

```

Tue Jul 16 5:09:30 PM
jegan@tektutor:~/devops-july-2024

jegan@tektutor.org ➤ docker run -d --name jfrog --hostname jfrog -p 8081:8081 -p 8082:8080 releases-docker.jfrog.io/jfrog/artifactory-oss:7.77.5
f3e64e2e304c453c9275857d7b7793bcd58c61f818ee86b80d1eb631c17e8ba3
jegan@tektutor.org ➤ docker images
REPOSITORY          TAG      IMAGE ID      CREATED       SIZE
tektutor/spring-ms    1.0      75521a221b1b  23 hours ago  405MB
hello                  2.0      6c0cc2421dee  4 days ago   335MB
tektutor/hello        1.0      6c0cc2421dee  4 days ago   335MB
tektutor/hello        2.0      6c0cc2421dee  4 days ago   335MB
tektutor/nodejs       2.0      6c0cc2421dee  4 days ago   335MB
tektutor/nodejs       1.0      fb137bf412d8  5 days ago   333MB
tektutor/dotnet-weather-ms  1.0      51ff08e3e97d  5 days ago   221MB
tektutor/hello-python-ms  1.0      e49cae150e40  5 days ago   484MB
tektutor/python-hello   1.0      e49cae150e40  5 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   d2c94e258dc9  14 months ago  13.3kB
ubuntu                 16.04   b6f507652425  2 years ago   135MB
jegan@tektutor.org ➤ docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED          STATUS           PORTS
MES
f3e64e2e304c        releases-docker.jfrog.io/jfrog/artifactory-oss:7.77.5   "/entrypoint-artifac..."   9 seconds ago
o   Up 9 seconds   0.0.0.0:8081->8081/tcp, :::8081->8081/tcp, 0.0.0.0:8082->8080/tcp, :::8082->8080/tcp   jfrog
jegan@tektutor.org ➤

```

# Day 2

## Lab - Cloning TekTutor Training Repository ( one time activity )

```

cd ~
git clone https://github.com/tektutor/devops-july-2024.git
cd devops-july-2024
ls -l

```

## Info - Maven Overview

- Maven is a build tool, predominantly used by Java projects but it is language agnostic(independent) tool
- It is possible to build C/C++,C#, etc project using maven
- opensource build tool developed and maintained by Apache Foundation
- Maven is a better build tool compared to Ant, as Maven was created by same Apache Foundation resolving all the issues that Ant build tool had
- Maven has supports dependency management
  - if your application has third-party framework/library dependency, those jar files will be automatically downloaded and their class path is managed by Maven if you have just mentioned the maven co-ordinates of the dependent libraries in the pom.xml
- Maven also uses pom.xml file to captures the project details
- Unlike Ant, in Maven we will not be writing build instructions in pom.xml, we just provide some meta-data while Maven takes care of build the language specific build instructions

- settings.xml is used by Maven to capture any login credentials, global maven settings, etc.,
- Maven has standards and conventions for everything is called Convention over Configuration

## Info - Maven vs Ant

- Ant and Maven is build tool developed and maintained by Apache Foundation
- Ant build tool is also mainly used by Java project
- Ant doesn't support dependency management
  - in case your project depends on some third-party libraries, Ant doesn't have an inbuilt feature to download them, manage class path, etc
  - we need to take care of dependency management ourselves
- Ant doesn't have any standards in terms of
  - where you should place your application source code
  - where you should place your test source code, etc
  - hence, every team figures out their own project folder structure
  - this makes it difficult for even a Ant veteran when they move in to a new project which is based on Ant
- Ant uses build.xml file to capture all the build instructions, which is not a good idea
  - Apache foundation found Ant build tool's complexity grows as the size of project grows
  - hence, Apache foundation wanted to develop a new build tool which will solve all the above Ant issues
- Maven is the new build tool developed by Apache foundation which solves all the Ant issues

## Info - What is Maven co-ordinates ?

- Maven co-ordinates are used to name application binaries in such a way, each artifact (.jar, war, ear, zip, etc) has a unique name within the Maven repositories
- Just like the GPS coordinates have 3 attributes
  - Altitude, Longitude and Latitude
  - the combination of all 3 coordinates will always point to a unique location on earth
- same way, the combination of Maven Coordinates will also be unique to point to single artifact
  - GroupId
  - ArtifactId
  - Version
- Everything in Maven project are given a name in terms of Maven coordinates

## Info - Maven Convention over Configuration

- 80-20 Principle
- Apache foundation has done extensive study to identify the most common usecase of Maven and they made it simple
- At the same, Maven also supports many advanced use-cases where you may not be able to follow the Maven's conventions strictly, in such cases you need to do more configurations in pom.xml and settings.xml files.
- Maven has conventions on
  - how to name your project
  - how your project folder structure should look like
  - where you must maintain your application source code
  - where you must maintain your application test source code
- If we follow Maven's conventions then with less or no extra configuraiton we can manage a project
- In case we can't follow Maven's conventions then Maven allows us configure to help Maven follow your convention

## Info - Maven Alternative tools

- Ant is the oldest build tools used in Java projects
- Gradle - which is a modern build tool that came after Maven

