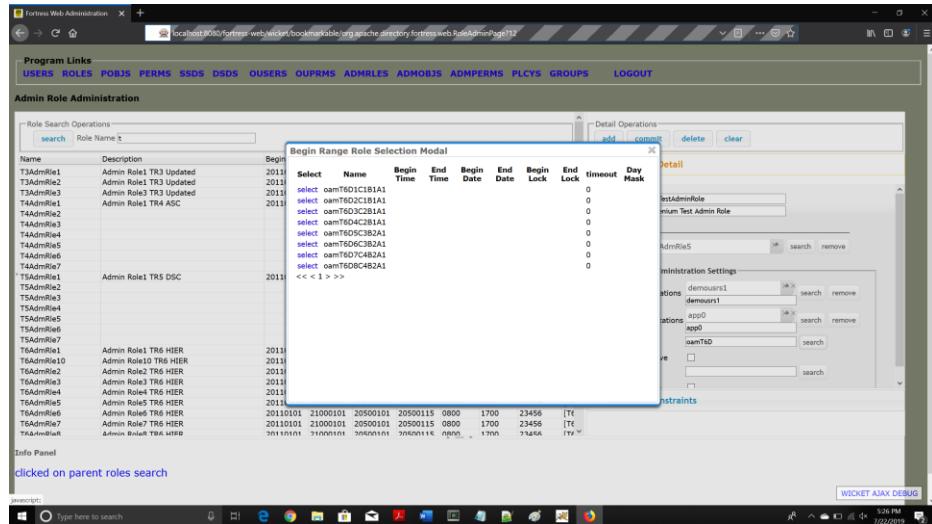
```
[INFO] Executed tasks
[INFO]
[INFO] --- maven-war-plugin:2.4:war (default-war) @ fortress-web ---
[INFO] Packaging webapp
[INFO] Assembling webapp [fortress-web] in [C:\fortress-web-2.0.3\target\fortress-web-2.0.3]
[INFO] Processing war project
[INFO] Copying webapp webResources [C:\fortress-web-2.0.3\src\main\resources] to [C:\fortress-web-2.0.3\target\fortress-web-2.0.3]
[INFO] Copying webapp resources [C:\fortress-web-2.0.3\src\main\webapp]
[INFO] Webapp assembled in [6858 mssecs]
[INFO] Building war: C:\fortress-web-2.0.3\target\fortress-web-2.0.3.war
[INFO] Packaging classes
[INFO] Building jar: C:\fortress-web-2.0.3\target\fortress-web-2.0.3-classes.jar
[INFO]
[INFO] >>> maven-source-plugin:2.4:jar (attach-sources) > generate-sources @ fortress-web >>
[INFO]
[INFO] <<< maven-source-plugin:2.4:jar (attach-sources) < generate-sources @ fortress-web <<<
[INFO]
[INFO] --- maven-source-plugin:2.4:jar (attach-sources) @ fortress-web ---
[INFO] Building jar: C:\fortress-web-2.0.3\target\fortress-web-2.0.3-sources.jar
[INFO]
[INFO] --- maven-site-plugin:3.4:attach-descriptor (attach-descriptor) @ fortress-web ---
[INFO]
[INFO] <<< tomcat-maven-plugin:1.0-beta-1:redeploy (default-cli) < package @ fortress-web <<<
[INFO]
[INFO] --- tomcat-maven-plugin:1.0-beta-1:redeploy (default-cli) @ fortress-web ---
[INFO] Deploying war to http://localhost:8080/fortress-web
[INFO] OK - Deployed application at context path [/fortress-web]
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 22.110 s
[INFO] Finished at: 2019-07-30T19:11:14-04:00
[INFO] -----
```

g. Run Selenium Web Driver Integration Test

To run this test, you can also run the FortressJUnit test in Fortress Core. See <https://directory.apache.org/fortress/gen-docs/latest/apidocs/org/apache/directory/fortress/core/doc-files/apache-fortress-core.html>

To run this test, follow the below steps.

- Run from root directory of Fortress-web
 - Run the test command: “mvn test -Dtest=FortressWebSeleniumITCase”:
 - It will launch the Firefox browser conducting the test:



- When the test completes, should also get a build success:

```
[/cygdrive/c/fortress-web-2.0.3
l_win.cc: line 341
[Child 6684, Chrome_ChildThread] WARNING[Parent 13036, Gecko_IOThread] WARNING: pipe error: 109: file z:/task_1563383129/build/src/ipc/chromium/src/chrome/common/ipc_channel_lwin.cc, line 341
[Child 9172, chrome_ChildThread] WARNING: pipe error: 109: file z:/task_1563383129/build/src/ipc/chromium/src/chrome/common/ipc_channe
l_win.cc: line 341
[Child 9172, chrome_ChildThread] WARNING: pipe error: 109: file z:/task_1563383129/build/[Parent 13036, Gecko_IOThread] WARNING: pipe
error: 109: file z:/task_1563383129/build/src/ipc/chromium/src/chrome/common/ipc_channel_lwin.cc, line 341
[Child 9172, chrome_ChildThread] WARNING: pipe error: 109: file z:/task_1563383129/build/src/ipc/chromium/src/chrome/common/ipc_chann
el_lwin.cc: line 341
[GPU 3080, chrome_ChildThread]
###!!! [Child][RunMessage] Error: Channel closing: too late to send/recv, messages will be lost
WAR
###!!! [Child][MessageChannel::SendAndWait] Error: Channel error: cannot send/recv
Tests run: 2, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 274.107 sec - in org.apache.directory.fortress.web.integration.Fortres
sWebSeleniumITCase
Results :
Tests run: 2, Failures: 0, Errors: 0, Skipped: 0
[INFO]
[INFO] --- maven-antrun-plugin:1.8:run (default) @ fortress-web ---
[INFO] Executing tasks
[INFO]
fortress-load;
[INFO] Executed tasks
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 04:39 min
[INFO] Finished at: 2019-07-22T17:28:27-04:00
[INFO] -----
```

4. Deploy ArchNav

a. Build and Deploy ArchNav Security Application

To build and deploy the ArchNav Security application, follow the below steps.

- Copy the fortress.properties file from Fortress-core to the ArchNav FortressSecurity directory:

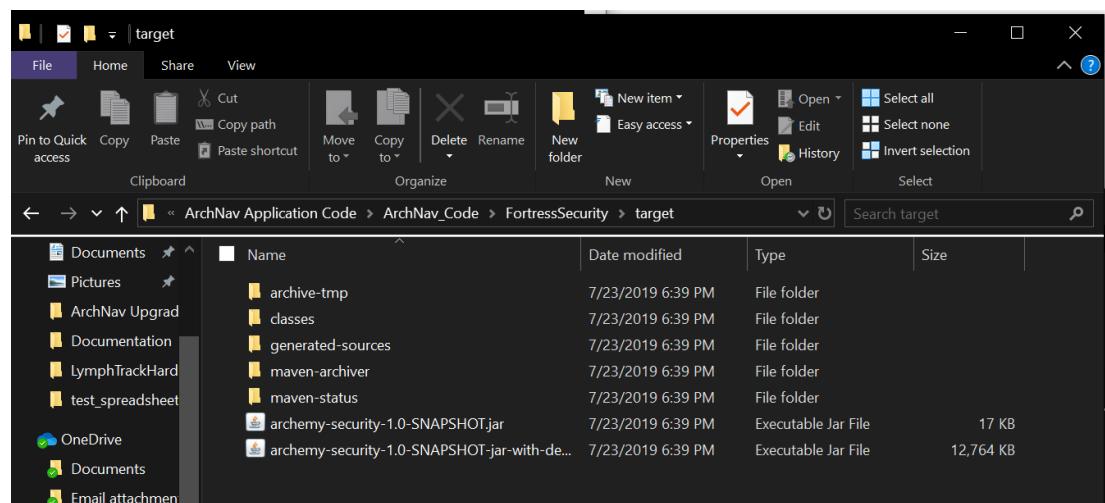
Copy from C:\fortress-core-2.0.3\config\

to

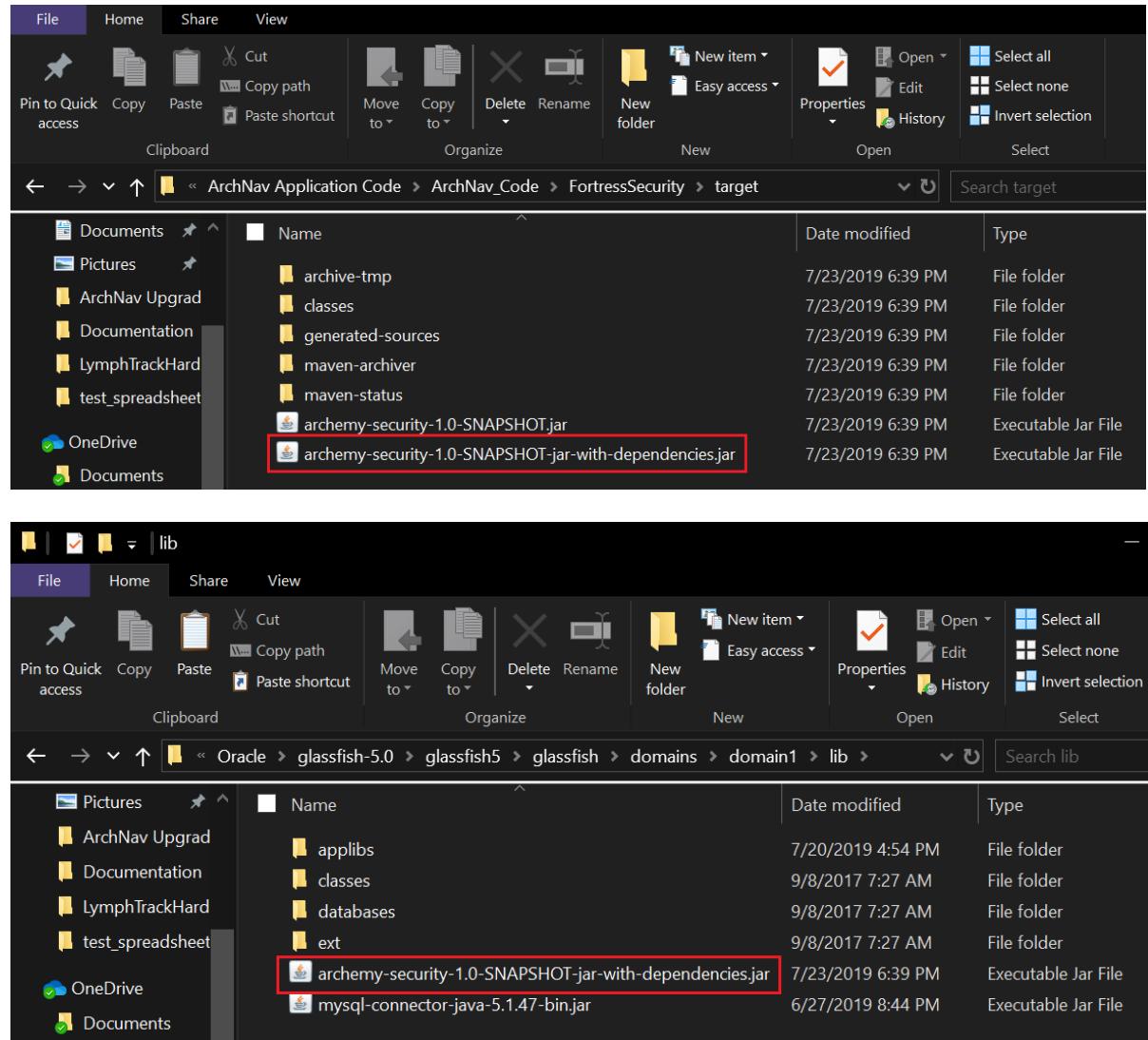
D:\Archemy\Archemy Solutions And Tools\Archemy Platform\ArchNav Tool\ArchNav Upgrade - June 2019\ArchNav Application Code\ArchNav_Code\FortressSecurity\src\main\resources\

