

Using the Cloudlab Java VM (v2019.7)

by Jnaapti

Contents

| | |
|--|-----------|
| Accessing the VNC environment | 3 |
| Accessing Browsers | 3 |
| Working with the Terminal | 3 |
| Accessing the terminal in the VNC Environment | 3 |
| Accessing the terminal without VNC | 5 |
| Working with the Filesystem | 5 |
| Creating directories from the File Manager | 5 |
| Creating files from the File Manager | 5 |
| Delete a file or folder from the File Manager | 5 |
| Creating files and folders from the Terminal | 5 |
| Accessing Eclipse | 6 |
| Access Eclipse via the Desktop Shortcut | 6 |
| Access Eclipse from the command line | 6 |
| Running Java | 6 |
| In Eclipse | 6 |
| From the command line | 6 |
| Running Maven | 6 |
| Working with MySQL | 8 |
| Starting/Stopping the Server | 8 |
| Connecting to MySQL with the client | 8 |
| Working with Git | 9 |
| Keyboard Shortcuts | 9 |
| Getting help from the facilitator | 9 |
| Changing passwords | 9 |
| Changing your VNC password | 9 |
| Changing your OS password | 9 |
| Ensuring a smooth user experience | 10 |
| Watch out your resource usage | 10 |
| Do NOT run anything other than what your instructor has advised you to | 10 |
| Troubleshooting | 10 |
| Capslock is toggled | 10 |
| Option 1 - Use onscreen keyboard | 10 |
| VNC environment has become unresponsive | 10 |

| | |
|--|-----------|
| Option 1 - Refresh the browser | 10 |
| Option 2 - Restart the VNC service | 11 |
| Option 3 - Contact your facilitator | 11 |
| Forgot your password | 11 |
| In case you have forgotten your VNC password | 11 |
| In case you have forgotten your OS password | 11 |
| Privacy and Security | 11 |

Accessing the VNC environment

You can then access the VNC environment at: <https://yourid-6080.cloudlab.jnaapti.io/>

Your facilitator would have shared your id, username and password (if any). If not, contact the facilitator for the same.

Here is a screenshot of the desktop that you should see:



Figure 1: Landing Screen

NOTE: There might be some warnings/messages. Confirm them to continue using the desktop.

Accessing Browsers

There are 2 browsers installed by default - Chromium (open source version of Chrome) and Firefox.

- Chrome can be accessed from the Desktop Shortcut.
- Firefox can be accessed from Main Menu -> Internet -> Firefox.

Working with the Terminal

Accessing the terminal in the VNC Environment

You can access the terminal by double-clicking the Desktop Shortcut called "Terminal"

By default, the terminal opens to the home directory of the root user, i.e. /root (represented by ~).

Use `Ctrl+D` to quit the shell and close the terminal.

