



AppDynamics Practice Lab

Epic Academy

- Building an AppDynamics Lab Practice Environment

AppDynamics Lab – Options

Building AppDynamics Lab environment –Virtual Machine

Option2 : This option is a little harder but for people who wants to build from scratch. Here you build the applications yourself, build the load generation engine etc. This option really exposes you to how application works.

AppDynamics Lab Options 2

1. Lab Installation Requirement

- Centos 7 Operating, 4GB Ram , 20GB HDD, 2 CPU Core
- Putty, WinSCP
- Knowing how to use Linux editing tool like vi
- Sample GitHub .war file

AppDynamics Lab

1. Cars Sample App

- In this setup, we will be setting a simple application – Cars Sample Application for the lab purposes.

AppDynamics Lab

Step 1: Install MySQL on the centos 7 Operating system

```
Lab01# wget https://dev.mysql.com/get/mysql57-community-release-el7-9.noarch.rpm
lab01# sudo rpm -ivh mysql57-community-release-el7-9.noarch.rpm
```

```
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]# wget https://dev.mysql.com/get/mysql57-community-release-el7-9.noarch.rpm ✘
--2020-07-13 04:49:48-- https://dev.mysql.com/get/mysql57-community-release-el7-9.noarch.rpm
Resolving dev.mysql.com (dev.mysql.com)... 137.254.60.11
Connecting to dev.mysql.com (dev.mysql.com)|137.254.60.11|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://repo.mysql.com//mysql57-community-release-el7-9.noarch.rpm [following]
--2020-07-13 04:49:50-- https://repo.mysql.com//mysql57-community-release-el7-9.noarch.rpm
Resolving repo.mysql.com (repo.mysql.com)... 96.16.109.48
Connecting to repo.mysql.com (repo.mysql.com)|96.16.109.48|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 9224 (9.0K) [application/x-redhat-package-manager]
Saving to: 'mysql57-community-release-el7-9.noarch.rpm'

100%[=====>] 9,224

2020-07-13 04:49:51 (12.0 MB/s) - 'mysql57-community-release-el7-9.noarch.rpm' saved [9224/9224]

[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]# sudo rpm -ivh mysql57-community-release-el7-9.noarch.rpm ✘
warning: mysql57-community-release-el7-9.noarch.rpm: Header V3 DSA/SHA1 Signature, key ID 5072e1f5: NOKEY
Preparing...
Updating / installing...
 1:mysql57-community-release-el7-9
[root@localhost ~]#
[root@localhost ~]#
```

AppDynamics Lab

Install MySQL on the centos 7 Operating system

Lab01# sudo yum install mysql-server

```
[root@localhost ~]# sudo yum install mysql-server
Loaded plugins: fastestmirror, langpacks
mysql-connectors-community
mysql-tools-community
mysql57-community
(1/3): mysql-connectors-community/x86_64/primary_db
```

Dependencies Resolved

Package	Arch	Version
Installing:		
mysql-community-libs	x86_64	5.7.31-1.el7
replacing mariadb-libs.x86_64 1:5.5.65-1.el7		
mysql-community-libs-compat	x86_64	5.7.31-1.el7
replacing mariadb-libs.x86_64 1:5.5.65-1.el7		
mysql-community-server	x86_64	5.7.31-1.el7
Installing for dependencies:		
mysql-community-client	x86_64	5.7.31-1.el7
mysql-community-common	x86_64	5.7.31-1.el7
Updating for dependencies:		
openssl	x86_64	1:1.0.2k-19.el7
openssl-libs	x86_64	1:1.0.2k-19.el7
postfix	x86_64	2:2.10.1-9.el7

Transaction Summary

```
Install 3 Packages (+2 Dependent packages)
Upgrade    ( 3 Dependent packages)
```

Total download size: 206 M

AppDynamics Lab

Install MySQL on the centos 7 Operating system

```
Transaction Summary
=====
Install 3 Packages (+2 Dependent packages)
Upgrade    ( 3 Dependent packages)

Total download size: 206 M
Is this ok [y/d/N]: y ✖
Downloading packages:
Delta RPMs disabled because /usr/bin/applydeltarpm not installed.
warning: /var/cache/yum/x86_64/7/mysql57-community/packages/mysql-community-common-5.7.31-1.el7.x86_64.rpm: Header V3 DSA/SHA1 Signature, key ID
Public key for mysql-community-common-5.7.31-1.el7.x86_64.rpm is not installed
(1/8): mysql-community-common-5.7.31-1.el7.x86_64.rpm
(2/8): mysql-community-libs-5.7.31-1.el7.x86_64.rpm
(3/8): mysql-community-libs-compat-5.7.31-1.el7.x86_64.rpm
(4/8): openssl-1.0.2k-19.el7.x86_64.rpm
(5/8): mysql-community-client-5.7.31-1.el7.x86_64.rpm
(6/8): openssl-libs-1.0.2k-19.el7.x86_64.rpm
(7/8): postfix-2.10.1-9.el7.x86_64.rpm
(8/8): mysql-community-server-5.7.31-1.el7.x86_64.rpm
-----
Total
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-mysql
Importing GPG key 0x5072E1F5:
  Userid      : "MySQL Release Engineering <mysql-build@oss.oracle.com>"
  Fingerprint: a4a9 4068 76fc bd3c 4567 70c8 8c71 8d3b 5072 e1f5
  Package     : mysql57-community-release-el7-9.noarch (installed)
  From        : /etc/pki/rpm-gpg/RPM-GPG-KEY-mysql
Is this ok [y/N]: y ✖
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
Warning: RPMDB altered outside of yum.
  Updating : 1:openssl-libs-1.0.2k-19.el7.x86_64
  Installing : mysql-community-common-5.7.31-1.el7.x86_64
  Installing : mysql-community-libs-5.7.31-1.el7.x86_64
  Installing : mysql-community-libs-compat-5.7.31-1.el7.x86_64
  Installing : mysql-community-client-5.7.31-1.el7.x86_64 [#####]
```

Install MySQL –Step 2

Starting MySQL and check MySQL status

```
sudo systemctl start mysqld  
sudo systemctl status mysqld
```

```
[root@localhost ~]#  
[root@localhost ~]# sudo systemctl start mysqld *  
[root@localhost ~]#  
[root@localhost ~]#  
[root@localhost ~]#  
[root@localhost ~]# sudo systemctl status mysqld *  
mysqld.service - MySQL Server  
   Loaded: loaded (/usr/lib/systemd/system/mysqld.service; enabled)  
   Active: active (running) since Mon 2020-07-13 05:21:16 WAT; 59s ago  
     Docs: man:mysqld(8)  
           http://dev.mysql.com/doc/refman/en/using-systemd.html  
  Process: 3129 ExecStart=/usr/sbin/mysqld --daemonize --pid-file=/var/run/mysqld/mysqld.pid $MYSQLD_OPTS (code=exited, status=0/SUCCESS)  
  Process: 3079 ExecStartPre=/usr/bin/mysqld_pre_systemd (code=exited, status=0/SUCCESS)  
 Main PID: 3132 (mysqld)  
    CGroup: /system.slice/mysqld.service  
            └─3132 /usr/sbin/mysqld --daemonize --pid-file=/var/run/mysqld/mysqld.pid  
  
Jul 13 05:21:13 localhost.localdomain systemd[1]: Starting MySQL Server...  
Jul 13 05:21:16 localhost.localdomain systemd[1]: Started MySQL Server.  
[root@localhost ~]#
```


Collect the temporary password that will be used for SQL setup

`sudo grep 'temporary password' /var/log/mysqld.log`
** change the password and accept default all through for lab purposes

```
[root@localhost ~]#  
[root@localhost ~]# sudo grep 'temporary password' /var/log/mysqld.log  
2020-07-13T04:21:13.968112Z 1 [Note] A temporary password is generated for root@localhost: HoLvMq=r7UM9  
[root@localhost ~]#
```

```
[root@localhost ~]# sudo mysql_secure_installation  
Securing the MySQL server deployment.  
Enter password for user root:  
The existing password for the user account root has expired. Please set a new password.  
New password:  
Re-enter new password:  
... Failed! Error: Your password does not satisfy the current policy requirements  
New password:  
Re-enter new password:  
The 'validate_password' plugin is installed on the server.  
The subsequent steps will run with the existing configuration  
of the plugin.  
Using existing password for root.  
Estimated strength of the password: 100  
Change the password for root ? ((Press y|Y for Yes, any other key for No) : no  
... skipping.  
By default, a MySQL installation has an anonymous user,  
allowing anyone to log into MySQL without having to have  
a user account created for them. This is intended only for  
testing, and to make the installation go a bit smoother.  
You should remove them before moving into a production  
environment.  
Remove anonymous users? (Press y|Y for Yes, any other key for No) :
```

Configuring MySQL

Run `#sudo mysql_secure_installation`

Login with the test password, you copied and accept the default.

It will prompt you to Change the password

```
[root@localhost ~]# sudo mysql_secure_installation
Securing the MySQL server deployment.

Enter password for user root:

The existing password for the user account root has expired. Please set a new password.

New password:

Re-enter new password:
... Failed! Error: Your password does not satisfy the current policy requirements

New password:

Re-enter new password:
The 'validate_password' plugin is installed on the server.
The subsequent steps will run with the existing configuration
of the plugin.
Using existing password for root.

Estimated strength of the password: 100
Change the password for root ? ((Press y|Y for Yes, any other key for No) : no

... skipping.
By default, a MySQL installation has an anonymous user,
allowing anyone to log into MySQL without having to have
a user account created for them. This is intended only for
testing, and to make the installation go a bit smoother.
You should remove them before moving into a production
environment.

Remove anonymous users? (Press y|Y for Yes, any other key for No) :
```

Login to test the database. Use the command below to login to the database

root#mysql -u root -p

```
[root@localhost ~]#  
[root@localhost ~]# mysql -u root -p  
Enter password:  
Welcome to the MySQL monitor.  Commands end with ; or \g.  
Your MySQL connection id is 17  
Server version: 5.7.31 MySQL Community Server (GPL)  
  
Copyright (c) 2000, 2020, Oracle and/or its affiliates. All rights reserved.  
  
Oracle is a registered trademark of Oracle Corporation and/or its  
affiliates. Other names may be trademarks of their respective  
owners.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
mysql> █
```