- In the FortressSecurity directory (root directory):
 - Run the command: “mvn clean install”.
 - Should get a build success and the JAR files generated as per the screenshots below:

```
[jlg20@Archemy-JLG ~]$ cd /cygdrive/d/Archemy/Archemy Solutions And Tools/Archemy Platform/ArchNav Tool/ArchNav Upgrade - June 2019/ArchNav Application Code/ArchNav_Code/FortressSecurity
[jlg20@Archemy-JLG ~]$ mvn clean install
[INFO] Scanning for projects...
[INFO]
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-repository-builder/1.0-alpha-2/maven-repository-builder-1.0-alpha-2.jar (58 kB at 412 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-repository-builder/1.0-alpha-2/maven-repository-builder-1.0-alpha-2.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/file-management/1.1/file-management-1.1.jar (31 kB at 200 kB/s)
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-io/1.1/maven-shared-io-1.1.jar (39 kB at 230 kB/s)
[INFO] Downloaded from central: https://repo.maven.apache.org/maven/org/apache/wagon/wagon-provider-api/1.0-alpha-6/wagon-provider-api-1.0-alpha-6.jar (43 kB at 196 kB/s)
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-repository-builder/1.0-alpha-2/maven-repository-builder-1.0-alpha-2.jar (23 kB at 93 kB/s)
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/2.2/plexus-archiver-2.jar (185 kB at 698 kB/s)
[INFO] Building jar: D:\Archemy\Archemy Solutions And Tools\Archemy Platform\ArchNav Tool\ArchNav Upgrade - June 2019\ArchNav Application Code\ArchNav_Code\FortressSecurity\target\alchemy-security-1.0-SNAPSHOT-jar-with-dependencies.jar
[INFO]
[INFO] [INFO] --- maven-install-plugin:2.4:install (default-install) @ alchemy-security ---
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.0.5/plexus-utils-3.0.5.pom
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.0.5/plexus-utils-3.0.5.pom (2.5 kB at 53 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-digest/1.0/plexus-digest-1.0.pom
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-digest/1.0/plexus-digest-1.0.pom (1.1 kB at 23 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-components/1.1.7/plexus-components-1.1.7.pom
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-components/1.1.7/plexus-components-1.1.7.pom (5.0 kB at 160 kB/s)
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.0.5/plexus-utils-3.0.5.jar
[INFO] Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-digest/1.0/plexus-digest-1.0.jar
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-digest/1.0/plexus-digest-1.0.jar (12 kB at 109 kB/s)
[INFO] Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.0.5/plexus-utils-3.0.5.jar (230 kB at 703 kB/s)
[INFO] Installing D:\Archemy\Archemy Solutions And Tools\Archemy Platform\ArchNav Tool\ArchNav Upgrade - June 2019\ArchNav Application Code\ArchNav_Code\FortressSecurity\target\alchemy-security-1.0-SNAPSHOT-jar to C:\Users\jlg20\.m2\repository\alchemy-security\alchemy-security\1.0-SNAPSHOT\alchemy-security-1.0-SNAPSHOT.jar
[INFO] Installing D:\Archemy\Archemy Solutions And Tools\Archemy Platform\ArchNav Tool\ArchNav Upgrade - June 2019\ArchNav Application Code\ArchNav_Code\FortressSecurity\pom.xml to C:\Users\jlg20\.m2\repository\alchemy-security\alchemy-security\1.0-SNAPSHOT\alchemy-security-1.0-SNAPSHOT.pom
[INFO] Installing D:\Archemy\Archemy Solutions And Tools\Archemy Platform\ArchNav Tool\ArchNav Upgrade - June 2019\ArchNav Application Code\ArchNav_Code\FortressSecurity\target\alchemy-security-1.0-SNAPSHOT-jar-with-dependencies.jar to C:\Users\jlg20\.m2\repository\alchemy-security\alchemy-security\1.0-SNAPSHOT\alchemy-security-1.0-SNAPSHOT-jar-with-dependencies.jar
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 19.806 s
[INFO] Finished at: 2019-07-23T18:39:40+04:00
[INFO]
```



- Integrated the built archemy-security JAR file with Glassfish by copying the archemy-security-1.0-SNAPSHOT-jar-with-dependencies.jar file into the Glassfish domain1/lib directory:



b. Configure Fortress to Include ArchNav Authentication and RBAC Details

To setup ArchNav authentication and RBAC details, follow the steps below.

- Create Admin and Normal user roles:
 - Under “ADMRLS”
 - Add “Admin” role with description “Archemy Admin Roles”:

The screenshot shows the 'Admin Role Administration' page. In the main list, there is a row for 'Admin' with the description 'Archemy Admin Roles'. This row is highlighted with a red box. On the right, a detailed view of this role is shown in a modal window, also with a red box around it. The modal contains fields for Name (Admin), Description (Archemy Admin Roles), and Internal ID (3b593a57-6951-482a-8574-c31935620dc7).

- Click “commit” after adding each entry.
- Under “ROLES”:
 - Add role name “NormalUser” with description “Archemy Normal User Roles”:

The screenshot shows the 'RBAC Role Administration' page. In the main list, there is a row for 'NormalUser' with the description 'Archemy Normal User Roles'. This row is highlighted with a red box. On the right, a detailed view of this role is shown in a modal window, also with a red box around it. The modal contains fields for Name (NormalUser), Description (Archemy Normal User Roles), and Internal ID (fe7e5f9d-7798-402d-8e17-e226e18785cd).

- Click “commit” after adding each entry.
- Create administrative permission objects
 - Click “ADMOBJS”
 - Add the following entries:

Object Name	Perm Organization	Description
manage-areas	default	Archemy Manage Areas Permission Object for Admins
manage-dimensions	default	Archemy Manage Dimensions Permission Object for Admins
manage-domains	default	Archemy Manage Domains Permission Object for Admins
manage-bus-probs	default	Archemy Manage Business Problems Permission Object for Admins

Object Name	Perm Organization	Description
AROBJ2_1	APP1	Test Case AROBJ_2
AROBJ2_2	APP1	Test Case AROBJ_2
AROBJ2_3	APP1	Test Case AROBJ_2
AROBJ2_4	APP1	Test Case AROBJ_2
AROBJ2_5	APP1	Test Case AROBJ_2
DelAdminMgr	APP1	ARBAC02 policies
manage-areas	default	Archemy Manage Areas Permission Object for Admins
manage-bus-probs	default	Archemy Manage Business Problems Permission Object for Admins
manage-dimensions	default	Archemy Manage Dimensions Permission Object for Admins
manage-domains	default	Archemy Manage Domains Permission Object for Admins
org.apache.directory.fortress.core.impl.AccessMgrImpl	default	Access Manager Policies
org.apache.directory.fortress.core.impl.AdmirMgrImpl	default	RBAC admin policies

- Click “commit” after adding each entry.
- All entries should appear in the Fortress web app (see above) as well as in Apache Directory Studio (see below):

Attribute Description	Value
objectClass	ftMods (structural)
objectClass	ftObject (structural)
objectClass	ftProperties (structural)
objectClass	organizationalUnit (structural)
objectClass	top (abstract)
ou	default
description	Archemy Manage Areas Permission Object for Admins
ftId	9405e46a-0b8a-4dfb-8654-6ad1616b6e5a
ftModCode	AdminMgrImplUpdatePermObj
ftModId	fb9ace30-6598-4e9b-9bd8-62edf5263044
ftModifier	1c18e95a-ad31-4c0f-ac49-8fe45d06c329
ftObjNm	manage-areas

- Create administrative permissions
 - Click “ADMPERMS”
 - Locate the entries for the administrative objects created in the previous steps by clicking on the “Search” button in the right-hand frame labeled “Administrative Permission Operation Detail” and use the popup to select the administrative object that was created in the previous step:

- Create the following entries:

Object Name	Operation Name	Description
manage-areas	View	Archemy Admins Operation Name for Manage Areas
manage-dimensions	View	Archemy Admins Operation Name for Manage Dimensions
manage-domains	View	Archemy Admins Operation Name for Manage Domains
manage-bus-probs	View	Archemy Admins Operation Name for Manage Business Problems

- For each of the above entries, set “Admin” for the “Roles” field.
- Click “commit” after adding each entry.
- The added entries should appear in Fortress and Apache Directory Studio:

- Create Normal User Permission Objects
 - Click “POBJS”
 - Add the following entries:

Object Name	Perm Organization	Description
customer-profile	default	Archemy Customer Profile Permission Object for Normal Users
register-kad-usage	default	Archemy Register KAD Usage Permission Object for Normal Users

- Click “Commit” after each entry is added.
- Entries should appear in the Fortress web app:

The screenshot shows the 'Permission Object Page' in the Fortress Web Administration interface. The page title is 'Permission Object Page'. At the top, there is a search bar and filter options for 'Object Name' and 'Perm Organization'. Below the header, a table lists various permission objects with their descriptions. Two specific entries, 'customer-profile' and 'register-kad-usage', are highlighted with a red box. The 'customer-profile' entry has a detailed description: 'Archemy Customer Profile Permission Object for Normal Users'. The 'register-kad-usage' entry also has a detailed description: 'Archemy Register KAD Usage Permission Object for Normal Users'.

Object Name	Perm Organization	Description
Account	APP0	Things we can do with Customer Accounts
Branch	APP0	Functions corresponds with a particular branch
Currency	APP0	Things we can do with currency
customer-profile	default	Archemy Customer Profile Permission Object for Normal Users
register-kad-usage	default	Archemy Register KAD Usage Permission Object for Normal Users
TellersPage	APP0	Used by Tellers
TOB1_1	APP1	Test Case TOB1
TOB1_2	APP2	Test Case TOB1
TOB1_3	APP3	Test Case TOB1

- Create Normal User Permissions
 - Click “PERMS”
 - Search for each Normal User Object and add the following Normal User Permissions by clicking “Search” in the “RBAC Permission Operation Detail” frame and selecting from the popup:

The screenshot shows the 'RBAC Permission Object Selection Modal' dialog box. On the left, a list of objects is shown with checkboxes. Two objects are selected: 'customer-profile' and 'register-kad-usage'. These are highlighted with a red box. On the right, a 'On Operation Detail' frame is open, containing a search bar and a list of operations. The 'search' button in this frame is also highlighted with a red box.

