

Day 3

Info - Maven Plugin vs Maven Dependencies

- Maven Dependencies
 - Whatever framework/libraries your application depends on is called dependencies
 - Example
 - JUnit Test Framework is used by your application to automate Unit and Integration Test Cases
- Maven Plugins
 - Maven depends plugins to do every activity
 - For instance to compile the applicaiton code it uses maven-compiler-plugin
 - to run the unit testcases, it depends on maven-surefire-plugin
 - to package jar file, maven depends on maven-jar-plugin
 - to package war file, maven depends on maven-war-plugin
 - to delete the target folder, maven depends on maven-clean-plugin

Lab - Multi module project

```
cd ~/devops-july-2024
git pull
cd Day3/maven/multi-module-project/dal
mvn install
cd ..
cd bl
mvn install
cd ..
cd fe
mvn install
cd ..
mvn clean install
```

Expected output

```
Wed Jul 17 12:05:08 PM 98%
jegan@tektutor.org:~/devops-july-2024$ git pull
remote: Enumerating objects: 11, done.
remote: Counting objects: 100% (11/11), done.
remote: Compressing objects: 100% (8/8), done.
remote: Total 8 (delta 4), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (8/8), 2.08 KiB | 236.00 KiB/s, done.
From https://github.com/tektutor/devops-july-2024
  0aae699..b514dde main      -> origin/main
Updating 0aae699..b514dde
Fast-forward
 Day3/README.md | 16 ++++++-----+
  1 file changed, 16 insertions(+)
jegan@tektutor.org:~/devops-july-2024$ cd Day3/maven/multi-module-project/
jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project$ mvn clean install
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] crm                                [pom]
[INFO] dal                                [jar]
[INFO] bl                                 [jar]
[INFO] fe                                 [jar]
[INFO] main                               [jar]
[INFO]
[INFO] -----< org.tektutor:crm >-----
[INFO] Building crm 1.0.0                  [1/5]
[INFO] -----[ pom ]-----
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ crm ---
[INFO]
[INFO] -----< org.tektutor:dal >-----
[INFO] Building dal 1.0.0                  [2/5]
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ dal ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ dal ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/multi-module-project/dal/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ dal ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file to /home/jegan/devops-july-2024/Day3/maven/multi-module-project/dal/target/classes
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ dal ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/multi-module-project/dal/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ dal ---
[INFO] Changes detected - recompiling the module!
```

```
Wed Jul 17 12:05:38 PM PT
jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project

[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ dal ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file to /home/jegan/devops-july-2024/Day3/maven/multi-module-project/dal/target/test-classes
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ dal ---
[INFO] Surefire report directory: /home/jegan/devops-july-2024/Day3/maven/multi-module-project/dal/target/surefire-reports

-----
T E S T S
-----

Results :

Tests run: 0, Failures: 0, Errors: 0, Skipped: 0

[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ dal ---
[INFO] Building jar: /home/jegan/devops-july-2024/Day3/maven/multi-module-project/dal/target/dal-1.0.0.jar
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ dal ---
[INFO] Installing /home/jegan/devops-july-2024/Day3/maven/multi-module-project/dal/target/dal-1.0.0.jar to /home/jegan/.m2/repository/org/tektutor/dal/1.0.0/dal-1.0.0.jar
[INFO] Installing /home/jegan/devops-july-2024/Day3/maven/multi-module-project/dal/pom.xml to /home/jegan/.m2/repository/org/tektutor/dal/1.0.0/dal-1.0.0.pom
[INFO]
[INFO] -----< org.tektutor:bl >-----
[INFO] Building bl 1.0.0 [3/5]
```

```
Wed Jul 17 12:05:46 PM PT
jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project

-----< org.tektutor:bl >-----
[INFO] Building bl 1.0.0 [3/5]
-----[ jar ]-----
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ bl ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ bl ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/multi-module-project/bl/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ bl ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file to /home/jegan/devops-july-2024/Day3/maven/multi-module-project/bl/target/classes
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ bl ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/multi-module-project/bl/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ bl ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file to /home/jegan/devops-july-2024/Day3/maven/multi-module-project/bl/target/test-classes
[INFO]
```

```
Wed Jul 17 12:05:55 PM PT
jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project

[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ bl ---
[INFO] Surefire report directory: /home/jegan/devops-july-2024/Day3/maven/multi-module-project/bl/target/surefire-reports

-----
TESTS
-----

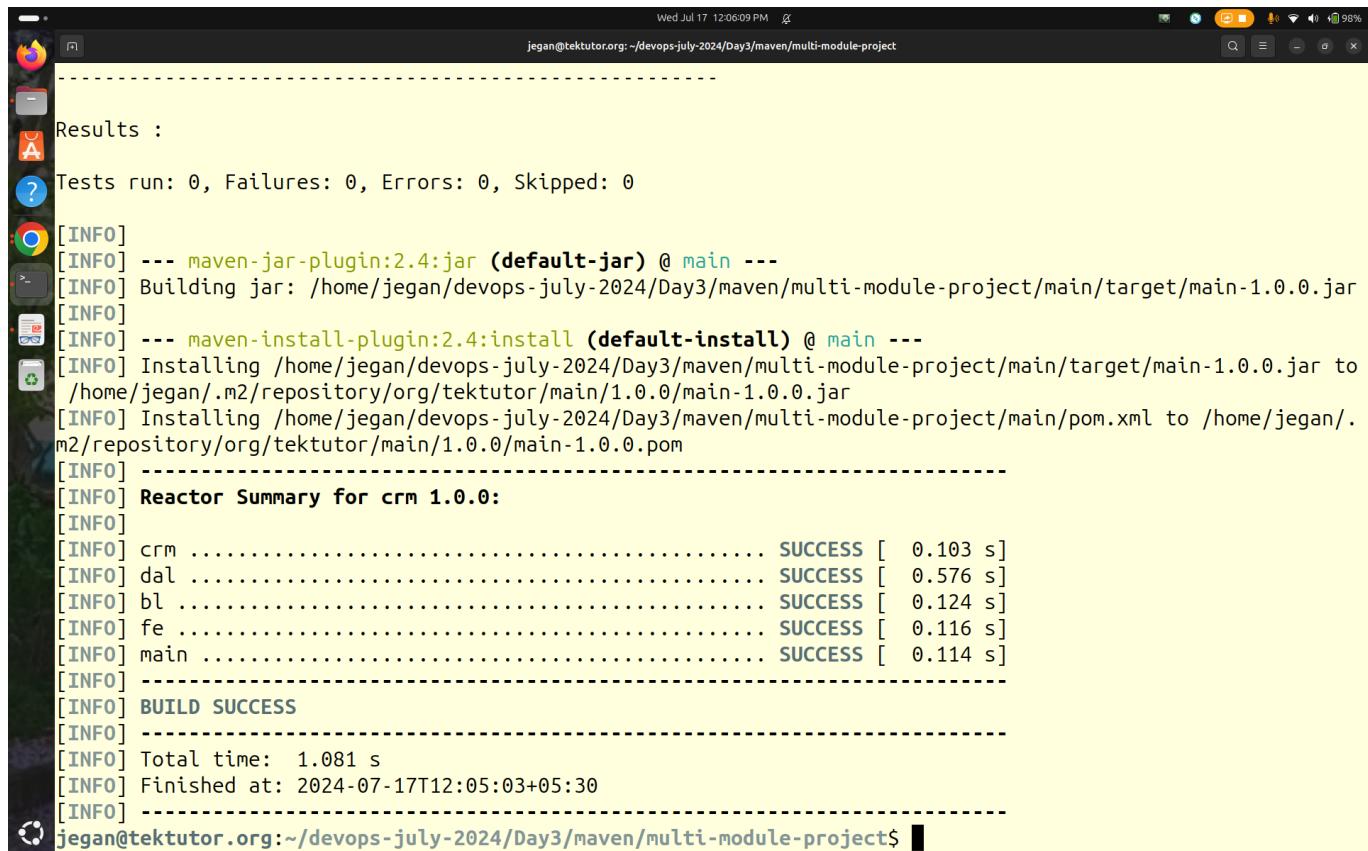
Results :

Tests run: 0, Failures: 0, Errors: 0, Skipped: 0

[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ bl ---
[INFO] Building jar: /home/jegan/devops-july-2024/Day3/maven/multi-module-project/bl/target/bl-1.0.0.jar
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ bl ---
[INFO] Installing /home/jegan/devops-july-2024/Day3/maven/multi-module-project/bl/target/bl-1.0.0.jar to /home/jegan/.m2/repository/org/tektutor/bl/1.0.0/bl-1.0.0.jar
[INFO] Installing /home/jegan/devops-july-2024/Day3/maven/multi-module-project/bl/pom.xml to /home/jegan/.m2/repository/org/tektutor/bl/1.0.0/bl-1.0.0.pom
[INFO]
[INFO] -----< org.tektutor:fe >-----
[INFO] Building fe 1.0.0 [4/5]
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ fe ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ fe ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
```

```
Wed Jul 17 12:06:02 PM PT
jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project

-----[ jar ]-----
[INFO]
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ fe ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ fe ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/multi-module-project/fe/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ fe ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file to /home/jegan/devops-july-2024/Day3/maven/multi-module-project/fe/target/classes
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ fe ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/multi-module-project/fe/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ fe ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file to /home/jegan/devops-july-2024/Day3/maven/multi-module-project/fe/target/test-classes
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ fe ---
[INFO] Surefire report directory: /home/jegan/devops-july-2024/Day3/maven/multi-module-project/fe/target/surefire-reports
```