Ensure MySQL root password is **AppDynamics**

You can change MySQL root password following steps below

```
mysql> UPDATE mysql.user SET authentication_string = PASSWORD('AppDynamics') WHERE User = 'root' AND Host = 'localhost';
```

```
[root@localhost ~]#  
[root@localhost ~]# systemctl stop mysqld  
[root@localhost ~]#  
[root@localhost ~]#  
[root@localhost ~]# systemctl set-environment MYSQLD_OPTS="--skip-grant-tables"  
[root@localhost ~]#  
[root@localhost ~]# systemctl start mysqld  
[root@localhost ~]#  
[root@localhost ~]# mysql -u root  
Welcome to the MySQL monitor.  Commands end with ; or \g.  
Your MySQL connection id is 2  
Server version: 5.7.31 MySQL Community Server (GPL)  
  
Copyright (c) 2000, 2020, Oracle and/or its affiliates. All rights reserved.  
  
Oracle is a registered trademark of Oracle Corporation and/or its  
affiliates. Other names may be trademarks of their respective  
owners.  
  
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.  
  
mysql>  
mysql> UPDATE mysql.user SET authentication_string = PASSWORD('AppDynamics') WHERE User = 'root' AND Host = 'localhost';  
Query OK, 1 row affected, 1 warning (0.00 sec)  
Rows matched: 1  Changed: 1  Warnings: 1  
  
mysql> FLUSH PRIVILEGES;  
Query OK, 0 rows affected (0.00 sec)  
  
mysql> exit
```

Start the database normally with the following command

```
[root@localhost ~]# systemctl stop mysqld
```

```
[root@localhost ~]# systemctl unset-environment MYSQLD_OPTS
```

```
[root@localhost ~]# systemctl start mysqld
```

```
[root@localhost ~]# mysql -u root -p # login with the new root password
```

```
[root@localhost ~]# systemctl stop mysqld
[root@localhost ~]# systemctl unset-environment MYSQLD_OPTS
[root@localhost ~]# systemctl start mysqld
[root@localhost ~]# mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.31 MySQL Community Server (GPL)

Copyright (c) 2000, 2020, Oracle and/or its affiliates. All rights reserved.

Oracle is a registered trademark of Oracle Corporation and/or its
affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> █
```

Step 2: Importing the sql database tables and configuration

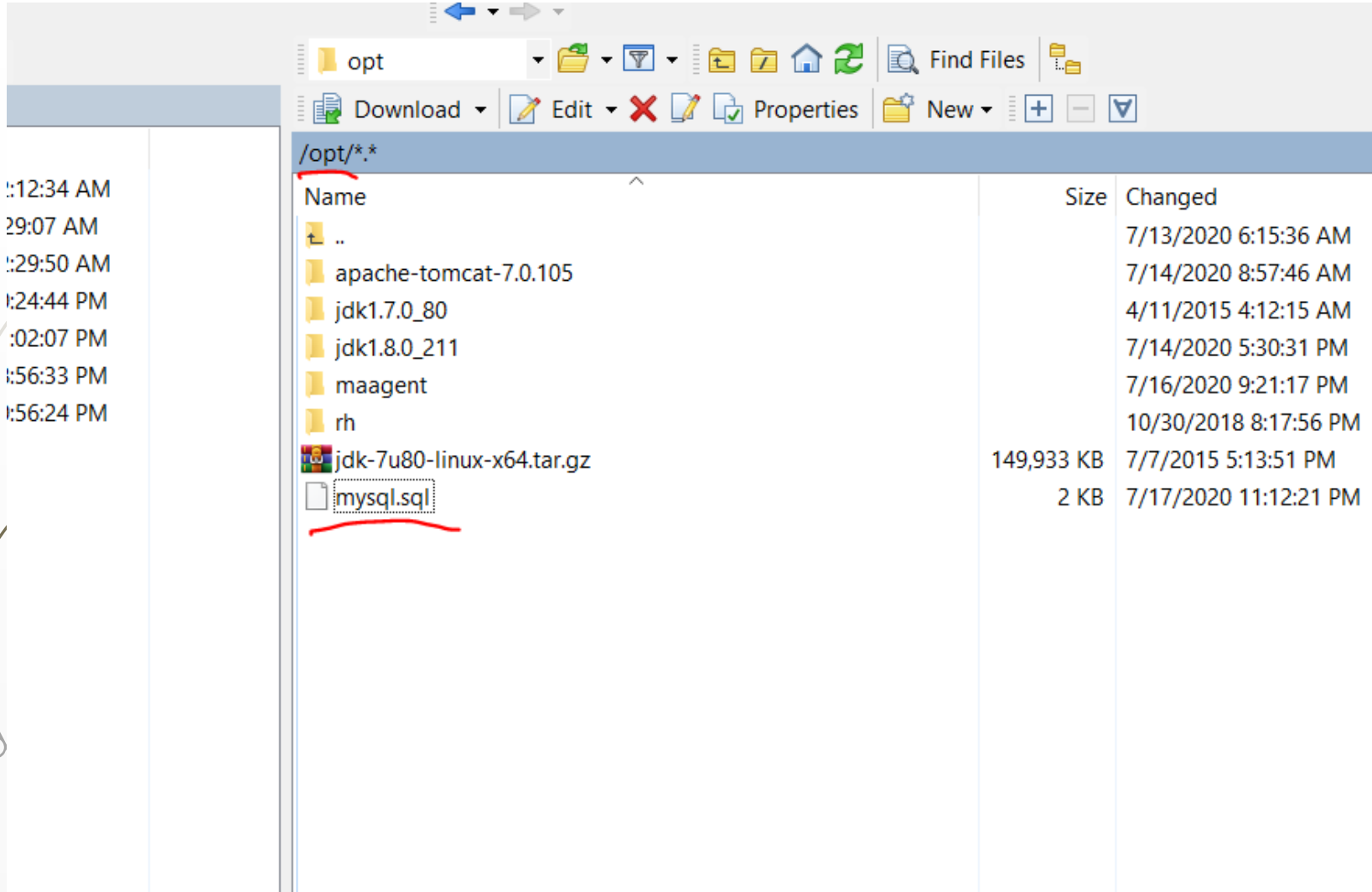
C:\Users\Dell Inspiron\Desktop\mysql.sql - Notepad++

File Edit Search View Encoding Language Settings Tools Macro Run Plugins Window ?

agent2020_07_06_00_45_31.log ByteCodeTransformer.2020_07_06_00_45_31.log app-agent-config.xml mysql.sql

```
1 CREATE DATABASE supercars;
2
3 connect supercars;
4
5 CREATE TABLE MANUFACTURER (
6     MANUFACTURER_ID MEDIUMINT NOT NULL,
7     NAME VARCHAR(30),
8     WEB VARCHAR(50),
9     EMAIL VARCHAR(50),
10    LOGO VARCHAR(30),
11    PRIMARY KEY (MANUFACTURER_ID)
12 );
13
14 CREATE TABLE CARS (
15     CAR_ID MEDIUMINT NOT NULL AUTO_INCREMENT,
16     NAME VARCHAR(30),
17     MODEL VARCHAR(30),
18     DESCRIPTION VARCHAR(200),
19     MANUFACTURER_ID MEDIUMINT NOT NULL,
20     COLOUR VARCHAR(20),
21     YEAR MEDIUMINT,
22     PRICE FLOAT,
23     SUMMARY VARCHAR(200),
24     PHOTO VARCHAR(30),
25     PRIMARY KEY (CAR_ID)
26 );
27
28 CREATE TABLE ENQUIRIES (
29     ENQUIRY_ID MEDIUMINT NOT NULL AUTO_INCREMENT,
30     NAME VARCHAR(50),
31     EMAIL VARCHAR(50),
32     COMMENT VARCHAR(200),
33     CAR_ID MEDIUMINT,
34     DUMMY MEDIUMINT,
35     PRIMARY KEY (ENQUIRY_ID)
36 );
37
38 INSERT INTO MANUFACTURER (MANUFACTURER_ID, NAME, WEB, EMAIL, LOGO) VALUES
39 (1, 'Porsche', 'http://www.porsche.com', 'web@porsche.com', 'Porsche.gif'),
40 (2, 'Ferrari', 'http://www.ferrari.com/en_us/', 'web@ferrari.com', 'Ferrari.gif'),
41 (3, 'Aston Martin', 'http://www.astonmartin.com', 'web@astonmartin.com', 'AstonMartin.gif'),
42 (4, 'BMW', 'http://www.bmw.com/com/en/', 'web@bmw.com', 'Bmw.gif'),
43 (5, 'Ford', 'http://www.ford.com', 'web@ford.com', 'Ford.gif'),
```

Copy the mysql.sql database dump file to your server via WinSCP and Login to MySQL and import
I copied mysql.sql file to **/opt**



WinSCP interface showing the contents of the `/opt` directory. The file `mysql.sql` is highlighted with a red box and a red underline. The path `/opt/*.*` is also highlighted with a red box.

Name	Size	Changed
..		7/13/2020 6:15:36 AM
apache-tomcat-7.0.105		7/14/2020 8:57:46 AM
jdk1.7.0_80		4/11/2015 4:12:15 AM
jdk1.8.0_211		7/14/2020 5:30:31 PM
maagent		7/16/2020 9:21:17 PM
rh		10/30/2018 8:17:56 PM
jdk-7u80-linux-x64.tar.gz	149,933 KB	7/7/2015 5:13:51 PM
<u>mysql.sql</u>	2 KB	7/17/2020 11:12:21 PM

Run the following command

Note I am **under /opt** where I have **mysql.sql dump** file. If your directory is different specify same

```
[root@localhost opt]# mysql -u root -p < mysql.sql
```

```
[root@localhost opt]#  
[root@localhost opt]# mysql -u root -p < mysql.sql  
Enter password:  
[root@localhost opt]#  
[root@localhost opt]#  
[root@localhost opt]#
```

This will create the database called "supercars" and the tables within the database. Verify this to be sure
Login to the database using the command below and run this "show databases;" "USE supercars;"

```
[root@localhost opt]# mysql -u root -p  
mysql> show databases;
```

```
[root@localhost opt]#  
[root@localhost opt]# mysql -u root -p  
Enter password:
```

```
mysql> show databases;  
+-----+  
| Database                |  
+-----+  
| information_schema      |  
| mysql                   |  
| performance_schema     |  
| supercars               |  
| sys                     |  
+-----+  
5 rows in set (0.00 sec)
```


Switch to the supercars database by using the following mysql command

mysql> use supercars;

```
mysql> use supercars;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
```

Show the mysql tables to be sure the tables were created, and use describe command to verify the content of the table.