## Info - Maven High-Level Architecture

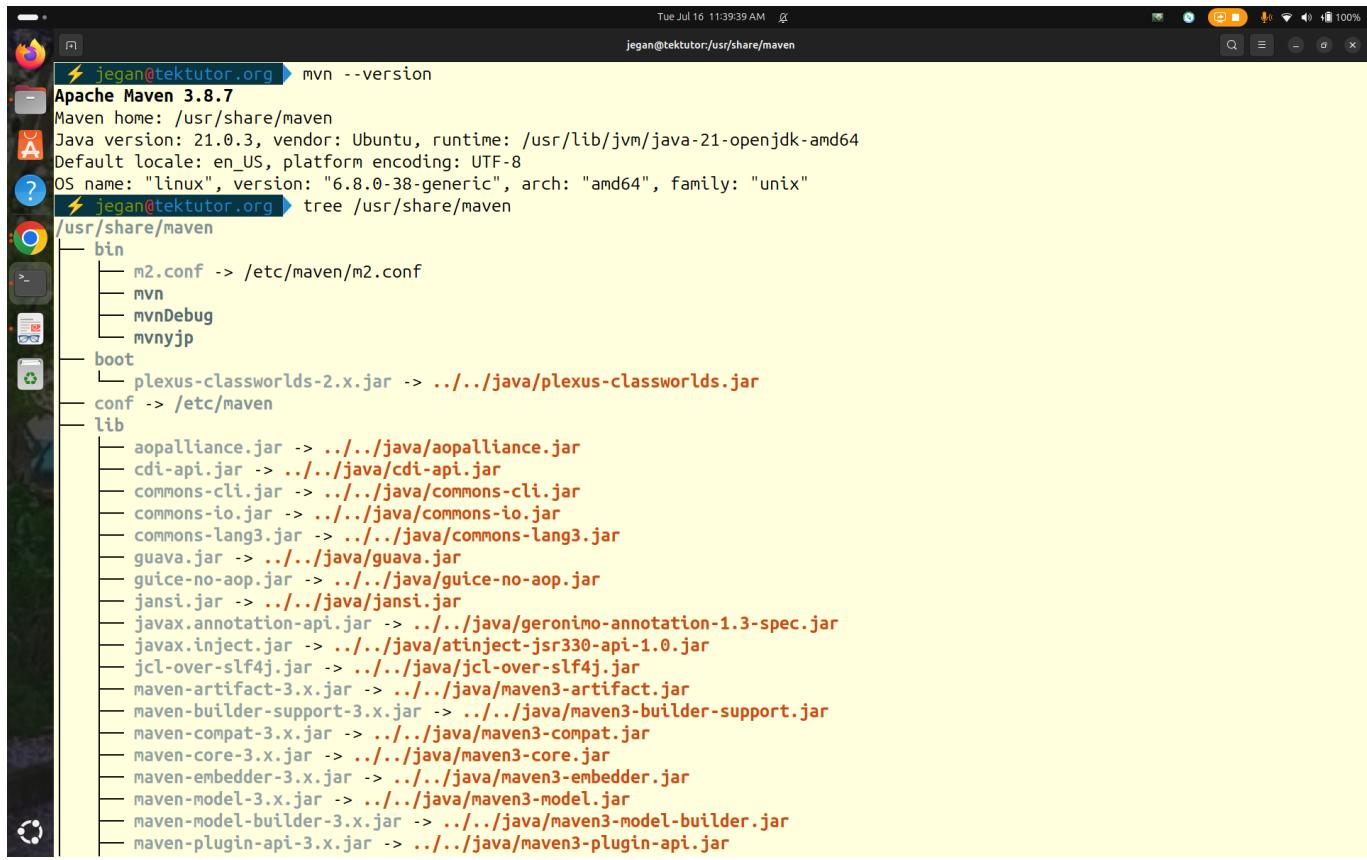
## Info - JDK vs JRE

- JDK - Java Development Kit - used by Developers in Dev environment
  - When we install JDK we get both javac(compiler) and java(interpreter)
  - source ( the machine where the application is compiled )
- JRE - Java Runtime Environment - used by QA and Production environments
  - we only get Java(interpreter) when we install JRE
  - target( the machine where the application will be running)

## Lab - Finding maven version

```
mvn --version  
tree /usr/share/maven
```

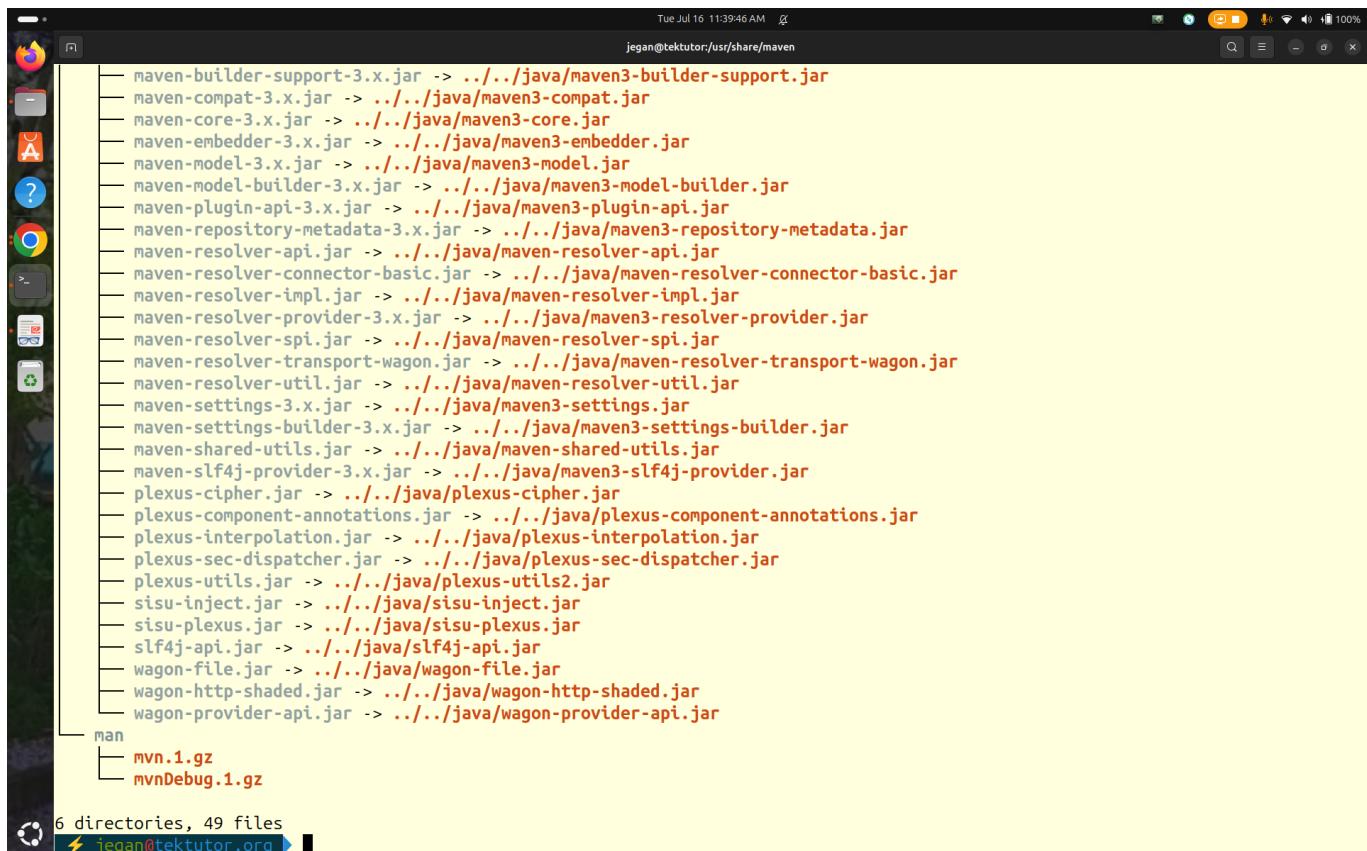
## Expected output



```

Tue Jul 16 11:39:39 AM  ✘
jegan@tektutor:/usr/share/maven
Apache Maven 3.8.7
Maven home: /usr/share/maven
Java version: 21.0.3, vendor: Ubuntu, runtime: /usr/lib/jvm/java-21-openjdk-amd64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "6.8.0-38-generic", arch: "amd64", family: "unix"
jegan@tektutor.org ➤ tree /usr/share/maven
/usr/share/maven
├── bin
│   ├── m2.conf -> /etc/maven/m2.conf
│   ├── mvn
│   ├── mvnDebug
│   └── mvnyjp
├── boot
│   └── plexus-classworlds-2.x.jar -> ../../java/plexus-classworlds.jar
├── conf -> /etc/maven
└── lib
    ├── aopalliance.jar -> ../../java/aopalliance.jar
    ├── cdi-api.jar -> ../../java/cdi-api.jar
    ├── commons-cli.jar -> ../../java/commons-cli.jar
    ├── commons-io.jar -> ../../java/commons-io.jar
    ├── commons-lang3.jar -> ../../java/commons-lang3.jar
    ├── guava.jar -> ../../java/guava.jar
    ├── guice-no-aop.jar -> ../../java/guice-no-aop.jar
    ├── jansi.jar -> ../../java/jansi.jar
    ├── javax.annotation-api.jar -> ../../java/geronimo-annotation-1.3-spec.jar
    ├── javax.inject.jar -> ../../java/atinject-jsr330-api-1.0.jar
    ├── jcl-over-slf4j.jar -> ../../java/jcl-over-slf4j.jar
    ├── maven-artifact-3.x.jar -> ../../java/maven3-artifact.jar
    ├── maven-builder-support-3.x.jar -> ../../java/maven3-builder-support.jar
    ├── maven-compat-3.x.jar -> ../../java/maven3-compat.jar
    ├── maven-core-3.x.jar -> ../../java/maven3-core.jar
    ├── maven-embedder-3.x.jar -> ../../java/maven3-embedder.jar
    ├── maven-model-3.x.jar -> ../../java/maven3-model.jar
    ├── maven-model-builder-3.x.jar -> ../../java/maven3-model-builder.jar
    └── maven-plugin-api-3.x.jar -> ../../java/maven3-plugin-api.jar