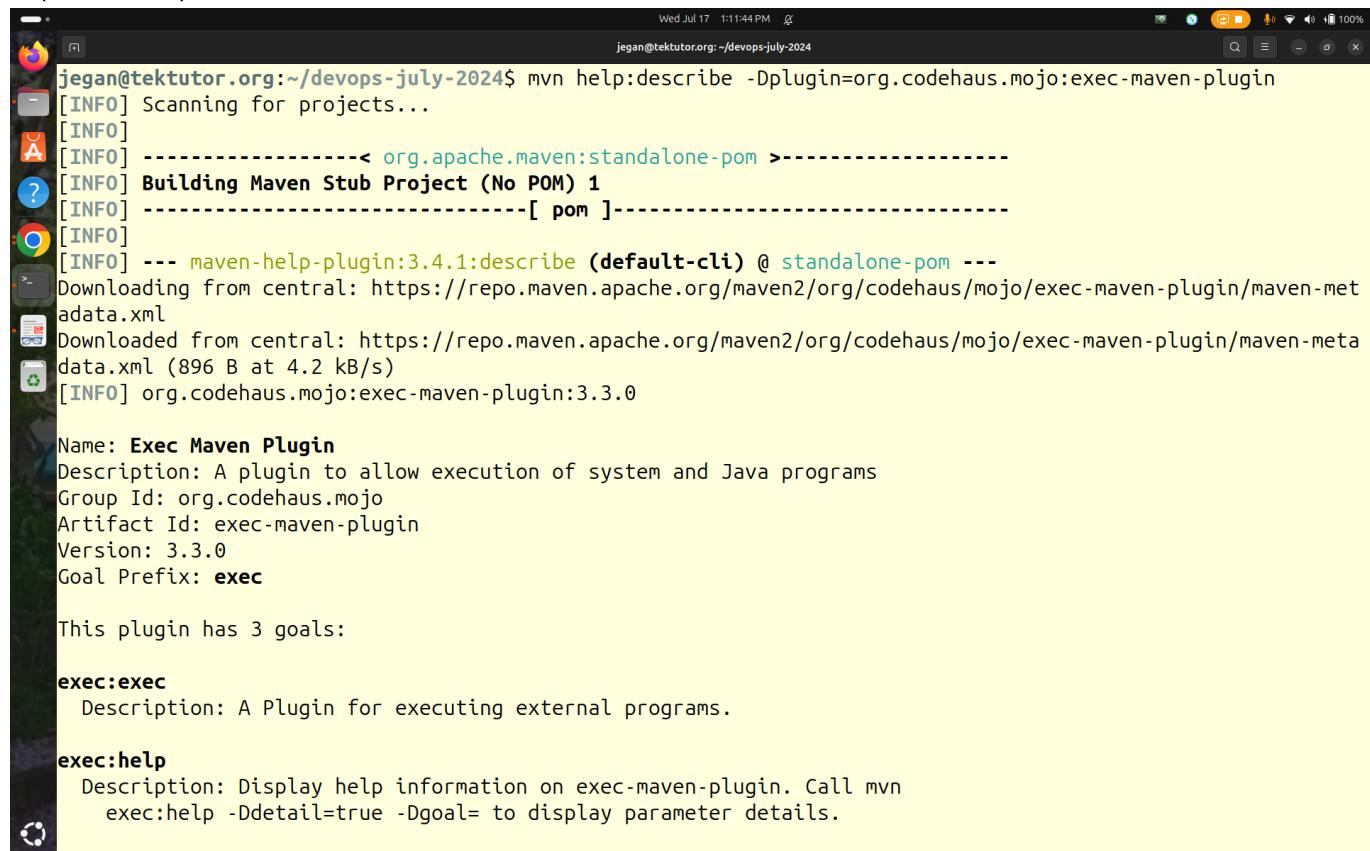
The screenshot shows a terminal window with the following content:

```
Wed Jul 17 12:06:09 PM JST
jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project$ /
Results :
Tests run: 0, Failures: 0, Errors: 0, Skipped: 0
[INFO] [INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ main ---
[INFO] Building jar: /home/jegan/devops-july-2024/Day3/maven/multi-module-project/main/target/main-1.0.0.jar
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ main ---
[INFO] Installing /home/jegan/devops-july-2024/Day3/maven/multi-module-project/main/target/main-1.0.0.jar to /home/jegan/.m2/repository/org/tektutor/main/1.0.0/main-1.0.0.jar
[INFO] Installing /home/jegan/devops-july-2024/Day3/maven/multi-module-project/main/pom.xml to /home/jegan/.m2/repository/org/tektutor/main/1.0.0/main-1.0.0.pom
[INFO] -----
[INFO] Reactor Summary for crm 1.0.0:
[INFO]
[INFO] crm ..... SUCCESS [ 0.103 s]
[INFO] dal ..... SUCCESS [ 0.576 s]
[INFO] bl ..... SUCCESS [ 0.124 s]
[INFO] fe ..... SUCCESS [ 0.116 s]
[INFO] main ..... SUCCESS [ 0.114 s]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 1.081 s
[INFO] Finished at: 2024-07-17T12:05:03+05:30
[INFO] -----
jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project$ /
```