Select	Object Name	Description	Organization Type
A	select: Account	Things we can do with Customer Accounts	APP0 TST
B	select: Branch	Functions corresponds with a particular branch	APP0 TST
C	select: Currency	Things we can do with currency	APP0 TST
D	select: customer-profile	Archemy Customer Profile Permission Object for Normal Users	default
E	select: register-kad-usage	Archemy Register KAD Usage Permission Object for Normal Users	default
F	select: TellersPage	Used by Tellers	APP0 TST
G	select: TOB1_1	Test Case TOB1	APP1 TST
H	select: TOB1_2	Test Case TOB1	APP2 TST
I	select: TOB1_3	Test Case TOB1	APP3 TST
J	select: TOB1_4	Test Case TOB1	APP4 TST
K	select: TOB2_1	Test Case TOB2	APP1 TST
L	select: TOB2_2	Test Case TOB2	APP2 TST
M	select: TOB2_3	Test Case TOB3	APP3 TST
N	select: TOB2_4	Test Case TOB2	APP4 TST
O	select: TOB3_1	Test Case TOB3	APP1 TST
P	select: TOB3_2	Test Case TOB3	APP2 TST

- Enter the below data:

Object Name	Operation Name	Description
customer-profile	View	Archemy Operation Name for Normal Users Customer Profile Permission Object
register-kad-usage	View	Archemy Operation Name for Normal Users Register KAD Usage Permission Object

- Add “NormalUser” for the Roles field.
- Click “commit” for each added entry.
- The entries should appear:

Permission Operation Page				
Permission Search Operations				
Object Name	Object Id	Operation Name	Description	RBAC
Account		deposit	account.deposit function	[Telle]
Account		inquiry	account.inquiry function	[Telle]
Account		withdrawal	dccount.withdrawal function	[Telle]
Branch		login	ability to login to branch web app	[Bank]
Currency		dry	Currency.dry function	[Was]
Currency		rinse	Currency.rinse function	[Was]
Currency		soak	Currency.soak function	[Was]
customer-profile		View	Alchemy Operation Name for Normal Users C []	
register-kad-usage		View	Alchemy Operation Name for Normal Users R []	
TellersPage		link	Tellers will view this link	[Telle]
TOB1_1	001	TOP1_1	TOP1 Updated	[oam]
TOB1_1	010	TOP1_10	TOP1 Updated	[oam]

- Create Admin Permission Objects for Catalog Add, Delete, and View Cust Name Operations
 - Click on “ADMLOBJS”
 - Add the following entries:

Object Name	Perm Organization	Description
searchoraddcatalog	default	Alchemy Admins Add Catalog Operation Name for Search and Add Catalog Permission Object
view-customer-name	default	Alchemy Admins Operation Name for View Customer Name Permission Object
customer-info	default	Alchemy Customer Information Permission Object for Admins

- Click “commit” after each added entry.
- Entries should appear in Fortress:

Administrative Permission Object Page		
Object Name	Perm Organization	Description
AROBJ2_1	APP1	Test Case AROBJ_2
AROBJ2_2	APP1	Test Case AROBJ_2
AROBJ2_3	APP1	Test Case AROBJ_2
AROBJ2_4	APP1	Test Case AROBJ_2
AROBJ2_5	APP1	Test Case AROBJ_2
DelAdminMgr	APP1	RBAC02 policies
manage-areas	default	Archemy Manage Areas Permission Object for Admins
manage-bus-probs	default	Archemy Manage Domains Permission Object for Admins
manage-dimensions	default	Archemy Manage Dimensions Permission Object for Admins
manage-domains	default	Archemy Manage Domains Permission Object for Admins
org.apache.directory.fortress.core.impl.Acce	default	Access Manager Policies
org.apache.directory.fortress.core.impl.Admir	default	RBAC admin policies
org.apache.directory.fortress.core.impl.Audit	default	RBAC audit review
org.apache.directory.fortress.core.impl.DelAc	default	Delegated Access Manager Policies
org.apache.directory.fortress.core.impl.DelAd	default	RBAC02 admin policies
org.apache.directory.fortress.core.impl.DelRe	default	RBAC review policies
org.apache.directory.fortress.core.impl.Group	default	LDAP Group admin policies
org.apache.directory.fortress.core.impl.PwPol	default	Password policies
org.apache.directory.fortress.core.impl.Revi	default	RBAC review policies
searchoraddcatalog	default	Archemy Admins Add Catalog Operation Name for Search and Add Catalog
view-customer-name	default	Archemy Admins Operation Name for View Customer Name Permission Ob

- Create a user organizational unit administration object.
 - Click on “OUSERS”
 - Enter the following fields:

Name	Description
“Archemy-Users”	Archemy Users OU

- Click “Add” and then click “Commit”
- Create an Admin user.
 - Click on “USERS”
 - Fill in the following fields:

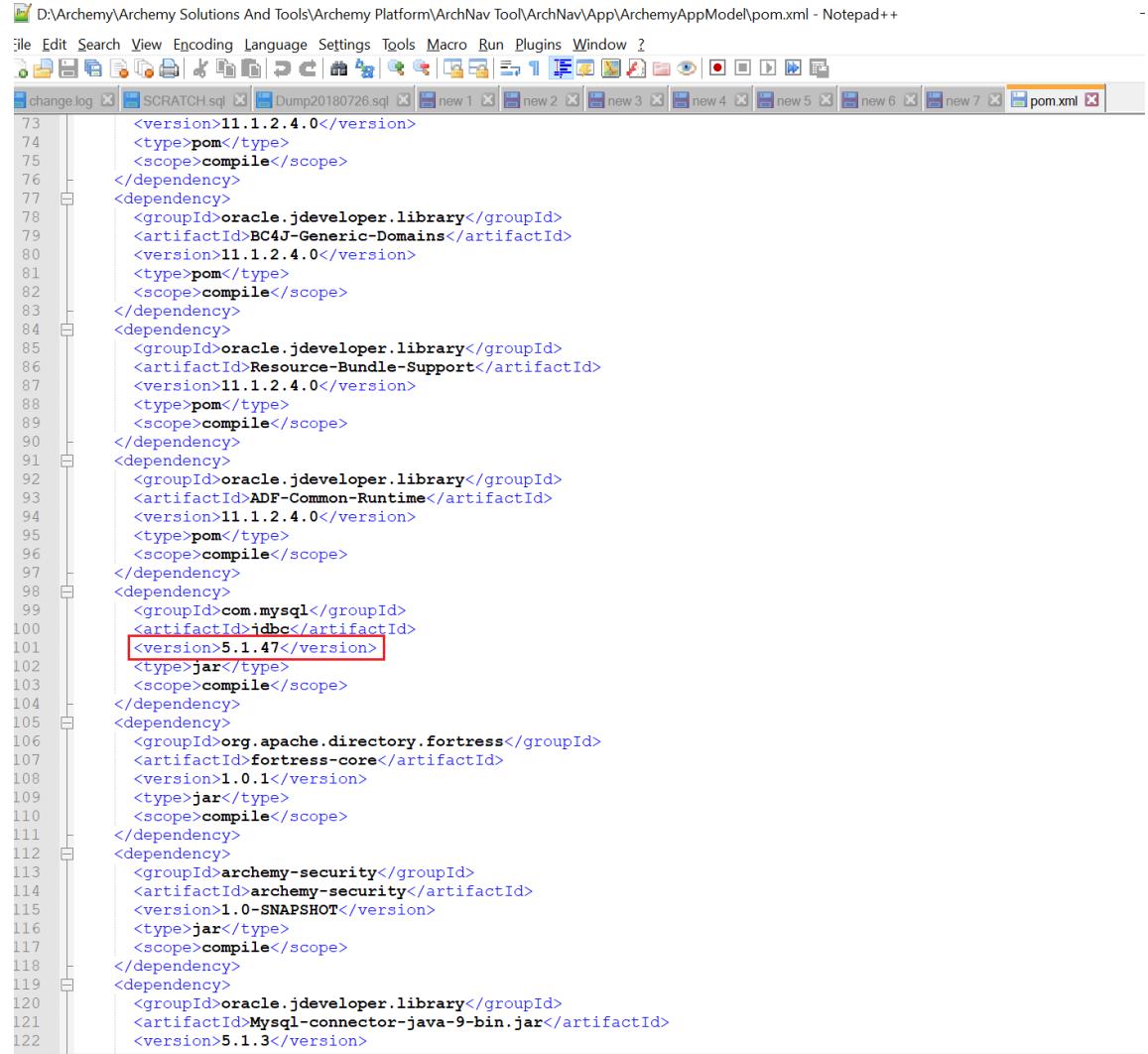
User Id	Password	User Organization	Admin Role Assignments
<create username> (use an email address as the username)	<create password>	Archemy- Users	Admin

- Must click “Add” and then “Commit” first to create the user before assigning “Admin” as the “Admin Role Assignments”. When add “Admin” as an “Admin Role Assignments” must click on “Assign” button and then click on the “Commit” again. To confirm the Admin role assignment was successful, click on “USERS” to refresh the list of users, and scroll to the right. “Admin” should be listed as an “Admin Role Assignments”.

c. Build the ArchNav Application

To build the ArchNav application, follow the steps below.

- Configure ArchemyAppModel to point to the correct version of the MySQL driver (do this before loading the ArchNav project into JDeveloper).
 - Open the pom.xml file in an editor.
 - Change the version for the MySQL Driver:

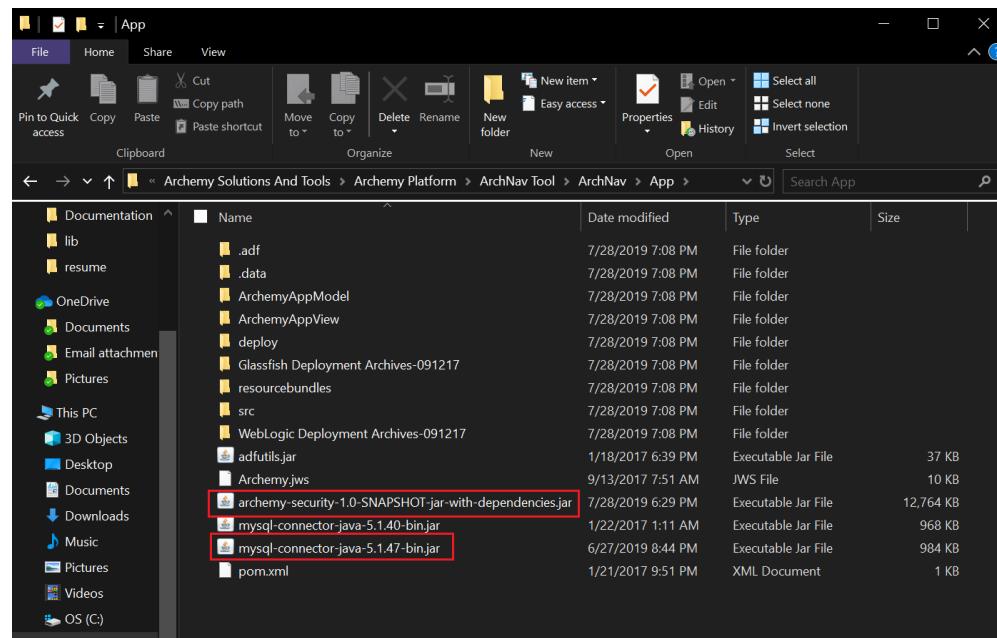


```

D:\Archemy\Archemy Solutions And Tools\Archemy Platform\ArchNav Tool\ArchNav\App\ArchemyAppModel\pom.xml - Notepad++
File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?
change.log SCRATCH.sql Dump20180726.sql new 1 new 2 new 3 new 4 new 5 new 6 new 7 pom.xml
73   <version>11.1.2.4.0</version>
74   <type>pom</type>
75   <scope>compile</scope>
76 </dependency>
77 <dependency>
78   <groupId>oracle.jdeveloper.library</groupId>
79   <artifactId>BC4J-Generic-Domains</artifactId>
80   <version>11.1.2.4.0</version>
81   <type>pom</type>
82   <scope>compile</scope>
83 </dependency>
84 <dependency>
85   <groupId>oracle.jdeveloper.library</groupId>
86   <artifactId>Resource-Bundle-Support</artifactId>
87   <version>11.1.2.4.0</version>
88   <type>pom</type>
89   <scope>compile</scope>
90 </dependency>
91 <dependency>
92   <groupId>oracle.jdeveloper.library</groupId>
93   <artifactId>ADF-Common-Runtime</artifactId>
94   <version>11.1.2.4.0</version>
95   <type>pom</type>
96   <scope>compile</scope>
97 </dependency>
98 <dependency>
99   <groupId>com.mysql</groupId>
100  <artifactId>jdbc</artifactId>
101  <version>5.1.47</version> highlighted line
102  <type>jar</type>
103  <scope>compile</scope>
104 </dependency>
105 <dependency>
106   <groupId>org.apache.directory.fortress</groupId>
107   <artifactId>fortress-core</artifactId>
108   <version>1.0.1</version>
109   <type>jar</type>
110   <scope>compile</scope>
111 </dependency>
112 <dependency>
113   <groupId>archemy-security</groupId>
114   <artifactId>archemy-security</artifactId>
115   <version>1.0-SNAPSHOT</version>
116   <type>jar</type>
117   <scope>compile</scope>
118 </dependency>
119 <dependency>
120   <groupId>oracle.jdeveloper.library</groupId>
121   <artifactId>Mysql-connector-java-9-bin.jar</artifactId>
122   <version>5.1.3</version>

```

- Copy relevant JAR files:
 - Copy the highlighted below JAR files into the “App” directory. The MySQL connector JAR file was downloaded and installed into Glassfish. The archemy-security JAR file was generated during a maven build when generated the Archemy Security piece.



- Change the header in faces-config.xml
 - Open the faces-config.xml file located in:

..../ArchemyAppView/public_html/WEB-INF/

- Change the <faces-config> tab, replace:

`<faces-config version="2.0" xmlns="http://java.sun.com/xml/ns/javaee">`

```

<?xml version="1.0" encoding="windows-1252"?>
<faces-config version="2.0" xmlns="http://java.sun.com/xml/ns/javaee">
  <application>
    <default-render-kit-id>oracle.adf.rich</default-render-kit-id>
    <el-resolver>com.chemistry.searchapp.view.el.resolver.FortressSecurityResolver</el-resolver>
  </application>
  <navigation-rule>
    <from-view-id>*</from-view-id>
    <navigation-case>
      <from-outcome>logout</from-outcome>
      <to-view-id>/login.jspx</to-view-id>
      <redirect/>
    </navigation-case>
  </navigation-rule>
  <navigation-rule>
    <from-view-id>/login.jspx</from-view-id>
    <navigation-case>
      <from-outcome>changePassword</from-outcome>
      <to-view-id>/changePassword.jspx</to-view-id>
      <redirect/>
    </navigation-case>
  </navigation-rule>
  <navigation-case>
    <from-outcome>success</from-outcome>
    <to-view-id>/secured/Home.jspx</to-view-id>
    <redirect/>
  </navigation-case>
  </navigation-rule>
</faces-config>

```

- And put the following in place:

```
<faces-config
    xmlns="http://java.sun.com/xml/ns/javaee"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee/web-
facesconfig_2_2.xsd"
    version="2.1">
```

```

1 <?xml version="1.0" encoding="windows-1252"?>
2 <faces-config
3     xmlns="http://java.sun.com/xml/ns/javaee"
4     xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
5     xsi:schemaLocation="http://xmlns.jcp.org/xml/ns/javaee/web-
facesconfig_2_2.xsd"
6     version="2.1">
7 <application>
8     <default-render-kit-id>oracle.adf.rich</default-render-kit-id>
9     <el-resolver>com.chemistry.searchapp.view.el.resolver.FortressSecurityResolver</el-resolver>
10    </application>
11    <navigation-rule>
12        <from-view-id>*</from-view-id>
13        <navigation-case>
14            <from-outcome>logout</from-outcome>
15            <to-view-id>/Login.jspx</to-view-id>
16            <redirect/>
17        </navigation-case>
18    </navigation-rule>
19    <navigation-rule>
20        <from-view-id>/login.jspx</from-view-id>
21        <navigation-case>
22            <from-outcome>changePassword</from-outcome>
23            <to-view-id>/changePassword.jspx</to-view-id>
24            <redirect/>
25        </navigation-case>
26        <navigation-case>
27            <from-outcome>success</from-outcome>
28            <to-view-id>/secured/Home.jspx</to-view-id>
29            <redirect/>
30        </navigation-case>
31    </navigation-rule>
32 </faces-config>

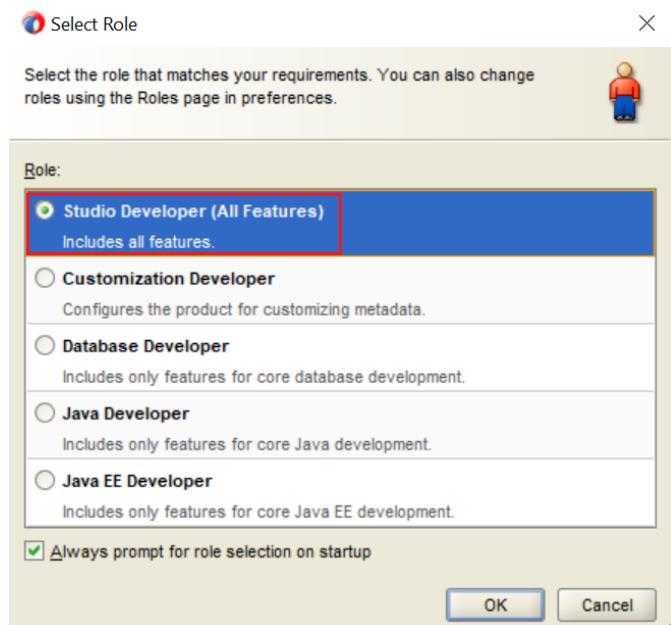
```

- Once import the code into JDeveloper, navigate to ArchemyAppView → Web Content → WEB-INF and open the faces-config.xml in the JDeveloper IDE editor. Click on the “Source” tab at the bottom of the open file. There should be no errors. If there are errors, these must be corrected before doing a build and then deploy.

d. Import Archemy Workspece into jDeveloper

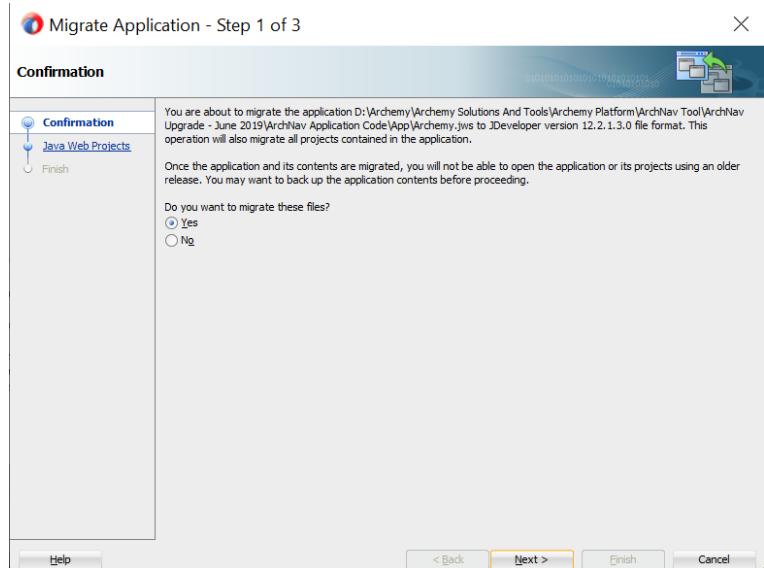
To import the Archemy workspace into jDeveloper, follow the below steps.

- To import the Archemy workspace:
 - Launch JDeveloper in “Studio Developer” mode

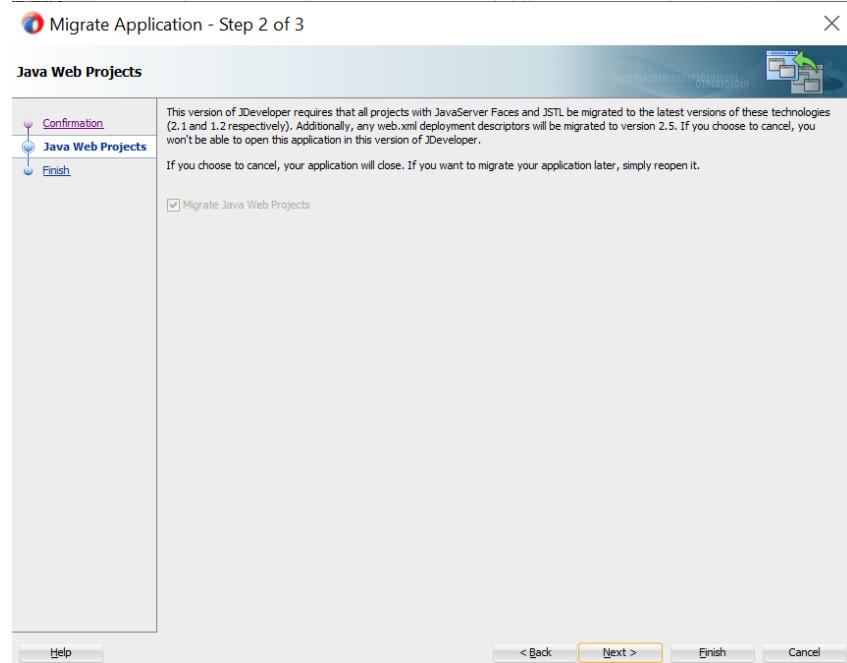


- In JDeveloper, go to File → Open.
- Navigate to and select Archemy.jws under the App directory.
- Select “Yes” and click “Next” to migrate the Archemy workspace to be compatible with JDeveloper 12c.