```

```

Tue Jul 16 11:39:46 AM  ✘
jegan@tektutor:/usr/share/maven
maven-builder-support-3.x.jar -> ../../java/maven3-builder-support.jar
maven-compat-3.x.jar -> ../../java/maven3-compat.jar
maven-core-3.x.jar -> ../../java/maven3-core.jar
maven-embedder-3.x.jar -> ../../java/maven3-embedder.jar
maven-model-3.x.jar -> ../../java/maven3-model.jar
maven-model-builder-3.x.jar -> ../../java/maven3-model-builder.jar
maven-plugin-api-3.x.jar -> ../../java/maven3-plugin-api.jar
maven-repository-metadata-3.x.jar -> ../../java/maven3-repository-metadata.jar
maven-resolver-api.jar -> ../../java/maven-resolver-api.jar
maven-resolver-connector-basic.jar -> ../../java/maven-resolver-connector-basic.jar
maven-resolver-impl.jar -> ../../java/maven-resolver-impl.jar
maven-resolver-provider-3.x.jar -> ../../java/maven3-resolver-provider.jar
maven-resolver-spi.jar -> ../../java/maven-resolver-spi.jar
maven-resolver-transport-wagon.jar -> ../../java/maven-resolver-transport-wagon.jar
maven-resolver-util.jar -> ../../java/maven-resolver-util.jar
maven-settings-3.x.jar -> ../../java/maven3-settings.jar
maven-settings-builder-3.x.jar -> ../../java/maven3-settings-builder.jar
maven-shared-utils.jar -> ../../java/maven-shared-utils.jar
maven-slf4j-provider-3.x.jar -> ../../java/maven3-slf4j-provider.jar
plexus-cipher.jar -> ../../java/plexus-cipher.jar
plexus-component-annotations.jar -> ../../java/plexus-component-annotations.jar
plexus-interpolation.jar -> ../../java/plexus-interpolation.jar
plexus-sec-dispatcher.jar -> ../../java/plexus-sec-dispatcher.jar
plexus-utils.jar -> ../../java/plexus-utils2.jar
sisu-inject.jar -> ../../java/sisu-inject.jar
sisu-plexus.jar -> ../../java/sisu-plexus.jar
slf4j-api.jar -> ../../java/slf4j-api.jar
wagon-file.jar -> ../../java/wagon-file.jar
wagon-http-shaded.jar -> ../../java/wagon-http-shaded.jar
wagon-provider-api.jar -> ../../java/wagon-provider-api.jar
man
└── mvn.1.gz
    └── mvnDebug.1.gz

```

6 directories, 49 files

## Lab - Creating a simple Core java application using Maven as a build tool

```

cd ~/devops-july-2024
git pull
cd Day2/Hello

```

```
mvn validate  
mvn compile
```

## Expected output

The terminal window shows the following sequence of commands and their results:

```
Tue Jul 16 11:43:41 AM jegan@tektutor:~/devops-july-2024/Day2>Hello  
jegan@tektutor.org ~ % pwd  
/home/jegan/devops-july-2024/Day2  
jegan@tektutor.org ~ % mkdir Hello  
jegan@tektutor.org ~ % cd Hello  
jegan@tektutor.org ~/Hello % mkdir -p src/main/java/org/tektutor  
jegan@tektutor.org ~/Hello % mkdir -p src/test/java/org/tektutor  
jegan@tektutor.org ~/Hello % tree  
.  
+-- src  
|   +-- main  
|   |   +-- java  
|   |   |   +-- org  
|   |   |   |   +-- tektutor  
|   +-- test  
|       +-- java  
|           +-- org  
|               +-- tektutor  
10 directories, 0 files  
jegan@tektutor.org ~/Hello % touch src/main/java/org/tektutor/Hello.java  
jegan@tektutor.org ~/Hello % touch src/test/java/org/tektutor/HelloTest.java  
jegan@tektutor.org ~/Hello % touch pom.xml  
jegan@tektutor.org ~/Hello % tree  
.  
+-- pom.xml  
+-- src  
|   +-- main  
|   |   +-- java  
|   |   |   +-- org  
|   |   |   |   +-- tektutor  
|   |   |   |   |   +-- Hello.java  
|   +-- test  
|       +-- java  
|           +-- org  
|               +-- tektutor  
|                   +-- HelloTest.java  
10 directories, 3 files  
jegan@tektutor.org ~ %
```

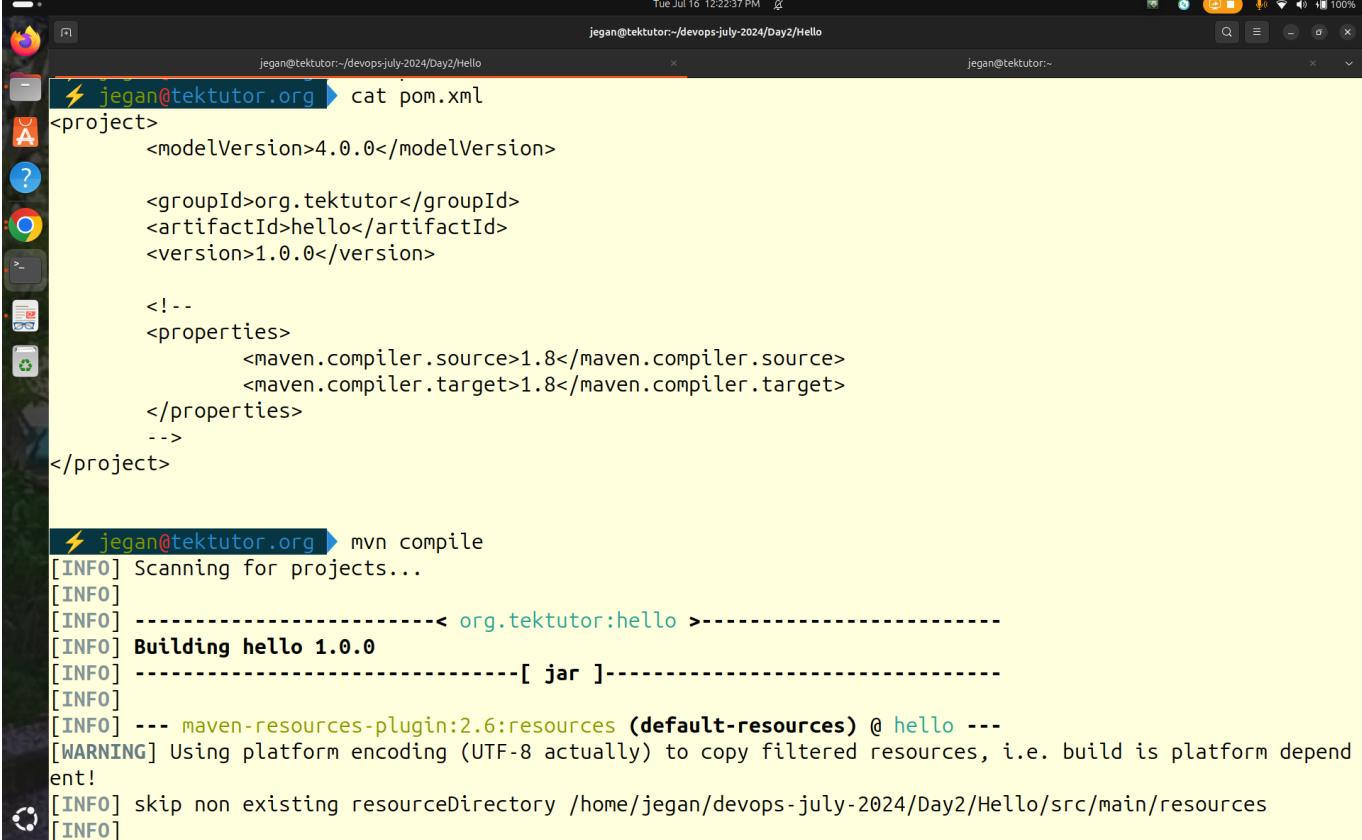
The terminal window shows the following sequence of commands and their results:

```
Tue Jul 16 12:00:32 PM jegan@tektutor:~/devops-july-2024/Day2>Hello  
jegan@tektutor.org ~ % tree  
.  
+-- pom.xml  
+-- src  
|   +-- main  
|   |   +-- java  
|   |   |   +-- org  
|   |   |   |   +-- tektutor  
|   |   |   |   |   +-- Hello.java  
|   +-- test  
|       +-- java  
|           +-- org  
|               +-- tektutor  
|                   +-- HelloTest.java  
10 directories, 3 files  
jegan@tektutor.org ~ % mvn validate  
[INFO] Scanning for projects...  
[INFO]  
[INFO] -----  
[INFO] < org.tektutor:hello >  
[INFO] Building hello 1.0.0  
[INFO] -----  
[INFO] [ jar ]  
[INFO] -----  
[INFO] BUILD SUCCESS  
[INFO] -----  
[INFO] Total time: 0.044 s  
[INFO] Finished at: 2024-07-16T12:00:26+05:30  
[INFO] -----  
jegan@tektutor.org ~ %
```