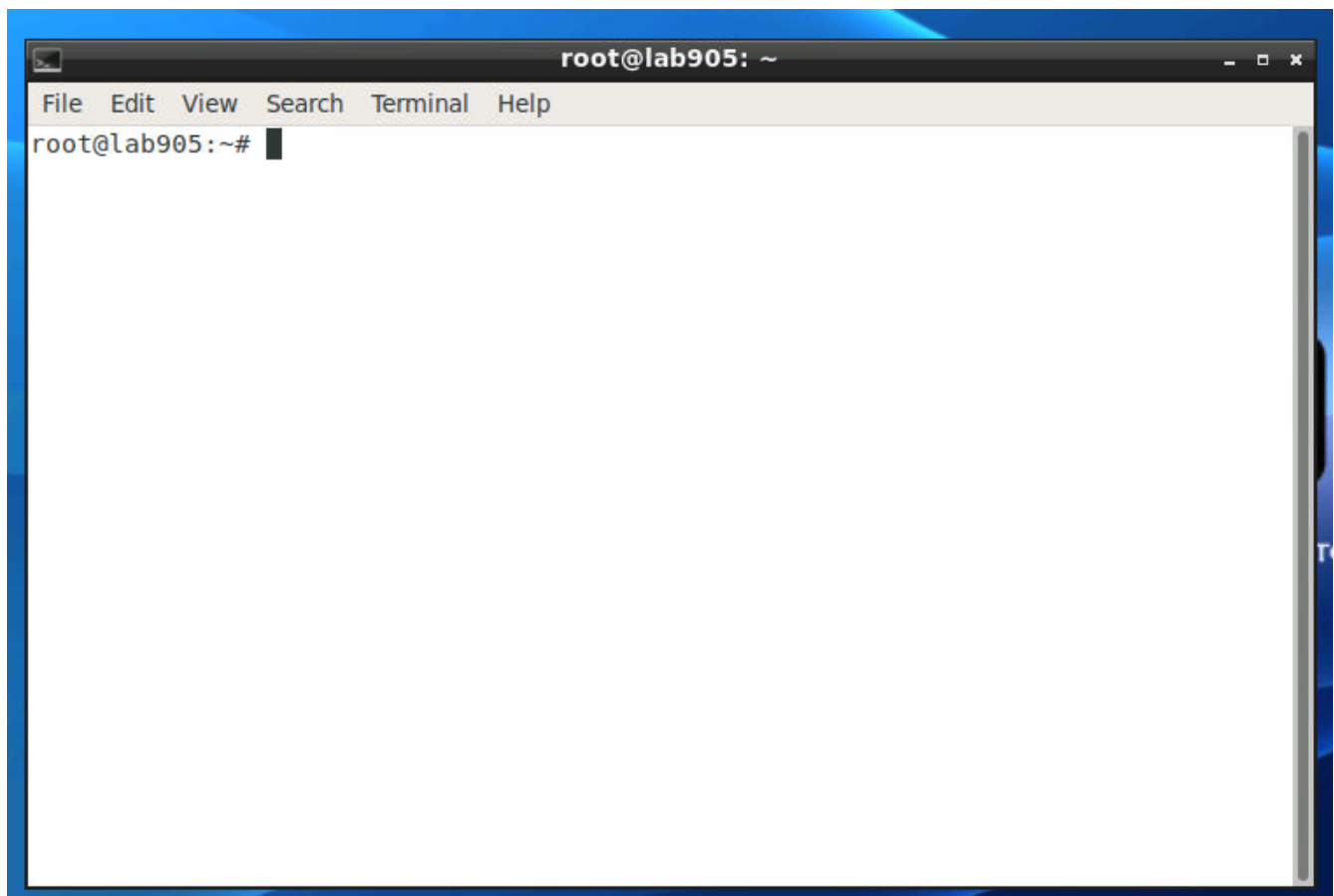


Figure 2: Terminal

Accessing the terminal without VNC

You can also access the terminal without VNC at: <https://yourid.cloudlab.jnaapti.io/>

This terminal service is useful in case your VNC environment becomes unusable and you have to restart the VNC service.

Your facilitator would have shared your id, username and password (if any). If not, contact the facilitator for the same.

Working with the Filesystem

You can access the File Manager at: Main Menu -> System Tools -> File Manager PCManFM. Refer to Jnaapti's guide on Linux basics if you need help navigating the Linux filesystem.

Creating directories from the File Manager

1. In the File Manager click on "Home Folder".
2. Right click and select Create New -> Folder.
3. Give the folder a name and click OK.

You can also follow this process to create folders on the desktop. Right click in an empty space on the Desktop and follow the same process from Step 2.

Creating files from the File Manager

1. Select the folder where you want to create the file.
2. Right click and select Create New -> Empty File.
3. Give the file a name with the required extension (eg: HelloWorld.java) and click OK.

Delete a file or folder from the File Manager

1. Select the folder or file that you want to delete.
2. Press Shift+Delete on your keyboard.
3. Choose Yes to confirm.

Creating files and folders from the Terminal

1. Open the Terminal as described in the section above.
2. Use the Linux commands `cd`, `touch`, `cat`, `mkdir`, `rm` etc to interact with files and folders.

Refer to Jnaapti's guide on Linux basics if you need help navigating the Linux filesystem.

Accessing Eclipse

The Eclipse version installed in this version of the Cloudlab Java VM is 2019-06 and the edition is Eclipse Java EE IDE for Web Developers.

Access Eclipse via the Desktop Shortcut

Just double-click the Desktop Shortcut to open

Access Eclipse from the command line

1. Open the Terminal as described above.
2. Type:

```
/opt/eclipse/eclipse
```

Select the workspace directory (you can go with the default, i.e. /root/eclipse-workspace) and click Launch.

Running Java

In Eclipse

Eclipse is pre-configured to use Java 8. You can verify the same at Window -> Preferences -> Java -> Installed JREs.