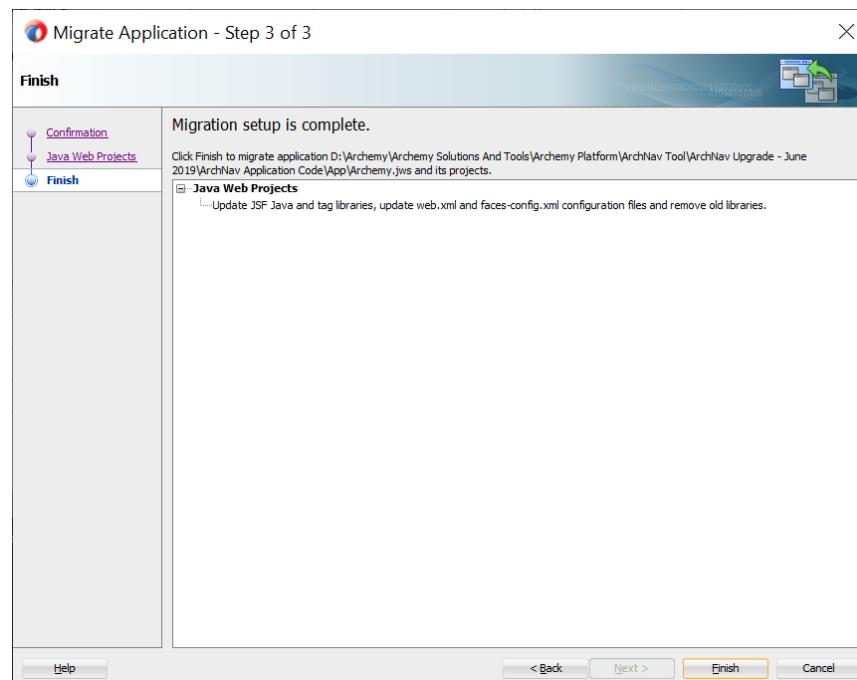
NOTE: the migration step was already performed to upgrade the ArchNav application project file for a later version of jDeveloper and thus is not required at this point.



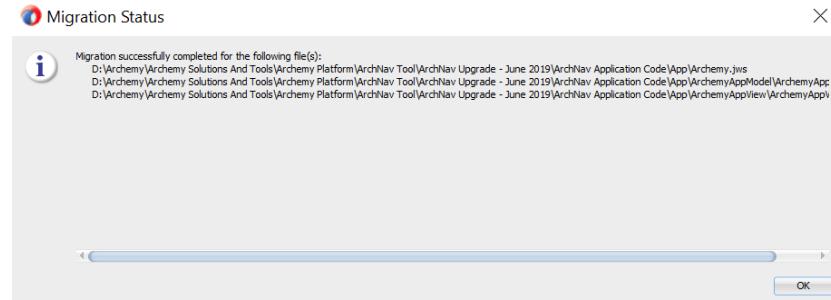
- Click “Next” to migrate JavaServer Faces and JSTL:



- When the migration is completed, the below page will confirm the migration setup was complete:



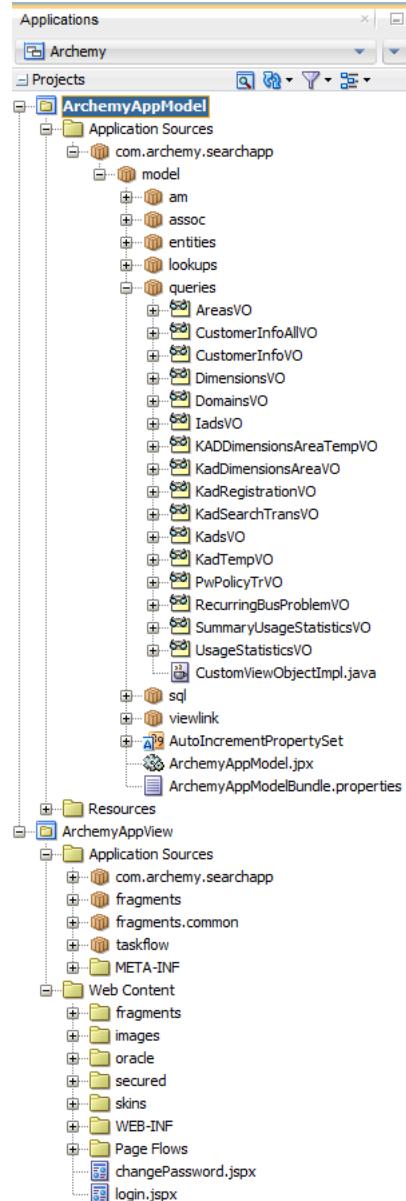
- Click "Finish" to start the actual migration process.
- When the migration is complete, the following dialog will appear indicating that the migration was successful and completed:



- Click "Ok". The message log in JDeveloper should list the files that were migrated:

```
Messages - Log
INFO: Check for index data updates
Jun 26, 2019 3:23:18 PM oracle.jdeveloper.maven.util.MavenUtil$4 transferStarted
INFO: Downloading nexus-maven-repository-index.properties
Jun 26, 2019 3:23:18 PM oracle.jdeveloper.maven.util.MavenUtil$4 transferCompleted
INFO: Done: nexus-maven-repository-index.properties
[3:23:38 PM] Migration started.
Jun 26, 2019 3:25:26 PM oracle.adf.share.dt.migration.wsm.PolicyAttachmentMigratorHelper migrate
INFO: Not an ADF application. No adf-config.xml at file://D:/Archesy/Archesy Solutions And Tools/Archesy Platform/ArchNav Tool/ArchNav Upgrade - June 2019/ArchNav Application Code/app/.adf/META-INF/adf-config.xml
Jun 26, 2019 3:25:31 PM oracle.adf.share.config.ADFConfigFactory findOrCreateADFConfig
INFO: Resource META-INF/adf-config.xml not found on the classpath.
Jun 26, 2019 3:25:31 PM oracle.adf.share.config.ADFConfigFactory findOrCreateADFConfig
INFO: A default implementation of ADFConfig is being created for application. This can lead to unexpected results in some cases. Please add a basic META-INF/adf-config.xml to your classpath to avoid functional errors.
Jun 26, 2019 3:25:33 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Migrating Faces Config
Jun 26, 2019 3:25:35 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Removing Tag Libraries from Project: JSF Core 2.0, JSF HTML 2.0
Jun 26, 2019 3:25:35 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Removing Tag Libraries from Project: JSF Core 2.0, JSF HTML 2.0
Jun 26, 2019 3:25:35 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Adding Tag Libraries to Project: JSF Core 2.2, JSF HTML 2.2
Jun 26, 2019 3:25:35 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Removing Tag Libraries from Project: JSF Core 2.0, JSF HTML 2.0
Jun 26, 2019 3:25:35 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Removing Tag Libraries from Project: JSF Core 2.0, JSF HTML 2.0
Jun 26, 2019 3:25:35 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Removing Tag Libraries from Project: JSF Core 2.2, JSF HTML 2.2
Jun 26, 2019 3:25:35 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Adding Tag Libraries to Project: JSF Core 2.2, JSF HTML 2.2
Jun 26, 2019 3:25:36 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Cleaning 'jpx' directory
Jun 26, 2019 3:25:36 PM oracle.jdevimpl.webapp.faces.migration.MigratorMessageLog updateProgress
INFO: Cleaning 'tags' directory
Migration successfully completed for the following file(s):
D:\Archesy\Archesy Solutions And Tools\Archesy Platform\ArchNav Tool\ArchNav Upgrade - June 2019\ArchNav Application Code\app\Archesy.jws
D:\Archesy\Archesy Solutions And Tools\Archesy Platform\ArchNav Tool\ArchNav Upgrade - June 2019\ArchNav Application Code\app\ArchesyAppModel\ArchesyAppModel.jpr
D:\Archesy\Archesy Solutions And Tools\Archesy Platform\ArchNav Tool\ArchNav Upgrade - June 2019\ArchNav Application Code\app\ArchesyAppView\ArchesyAppView.jpr
[3:25:38 PM] Migration finished.
```

- After the Archesy.jws workspace loads, the following directory structure for the project should appear in JDeveloper:



- Update JDK in JDeveloper using setProperty.cmd (Windows) script (see <https://docs.oracle.com/middleware/12213/jdev/install/GUID-4230A928-7BE8-4D23-B8F9-1CB2D4EDEC33.htm#OJDIG-GUID-A02C7708-B331-4A8C-B1C7-B35E289C7A5B>):

```

C:\ Command Prompt

96/26/2019 12:12 PM <DIR> .
96/26/2019 12:12 PM <DIR> ..
96/27/2019 06:36 PM <DIR> Oracle_Home
    0 File(s) 0 bytes
    3 Dir(s) 415,962,497,024 bytes free

C:\Oracle\Middleware>Oracle_Home\oui\binsetProperty.cmd -name OLD_JAVA_HOME -value C:\\\\Oracle\\\\Middleware\\\\Oracle_Home\\\\oracle_common\\\\jdk
Property OLD_JAVA_HOME successfully set to "C:\\\\Oracle\\\\Middleware\\\\Oracle_Home\\\\oracle_common\\\\jdk"

C:\Oracle\Middleware>Oracle_Home\oui\binsetProperty.cmd -name OLD_JAVA_HOME -value C:\Oracle\Middleware\Oracle_Home\oracle_common\jdk
Property OLD_JAVA_HOME successfully set to "C:\Oracle\Middleware\Oracle_Home\oracle_common\jdk"

C:\Oracle\Middleware>Oracle_Home\oui\binsetProperty.cmd -name JAVA_HOME -value C:\Program Files\Java\jdk-12.0.1
Usage: setProperty [ <option> | <option> <value> ]
Where <option> includes:
  -name <property name>
  -value <property value>
  -jreLoc <Java Home>
  -debug
  -help

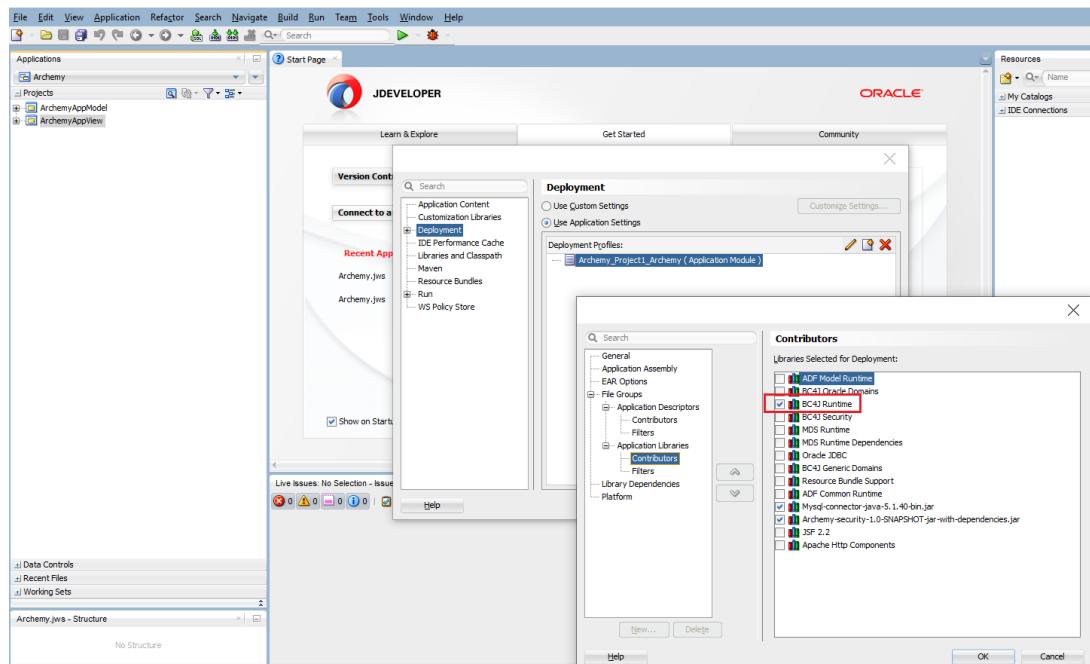
C:\Oracle\Middleware>Oracle_Home\oui\binsetProperty.cmd -name JAVA_HOME -value C:\Oracle\Middleware\Oracle_Home\oracle_common\jdk-12.0.1
Property JAVA_HOME successfully set to "C:\Oracle\Middleware\Oracle_Home\oracle_common\jdk-12.0.1"
C:\Oracle\Middleware>

```

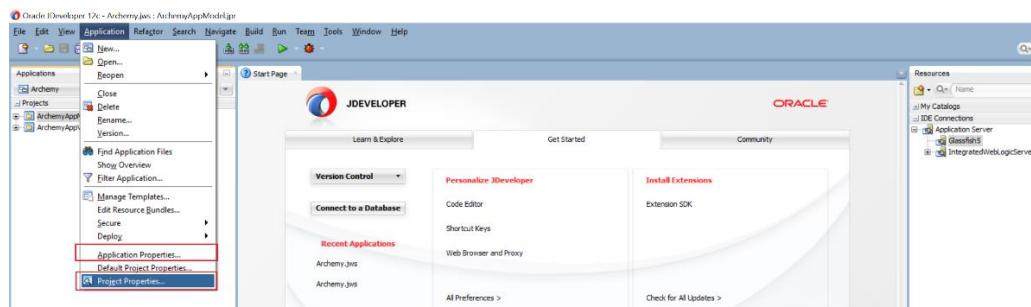
e. Configure Archemy Project to Include Important Libraries

To import library dependencies, follow the below steps.