mysql> show tables;

mysql> describe CARS;

```
mysql> show tables;
+-----+
| Tables_in_supercars |
+-----+
| CARS                 |
| ENQUIRIES            |
| MANUFACTURER         |
+-----+
3 rows in set (0.00 sec)
```

```
mysql> describe CARS;
```

Field	Type	Null	Key	Default	Extra
CAR_ID	mediumint(9)	NO	PRI	NULL	auto_increment
NAME	varchar(30)	YES		NULL	
MODEL	varchar(30)	YES		NULL	
DESCRIPTION	varchar(200)	YES		NULL	
MANUFACTURER_ID	mediumint(9)	NO		NULL	
COLOUR	varchar(20)	YES		NULL	
YEAR	mediumint(9)	YES		NULL	
PRICE	float	YES		NULL	
SUMMARY	varchar(200)	YES		NULL	
PHOTO	varchar(30)	YES		NULL	

10 rows in set (0.00 sec)



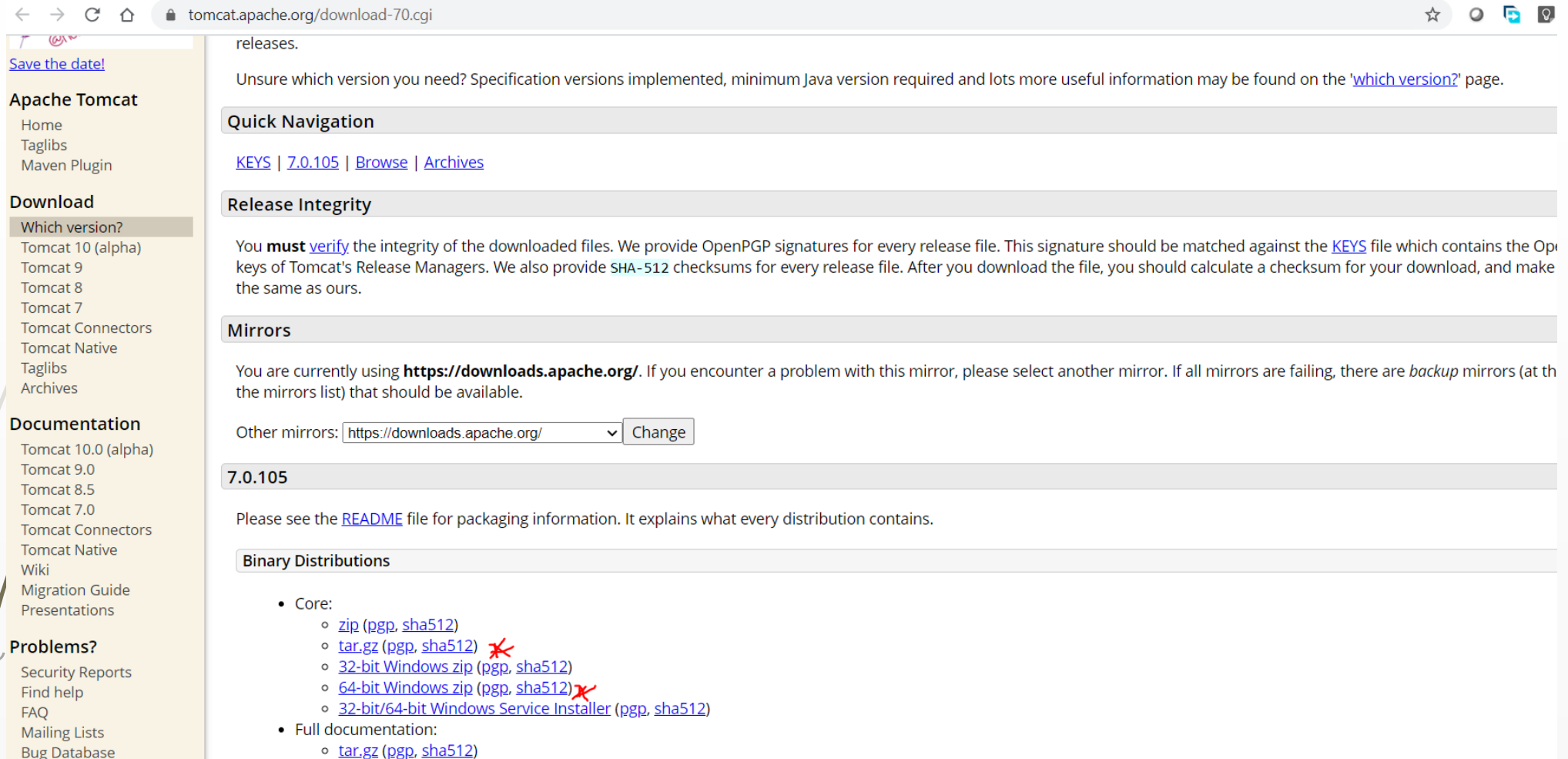
This concludes database installation and setup for the lab

Step 3: Download and Install Tomcat Application

Tomcat application will be used to host the Car Sample Application

Download Apache Tomcat [apache-tomcat-7.0.104.tar](#) or [apache-tomcat-7.0.105.tar.gz](#)

Download depending on your operating system on <https://tomcat.apache.org/download-70.cgi>



The screenshot shows the Apache Tomcat download page for version 7.0. The browser address bar displays 'tomcat.apache.org/download-70.cgi'. The left sidebar contains navigation links under 'Apache Tomcat' (Home, Taglibs, Maven Plugin), 'Download' (Which version?, Tomcat 10 (alpha), Tomcat 9, Tomcat 8, Tomcat 7, Tomcat Connectors, Tomcat Native, Taglibs, Archives), 'Documentation' (Tomcat 10.0 (alpha), Tomcat 9.0, Tomcat 8.5, Tomcat 7.0, Tomcat Connectors, Tomcat Native, Wiki, Migration Guide, Presentations), and 'Problems?' (Security Reports, Find help, FAQ, Mailing Lists, Bug Database). The main content area includes a 'releases.' section with a link to 'which version?'. A 'Quick Navigation' section lists links for 'KEYS', '7.0.105', 'Browse', and 'Archives'. The 'Release Integrity' section explains the importance of verifying file integrity using OpenPGP signatures and SHA-512 checksums. The 'Mirrors' section provides a list of mirrors and a dropdown menu to select a mirror, currently set to 'https://downloads.apache.org/'. The '7.0.105' section contains a link to the 'README' file. The 'Binary Distributions' section lists various distribution options, including 'Core' (zip, tar.gz, 32-bit Windows zip, 64-bit Windows zip, 32-bit/64-bit Windows Service Installer) and 'Full documentation' (tar.gz). Red 'X' marks are placed over the 'tar.gz' links in the 'Core' section.

releases.

Unsure which version you need? Specification versions implemented, minimum Java version required and lots more useful information may be found on the ['which version?'](#) page.

Quick Navigation

[KEYS](#) | [7.0.105](#) | [Browse](#) | [Archives](#)

Release Integrity

You **must** [verify](#) the integrity of the downloaded files. We provide OpenPGP signatures for every release file. This signature should be matched against the [KEYS](#) file which contains the Op keys of Tomcat's Release Managers. We also provide [SHA-512](#) checksums for every release file. After you download the file, you should calculate a checksum for your download, and make the same as ours.

Mirrors

You are currently using <https://downloads.apache.org/>. If you encounter a problem with this mirror, please select another mirror. If all mirrors are failing, there are *backup* mirrors (at th the mirrors list) that should be available.

Other mirrors:

7.0.105

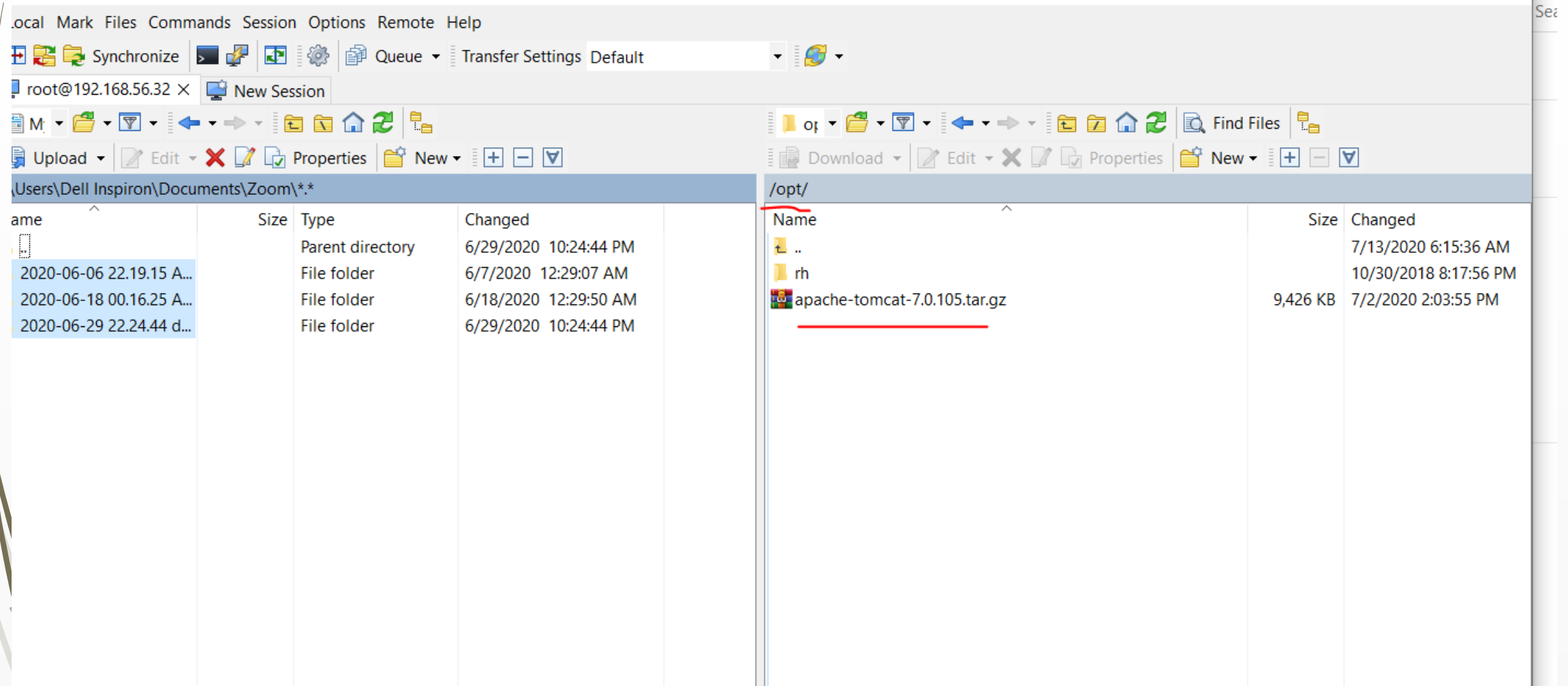
Please see the [README](#) file for packaging information. It explains what every distribution contains.