Lab - Finding the exec-maven-plugin goals

```
cd ~/devops-july-2024
git pull
cd Day3/cpp-app
mvn help:describe -Dplugin=org.codehaus.mojo:exec-maven-plugin
```

Expected output



jegan@tektutor.org:~/devops-july-2024\$ mvn help:describe -Dplugin=org.codehaus.mojo:exec-maven-plugin
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.apache.maven:standalone-pom >-----
[INFO] Building Maven Stub Project (No POM) 1
[INFO] -----[pom]-----
[INFO]
[INFO] --- maven-help-plugin:3.4.1:describe (default-cli) @ standalone-pom ---
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/exec-maven-plugin/maven-metadata.xml
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/mojo/exec-maven-plugin/maven-metadata.xml (896 B at 4.2 kB/s)
[INFO] org.codehaus.mojo:exec-maven-plugin:3.3.0

Name: **Exec Maven Plugin**
Description: A plugin to allow execution of system and Java programs
Group Id: org.codehaus.mojo
Artifact Id: exec-maven-plugin
Version: 3.3.0
Goal Prefix: **exec**

This plugin has 3 goals:

exec:exec
Description: A Plugin for executing external programs.

exec:help
Description: Display help information on exec-maven-plugin. Call mvn exec:help -Ddetail=true -Dgoal= to display parameter details.

Lab - Building c++ application using maven build tool

You need to install c++, make and dependent tools before proceeding

```
sudo apt install -y build-essential
```

Once the above tools are installed, you may proceed

```
cd ~/devops-july-2024  
git pull  
cd Day3/cpp-app  
mvn compile
```

Expected output

```
Wed Jul 17 1:00:26 PM jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:cpp >-----
[INFO] Building cpp 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ cpp ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/cpp-app/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ cpp ---
[INFO] No sources to compile
[INFO]
[INFO] -----< org.tektutor:cpp >-----
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.228 s
[INFO] Finished at: 2024-07-17T13:00:24+05:30
[INFO]
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ 

-----< org.tektutor:cpp >-----
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ cpp ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/cpp-app/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ cpp ---
[INFO] No sources to compile
[INFO]
[INFO] -----< org.tektutor:cpp >-----
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.228 s
[INFO] Finished at: 2024-07-17T13:00:24+05:30
[INFO]
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ vim pom.xml
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:cpp >-----
[INFO] Building cpp 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] -----< org.tektutor:cpp >-----
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.040 s
[INFO] Finished at: 2024-07-17T13:00:54+05:30
[INFO]
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ 
```

```
Wed Jul 17 12:59:17 PM PT
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] ----- < org.tektutor:cpp > -----
[INFO] Building cpp 1.0.0
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- exec-maven-plugin:3.3.0:exec (custom-cpp-maven) @ cpp ---
rm -rf bin
mkdir -p bin
g++ -c src/main.cpp -o bin/main.o
mkdir -p bin
g++ -c src/hello.cpp -o bin/hello.o
g++ bin/main.o bin/hello.o -lstdc++ -o bin/hello
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.535 s
[INFO] Finished at: 2024-07-17T12:57:08+05:30
[INFO]
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$
```

```
Wed Jul 17 1:01:27 PM PT
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ vim pom.xml
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] ----- < org.tektutor:cpp > -----
[INFO] Building cpp 1.0.0
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- exec-maven-plugin:3.3.0:exec (custom-cpp-maven) @ cpp ---
rm -rf bin
mkdir -p bin
g++ -c src/main.cpp -o bin/main.o
mkdir -p bin
g++ -c src/hello.cpp -o bin/hello.o
g++ bin/main.o bin/hello.o -lstdc++ -o bin/hello
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.529 s
[INFO] Finished at: 2024-07-17T13:01:24+05:30
[INFO]
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$
```

```
cd ~/devops-july-2024
git pull
cd Day3/maven/cpp-app
tree
mvn clean
ls -l
```

```
mvn clean compile
```

Expected output

The screenshot shows a terminal window on a Linux desktop environment. The terminal title is "jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app\$". The window contains the following text:

```
Wed Jul 17 1:08:10 PM JST
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ ls
bin  Makefile  pom.xml  src
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ tree
.
+-- bin
|   +-- hello
|   |   +-- hello.o
|   |   +-- main.o
|   +-- Makefile
|   +-- pom.xml
+-- src
    +-- hello.cpp
    +-- hello.h
    +-- main.cpp

3 directories, 8 files
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ mvn clean
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:cpp >-----
[INFO] Building cpp 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- exec-maven-plugin:3.3.0:exec (custom-clean) @ cpp ---
rm -rf bin
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time:  0.125 s
[INFO] Finished at: 2024-07-17T13:07:03+05:30
```

```
Wed Jul 17 10:03:23 PM jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ ls -l
total 12
-rw-rw-r-- 1 jegan jegan 253 Jul 17 12:38 Makefile
-rw-rw-r-- 1 jegan jegan 1745 Jul 17 13:06 pom.xml
drwxrwxr-x 2 jegan jegan 4096 Jul 17 12:33 src
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ mvn clean
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:cpp >-----
[INFO] Building cpp 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- exec-maven-plugin:3.3.0:exec (custom-clean) @ cpp ---
rm -rf bin
[INFO]
[INFO] -----BUILD SUCCESS-----
[INFO]
[INFO] Total time: 0.125 s
[INFO] Finished at: 2024-07-17T13:07:03+05:30
[INFO]
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ ls -l
total 12
-rw-rw-r-- 1 jegan jegan 253 Jul 17 12:38 Makefile
-rw-rw-r-- 1 jegan jegan 1745 Jul 17 13:06 pom.xml
drwxrwxr-x 2 jegan jegan 4096 Jul 17 12:33 src
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$
```

```
Wed Jul 17 1:09:02 PM jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ ls -l
total 12
-rw-rw-r-- 1 jegan jegan 253 Jul 17 12:38 Makefile
-rw-rw-r-- 1 jegan jegan 1745 Jul 17 13:06 pom.xml
drwxrwxr-x 2 jegan jegan 4096 Jul 17 12:33 src
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ mvn clean compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:cpp >-----
[INFO] Building cpp 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- exec-maven-plugin:3.3.0:exec (custom-clean) @ cpp ---
rm -rf bin
[INFO]
[INFO] --- exec-maven-plugin:3.3.0:exec (custom-cpp-maven) @ cpp ---
mkdir -p bin
g++ -c src/main.cpp -o bin/main.o
mkdir -p bin
g++ -c src/hello.cpp -o bin/hello.o

g++ bin/main.o bin/hello.o -lstdc++ -o bin/hello
[INFO]
[INFO] -----BUILD SUCCESS-----
[INFO]
[INFO] Total time: 0.534 s
[INFO] Finished at: 2024-07-17T13:08:45+05:30
[INFO]
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$ ls
bin Makefile pom.xml src
jegan@tektutor.org:~/devops-july-2024/Day3/maven/cpp-app$
```