From the command line

javac and java are already in the PATH. So you can directly type these in the terminal.

```
root@lab905:~# java -version
openjdk version "1.8.0_212"
OpenJDK Runtime Environment (build 1.8.0_212-8u212-b03-0ubuntu1.18.04.1-b03)
OpenJDK 64-Bit Server VM (build 25.212-b03, mixed mode)
root@lab905:~# javac -version
javac 1.8.0_212
root@lab905:~#
```

Running Maven

mvn is already present in the PATH. So you can directly type it in the terminal.

```
root@lab905:~# mvn --version
Apache Maven 3.6.0
Maven home: /usr/share/maven
Java version: 1.8.0_212, vendor: Oracle Corporation, runtime: /usr/lib/jvm/java-8-openjdk-amd64/jre
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "4.15.0-52-generic", arch: "amd64", family: "unix"
root@lab905:~#
```

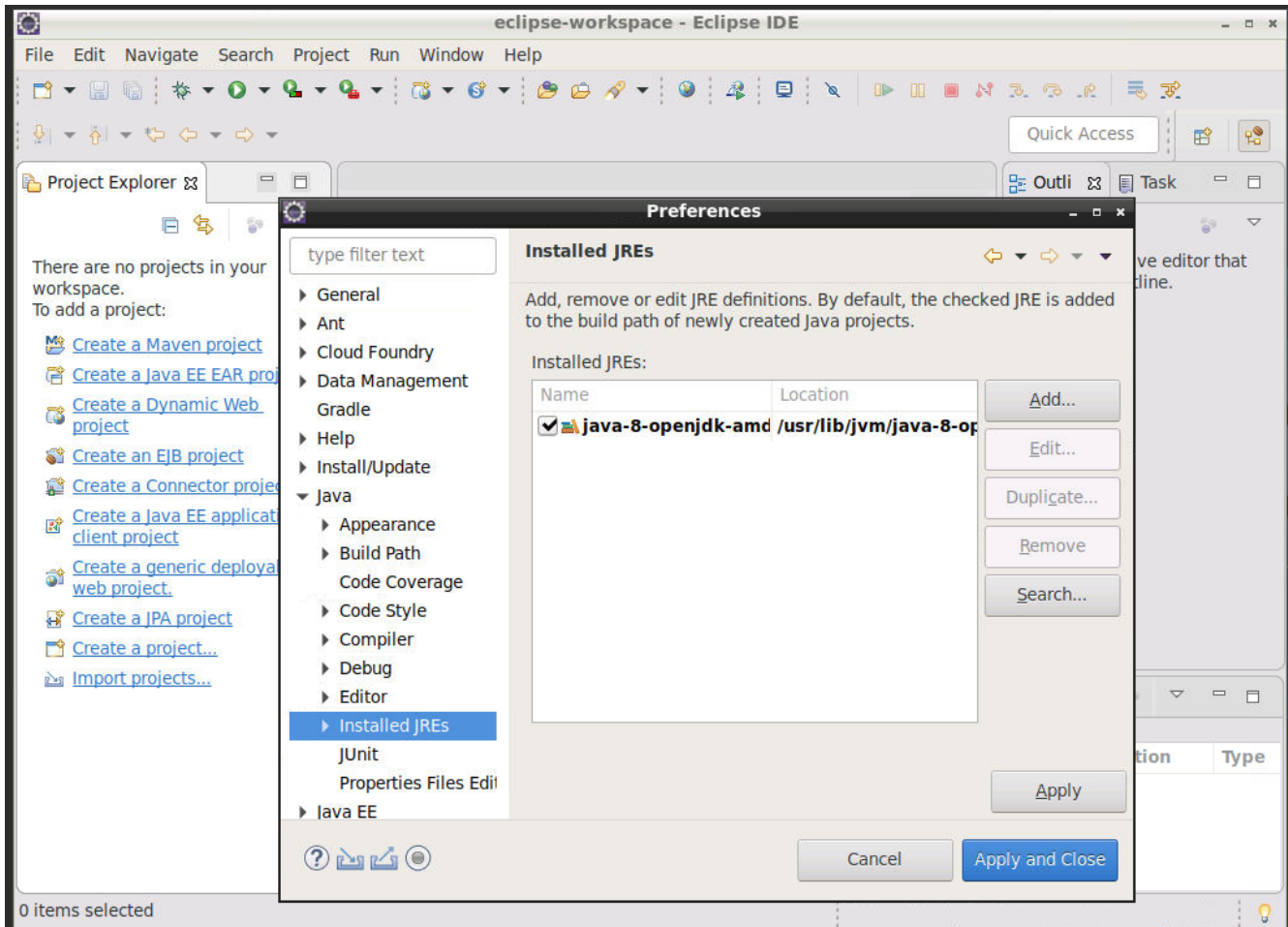


Figure 3: Installed JREs

Working with MySQL

Starting/Stopping the Server

The MySQL server will already be running when the Operating System boots. So you don't need to start it. In case you need to start/stop the service you can use the following commands:

- To start:

```
systemctl start mysql
```

- To stop:

```
systemctl stop mysql
```

- To check the status

```
systemctl status mysql
```

(Use q to quit the status)

Connecting to MySQL with the client

mysql client is already present in PATH. So you can access the database server as follows:

```
root@lab905:~# mysql -uroot -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 2
Server version: 5.7.26-0ubuntu0.18.04.1 (Ubuntu)
```