When the maven.compiler.source and maven.compiler.target is not configured, the maven version we have installed uses maven-compiler-plugin:3.1 which was released in the year 2013, at that time the stable version

of JDK was JDK 1.5, hence irrespective of which version of JDK you have installed on your machine, it will use the Java as v1.5 only.

In case you are using latest Java features, when the compiler feature set is restricted to JDK 1.5, your code may not compile.



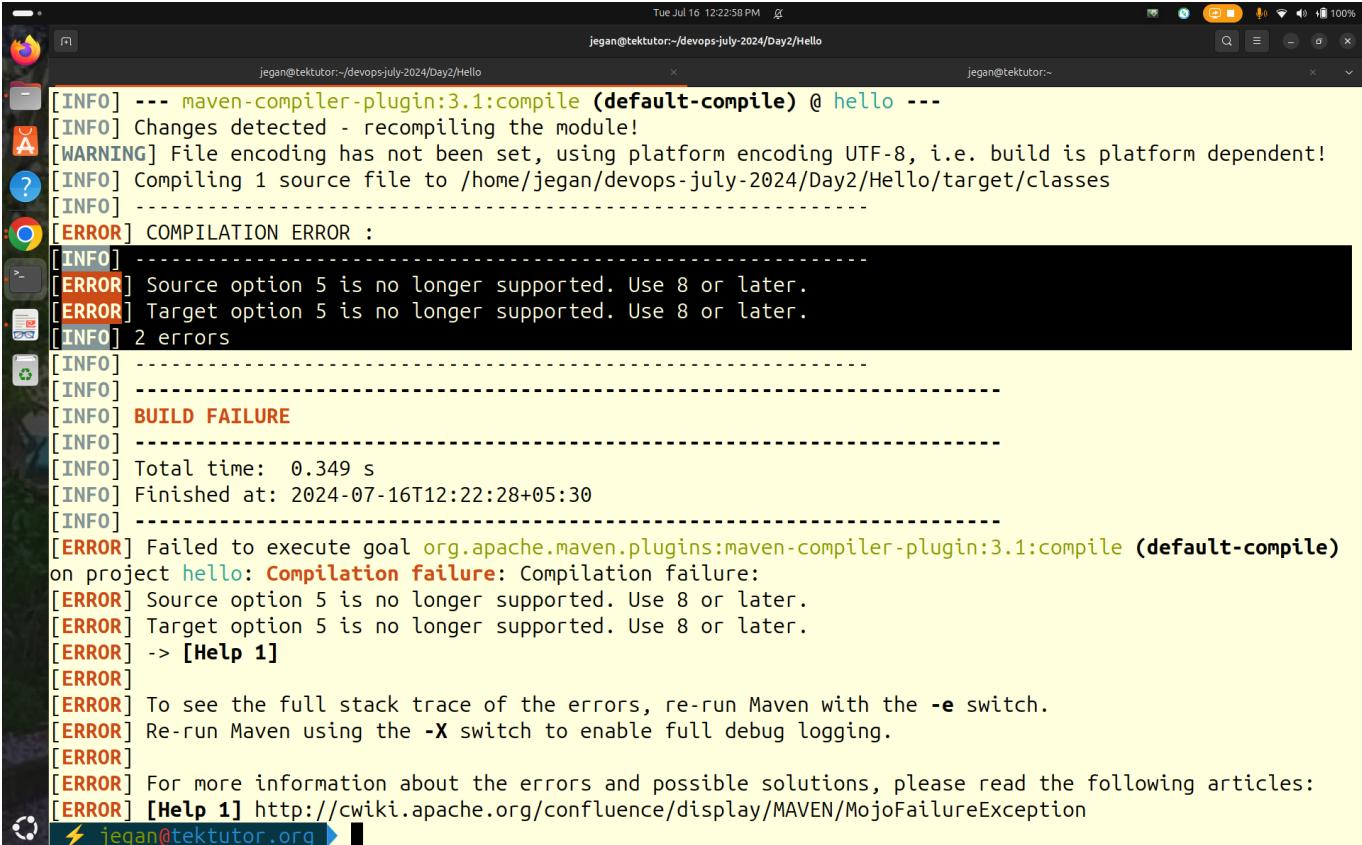
```
Tue Jul 16 12:22:37 PM jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~-

jegan@tektutor.org ~ cat pom.xml
<project>
    <modelVersion>4.0.0</modelVersion>

    <groupId>org.tektutor</groupId>
    <artifactId>hello</artifactId>
    <version>1.0.0</version>

    <!--
        <properties>
            <maven.compiler.source>1.8</maven.compiler.source>
            <maven.compiler.target>1.8</maven.compiler.target>
        </properties>
    -->
</project>

jegan@tektutor.org ~ mvn compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:hello >-----
[INFO] Building hello 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ hello ---
[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/Day2/Hello/src/main/resources
[INFO]
```



```
Tue Jul 16 12:22:58 PM jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~-

[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ hello ---
[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/Day2/Hello/target/classes
[INFO]
[ERROR] COMPILATION ERROR :
[INFO]
[ERROR] Source option 5 is no longer supported. Use 8 or later.
[ERROR] Target option 5 is no longer supported. Use 8 or later.
[INFO] 2 errors
[INFO]
[INFO] BUILD FAILURE
[INFO]
[INFO] Total time:  0.349 s
[INFO] Finished at: 2024-07-16T12:22:28+05:30
[INFO]
[ERROR] Failed to execute goal org.apache.maven.plugins:maven-compiler-plugin:3.1:compile (default-compile)
on project hello: Compilation failure: Compilation failure:
[ERROR] Source option 5 is no longer supported. Use 8 or later.
[ERROR] Target option 5 is no longer supported. Use 8 or later.
[ERROR] -> [Help 1]
[ERROR]
[ERROR] To see the full stack trace of the errors, re-run Maven with the -e switch.
[ERROR] Re-run Maven using the -X switch to enable full debug logging.
[ERROR]
[ERROR] For more information about the errors and possible solutions, please read the following articles:
[ERROR] [Help 1] http://cwiki.apache.org/confluence/display/MAVEN/MojoFailureException
jegan@tektutor.org ~
```