Lab - Maven profiles

```
cd ~/devops-july-2024
git pull
cd Day3/maven/profiles/multi-module-project
mvn clean compile
```

```
mvn test -P test
mvn package -P package
mvn install -P install
mvn deploy -P deploy
```

Expected output

```
jegan@tektutor.org:~/devops-july-2024$ ls -lha
total 2.0M
drwxrwxr-x 8 jegan jegan 4.0K Jul 17 14:46 .
drwxr-x--x 89 jegan jegan 4.0K Jul 17 14:47 ..
drwxrwxr-x 3 jegan jegan 4.0K Jul 15 18:09 Day1
drwxrwxr-x 3 jegan jegan 4.0K Jul 17 10:11 Day2
drwxrwxr-x 3 jegan jegan 4.0K Jul 17 14:47 Day3
drwxrwxr-x 2 jegan jegan 4.0K Jul 16 16:01 Day4
drwxrwxr-x 2 jegan jegan 4.0K Jul 15 09:57 Day5
drwxrwxr-x 8 jegan jegan 4.0K Jul 17 14:47 .git
-rw-rw-r-- 1 jegan jegan 17 Jul 17 14:46 .gitignore
-rw-rw-r-- 1 jegan jegan 1.6K Jul 15 14:09 README.md
-rw-rw-r-- 1 jegan jegan 1.9M Jul 15 17:46 README.pdf
jegan@tektutor.org:~/devops-july-2024$ cd Day3/maven/profiles/multi-module-project/
jegan@tektutor.org:~/devops-july-2024/Day3/maven/profiles/multi-module-project$ mvn clean compile
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] crm                                [pom]
[INFO] dal                                [jar]
[INFO] bl                                 [jar]
[INFO] fe                                 [jar]
[INFO] main                               [jar]
[INFO]
[INFO] -----< org.tektutor:crm >-----
[INFO] Building crm 1.0.0                  [1/5]
[INFO] -----[ pom ]-----
[INFO]
```

```
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ main ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ main ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/profiles/multi-module-project/main/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ main ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file to /home/jegan/devops-july-2024/Day3/maven/profiles/multi-module-project/main/target/classes
[INFO]
[INFO] Reactor Summary for crm 1.0.0:
[INFO]
[INFO] crm ..... SUCCESS [ 0.047 s]
[INFO] dal ..... SUCCESS [ 0.318 s]
[INFO] bl ..... SUCCESS [ 0.028 s]
[INFO] fe ..... SUCCESS [ 0.016 s]
[INFO] main ..... SUCCESS [ 0.012 s]
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.470 s
[INFO] Finished at: 2024-07-17T14:49:35+05:30
[INFO]
```

```
Wed Jul 17 2:50:21 PM └─
jegan@tektutor.org: ~/devops-july-2024/Day3/maven/profiles/multi-module-project
jegan@tektutor.org: ~/devops-july-2024/Day3/maven/profiles/multi-module-project

jegan@tektutor.org:~/devops-july-2024/Day3/maven/profiles/multi-module-project$ mvn test -P test
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] crm                                [pom]
[INFO] dal                                [jar]
[INFO] bl                                 [jar]
[INFO] fe                                 [jar]
[INFO] main                               [jar]
[INFO]
[INFO] ----- < org.tektutor:crm > -----
[INFO] Building crm 1.0.0                   [1/5]
[INFO] ----- [ pom ] -----
[INFO]
[INFO] ----- < org.tektutor:dal > -----
[INFO] Building dal 1.0.0                   [2/5]
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ dal ---
[WARNING] Using platform encoding (UTF-8 actually) to copy filtered resources, i.e. build is platform dependent!
[INFO] skip non existing resourceDirectory /home/jegan/devops-july-2024/Day3/maven/profiles/multi-module-project/dal/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ dal ---
[INFO] Changes detected - recompiling the module!
[WARNING] File encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Compiling 1 source file to /home/jegan/devops-july-2024/Day3/maven/profiles/multi-module-project/dal/
```

```
Wed Jul 17 2:50:28 PM └─
jegan@tektutor.org: ~/devops-july-2024/Day3/maven/profiles/multi-module-project
jegan@tektutor.org: ~/devops-july-2024/Day3/maven/profiles/multi-module-project

/target/test-classes
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ main ---
[INFO] Surefire report directory: /home/jegan/devops-july-2024/Day3/maven/profiles/multi-module-project/main/target/surefire-reports

-----
T E S T S
-----

Results :

Tests run: 0, Failures: 0, Errors: 0, Skipped: 0

[INFO] -----
[INFO] Reactor Summary for crm 1.0.0:
[INFO]
[INFO] crm ..... SUCCESS [ 0.001 s]
[INFO] dal ..... SUCCESS [ 0.571 s]
[INFO] bl ..... SUCCESS [ 0.110 s]
[INFO] fe ..... SUCCESS [ 0.101 s]
[INFO] main ..... SUCCESS [ 0.100 s]
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.932 s
[INFO] Finished at: 2024-07-17T14:50:16+05:30
[INFO]
jegan@tektutor.org:~/devops-july-2024/Day3/maven/profiles/multi-module-project$ └─
```

```

Wed Jul 17 2:50:58 PM PT
jegan@tektutor.org: ~/devops-july-2024/Day3/maven/profiles/multi-module-project
jegan@tektutor.org: ~/devops-july-2024/Day3/maven/profiles/multi-module-project

jegan@tektutor.org:~/devops-july-2024/Day3/maven/profiles/multi-module-project$ mvn package -P package
[INFO] Scanning for projects...
[INFO] -----
[INFO] Reactor Build Order:
[INFO]
[INFO] crm                               [pom]
[INFO] dal                               [jar]
[INFO] bl                                [jar]
[INFO] fe                                [jar]
[INFO] main                             [jar]
[INFO]
[INFO] ----- < org.tektutor:crm >
[INFO] Building crm 1.0.0                  [1/5]
[INFO] ----- [ pom ] -----
[INFO]
[INFO] ----- < org.tektutor:dal >
[INFO] Building dal 1.0.0                  [2/5]
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ dal ---
[INFO] Building jar: /home/jegan/devops-july-2024/Day3/maven/profiles/multi-module-project/dal/target/dal-1.0.0.jar
[INFO]
[INFO] ----- < org.tektutor:bl >
[INFO] Building bl 1.0.0                   [3/5]
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ bl ---
[INFO] Building jar: /home/jegan/devops-july-2024/Day3/maven/profiles/multi-module-project/bl/target/bl-1.0.0.jar
Wed Jul 17 2:51:04 PM PT
jegan@tektutor.org: ~/devops-july-2024/Day3/maven/profiles/multi-module-project
jegan@tektutor.org: ~/devops-july-2024/Day3/maven/profiles/multi-module-project

[INFO] Building fe 1.0.0                  [4/5]
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ fe ---
[INFO] Building jar: /home/jegan/devops-july-2024/Day3/maven/profiles/multi-module-project/fe/target/fe-1.0.0.jar
[INFO]
[INFO] ----- < org.tektutor:main >
[INFO] Building main 1.0.0                 [5/5]
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ main ---
[INFO] Building jar: /home/jegan/devops-july-2024/Day3/maven/profiles/multi-module-project/main/target/main-1.0.0.jar
[INFO]
[INFO] ----- Reactor Summary for crm 1.0.0:
[INFO]
[INFO] crm ..... SUCCESS [ 0.001 s]
[INFO] dal ..... SUCCESS [ 0.149 s]
[INFO] bl ..... SUCCESS [ 0.007 s]
[INFO] fe ..... SUCCESS [ 0.004 s]
[INFO] main ..... SUCCESS [ 0.003 s]
[INFO]
[INFO] ----- BUILD SUCCESS
[INFO]
[INFO] Total time: 0.211 s
[INFO] Finished at: 2024-07-17T14:50:51+05:30
[INFO]
jegan@tektutor.org:~/devops-july-2024/Day3/maven/profiles/multi-module-project$ 