Binary Distributions

- Core:
 - [zip \(pgp, sha512\)](#)
 - [tar.gz \(pgp, sha512\)](#) ✗
 - [32-bit Windows zip \(pgp, sha512\)](#)
 - [64-bit Windows zip \(pgp, sha512\)](#) ✗
 - [32-bit/64-bit Windows Service Installer \(pgp, sha512\)](#)
- Full documentation:
 - [tar.gz \(pgp, sha512\)](#)

Move the downloaded tomcat file with WinSCP to your server into any directory – in my case **/opt**


You can download and install WinSCP from <https://winscp.net/eng/download.php>



The screenshot displays the WinSCP application window. The top menu bar includes .ocal, Mark, Files, Commands, Session, Options, Remote, and Help. Below the menu is a toolbar with icons for Synchronize, Queue, and Transfer Settings. The main window is split into two panes. The left pane shows the local file system at 'Users\Dell Inspiron\Documents\Zoom*. *'. The right pane shows the remote file system at '/opt/'.

Name	Size	Changed
..		7/13/2020 6:15:36 AM
rh		10/30/2018 8:17:56 PM
apache-tomcat-7.0.105.tar.gz	9,426 KB	7/2/2020 2:03:55 PM

Login via putty and extract the file
You can download putty from <https://www.putty.org/>

 root@localhost:/opt

```
[root@localhost opt]#  
[root@localhost opt]#  
[root@localhost opt]#  
[root@localhost opt]#  
[root@localhost opt]# pwd  
/opt  
[root@localhost opt]#  
[root@localhost opt]# ls  
apache-tomcat-7.0.105.tar.gz  rh  
[root@localhost opt]#  
[root@localhost opt]# tar -xzvf apache-tomcat-7.0.105.tar.gz
```

Login via putty and extract the file using

[root@localhost opt]# tar -xzf apache-tomcat-7.0.105.tar.gz

root@localhost:/opt

```
[root@localhost opt]#  
[root@localhost opt]#  
[root@localhost opt]#  
[root@localhost opt]#  
[root@localhost opt]# pwd  
/opt  
[root@localhost opt]#  
[root@localhost opt]# ls  
apache-tomcat-7.0.105.tar.gz  rh  
[root@localhost opt]#  
[root@localhost opt]# tar -xzf apache-tomcat-7.0.105.tar.gz
```

Use the 'ls' command to list the directory and see what you have extracted. You should see the apache directory

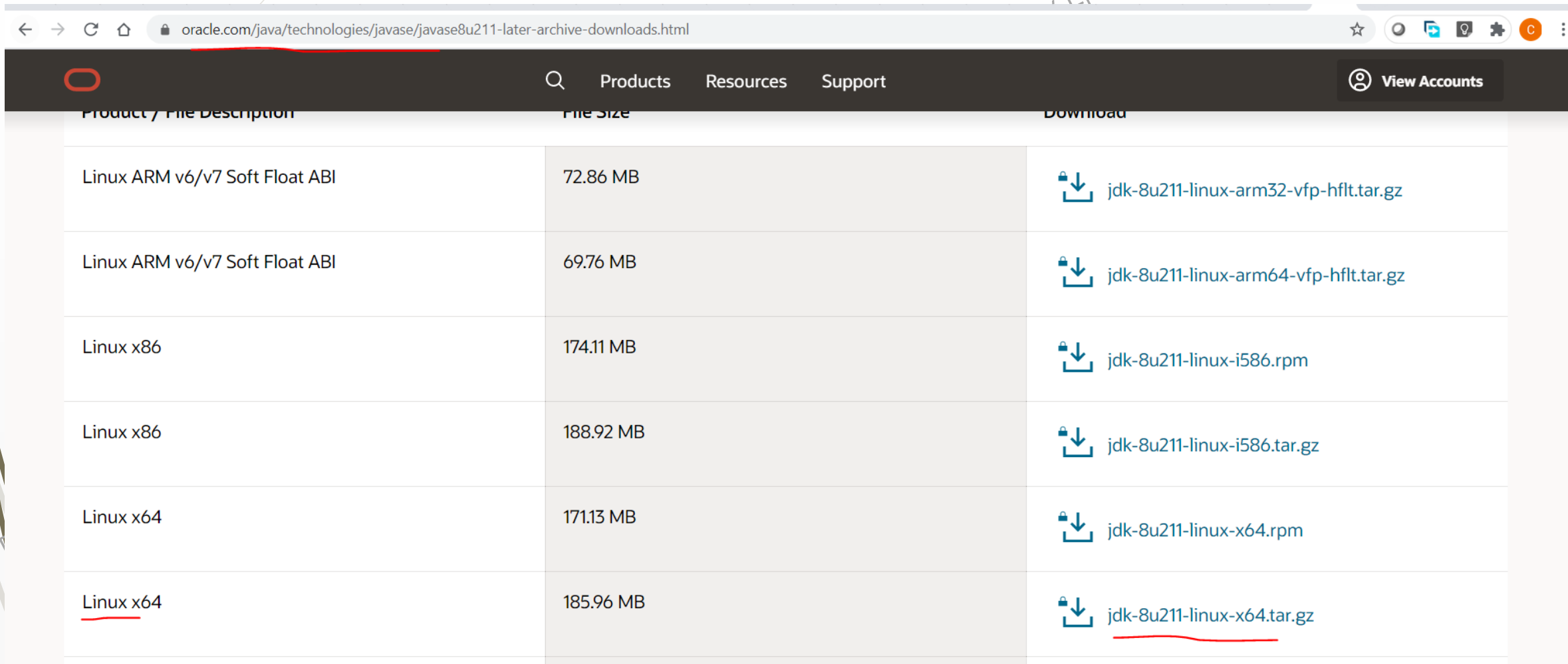
[root@localhost opt]# ls







```
[root@localhost opt]#  
[root@localhost opt]# ls  
apache-tomcat-7.0.105  apache-tomcat-7.0.105.tar.gz  rh  
[root@localhost opt]#  
[root@localhost opt]#
```

Step 4: Setup the JAVA HOME

Set up the JAVA HOME for the tomcat environment

- Download the oracle JDK. It will prompt you to sign in to download. Sign in and download.
- Extract into your choice directory - /opt in my case. I downloaded jdk-8u211-linux-x64.tar.gz

A screenshot of a web browser showing the Oracle JDK download page. The browser's address bar displays 'oracle.com/java/technologies/javase/javase8u211-later-archive-downloads.html'. The page has a dark header with the Oracle logo, search, and navigation links (Products, Resources, Support, View Accounts). Below the header is a table with three columns: 'Product / File Description', 'File Size', and 'Download'. The table lists various JDK versions for different architectures. The last row, for 'Linux x64', is highlighted with a red underline under the product name and the download link.

Product / File Description	File Size	Download
Linux ARM v6/v7 Soft Float ABI	72.86 MB	 jdk-8u211-linux-arm32-vfp-hflt.tar.gz
Linux ARM v6/v7 Soft Float ABI	69.76 MB	 jdk-8u211-linux-arm64-vfp-hflt.tar.gz
Linux x86	174.11 MB	 jdk-8u211-linux-i586.rpm
Linux x86	188.92 MB	 jdk-8u211-linux-i586.tar.gz
Linux x64	171.13 MB	 jdk-8u211-linux-x64.rpm
<u>Linux x64</u>	185.96 MB	 <u>jdk-8u211-linux-x64.tar.gz</u>

Set up the JAVA HOME for the tomcat environment

- Download the oracle JDK. It will prompt you to sign in to download. Sign in and download.
- Copy with WinSCP to your server and extract into your choice directory - /opt in my case
- `[root@localhost opt]# tar -xzvf jdk-8u211-linux-x64.tar.gz`

```
[root@localhost ~]#  
[root@localhost ~]#  
[root@localhost ~]# tar -xzvf jdk-8u211-linux-x64.tar.gz
```


Set up the JAVA HOME for the tomcat environment

The command below shows the JAVA home is not setup. The JAVA Home is required for Tomcat to run.

- `[root@localhost opt]# echo $JAVA_HOME`

```
[root@localhost opt]# echo $JAVA_HOME  
  
[root@localhost opt]#
```

- Modify the `/etc/profile` file and add the java environmental variables below
- `export JAVA_HOME=/opt/jdk1.8.0_211`
- `export JRE_HOME=/opt/jdk1.8.0_211/jre`
- `export PATH=$PATH:/opt/jdk1.8.0_211/bin:/opt/jdk1.8.0_211/jre/bin`

```
[root@localhost opt]#  
[root@localhost opt]#  
[root@localhost opt]# vi /etc/profile
```

Set up the JAVA HOME for the tomcat environment

Modify and save the file with :wq

root@localhost:/opt

```
# /etc/profile

# System wide environment and startup programs, for login setup
# Functions and aliases go in /etc/bashrc

# It's NOT a good idea to change this file unless you know what you
# are doing. It's much better to create a custom.sh shell script in
# /etc/profile.d/ to make custom changes to your environment, as this
# will prevent the need for merging in future updates.

export JAVA_HOME=/opt/jdk1.8.0_211
export JRE_HOME=/opt/jdk1.8.0_211/jre
export PATH=$PATH:/opt/jdk1.8.0_211/bin:/opt/jdk1.8.0_211/jre/bin

pathmunge () {
    case ":${PATH}:" in
        *:"$1":*)
```

```
HOSTNAME=`/usr/bin/hostname 2>/dev/null`
:wq
```

Set up the JAVA HOME for the tomcat environment

Modify and save the file with :wq

Logout of the terminal and login again and run or restart

```
[root@dockerhost ~]# echo $JAVA_HOME
```

```
[root@localhost ~]#  
[root@localhost ~]# echo $JAVA_HOME  
/opt/jdk1.8.0_211  
[root@localhost ~]#
```