The screenshot shows a terminal window with the following content:

```

Tue Jul 16 12:19:50 PM vim pom.xml
vim pom.xml
jegan@tektutor:~
```

**pom.xml**

```

<project>
    <modelVersion>4.0.0</modelVersion>
    <groupId>org.tektutor</groupId>
    <artifactId>hello</artifactId>
    <version>1.0.0</version>
    <!--
        <properties>
            <maven.compiler.source>1.8</maven.compiler.source>
            <maven.compiler.target>1.8</maven.compiler.target>
        </properties>
    -->
</project>
```

"pom.xml" 16L, 298B written

9,4-11 All

```

Tue Jul 16 12:31:32 PM jegan@tektutor:~/devops-july-2024/Day2/Hello/src/main/java
jegan@tektutor:~/devops-july-2024/Day2/Hello/src/main/java x jegan@tektutor:~
4cb1427..ce1538a main -> main
jegan@tektutor.org cd Day2/Hello
jegan@tektutor.org ls
pom.xml src
jegan@tektutor.org cd src/main/java
jegan@tektutor.org javac --source 1.5 org/tektutor/Hello.java
warning: [options] bootstrap class path not set in conjunction with -source 5
error: Source option 5 is no longer supported. Use 8 or later.
jegan@tektutor.org javac -version
javac 21.0.3
jegan@tektutor.org javac --source 1.6 org/tektutor/Hello.java
warning: [options] bootstrap class path not set in conjunction with -source 6
error: Source option 6 is no longer supported. Use 8 or later.
jegan@tektutor.org javac --source 1.7 org/tektutor/Hello.java
warning: [options] bootstrap class path not set in conjunction with -source 7
error: Source option 7 is no longer supported. Use 8 or later.
jegan@tektutor.org javac --source 1.8 org/tektutor/Hello.java
warning: [options] bootstrap class path not set in conjunction with -source 8
warning: [options] source value 8 is obsolete and will be removed in a future release
warning: [options] To suppress warnings about obsolete options, use -Xlint:-options.
3 warnings
jegan@tektutor.org ls
org
jegan@tektutor.org tree
.
└── org
    └── tektutor
        └── Hello.class
        └── Hello.java

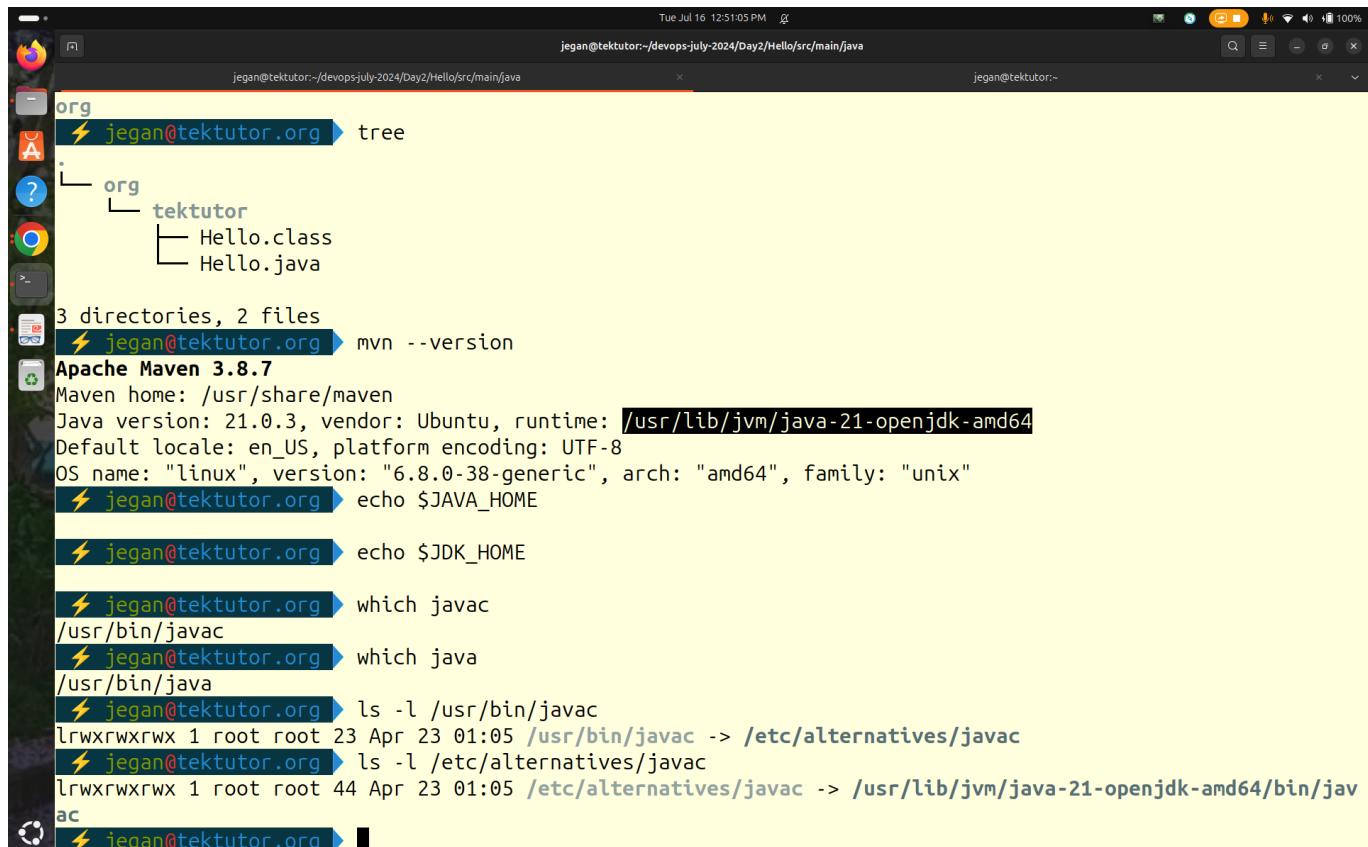
```

## Things to note

- Maven has plugins to do each and every activities
- There are maven plugins to compile, package, test, etc.,
- to compile java applications maven depends on a plugin called maven-compiler-plugin

- for each maven plugin there might be several version available in the Maven Central Repository, we can configure the pom.xml to use any specific version of maven-compiler-plugin.
- the maven-compiler-plugin will invoke the javac compiler to compile the java project
- depending the version of maven-compiler-plugin we are using it may a default version of JDK
- in our case, the default maven-compiler-version happens to be 3.1 which uses JDK 1.5 and JRE 1.5
- hence, we have to configure the properties to instruct maven to use a specific version of JDK and JRE

```
<properties>
  <maven-compiler-source>1.8</maven-compiler-source>
  <maven-compiler-target>1.8</maven-compiler-target>
</properties>
```