```

Info - Infrastructure as a Code Tool Overview

- Let's one of the Dev team has approached me to install RHEL 9.2 in a Virtual machine
- is used to provision Virtual Machine, Physical machine with Operating System, Storage, etc

- Examples
 - Cloudformation which is used in AWS Infrastructure automation
 - Terraform is cloud neutral infrastructure as a code tool
 - is used to automate infrastructure in any public cloud AWS, Azure, GCP, Digital Ocean
 - can also be used to provision VMs in onPrem environment

Info - Configuration Management Overview

- If you already have a machine with Operating System installed in it, you can use Configuration Management tools to further install softwares, configure the software, create users, provide permissions, deny certain permissions to certain user, manage network, etc.,
- Examples
 - Puppet
 - DSL (Domain Specific Language - the language in which the automation script is written)
 - DSL used is Puppet's proprietary language
 - Chef
 - DSL used is Ruby
 - Ansible
 - DSL used is YAML (Yet Another Markup Language - superset of JSON)

Ansible Overview

- is a configuration management tool
- developed in Python by Michael Deehan along with OpenSource contributors
- Michael Deehan was former employee of Red Hat, who was developing a similar configuration tool at Red Hat, at some point Red Hat had decommissioned the project, hence Michael Deehan had quit Red Hat and started a company called Ansible Inc
- can be installed only in Linux
- the machine where Ansible is installed is called Ansible Controller Machine (ACM)
- the machines managed by Ansible is called Ansible Nodes
- Ansible comes in 3 flavours
 - Ansible Core
 - Command line only
 - opensource
 - AWX
 - Ansible Tower open source
 - developed on top of Ansible core open source tool
 - supports webconsole
 - Ansible Tower
 - support Webconsole
 - Red Hat Licensed Product
 - developed on top of AWX

Ansible Inventory file

- text file
- contains connections details to ansible nodes(servers)
- two types of inventory are there
 1. Static Inventory - manually ansible nodes(servers) are added and removed
 2. Dynamic Inventory - it is python script

Ansible ad-hoc commands

- trivial commands like ping can be executed as ad-hoc commands
- any ansible module can be invoked in commandline without writing ansible playbook for quick testing or R&D

Ansible Playbooks

- is a YAML file
- that follows a specific format and sections to be considered as an Ansible Playbook
- all Ansible Playbooks are YAML file but not all YAML files are Ansible Playbook
- Playbook invokes many Ansible modules in a particular order to automate software installation and configuration management activities

Lab - Creating a key-pair for rps user

Accept all defaults(press enter key 3 times in total)

```
cd ~
whoami
ssh-keygen
```

Expected output

The screenshot shows a terminal window with two tabs. The left tab shows the command history for creating a directory and navigating into it. The right tab shows the execution of the `ssh-keygen` command to generate a key pair, followed by the creation of a Dockerfile and its build.

```
Wed Jul 17 4:48:32 PM jegan@tektutor.org ~
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible$ mkdir CustomAnsibleNodeContainerImages
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible$ cd CustomAnsibleNodeContainerImages/
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages$ mkdir ubuntu
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages$ cd ubuntu/
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ vim Dockerfile
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ls
```

```
Dockerfile
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ssh-keygen
```

```
Generating public/private ed25519 key pair.
```

```
Enter file in which to save the key (/home/jegan/.ssh/id_ed25519):
```

```
Enter passphrase (empty for no passphrase):
```

```
Enter same passphrase again:
```

```
Your identification has been saved in /home/jegan/.ssh/id_ed25519
```

```
Your public key has been saved in /home/jegan/.ssh/id_ed25519.pub
```

```
The key fingerprint is:
```

```
SHA256:Mn6R16i1cPiTNUqxDkQg3JC4Pg0+eqvE0mumGWi2OPs jegan@tektutor.org
```

```
The key's randomart image is:
```

```
+--[ED25519 256]--+
| oo+...
| . o...
| . . .
| .. . o =
| .o o S B +
| o.+ . o % = .
| o=.o . o B
| O*o . .
| #XE.
```

```
+---[SHA256]---
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$
```

Lab - Building a Custom Ansible Ubuntu Node

```
cd ~/devops-july-2024
git pull
cd Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu
cp ~/.ssh/id_ed25519.pub authorized_keys
docker build -t tektutor/ansible-ubuntu-node:latest .
docker images
```

Expected output

Wed Jul 17 4:53:54 PM jegan@tektutor.org: ~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu

```
jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project x jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu x
```

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ssh-keygen
Generating public/private ed25519 key pair.
Enter file in which to save the key (/home/jegan/.ssh/id_ed25519):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/jegan/.ssh/id_ed25519
Your public key has been saved in /home/jegan/.ssh/id_ed25519.pub
The key fingerprint is:
SHA256:Mn6R16i1cPiTNUqxDkQg3JC4Pg0+eqvE0mumGWi2OPs jegan@tektutor.org
The key's randomart image is:
+--[ED25519 256]--+
| oo+...
| . o...
| . . . .
| .. . o =
| .o o S B +
| o.+ . o % =
| o=.o . o B
| O*o . .
| #XE.
+---[SHA256]-----+
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ vim Dockerfile
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ cp /home/jegan/.ssh/id_ed25519.pub authorized_keys
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ls
authorized_keys Dockerfile
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker build -t tektutor/ansible-ubuntu-node:latest .
[+] Building 12.8s (13/13) FINISHED
          docker:default
```