Step 5: Start the Tomcat Application

Starting tomcat

Navigate to tomcat bin directory /opt/apache-tomcat-7.0.105/bin and run

```
[root@localhost bin]# ./catalina.sh start
```

If you run into permission as seen below in the tomcat log **catalina.out**, give the java an execute permission with "chmod 755 or 777 /opt/jdk1.0.0_211/jre/bin/java"

```
[root@localhost bin]#  
[root@localhost bin]# pwd  
/opt/apache-tomcat-7.0.105/bin
```

```
udp6      0      0 :::858          :::*             688/rpcbind  
[root@localhost bin]# ./catalina.sh start  
Using CATALINA_BASE:   /opt/apache-tomcat-7.0.105  
Using CATALINA_HOME:   /opt/apache-tomcat-7.0.105  
Using CATALINA_TMPDIR: /opt/apache-tomcat-7.0.105/temp  
Using JRE_HOME:        /opt/jdk1.8.0_211/jre  
Using CLASSPATH:       /opt/apache-tomcat-7.0.105/bin/bootstrap.jar:/opt/apache-tomcat-7.0.105/bin/tomcat-jar.jar  
Tomcat started.  
[root@localhost bin]# cd ..  
[root@localhost apache-tomcat-7.0.105]# cd logs/  
[root@localhost logs]# ls  
catalina.out  
[root@localhost logs]# cat catalina.out  
./catalina.sh: line 501: /opt/jdk1.8.0_211/jre/bin/java: Permission denied  
./catalina.sh: line 501: /opt/jdk1.8.0_211/jre/bin/java: Permission denied  
./catalina.sh: line 501: /opt/jdk1.8.0_211/jre/bin/java: Permission denied  
[root@localhost logs]#  
[root@localhost logs]# chmod 777 /opt/jdk1.8.0_211/jre/bin/java  
[root@localhost logs]#
```

Academy Epic Academy

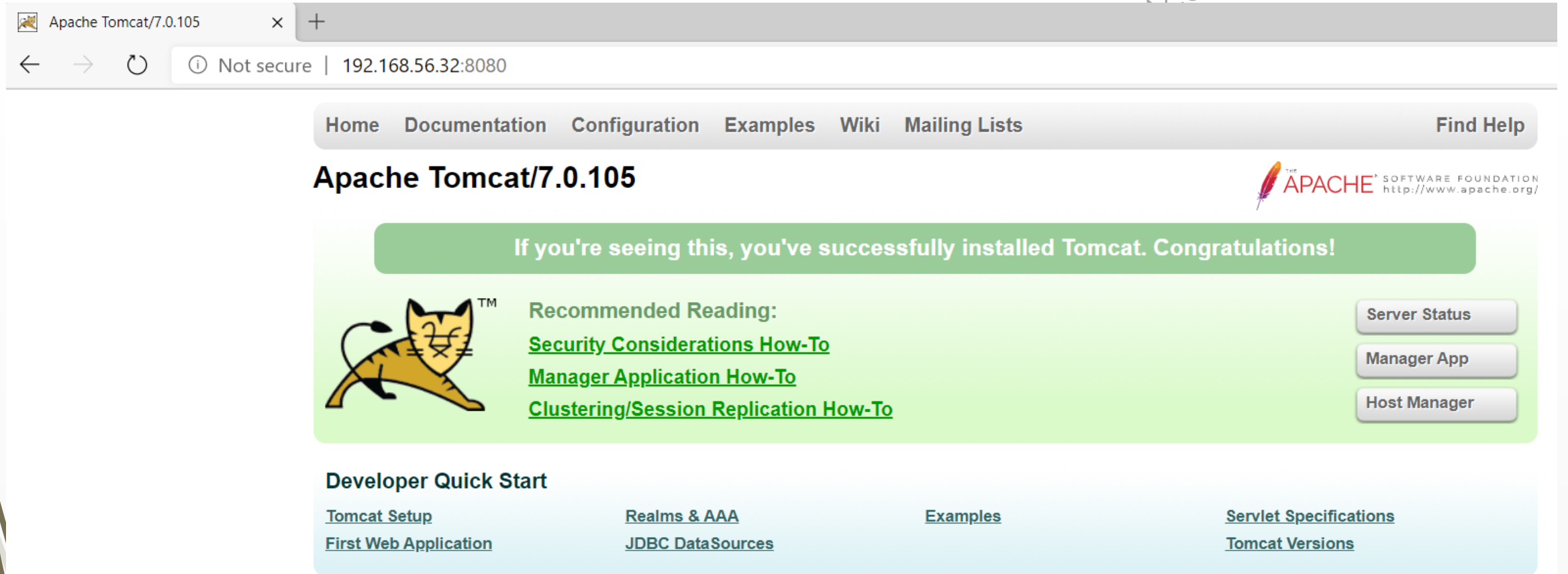
```
[root@localhost bin]# ./catalina.sh start
```

Use netstat to confirm tomcat is listening on default port 8080

```
[root@localhost bin]#
[root@localhost bin]# ./catalina.sh start
Using CATALINA_BASE: /opt/apache-tomcat-7.0.105
Using CATALINA_HOME: /opt/apache-tomcat-7.0.105
Using CATALINA_TMPDIR: /opt/apache-tomcat-7.0.105/temp
Using JRE_HOME: /opt/jdk1.8.0_211/jre
Using CLASSPATH: /opt/apache-tomcat-7.0.105/bin/bootstrap.jar:/opt/apache-tomcat-7.0.105/bin/tomcat-juli.jar
Tomcat started.
[root@localhost bin]#
[root@localhost bin]#
[root@localhost bin]# netstat -tulpn
Active Internet connections (only servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State                   PID/Program name
tcp        0      0 127.0.0.1:25            0.0.0.0:*                LISTEN                  1162/master
tcp        0      0 0.0.0.0:111             0.0.0.0:*                LISTEN                  688/rpcbind
tcp        0      0 0.0.0.0:22              0.0.0.0:*                LISTEN                  957/sshd
tcp6       0      0 :::25                   :::*                    LISTEN                  1162/master
tcp6       0      0 127.0.0.1:8005           :::*                    LISTEN                  1495/java
tcp6       0      0 :::3306                  :::*                    LISTEN                  1017/mysqld
tcp6       0      0 :::111                   :::*                    LISTEN                  688/rpcbind
tcp6       0      0 :::8080                 :::*                    LISTEN                  1495/java
tcp6       0      0 :::22                   :::*                    LISTEN                  957/sshd
udp        0      0 0.0.0.0:111             0.0.0.0:*                688/rpcbind
udp        0      0 127.0.0.1:323           0.0.0.0:*                705/chronyd
udp        0      0 0.0.0.0:858             0.0.0.0:*                688/rpcbind
udp6       0      0 :::111                   :::*                    688/rpcbind
udp6       0      0 :::1:323                 :::*                    705/chronyd
udp6       0      0 :::858                   :::*                    688/rpcbind
[root@localhost bin]#
```

Starting tomcat

Access the tomcat URL to confirm you are good to go




The screenshot shows a web browser window with the title "Apache Tomcat/7.0.105". The address bar shows "Not secure | 192.168.56.32:8080". The page has a navigation bar with links: Home, Documentation, Configuration, Examples, Wiki, Mailing Lists, and Find Help. The main heading is "Apache Tomcat/7.0.105". To the right is the Apache Software Foundation logo and URL. A green banner says "If you're seeing this, you've successfully installed Tomcat. Congratulations!". Below this is the Tomcat logo and "Recommended Reading" links: Security Considerations How-To, Manager Application How-To, and Clustering/Session Replication How-To. On the right are buttons for Server Status, Manager App, and Host Manager. A "Developer Quick Start" section at the bottom contains links for Tomcat Setup, First Web Application, Realms & AAA, JDBC DataSources, Examples, Servlet Specifications, and Tomcat Versions.

Apache Tomcat/7.0.105


Not secure | 192.168.56.32:8080

Home Documentation Configuration Examples Wiki Mailing Lists Find Help

Apache Tomcat/7.0.105

 **APACHE** SOFTWARE FOUNDATION
<http://www.apache.org/>

If you're seeing this, you've successfully installed Tomcat. Congratulations!

 TM

Recommended Reading:

- [Security Considerations How-To](#)
- [Manager Application How-To](#)
- [Clustering/Session Replication How-To](#)

Server Status
Manager App
Host Manager

Developer Quick Start

Tomcat Setup	Realms & AAA	Examples	Servlet Specifications
First Web Application	JDBC DataSources		Tomcat Versions

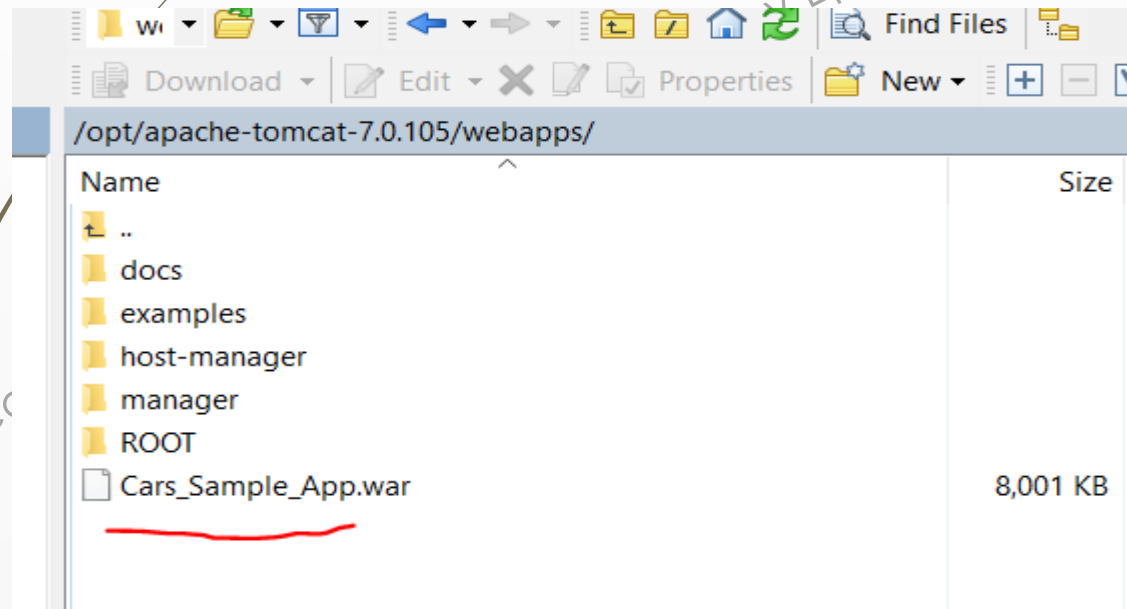
Step 6: Deploy the supercar .war file

With your tomcat and MySQL running, you are ready to deploy your web applications