The screenshot shows a terminal window on a Linux desktop. The title bar indicates the session is running on a 'tektutor' host. The terminal displays the following commands and output:

```

Tue Jul 16 12:51:05 PM UTC
jegan@tektutor:~/devops-july-2024/Day2/Hello/src/main/java
jegan@tektutor:~>

org
└── org
    └── tektutor
        ├── Hello.class
        └── Hello.java

3 directories, 2 files
jegan@tektutor:~> mvn --version
Apache Maven 3.8.7
Maven home: /usr/share/maven
Java version: 21.0.3, vendor: Ubuntu, runtime: /usr/lib/jvm/java-21-openjdk-amd64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "6.8.0-38-generic", arch: "amd64", family: "unix"
jegan@tektutor:~> echo $JAVA_HOME
jegan@tektutor:~> echo $JDK_HOME
jegan@tektutor:~> which javac
/usr/bin/javac
jegan@tektutor:~> which java
/usr/bin/java
jegan@tektutor:~> ls -l /usr/bin/javac
lrwxrwxrwx 1 root root 23 Apr 23 01:05 /usr/bin/javac -> /etc/alternatives/javac
jegan@tektutor:~> ls -l /etc/alternatives/javac
lrwxrwxrwx 1 root root 44 Apr 23 01:05 /etc/alternatives/javac -> /usr/lib/jvm/java-21-openjdk-amd64/bin/javac
jegan@tektutor:~>

```

## Info - Commonly used Maven commands

- mvn compile - compiles the application source code kept under src/main/java and sub-folders
- mvn test - compiles the test case source code kept under src/test/java and sub-folders
- mvn clean - will delete the target folder where all the .class, jar/war/ear files are stored

- mvn clean compile - will first delete the target folder and compiles the applicaiton source code
- mvn package - will create jar/war/ear depending on the type of your project

## Info - Maven Dependency Management

- Our application depends on JUnit Testing Framework to perform automatted Unit and Integration Testing
- We need to add a dependency section and give the maven-coordinated of Junit testing framework jar

The screenshot shows a Linux desktop environment with a terminal window and a web browser.

**Terminal Window:**

```
jegan@tektutor:~/devops-july-2024/Day2>Hello
jegan@tektutor:~/devops-july-2024/Day2>Hello
```

**Web Browser (Maven Central Repository):**

The browser is displaying the Maven Central repository page for the JUnit dependency. The URL is <https://central.sonatype.com/artifactory/junit/junit>. The page shows the following details:

- Version:** 4.13.2
- Used in:** 470343 components
- Snippets:** A code snippet for Apache Maven showing the dependency declaration:

```
<dependency>
    <groupId>junit</groupId>
    <artifactId>junit</artifactId>
    <version>4.13.2</version>
</dependency>
```
- Maven POM File:** A snippet of a Maven POM file showing the project configuration:

```
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
```
- Sonatype Developer:** An advertisement for Sonatype Developer, which makes coding faster and safer, and provides real-time guidance to developers to make your job easier. It includes a "Try Developer Team For Free" button.
- Sonatype Safety Rating:** A rating of 1 out of 10.

## Info - Maven Lifecycle

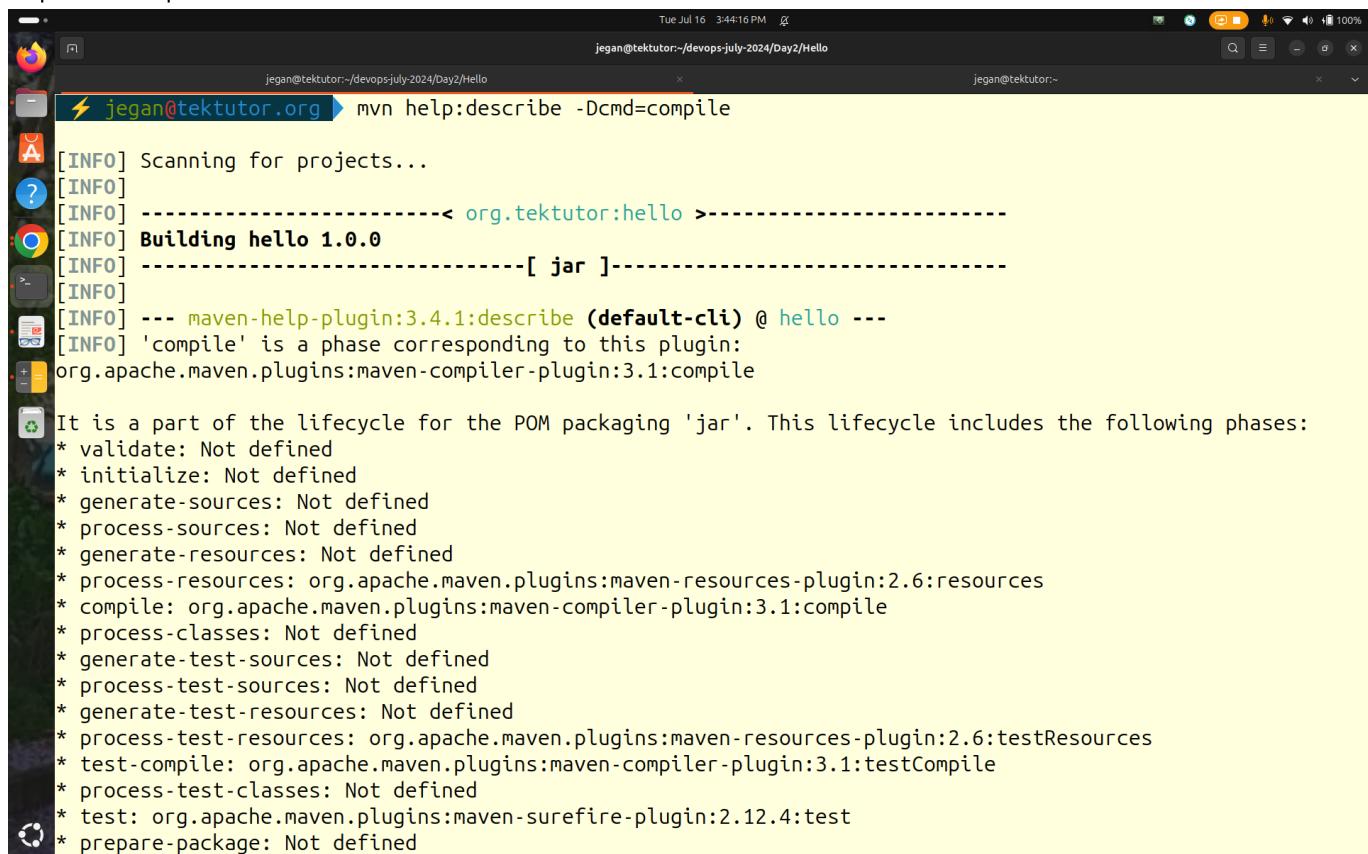
- Life cycle is a collection of many Phases called one after the other in a particular sequence
- Each Maven Phase in a Lifecycle will invoke one or more Plugins goals
  - Examples

- During the compile phase, maven-compiler-plugin's compile goal is invoked
  - During the clean phase, maven-clean-plugins's clean goal is invoked
- Each Maven Plugin has multiple goals
- Each Plugin goal does one activity like compiling, invoking test case, packing applicaiton jar/war/ear, etc.,
- Maven supports 3 lifecycle
  - default ( 23 Phases )
  - clean ( 3 Phases )
  - site ( 4 Phase )