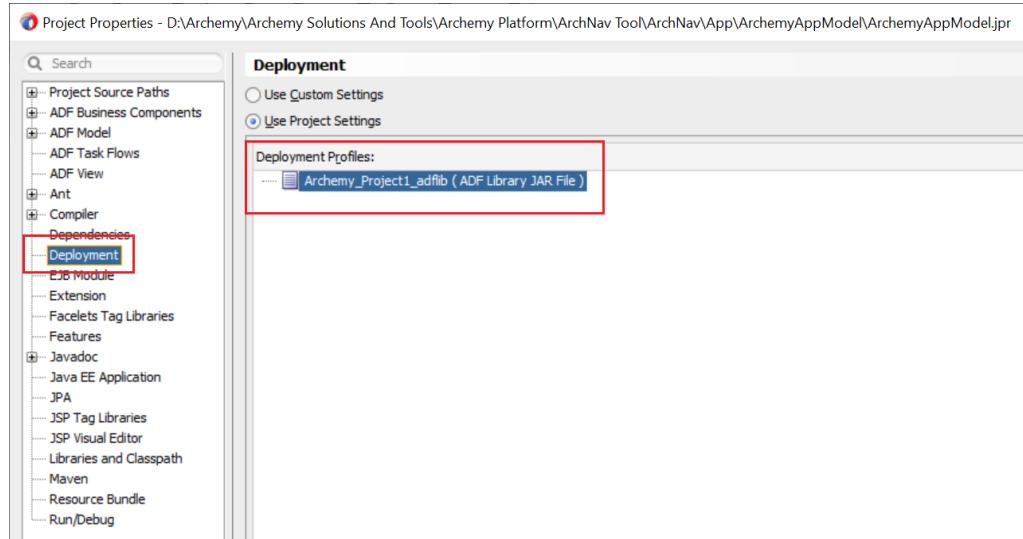
- Highlight ArchemyAppView and navigate to Applications → Application Properties.
 - Click on Deployment in the left frame and double click on the existing deployment profile for the Archemy application.
 - Select “Contributions” under “Application Libraries” and check “BC4J Runtime” under “Contributors”:



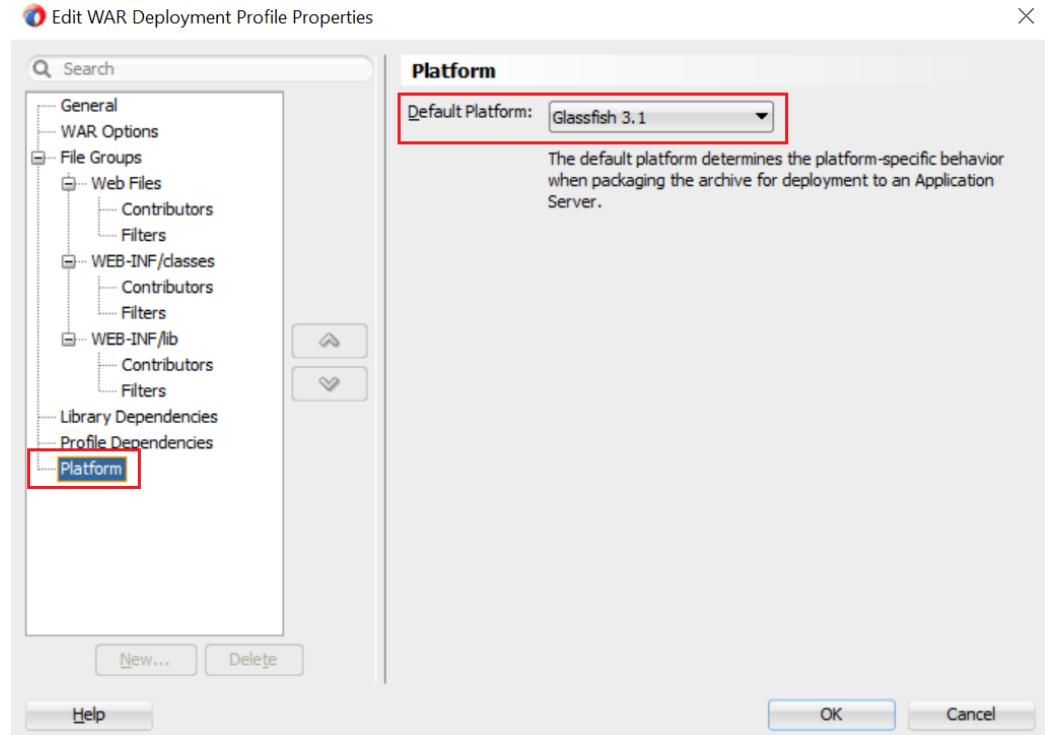
- Click “OK” on all pop-up windows and save the project.
- Configure Archemy project in JDeveloper to build a deployment profile using Glassfish.
 - Highlight ArchemyAppView:
 - Navigate to Application → Project Properties (will have to repeat the following steps for “Application Properties” as well) (NOTE: it is important that the steps that follow are done for both “Project Properties” and “Application Properties” so that all are set to deployment in Glassfish before doing a build.



- Click on “Deployment” in the left frame, and then double-click on the “Archemy_Project1_adflib” deployment profile:

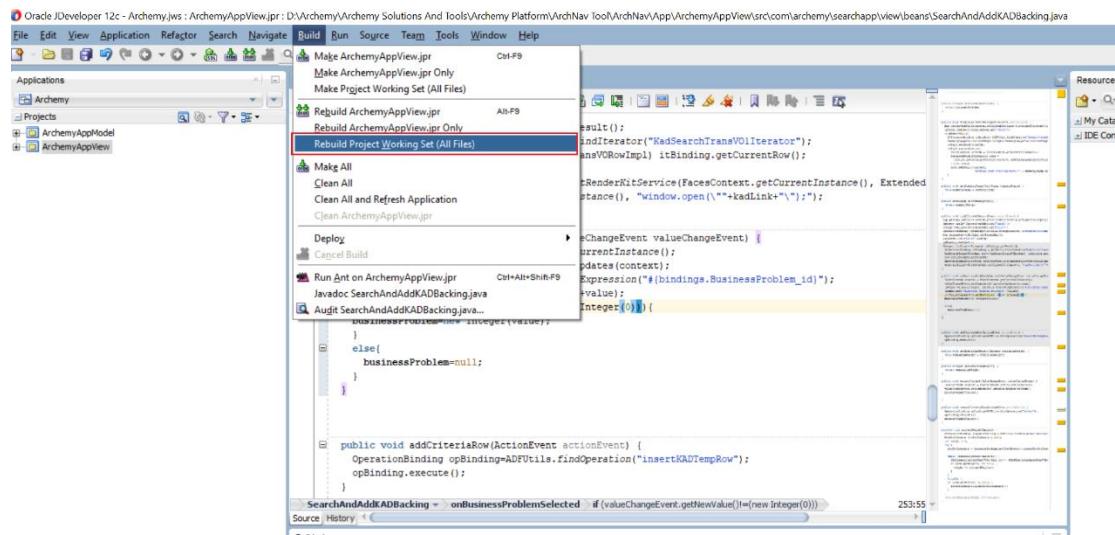


- Select “Platform” in the left frame, and then select “Glassfish” as the “Default Platform” in the right frame. Click OK.



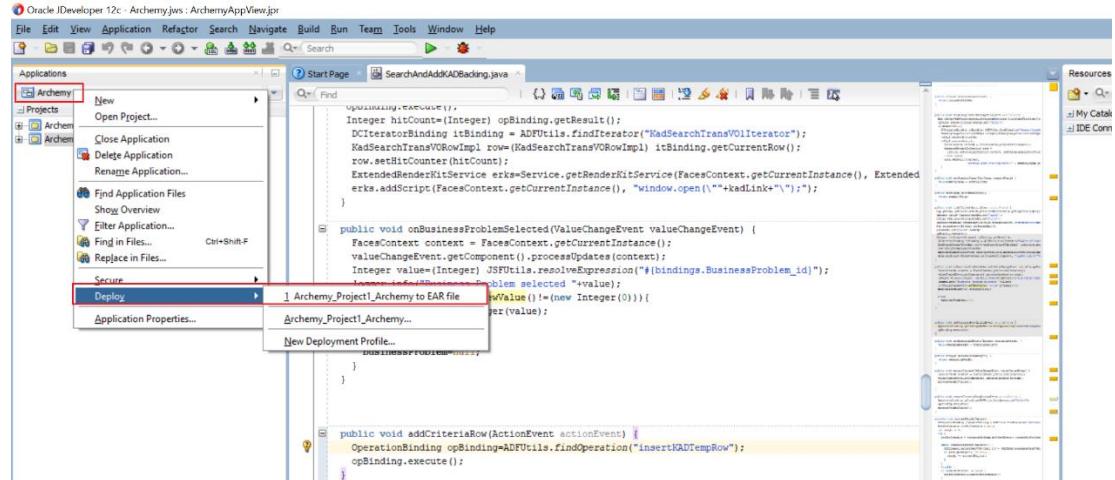
- Save the Project.