Copy the Cars_Sample_App.war file with WinSCP and drop in **/opt/apache-tomcat-7.0.105/webapps**

Tomcat will unpack this and deploy the application

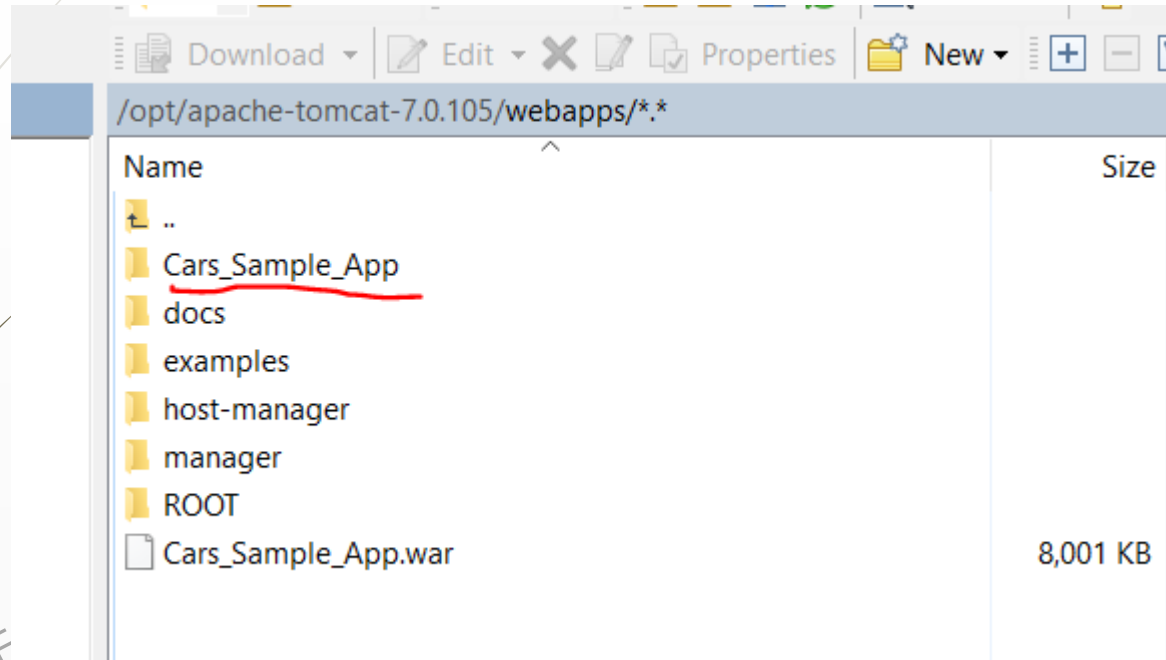
```
[root@localhost webapps]#  
[root@localhost webapps]# pwd  
/opt/apache-tomcat-7.0.105/webapps  
[root@localhost webapps]#  
[root@localhost webapps]# ls  
docs  examples  host-manager  manager  ROOT  
[root@localhost webapps]#
```



War file is a Web Application resource or web application archive used in packaging and distributing .jar files, htm pages, jsp pages and other resources to constitute an application.

Deploying the supercars web application

You should see the deployed application with the additional directory

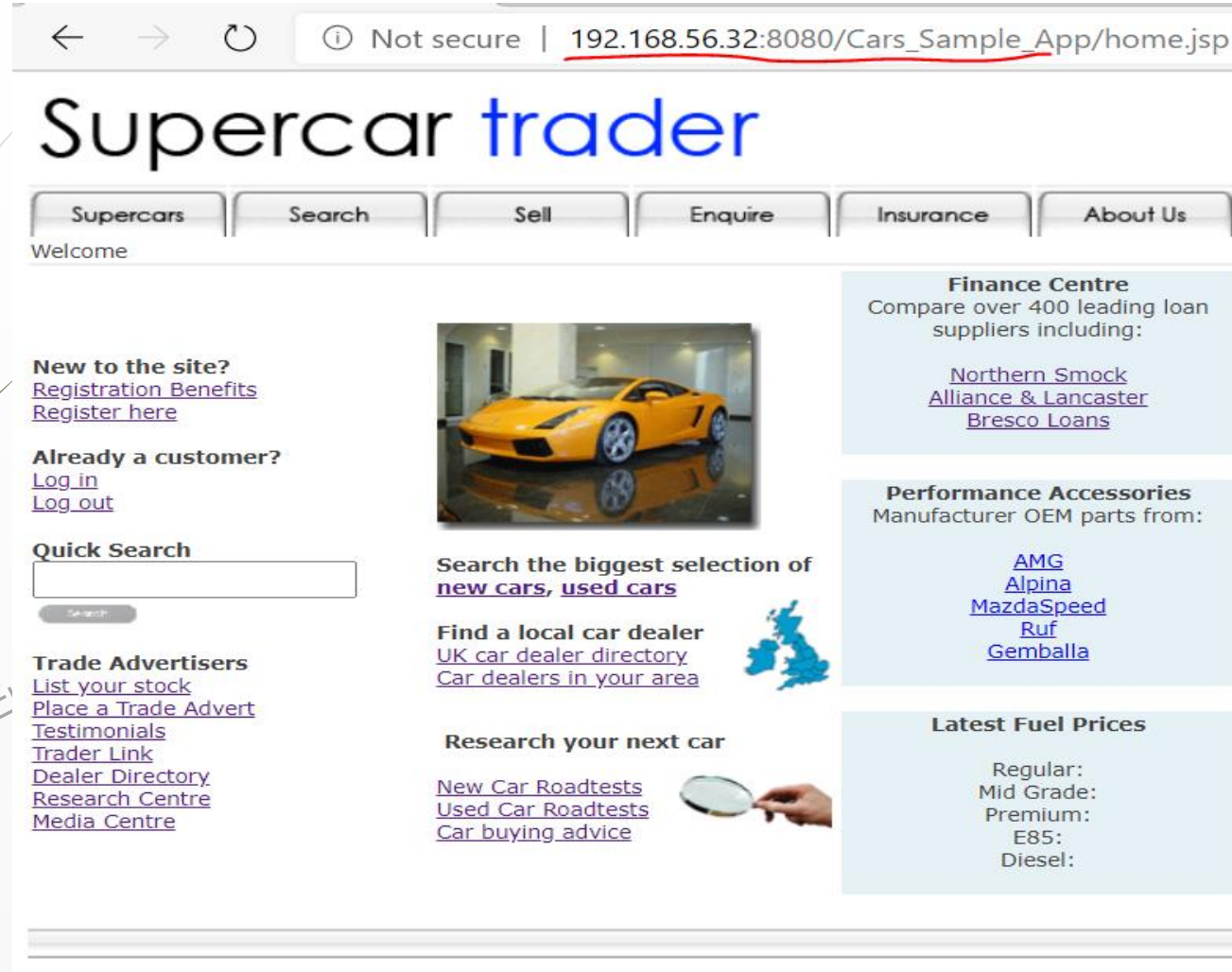


```
[root@localhost webapps]# ls
Cars_Sample_App  Cars_Sample_App.war  docs  examples  host-manager  manager  ROOT
[root@localhost webapps]#
```


Accessing the supercars web application

Access your newly deployed application on your URL

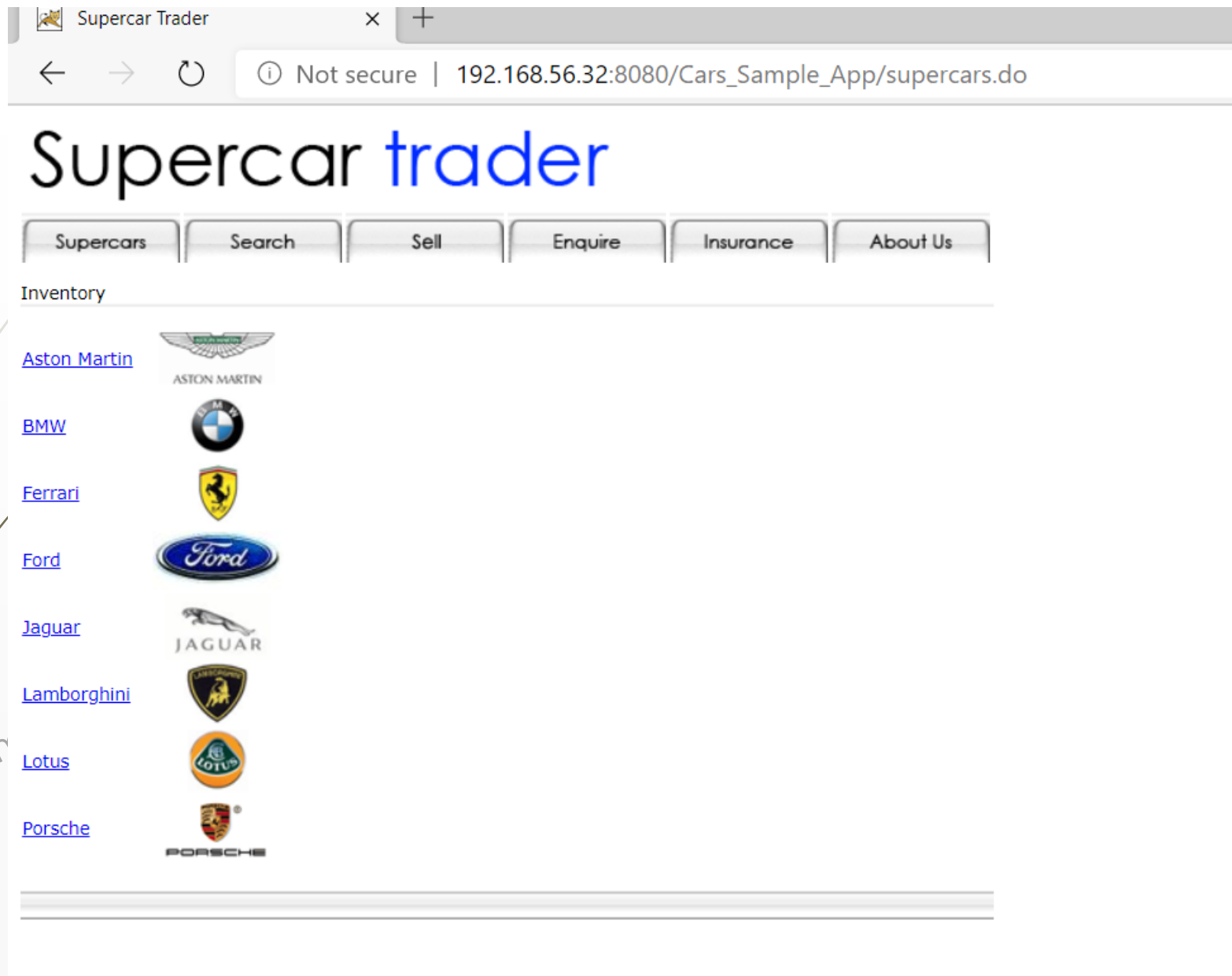
http://192.168.56.32:8080/Cars_Sample_App/home.jsp