## Lab - Finding all the phases that are part of default maven life-cycle

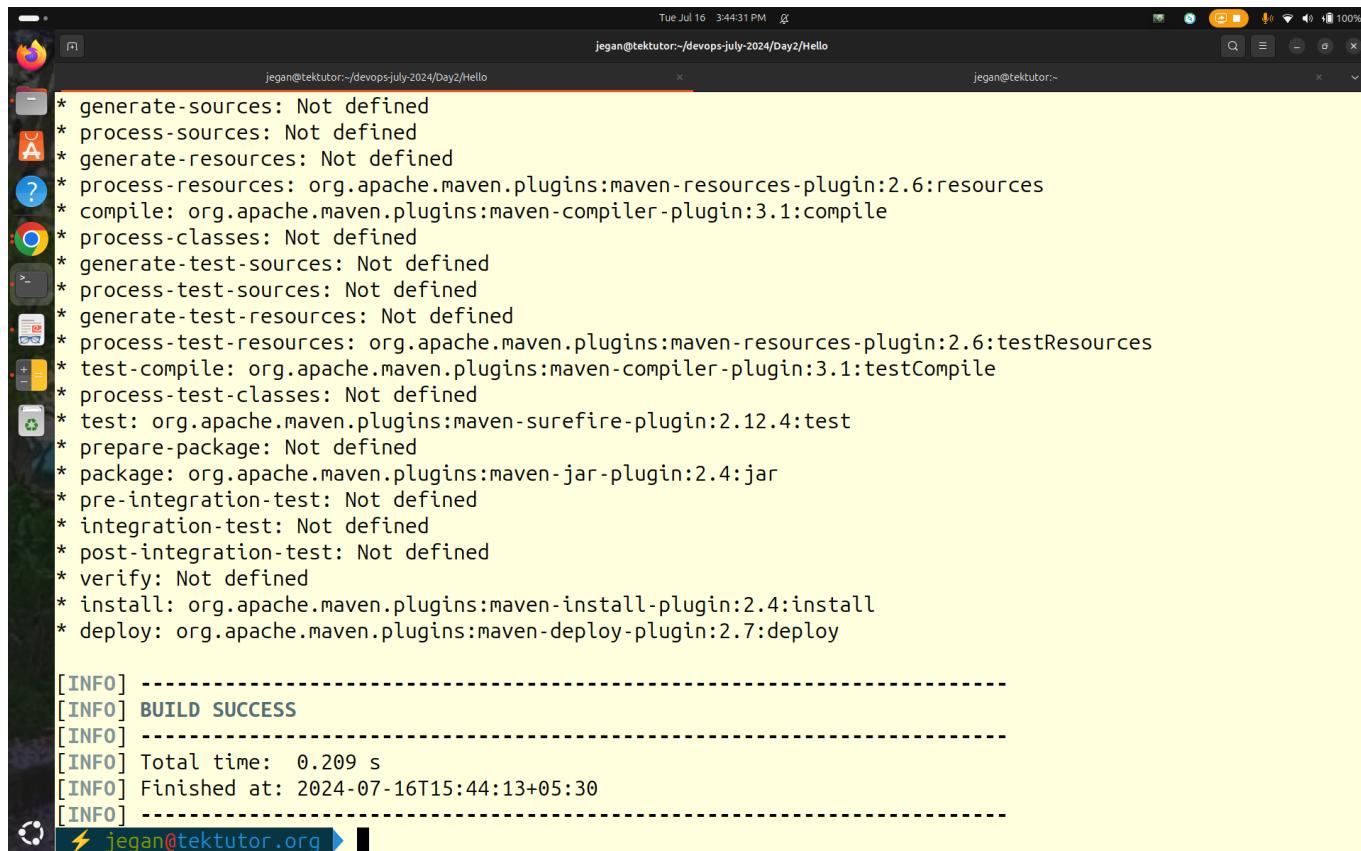
```
cd ~/devops-july-2024
git pull
cd Day2/Hello
mvn help:describe -Dcmd=compile
```

Expected output



```
Tue Jul 16 3:44:16 PM jct
jegan@tektutor:~/Devops-july-2024/Day2/Hello
jegan@tektutor:~/Devops-july-2024/Day2/Hello
jegan@tektutor:~
jegan@tektutor.org: mvn help:describe -Dcmd=compile
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:hello >-----
[INFO] Building hello 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-help-plugin:3.4.1:describe (default-cli) @ hello ---
[INFO] 'compile' is a phase corresponding to this plugin:
org.apache.maven.plugins:maven-compiler-plugin:3.1:compile

It is a part of the lifecycle for the POM packaging 'jar'. This lifecycle includes the following phases:
* validate: Not defined
* initialize: Not defined
* generate-sources: Not defined
* process-sources: Not defined
* generate-resources: Not defined
* process-resources: org.apache.maven.plugins:maven-resources-plugin:2.6:resources
* compile: org.apache.maven.plugins:maven-compiler-plugin:3.1:compile
* process-classes: Not defined
* generate-test-sources: Not defined
* process-test-sources: Not defined
* generate-test-resources: Not defined
* process-test-resources: org.apache.maven.plugins:maven-resources-plugin:2.6:testResources
* test-compile: org.apache.maven.plugins:maven-compiler-plugin:3.1:testCompile
* process-test-classes: Not defined
* test: org.apache.maven.plugins:maven-surefire-plugin:2.12.4:test
* prepare-package: Not defined
```



The screenshot shows a terminal window with the following content:

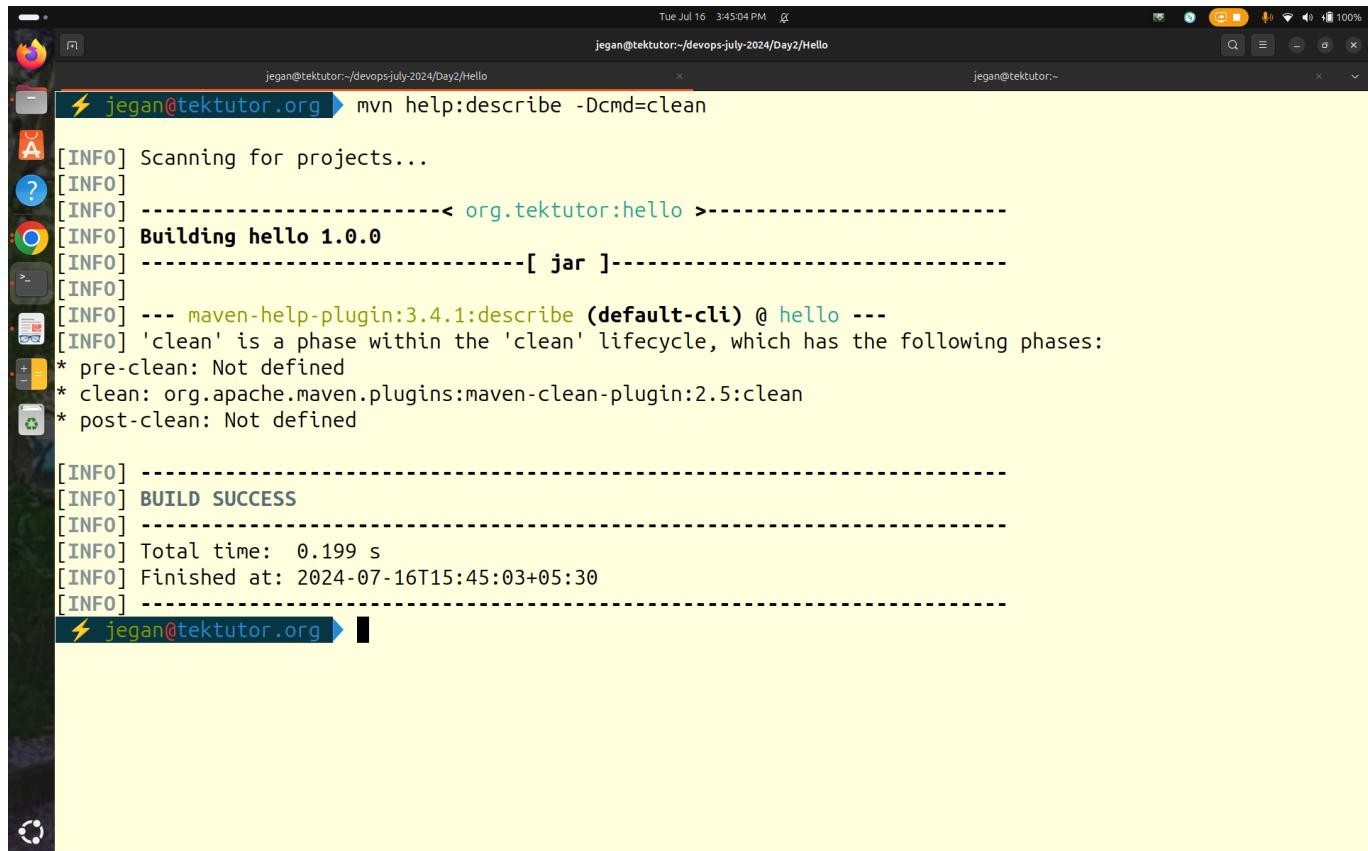
```
Tue Jul 16 3:44:31 PM jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~
* generate-sources: Not defined
* process-sources: Not defined
* generate-resources: Not defined
* process-resources: org.apache.maven.plugins:maven-resources-plugin:2.6:resources
* compile: org.apache.maven.plugins:maven-compiler-plugin:3.1:compile
* process-classes: Not defined
* generate-test-sources: Not defined
* process-test-sources: Not defined
* generate-test-resources: Not defined
* process-test-resources: org.apache.maven.plugins:maven-resources-plugin:2.6:testResources
* test-compile: org.apache.maven.plugins:maven-compiler-plugin:3.1:testCompile
* process-test-classes: Not defined
* test: org.apache.maven.plugins:maven-surefire-plugin:2.12.4:test
* prepare-package: Not defined
* package: org.apache.maven.plugins:maven-jar-plugin:2.4:jar
* pre-integration-test: Not defined
* integration-test: Not defined
* post-integration-test: Not defined
* verify: Not defined
* install: org.apache.maven.plugins:maven-install-plugin:2.4:install
* deploy: org.apache.maven.plugins:maven-deploy-plugin:2.7:deploy

[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 0.209 s
[INFO] Finished at: 2024-07-16T15:44:13+05:30
[INFO] -----
```