```

jegan@tektutor.org:~/devops-july-2024/Day3/maven/multi-module-project
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ vim Dockerfile
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ cp /home/jegan/.ssh/id_ed25519.pub authorized_keys
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ls
authorized_keys Dockerfile
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker build -t
tektutor/ansible-ubuntu-node:latest .
[+] Building 12.8s (13/13) FINISHED
      docker:default
--> [internal] load build definition from Dockerfile
--> => transferring dockerfile: 613B
--> [internal] load metadata for docker.io/library/ubuntu:16.04
--> [internal] load .dockerrcignore
--> => transferring context: 2B
--> CACHED [1/8] FROM docker.io/library/ubuntu:16.04
--> [internal] load build context
--> => transferring context: 142B
--> [2/8] RUN apt-get update && apt-get install -y openssh-server python3
--> [3/8] RUN mkdir -p /var/run/sshd
--> [4/8] RUN echo 'root:root' | chpasswd
--> [5/8] RUN sed -i 's/PermitRootLogin prohibit-password/PermitRootLogin yes/' /etc/ssh/sshd_config
--> [6/8] RUN sed 's@session\s*required\s*pam_loginuid.so@session optional pam_loginuid.so@g' -i /etc
--> [7/8] RUN mkdir -p /root/.ssh
--> [8/8] COPY authorized_keys /root/.ssh/authorized_keys
--> exporting to image
--> => exporting layers
--> => writing image sha256:a51b0127697cf4e8acc9bbf2fe9c4525b427b0739db8031793ef6afce42c4803
--> => naming to docker.io/tektutor/ansible-ubuntu-node:latest
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ 

```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
tektutor/ansible-ubuntu-node	latest	a51b0127697c	2 minutes ago	217MB
tektutor/spring-ms	1.0	75521a221b1b	47 hours ago	405MB
hello	2.0	6c0cc2421dee	5 days ago	335MB
tektutor/hello	1.0	6c0cc2421dee	5 days ago	335MB
tektutor/hello	2.0	6c0cc2421dee	5 days ago	335MB
tektutor/nodejs	2.0	6c0cc2421dee	5 days ago	335MB
tektutor/nodejs	1.0	fb137bf412d8	5 days ago	333MB
tektutor/dotnet-weather-ms	1.0	51ff08e3e97d	6 days ago	221MB
tektutor/hello-python-ms	1.0	e49cae150e40	6 days ago	484MB
tektutor/python-hello	1.0	e49cae150e40	6 days ago	484MB
mysql	latest	5cde95de907d	2 weeks ago	586MB
bitnami/nginx	latest	11ee024d142d	2 weeks ago	192MB
nginx	latest	fffffc90d343	3 weeks ago	188MB
ubuntu	latest	35a88802559d	5 weeks ago	78.1MB
releases-docker.jfrog.io/jfrog/artifactory-oss	7.77.5	2bfa777ab731	5 months ago	2.29GB
hello-world	latest	d2c94e258dc8	14 months ago	13.3kB
ubuntu	16.04	b6f507652425	2 years ago	135MB

Lab - Creating ubuntu container using our custom docker image

```

docker run -d --name ubuntu1 --hostname ubuntu1 -p 8001:80 -p 2001:22
tektutor/ansible-ubuntu-node:latest
docker run -d --name ubuntu2 --hostname ubuntu2 -p 8002:80 -p 2002:22

```

```
tektutor/ansible-ubuntu-node:latest
docker ps
```

Expected output

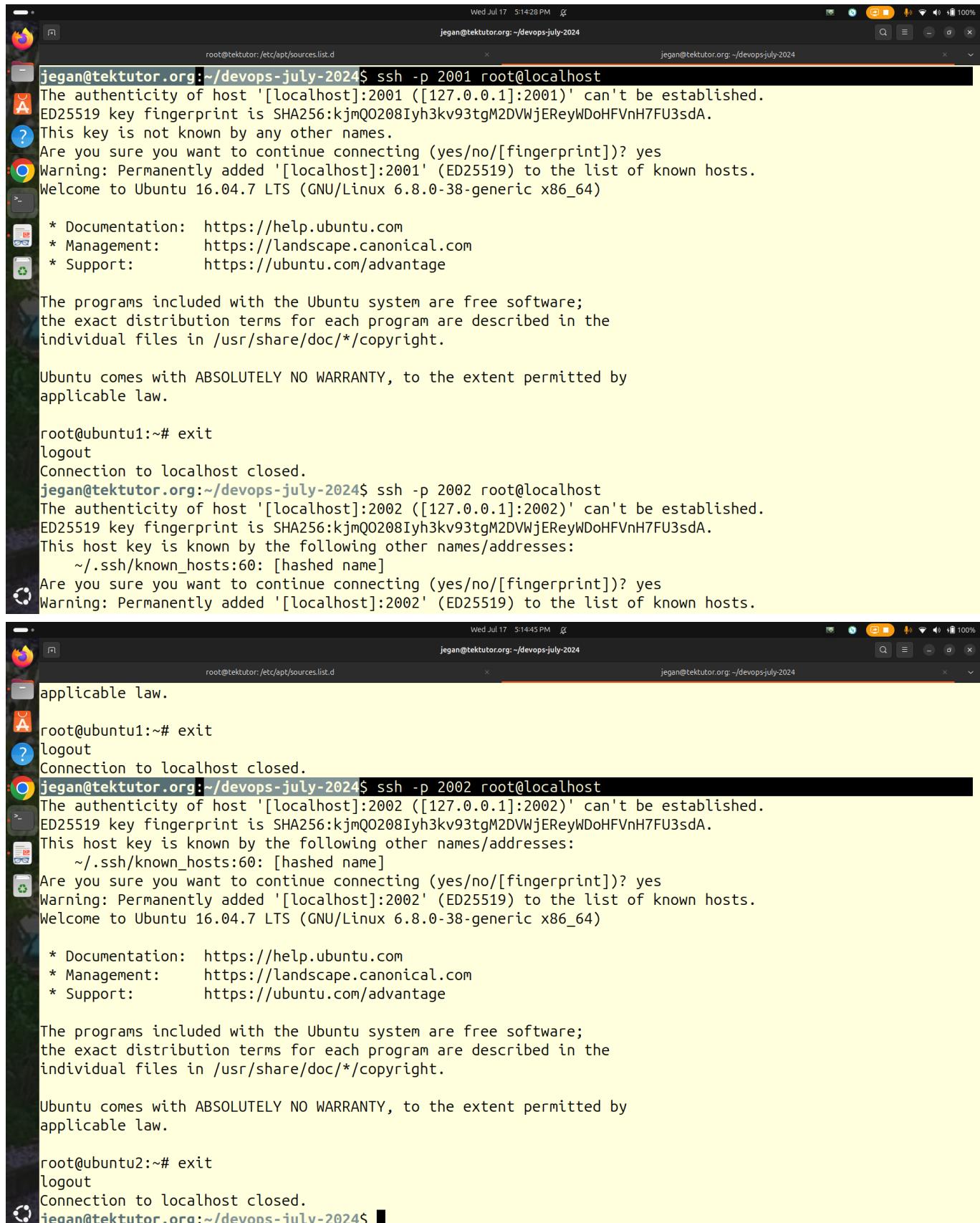
The screenshot shows a terminal window with two tabs. The left tab displays the contents of `/etc/apt/sources.list.d`, which lists various Docker images. The right tab shows the command `docker ps` running, listing four Docker containers:

CONTAINER ID	IMAGE	COMMAND	CREATED
STATUS	PORTS		NAMES
bc9df34559e4	tektutor/ansible-ubuntu-node:latest	<code>"/usr/sbin/sshd -D"</code>	2 seconds ago
3a00596a13aa	tektutor/ansible-ubuntu-node:latest	<code>"/usr/sbin/sshd -D"</code>	13 seconds ago
4681e57eb0a0	releases-docker.jfrog.io/jfrog/artifactory-oss:7.77.5	<code>"/entrypoint-artifac..."</code>	3 hours ago
Up 3 hours	0.0.0.0:8081-8082->8081-8082/tcp, :::8081-8082->8081-8082/tcp		jfrog

Let's test if we are able ssh into the ubuntu1 and ubuntu2 containers