- Build / Compile the ArchNave code:
 - Navigate to Build → Rebuild Project_Working_Set (All Files):

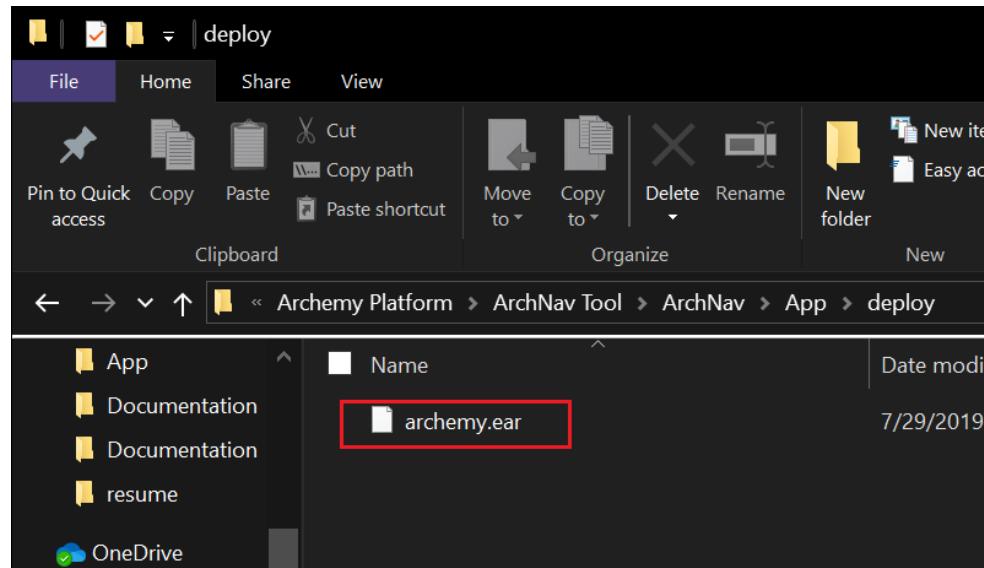


- The code should compile and build with no errors and no warnings.
- Generate EAR file:
 - Right-click on “Archemy” listed under “Applications” in the far top-left corner.

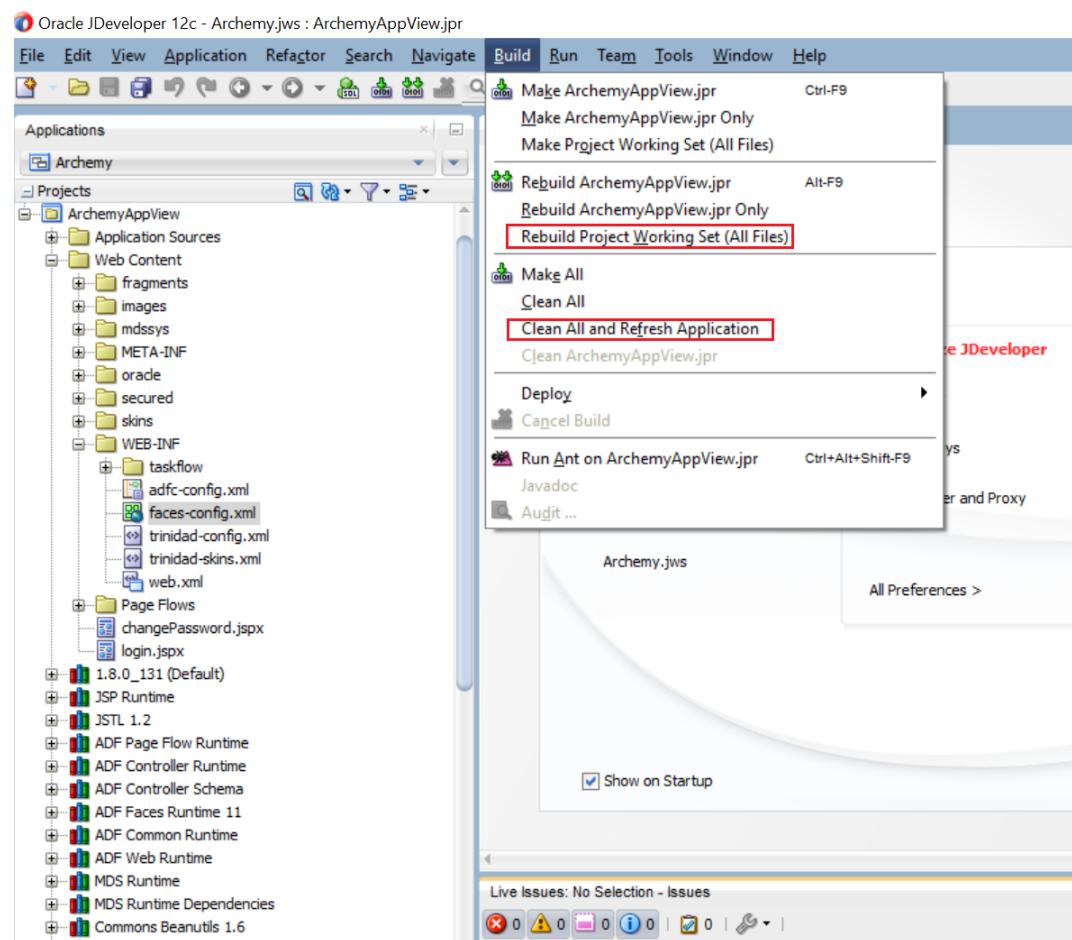
Select “Deploy” → “Archemy_Project1_Archemy...” (NOTE: the first time through this, will only have this option, and after the EAR is generated, will have an additional option “Archemy_Project1_Archemy to EAR file”).

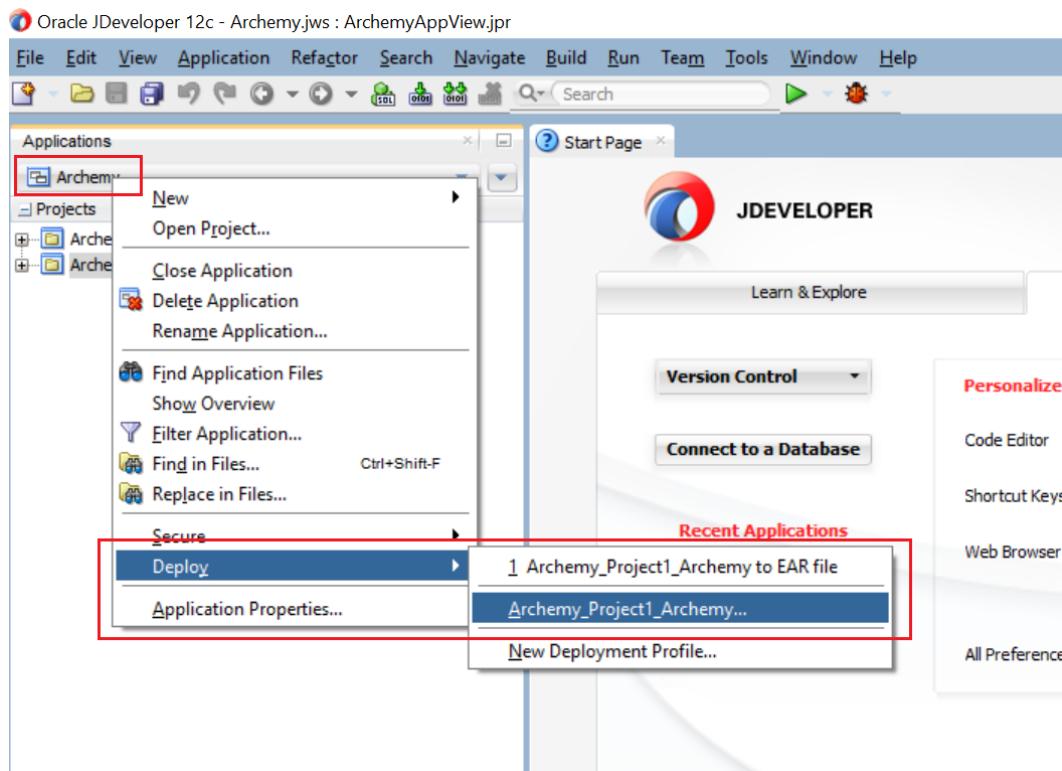


- An EAR file (archemy.ear) should be generated into a “deploy” directory:



- When do a “Clean All and Refresh Application” before doing a “Rebuild Project Working Set (All Files)” then when deploy there will only be one choice available: “Archemy_Project1_Archemy...” otherwise there will be two choices with “Archemy_Project1_Archemy to EAR file” as a second choice (see screenshots below):