The screenshot shows a web browser window with the address bar displaying "192.168.56.32:8080/Cars_Sample_App/home.jsp". The page title is "Supercar trader". The navigation bar includes links for "Supercars", "Search", "Sell", "Enquire", "Insurance", and "About Us". Below the navigation bar, the page is divided into several sections:

- Welcome**
- New to the site?**
 - [Registration Benefits](#)
 - [Register here](#)
- Already a customer?**
 - [Log in](#)
 - [Log out](#)
- Quick Search**
 - Search input field
 - Search button
- Trade Advertisers**
 - [List your stock](#)
 - [Place a Trade Advert](#)
 - [Testimonials](#)
 - [Trader Link](#)
 - [Dealer Directory](#)
 - [Research Centre](#)
 - [Media Centre](#)
- Search the biggest selection of new cars, used cars**
 - [Find a local car dealer](#)
 - [UK car dealer directory](#)
 - [Car dealers in your area](#)
- Research your next car**
 - [New Car Roadtests](#)
 - [Used Car Roadtests](#)
 - [Car buying advice](#)
- Finance Centre**
 - Compare over 400 leading loan suppliers including:
 - [Northern Smock](#)
 - [Alliance & Lancaster](#)
 - [Bresco Loans](#)
- Performance Accessories**
 - Manufacturer OEM parts from:
 - [AMG](#)
 - [Alpina](#)
 - [MazdaSpeed](#)
 - [Ruf](#)
 - [Gemballa](#)
- Latest Fuel Prices**
 - Regular:
 - Mid Grade:
 - Premium:
 - E85:
 - Diesel:

You should see Car Images under supercars tab



Instrument the Car Sample Application with AppDynamics

Exercise 1: Instrumenting Java Based Application

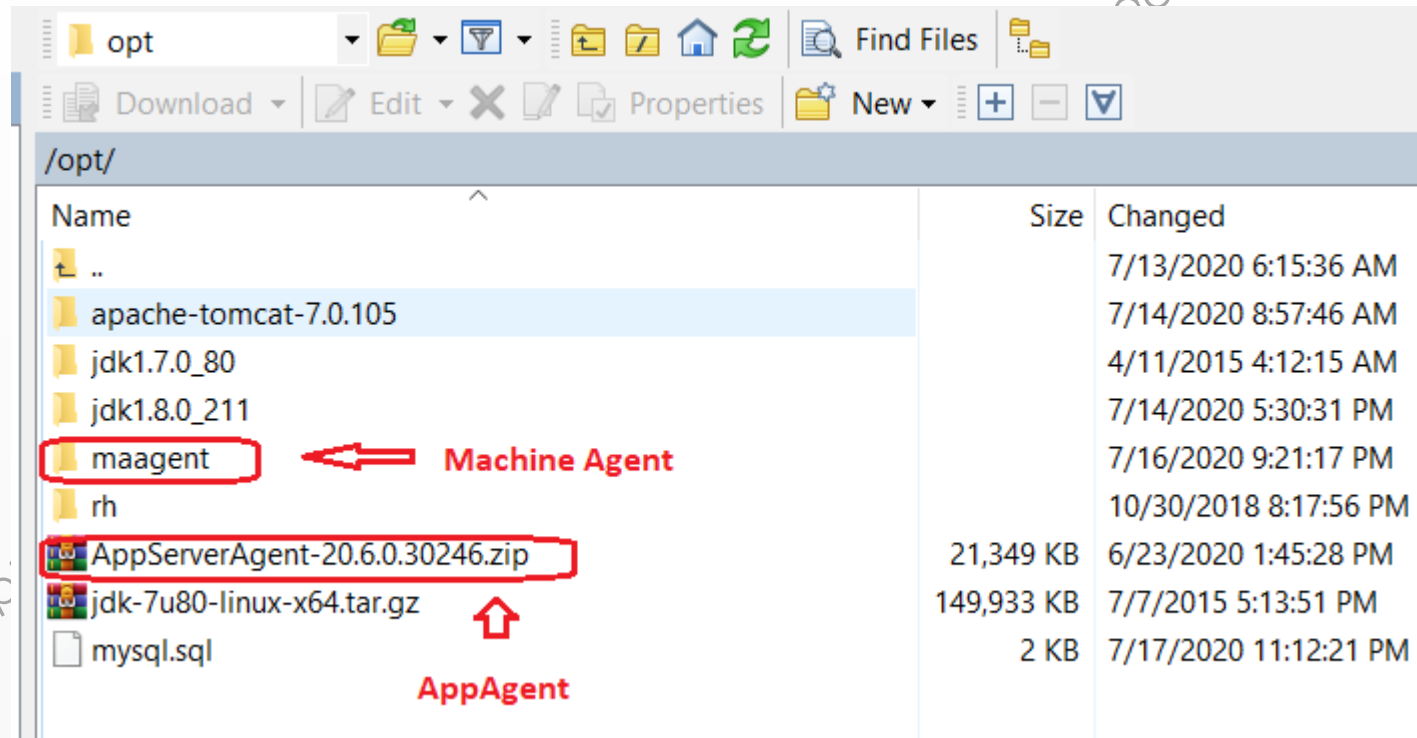
Refer to AppDynamics documentation on Tomcat

<https://docs.appdynamics.com/display/PRO45/Adobe+Tomcat+Startup+Settings>

Instrument the Car Sample Application with AppDynamics

Exercise 1: Instrumenting Java Based Application - Instruction

Step 1: Use WinSCP to copy the AppDynamics App Agent and the machine agent binaries to the server



Exercise 1: Instrumenting Java Based Application - Instruction

Step 2: Make a directory under /opt called AppServerAgent, Move the binaries inside it and extract

```
[root@localhost opt]# mkdir AppServerAgent
[root@localhost opt]# mv AppServerAgent-20.6.0.30246.zip AppServerAgent
[root@localhost opt]# cd AppServerAgent/
[root@localhost AppServerAgent]# unzip AppServerAgent-20.6.0.30246.zip
[root@localhost opt]#
[root@localhost opt]# mkdir AppServerAgent
[root@localhost opt]# mv AppServerAgent-20.6.0.30246.zip AppServerAgent
[root@localhost opt]#
[root@localhost opt]#
[root@localhost opt]# cd AppServerAgent/
[root@localhost AppServerAgent]# unzip AppServerAgent-20.6.0.30246.zip
Archive:  AppServerAgent-20.6.0.30246.zip
  inflating: readme.txt.asc
   creating: ver20.6.0.30246/
  inflating: ver20.6.0.30246/readme.txt.asc
  inflating: ver20.6.0.30246/readme.txt
```

Instrument the Car Sample Application with AppDynamics

Exercise 1: Instrumenting Java Based Application - Instructions

Step 3: Edit the AppDynamics File /opt/AppServerAgent/conf/controller-info.xml

```
cd /opt/AppServerAgent/conf  
[root@localhost conf]# vi controller-info.xml
```

Modify the following replacing the controller-host with your controller ip address and your access key.

```
<controller-host>192.168.56.40</controller-host>  
<controller-port>8090</controller-port>  
<application-name>CarSampleApp</application-name>  
<tier-name>WebTier</tier-name>  
<node-name>WebNode1</node-name>  
<account-name>customer1</account-name>  
<account-access-key>xxxxxxxxxxxxxxxx</account-access-key>
```

Save the file and exit.

Instrument the Car Sample Application with AppDynamics

Exercise 1: Instrumenting Java Based Application - Instructions

Refer to AppDynamics documentation on Tomcat

Step 1: use the vi to Create **setenv.sh** file under the Tomcat CATALINA_BASE/bin directory

```
[root@localhost ~]# cd /opt/apache-tomcat-7.0.105/bin/
```

```
[root@localhost bin]# vi setenv.sh
```

```
[root@localhost bin]# vi setenv.sh
export CATALINA_OPTS="$CATALINA_OPTS -javaagent:/opt/AppServerAgent/javaagent.jar"
export CATALINA_OPTS="$CATALINA_OPTS -javaagent:/opt/AppServerAgent/javaagent.jar"
```

Save and exit.