```
ssh -p 2001 root@localhost
exit
ssh -p 2002 root@localhost
exit
```

Expected output



```

root@tektutor:/etc/apt/sources.list.d
jegan@tektutor.org:~/devops-july-2024$ ssh -p 2001 root@localhost
The authenticity of host '[localhost]:2001 ([127.0.0.1]:2001)' can't be established.
ED25519 key fingerprint is SHA256:kjmQO208Iyh3kv93tgM2DVWjEReyWDoHFVnH7FU3sdA.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[localhost]:2001' (ED25519) to the list of known hosts.
Welcome to Ubuntu 16.04.7 LTS (GNU/Linux 6.8.0-38-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

root@ubuntu1:~# exit
logout
Connection to localhost closed.
jegan@tektutor.org:~/devops-july-2024$ ssh -p 2002 root@localhost
The authenticity of host '[localhost]:2002 ([127.0.0.1]:2002)' can't be established.
ED25519 key fingerprint is SHA256:kjmQO208Iyh3kv93tgM2DVWjEReyWDoHFVnH7FU3sdA.
This host key is known by the following other names/addresses:
    ~/.ssh/known_hosts:60: [hashed name]
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[localhost]:2002' (ED25519) to the list of known hosts.

root@tektutor:/etc/apt/sources.list.d
jegan@tektutor.org:~/devops-july-2024$ ssh -p 2002 root@localhost
The authenticity of host '[localhost]:2002 ([127.0.0.1]:2002)' can't be established.
ED25519 key fingerprint is SHA256:kjmQO208Iyh3kv93tgM2DVWjEReyWDoHFVnH7FU3sdA.
This host key is known by the following other names/addresses:
    ~/.ssh/known_hosts:60: [hashed name]
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[localhost]:2002' (ED25519) to the list of known hosts.
Welcome to Ubuntu 16.04.7 LTS (GNU/Linux 6.8.0-38-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

root@ubuntu2:~# exit
logout
Connection to localhost closed.
jegan@tektutor.org:~/devops-july-2024$ 
```

Lab - Ansible ping adhoc command

```

cd ~/devops-july-2024
git pull
cd Day3/ansible/static-inventory

```

```
cat inventory
ansible -i inventory all -m ping
```

Expected output

```
jegan@tektutor.org:~/devops-july-2024$ cd Day3
jegan@tektutor.org:~/devops-july-2024/Day3$ ls
ansible maven README.md
CustomAnsibleNodeContainerImages
jegan@tektutor.org:~/devops-july-2024/Day3/ansible$ mkdir static-inventory
jegan@tektutor.org:~/devops-july-2024/Day3/ansible$ cd static-inventory/
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory$ ls
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory$ vim inventory
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory$ ls -l ~/ssh/id_ed25519^C
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory$ vim inventory
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory$ ansible -i inventory all -m ping
ubuntu2 | FAILED! => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "msg": "ansible-core requires a minimum of Python2 version 2.7 or Python3 version 3.6. Current version: 3.5.2 (default, Jan 26 2021, 13:30:48) [GCC 5.4.0 20160609]"
}
ubuntu1 | FAILED! => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "msg": "ansible-core requires a minimum of Python2 version 2.7 or Python3 version 3.6. Current version: 3.5.2 (default, Jan 26 2021, 13:30:48) [GCC 5.4.0 20160609]"
}
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory$
```

As the latest version of ansible seems to expect Python 3.6 to be installed, let's upgrade the Ubuntu we use in Dockerfile and redo the all the procedures to rebuild the image

Let's delete the ubuntu1 and ubuntu2 containers

```
docker rm -f ubuntu1 ubuntu2
docker ps -a
```

Let's rebuild the image with Ubuntu latest image as base image

```
cd ~/devops-july-2024
git pull
cd Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu
docker build -t tektutor/ansible-ubuntu-node:latest .
docker images
```

Let's recreate the ubuntu1 and ubuntu2

```
docker run -d --name ubuntu1 --hostname ubuntu1 -p 2001:22 -p 8001:80
tektutor/ansible-ubuntu-node:latest
```

```
docker run -d --name ubuntu2 --hostname ubuntu2 -p 2002:22 -p 8002:80
tektutor/ansible-ubuntu-node:latest
docker ps
```

Check if you are able to ssh into ubuntu1 and ubuntu2

```
ssh -p 2001 root@localhost
exit
ssh -p 2002 root@localhost
exit
```

Troubleshooting below error

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ssh -p 2001 root@localhost
root@ubuntu1:~#
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ exit
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ssh -p 2002 root@localhost
root@ubuntu2:~#
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ exit
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$
```

The screenshot shows a terminal window with two tabs. The left tab is titled 'root@tektutor:/etc/apt/sources.list.d' and the right tab is titled 'jegan@tektutor.org: ~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu'. The terminal displays the following command and its output:

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ echo "" > ~/.ssh/known_hosts
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ssh -p 2001 root@localhost
The authenticity of host '[localhost]:2001' ([127.0.0.1]:2001) can't be established.
ED25519 key fingerprint is SHA256:JpwS+kL5qc0i9ND9Ya+0Q3pX5mu5XvrmYpQcQHSl+IM.
This key is not known by any other names.
? Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[localhost]:2001' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-38-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

This system has been minimized by removing packages and content that are
not required on a system that users do not log into.

To restore this content, you can run the 'unminimize' command.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

root@ubuntu1:~# exit
logout
Connection to localhost closed.
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ssh -p 2002 root@localhost
The authenticity of host '[localhost]:2002' ([127.0.0.1]:2002) can't be established.
ED25519 key fingerprint is SHA256:JpwS+kL5qc0i9ND9Ya+0Q3pX5mu5XvrmYpQcQHSl+IM.
This host key is known by the following other names/addresses:
 ~/.ssh/known_hosts:2: [hashed name]
? Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '[localhost]:2002' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-38-generic x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/pro

This system has been minimized by removing packages and content that are
```

If all went well, you can try to do ansible ping adhoc command

```
cd ~/devops-july-2024
git pull
cd Day3/ansible/static-inventory
cat inventory
ansible -i inventory all -m ping
```

Expected output

The screenshot shows a terminal window with two tabs. The left tab is titled 'root@tektutor:/etc/apt/sources.list.d' and the right tab is titled 'jegan@tektutor.org: ~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu'. The terminal displays the command 'docker build -t tektutor/ansible-ubuntu-node:latest .'. The output shows the build progress, including the creation of layers and the final image. The right tab also shows the command 'docker images' which lists various Docker images with their tags, creation times, and sizes.