Copyright (c) 2000, 2019, 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>
```

Use Ctrl+D to quit the mysql shell.

Your facilitator will share the root password with you.

Working with Git

git is already present in PATH. So you can clone and work with Git repositories by typing git:

```
root@lab905:~# git --version
git version 2.17.1
root@lab905:~# git clone https://github.com/buzypi/spring-boot-hello
Cloning into 'spring-boot-hello'...
remote: Enumerating objects: 49, done.
remote: Total 49 (delta 0), reused 0 (delta 0), pack-reused 49
Unpacking objects: 100% (49/49), done.
root@lab905:~#
```

Keyboard Shortcuts

Since Alt-Tab and Alt-Shift-Tab switch the windows on your laptop, we have remapped the keyboard shortcuts to switch windows in the VNC environment. To switch windows, use Alt-q or Alt-Shift-q.

Getting help from the facilitator

Your facilitator has real-time access to your VNC environment. So in case you are facing an issue, you can share your id with the facilitator, and the facilitator can access your VNC environment and fix the issues for you.

Changing passwords

Changing your VNC password

To change your VNC password, follow these steps:

1. Open the terminal at: <https://yourid.cloudlab.jnaapti.io/>
2. Login with your username and password.
3. Enter the following command:

```
sudo changevncpassword
```

This will prompt you to enter a password. Please note that your key presses will not be shown.

4. Press Enter.
5. Refresh your VNC environment at: <https://yourid-6080.cloudlab.jnaapti.io>
6. Enter your new VNC password to login

Changing your OS password

To change your OS password, follow these steps:

1. Open the terminal at: <https://yourid.cloudlab.jnaapti.io/>
2. Login with your username and password.
3. Enter the following command:

```
passwd
```

This will prompt you to enter a password and re-enter it. Please note that your key presses will not be shown.

4. Use this password the next time you load the terminal at: <https://yourid.cloudlab.jnaapti.io/>

NOTE: If you forget your OS password, you cannot reset it without raising a support request, so please ensure that you don't forget it!

Ensuring a smooth user experience

Watch out your resource usage

Ensure that you don't overshoot your resource usage. This means you don't open too many browser tabs or run multiple Java programs at the same time (unless instructed by your facilitator).

You can check your resource usage using the following commands:

```
top # Helps you find out the load average of your machine
free -m # Helps you find out the free memory available on your machine
```

Do NOT run anything other than what your instructor has advised you to

Running scripts that load the memory or CPU will trigger our monitoring systems and our systems may end up temporarily/permanently shutting down the VM. So in order to ensure a smooth learning experience, do NOT run any scripts other than what your facilitator has instructed you to execute.

Troubleshooting

Capslock is toggled

You may sometimes see that the Capslock key in your laptop/desktop is OFF but the remote environment is assuming it is ON. The reason this happens is, if the Capslock was set to ON *before* you accessed VNC and then you sent a Capslock toggle to the remote environment.

Option 1 - Use onscreen keyboard

You can fix this by opening: Main Menu -> Universal Access -> Onboard, and switching off Capslock in the remote system.

VNC environment has become unresponsive

In case the VNC environment becomes unresponsive follow these steps to fix the issue.

Option 1 - Refresh the browser

Since the VNC session stays across browser refreshes, refreshing the browser can solve some network connection issues, while restoring your session.

Option 2 - Restart the VNC service

If your VNC environment has become unresponsive and you are sure that it's not a network issue in your organization, you can restart the VNC service.

To restart the VNC service, open the jnaapti terminal at: <https://yourid.cloudlab.jnaapti.io/>.

Login with the username and password provided to you. Then run this command:

```
sudo systemctl restart jnaaptivnc
```

If the VNC environment seems to be misbehaving for any reason, but you are able to access the terminal in the VNC environment, you can run the above command from the terminal in the VNC environment itself. This will momentarily disconnect you from the VNC session. Refresh the page and the VNC environment should load back up.

NOTE: Restarting the VNC service will close all open applications.

Option 3 - Contact your facilitator

In case the above 2 steps don't work, contact your facilitator to get help.

Forgot your password

In case you have forgotten your VNC password

If you have forgotten your VNC password but you remember your OS password, you can follow the steps above (Changing your VNC password) to reset your VNC password.

In case you have forgotten your OS password

If you have forgotten your OS password, contact your facilitator to raise a support request to reset it for you. While we will make our best efforts to reset your password, we cannot guarantee the same and may have to reset your environment.

Privacy and Security

NOTE: For security reasons, we will be monitoring resource usage and activity in your VNC session. So ensure that your VMs are not misused. Any such activities will result in the environment being terminated without notice and the incident will be reported to your facilitator and the organization.