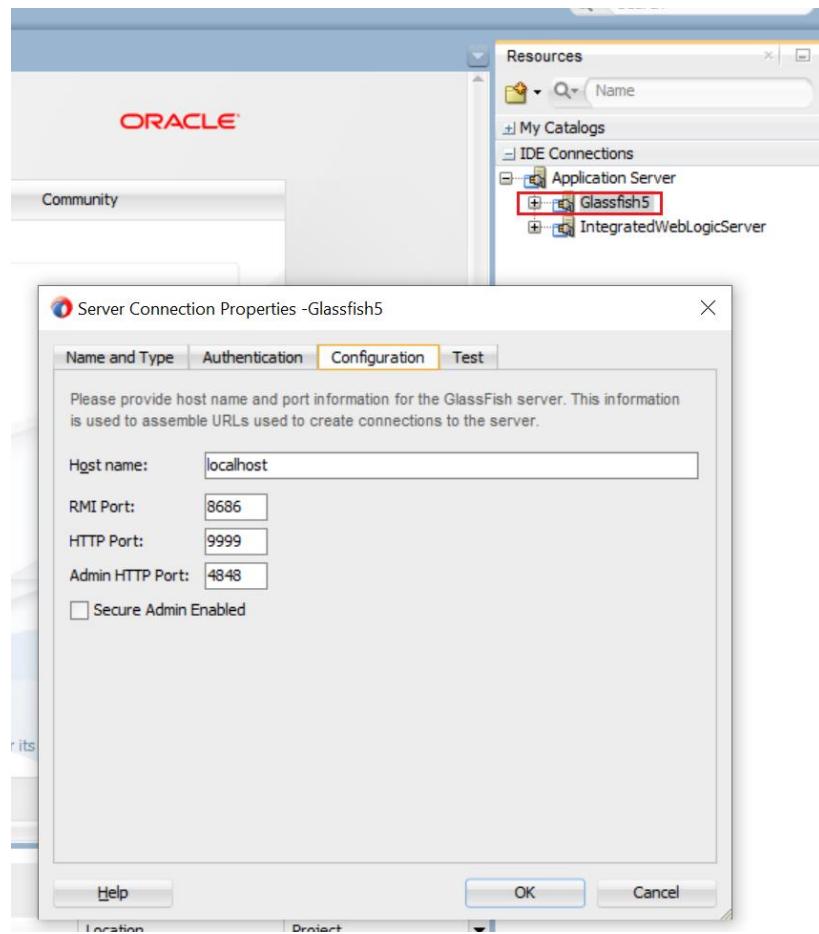




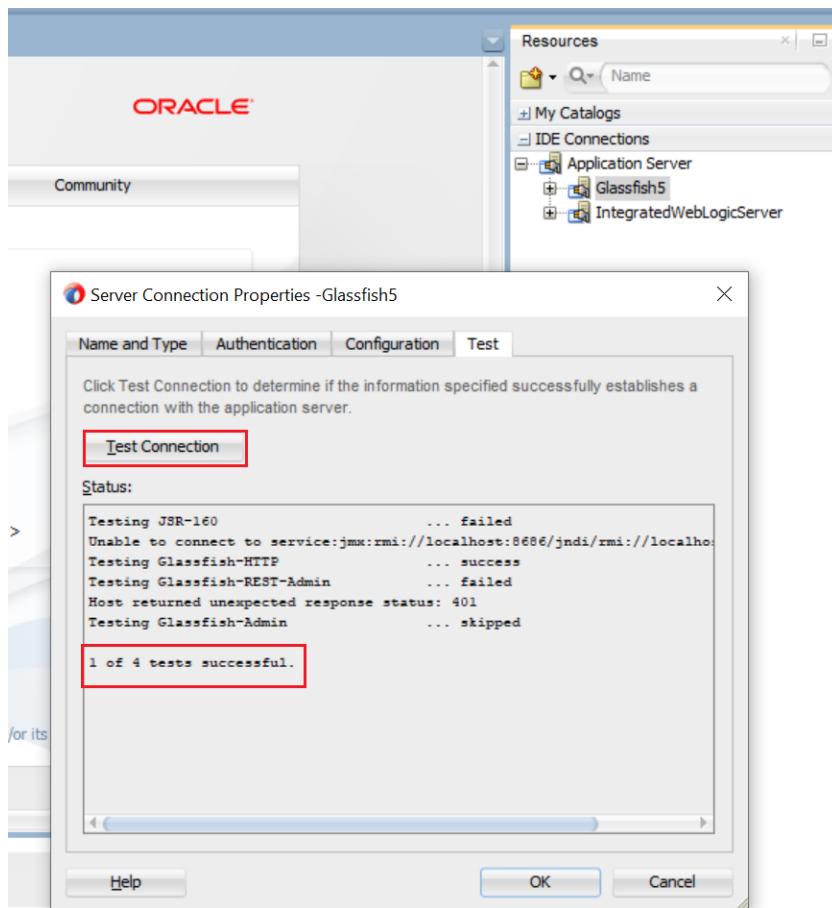
f. Deploy ArchNav into GlassFish

Before deploying the ArchNav project into GlassFish, test the database connection. To do this follow the below steps.

- Perform test connection to Glassfish server from JDeveloper.
 - In JDeveloper, in the far-right frame, expand “IDE Connections” and then expand “Application Server”. “Glassfish 5” should be listed as an Application server. Right-click on “Glassfish 5” and click on the “Configuration” tab to confirm the Glassfish configurations are correct.



- Click on the “Test” tab and click the “Test Connection” button to confirm connection to the Glassfish application server is successful. Click OK.



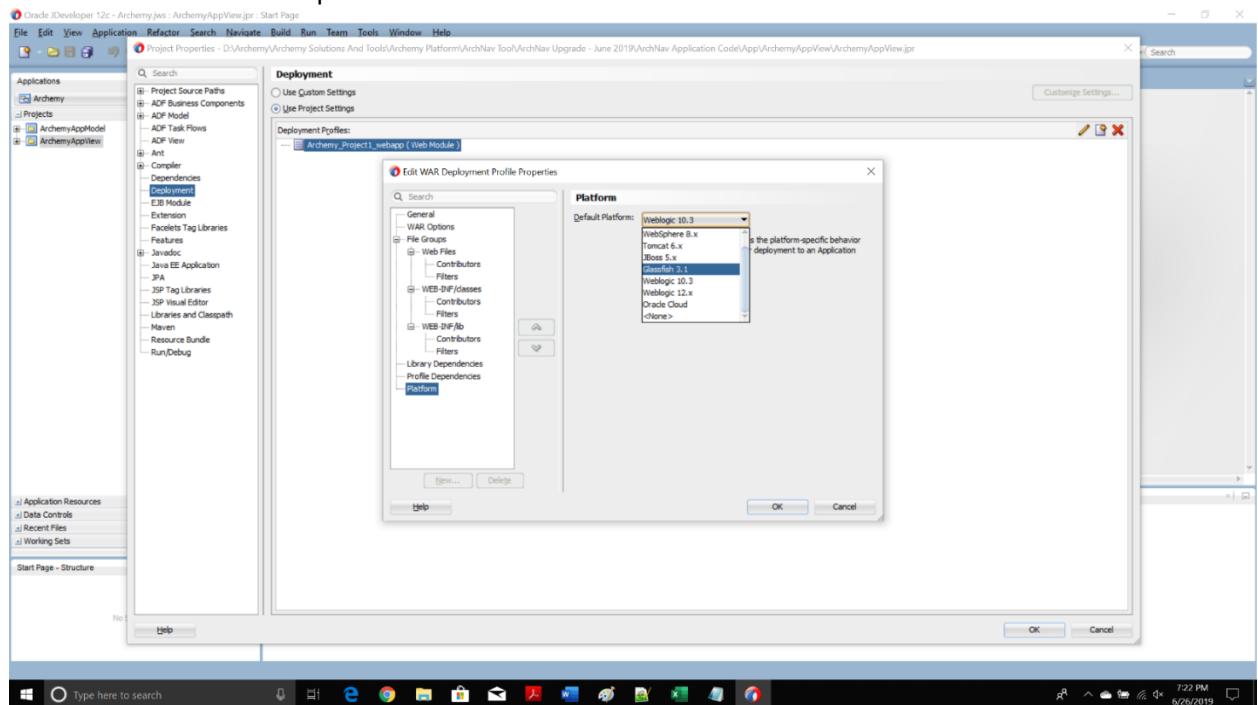
The project directory structure for ArchNav should be similar to the screenshot below:

Archemy Solutions And Tools > Archemy Platform > ArchNav Tool > ArchNav > App					Search App
	Name	Date modified	Type	Size	
Documentation	.adf	7/26/2019 9:07 PM	File folder		
Documentation	.data	7/26/2019 9:07 PM	File folder		
resume	ArchemyAppModel	7/26/2019 9:09 PM	File folder		
OneDrive	ArchemyAppView	7/26/2019 9:10 PM	File folder		
Documents	resourcebundles	7/26/2019 9:08 PM	File folder		
Email attachments	src	7/26/2019 9:08 PM	File folder		
Pictures	adfutils.jar	6/24/2019 9:02 PM	Executable Jar File	37 KB	
This PC	Archemy.jws	7/27/2019 7:43 PM	JWS File	13 KB	
3D Objects	mysql-connector-java-5.1.47-bin.jar	6/27/2019 8:44 PM	Executable Jar File	984 KB	
Desktop	pom.xml	7/18/2019 6:52 PM	XML Document	1 KB	
Documents					
Downloads					

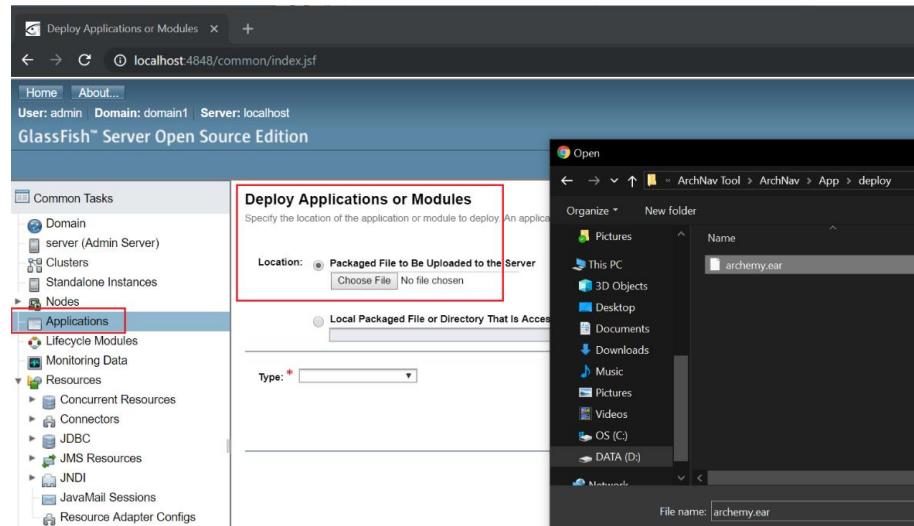
As was mentioned above, GlassFish is the application server used to make ArchNav accessible. ArchNav must be deployed into GlassFish to become available. To do this, follow the below steps.

- In the GlassFish admin console, go to *Application -> Project Properties*.
- Select "*Deployment*" in left frame.
- You will see the Archemy_Project1_webapp module listed in the right frame, double-click this.
- Select "*Platform*" in the left frame of the popup.
- From the "Default Platform" menu, you should see GlassFish listed.

NOTE: although the ArchNav application uses GlassFish 5.0, the jDeveloper configurations for deploying applications in GlassFish will say GlassFish 3.0. This is OK – select this option.



- First option (preferable option) to deploy:
 - Open the Admin Console for Glassfish (<http://localhost:4848>).
 - Click on “Applications” from the left from.
 - Under “Deploy Applications or Modules” click on “Choose File” to navigate to the generated EAR file to upload and deploy:

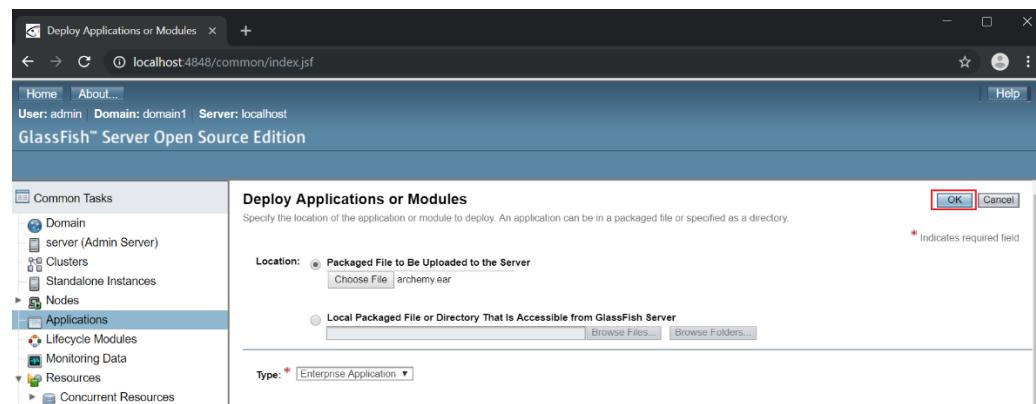


- Be sure to select “server” under “Virtual Servers” after choosing the EAR file to deploy:

Name: archemy
Status: Enabled
Virtual Servers:

Associates an Internet domain name with a physical server.

- Click “OK”:



- After the application is successfully deployed, it will be listed under “Applications”:

The screenshot shows the GlassFish Administration Console at localhost:4848/common/index.jsf. The left sidebar under 'Common Tasks' has 'Applications' selected. The main panel is titled 'Applications' and contains a table titled 'Deployed Applications (1)'. The table has columns: Select, Name, Deployment Order, Enabled, Engines, and Action. One row is shown: 'archemy' (with a checked checkbox), '100', '✓', 'ear, web', and a button bar with 'Redeploy' and 'Reload'.

Select	Name	Deployment Order	Enabled	Engines	Action
<input type="checkbox"/>	archemy	100	✓	ear, web	Redeploy Reload

g. Test ArchNav

To test the ArchNav application, follow the below steps.

- To launch the ArchNav application:
 - In a browser, go to URL: <http://localhost:9999/archemy/faces/login.jspx>
 - Login using the admin username and password that was setup in section “Configure Fortress to Include ArchNav Authentication and RBAC Details”.