```
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ set -o vi
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ cp /home/jegan/.ssh/id_ed25519.pub authorized_keys
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker build -t tektutor/ansible-ubuntu-node:latest .
[+] Building 1.1s (13/13) FINISHED
=> [internal] load build definition from Dockerfile
=> transferring dockerfile: 614B
=> [internal] load metadata for docker.io/library/ubuntu:latest
=> [internal] load .dockerignore
=> => transferring context: 2B
=> [1/8] FROM docker.io/library/ubuntu:latest
=> [internal] load build context
=> => transferring context: 142B
=> CACHED [2/8] RUN apt-get update && apt-get install -y openssh-server python3
=> [3/8] RUN mkdir -p /var/run/sshd
=> [4/8] RUN echo 'root:root' | chpasswd
=> [5/8] RUN sed -i '/s/PermitRootLogin prohibit-password/PermitRootLogin yes/' /etc/ssh/sshd_config
=> [6/8] RUN sed 's@session@s*required\s*pam_loginuid.so@session optional pam_loginuid.so@g' -i /etc/pam.d/sshd
=> [7/8] RUN mkdir -p /root/.ssh
=> [8/8] COPY authorized_keys /root/.ssh/authorized_keys
=> exporting to image
=> => exporting layers
=> => writing image sha256:3c17842e4a839f7750ba279e1c7837508384450edeb9345f8eda9e341a993527
=> => naming to docker.io/tektutor/ansible-ubuntu-node:latest
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker images
REPOSITORY          TAG      IMAGE ID   CREATED        SIZE
tektutor/ansible-ubuntu-node    latest   3c17842e4a83  5 seconds ago  245MB
<none>            <none>   a51b0127697c  51 minutes ago  217MB
tektutor/spring-ms       1.0     75521a221b1b  2 days ago   405MB
hello                2.0     6c0cc2421dee  6 days ago   335MB
tektutor/hello          1.0     6c0cc2421dee  6 days ago   335MB
tektutor/hello          2.0     6c0cc2421dee  6 days ago   335MB
tektutor/nodejs         2.0     6c0cc2421dee  6 days ago   335MB
tektutor/nodejs         1.0     fb137bf412d8  6 days ago   333MB
tektutor/dotnet-weather-ms  1.0     51ff08e3e97d  6 days ago   221MB
tektutor/hello-python-ms  1.0     e49cae150e40  6 days ago   484MB
tektutor/python-hello    1.0     e49cae150e40  6 days ago   484MB
mysql                latest   5cde95de907d  2 weeks ago  586MB
bitnami/nginx          latest   11ee024d142d  2 weeks ago  192MB
nginx                latest   ffffffc90d343  3 weeks ago  188MB
ubuntu               latest   35a88802559d  5 weeks ago  78.1MB
releases-docker.jfrog.io/jfrog/artifactory-oss
hello-world           latest   d2r94e258drch  14 months ago  13.3kB
```

```

Wed Jul 17 5:50:53 PM ⓘ
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu
root@tektutor:/etc/apt/sources.list.d x jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu x
root@tektutor:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
tektutor/ansible-ubuntu-node latest 3c17842e4a839f7750ba279e1c7837508384450edeb9345f8eda9e341a8993527 0.0s
=> => naming to docker.io/tektutor/ansible-ubuntu-node:latest 0.0s
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
tektutor/ansible-ubuntu-node latest 3c17842e4a83 5 seconds ago 245MB
=> => writing image sha256:3c17842e4a839f7750ba279e1c7837508384450edeb9345f8eda9e341a8993527
tektutor/ansible-ubuntu-node <none> a51b0127697c 51 minutes ago 217MB
tektutor/spring-ms 1.0 75521a221bib 2 days ago 405MB
hello 2.0 6c0cc2421dee 6 days ago 335MB
tektutor/hello 1.0 6c0cc2421dee 6 days ago 335MB
tektutor/hello 2.0 6c0cc2421dee 6 days ago 335MB
tektutor/nodejs 2.0 6c0cc2421dee 6 days ago 335MB
tektutor/nodejs 1.0 fb137bf412d8 6 days ago 333MB
tektutor/dotnet-weather-ms 1.0 51ff08e3e97d 6 days ago 221MB
tektutor/hello-python-ms 1.0 e49cae150e40 6 days ago 484MB
tektutor/python-hello 1.0 e49cae150e40 6 days ago 484MB
mysql latest 5cde95de907d 2 weeks ago 586MB
bitnami/nginx latest 11ee024d142d 2 weeks ago 192MB
nginx latest ffffffc90d343 3 weeks ago 188MB
ubuntu latest 35a88802559d 5 weeks ago 78.1MB
releases-docker.jfrog.io/jfrog/artifactory-oss 7.77.5 2bfa777ab731 5 months ago 2.29GB
hello-world latest d2c94e258dcb 14 months ago 13.3KB
ubuntu 16.04 b6f507652425 2 years ago 135MB
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker rm -f ubuntu1 ubuntu2
ubuntu1
ubuntu2
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker run -d --name ubuntu1 --hostname ubuntu1 -p 8001:80 -p 2001:22 tektutor/ansible-ubuntu-node:latest
76eec98510ca0b5f0bc6b766aa9c155e3a2fc8fa9f9fa84311a67bbb13f24aa1
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker run -d --name ubuntu2 --hostname ubuntu2 -p 8002:80 -p 2002:22 tektutor/ansible-ubuntu-node:latest
8df0820419fe33aa2304e66081301dc1b03ef695a8f87fa23470ae764150bc0
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ docker ps
CONTAINER ID IMAGE NAMES COMMAND CREATED STATUS PORTS
8df0820419fe tektutor/ansible-ubuntu-node:latest " /usr/sbin/sshd -D" 3 seconds ago Up 2 seconds 0.0.0.0:2002->22/tcp, :::20
02->22/tcp, 0.0.0.0:8002->80/tcp, :::8002->80/tcp ubuntu2
76eec98510ca tektutor/ansible-ubuntu-node:latest " /usr/sbin/sshd -D" 7 seconds ago Up 6 seconds 0.0.0.0:2001->22/tcp, :::20
01->22/tcp, 0.0.0.0:8001->80/tcp, :::8001->80/tcp ubuntu1
4681e57eb0a0 releases-docker.jfrog.io/jfrog/artifactory-oss:7.77.5 "/entrypoint-artif... jfrog 4 hours ago Up 4 hours 0.0.0.0:8081-8082->8081-8082/tcp, :::2/tcp, :::8081-8082->8081-8082/tcp
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ 

```

```

Wed Jul 17 6:00:54 PM ⓘ
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu
root@tektutor:/etc/apt/sources.list.d x jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory x
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ ls
authorized_keys Dockerfile
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages/ubuntu$ cd ..
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages$ ls
ubuntu
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/CustomAnsibleNodeContainerImages$ cd ..
jegan@tektutor.org:~/devops-july-2024/Day3/ansible$ ls
CustomAnsibleNodeContainerImages static-inventory
jegan@tektutor.org:~/devops-july-2024/Day3/ansible$ cd static-inventory/
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory$ ls
inventory
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory$ ansible -i inventory all -m ping
ubuntu1 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
ubuntu2 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
jegan@tektutor.org:~/devops-july-2024/Day3/ansible/static-inventory$ 

```