Give the setenv.sh script execution permission

```
[root@localhost bin]# chmod 777 setenv.sh
```

Instrument the Car Sample Application with AppDynamics

Exercise 1: Instrumenting Java Based Application - Instructions

Start the Tomcat Application

[root@localhost bin]# ./catalina.sh start

```
[root@localhost bin]# ./catalina.sh start
Using CATALINA_BASE:   /opt/apache-tomcat-7.0.105
Using CATALINA_HOME:   /opt/apache-tomcat-7.0.105
Using CATALINA_TMPDIR: /opt/apache-tomcat-7.0.105/temp
Using JRE_HOME:        /opt/jdk1.8.0_211/jre
Using CLASSPATH:       /opt/apache-tomcat-7.0.105/bin/bootstrap.jar:/opt/apache-tomcat-7.0.105/bin/tomcat-juli.jar
Tomcat started.
[root@localhost bin]#
```


Instrument the Car Sample Application with AppDynamics

Exercise 1: Instrumenting Java Based Application – Instructions

Application should register with the controller

Not secure | 192.168.56.40:8090/controller/#/location=APPS_ALL_DASHBOARD&timeRange=last_1_hour.BEFORE_NOW.-1.-1.60

Home Applications User Experience Databases Servers Analytics Dashboards & Reports AI

Application Actions View Options View Sort

Calls / min

✓ CarSampleApp >	✓ AD-Docker-Capital >
0 ms Response Time (ms)	0 ms Response Time (ms)
0 Calls	0 Calls
0 Calls / min	0 Calls / min
0.0 % Error %	0.0 % Error %
0 Errors	0 Errors
0 Errors / min	0 Errors / min

Instrument the Car Sample Application with AppDynamics

Exercise 1: Instrumenting Java Based Application – Instructions

Check the agent log as discussed in the video to confirm full registration

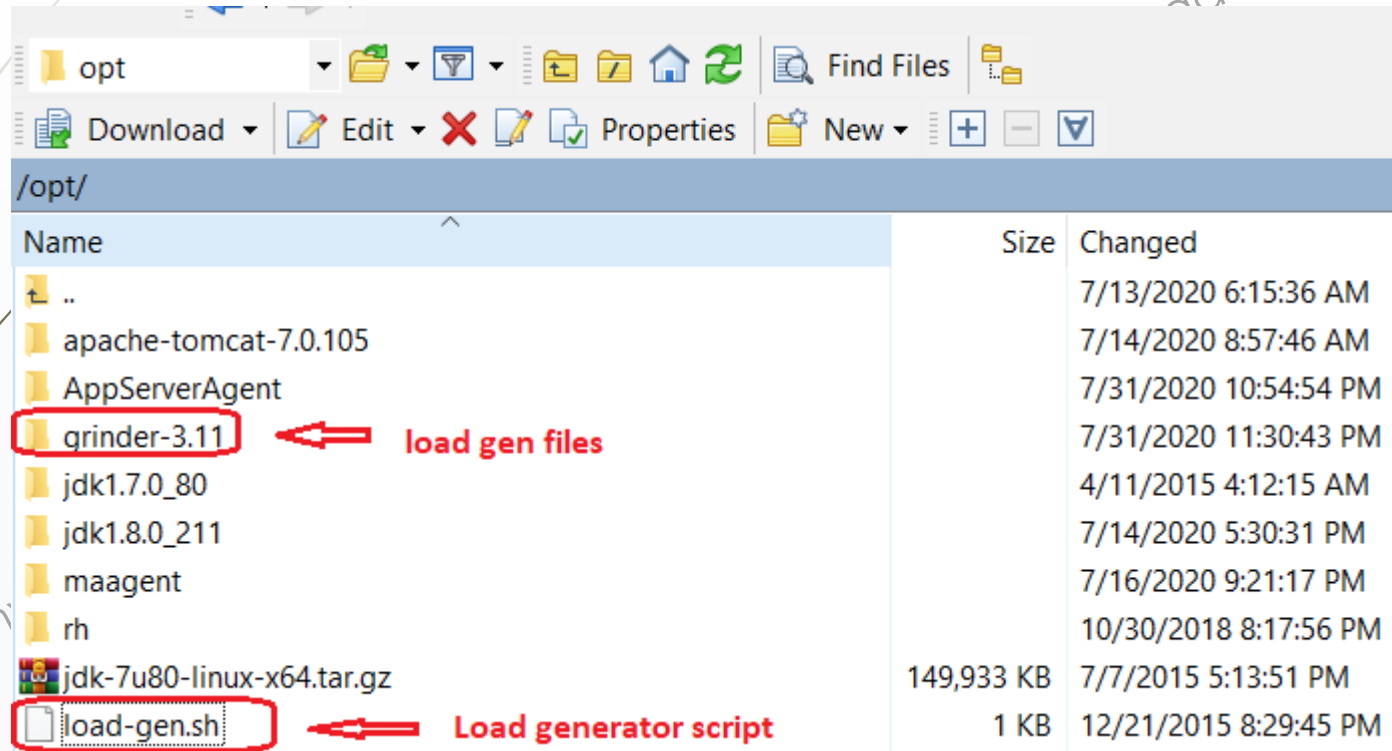
Confirm you see the following in the log

[AD Agent init] 31 Jul 2020 23:22:01,570 INFO JavaAgent - Started AppDynamics Java Agent Successfully.

Instrument the Car Sample Application with AppDynamics

Exercise 2: Generate load using Grinder script in the lab files

Step 1: Copy the grinder files and script with WinSCP



The screenshot shows a WinSCP window displaying the contents of the /opt/ directory. The file list includes folders like apache-tomcat-7.0.105, AppServerAgent, grinder-3.11, jdk1.7.0_80, jdk1.8.0_211, maagent, rh, and a file jdk-7u80-linux-x64.tar.gz. The 'grinder-3.11' folder and 'load-gen.sh' file are highlighted with red boxes. Red arrows point from the text 'load gen files' to the 'grinder-3.11' folder and from 'Load generator script' to the 'load-gen.sh' file.

Name	Size	Changed
..		7/13/2020 6:15:36 AM
apache-tomcat-7.0.105		7/14/2020 8:57:46 AM
AppServerAgent		7/31/2020 10:54:54 PM
grinder-3.11		7/31/2020 11:30:43 PM
jdk1.7.0_80		4/11/2015 4:12:15 AM
jdk1.8.0_211		7/14/2020 5:30:31 PM
maagent		7/16/2020 9:21:17 PM
rh		10/30/2018 8:17:56 PM
jdk-7u80-linux-x64.tar.gz	149,933 KB	7/7/2015 5:13:51 PM
load-gen.sh	1 KB	12/21/2015 8:29:45 PM

Exercise 2: Generate load using Grinder script in the lab files

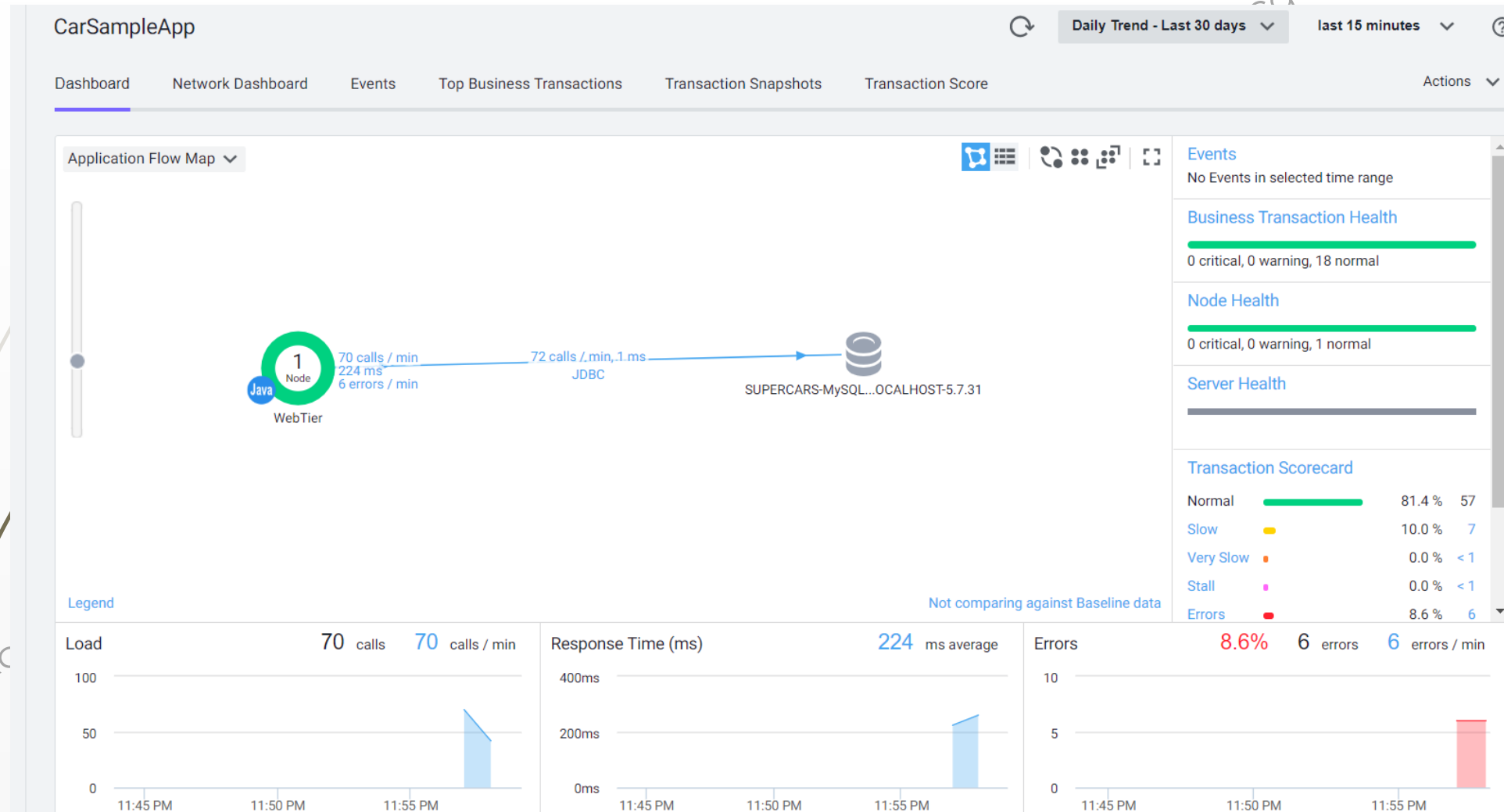
Step 2: Give the script permission and then run the load-gen.sh file to generate load

```
[root@localhost opt]# chmod 777 load-gen.sh  
[root@localhost opt]# ./load-gen.sh &
```

```
[root@localhost opt]# ./load-gen.sh &  
[1] 1890  
[root@localhost opt]# /opt  
/opt/grinder-3.11/lib/grinder.jar  
2020-07-31 23:40:55,652 INFO  agent: The Grinder 3.11  
2020-07-31 23:40:55,659 INFO  agent: Worker process command line: java '-javaagent:/opt/grinder-3.11/lib/grinder-  
er.engine.process.WorkerProcessEntryPoint  
2020-07-31 23:40:55,729 INFO  agent: worker localhost.localdomain-0 started  
2020-07-31 23:40:57,349 INFO  localhost.localdomain-0: starting threads  
[root@localhost opt]#
```

Instrument the Car Sample Application with AppDynamics

Cars Sample Flow Map should populate



The slide features a light gray background with a horizontal gradient. On the left side, there is a dark red arrow pointing right, partially overlapping a vertical brown bar. Below the arrow are several thin, curved lines in shades of brown and gray, resembling stylized grass or reeds. The text 'The End' is centered in a large, black, sans-serif font. A diagonal watermark with the text 'Epic Academy' is repeated across the slide from the bottom left to the top right.

The End