## Lab - Finding all the phases that are part of clean maven life-cycle

```
cd ~/devops-july-2024
git pull
cd Day2/Hello
mvn help:describe -Dcmd=clean
```

## Expected output



A screenshot of a terminal window titled "jegan@tektutor:~/devops-july-2024/Day2/Hello". The terminal shows the output of the command "mvn help:describe -Dcmd=clean". The output details the Maven lifecycle phases for the 'clean' phase of the 'hello' project.

```
Tue Jul 16 3:45:04 PM ፳
jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~
```

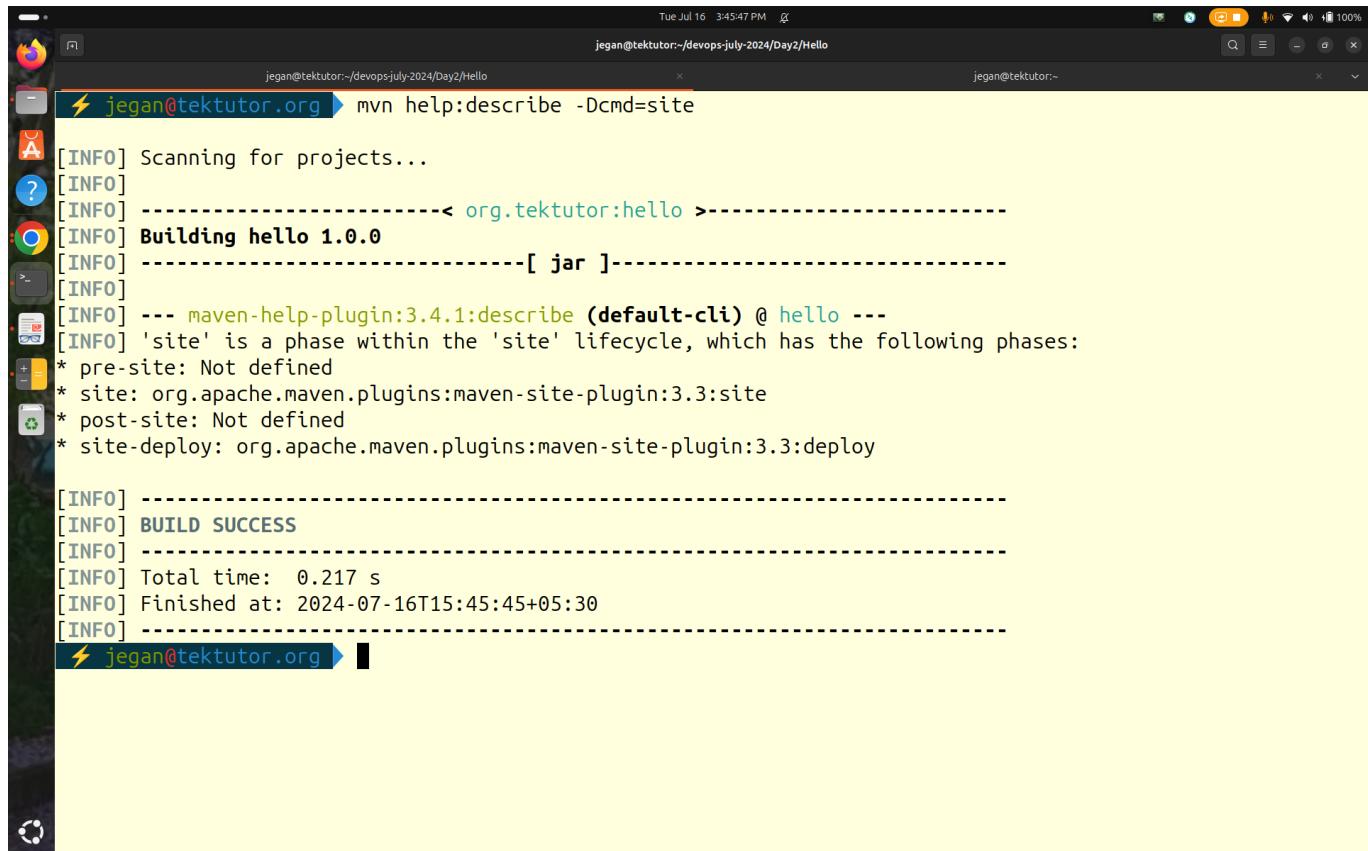
```
jegan@tektutor.org > mvn help:describe -Dcmd=clean
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:hello >-----
[INFO] Building hello 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-help-plugin:3.4.1:describe (default-cli) @ hello ---
[INFO] 'clean' is a phase within the 'clean' lifecycle, which has the following phases:
* pre-clean: Not defined
* clean: org.apache.maven.plugins:maven-clean-plugin:2.5:clean
* post-clean: Not defined

[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time:  0.199 s
[INFO] Finished at: 2024-07-16T15:45:03+05:30
[INFO] -----
```

## Lab - Finding all the phases that are part of site maven life-cycle

```
cd ~/devops-july-2024
git pull
cd Day2/Hello
mvn help:describe -Dcmd=site
```

## Expected output



The screenshot shows a terminal window titled "jegan@tektutor:~/devops-july-2024/Day2>Hello". The command "mvn help:describe -Dcmd=site" is run, displaying Maven's help system output. The output includes information about the "hello" project, its build phases (pre-site, site, post-site, site-deploy), and a "BUILD SUCCESS" message. The terminal window has a light yellow background and a dark blue header bar.

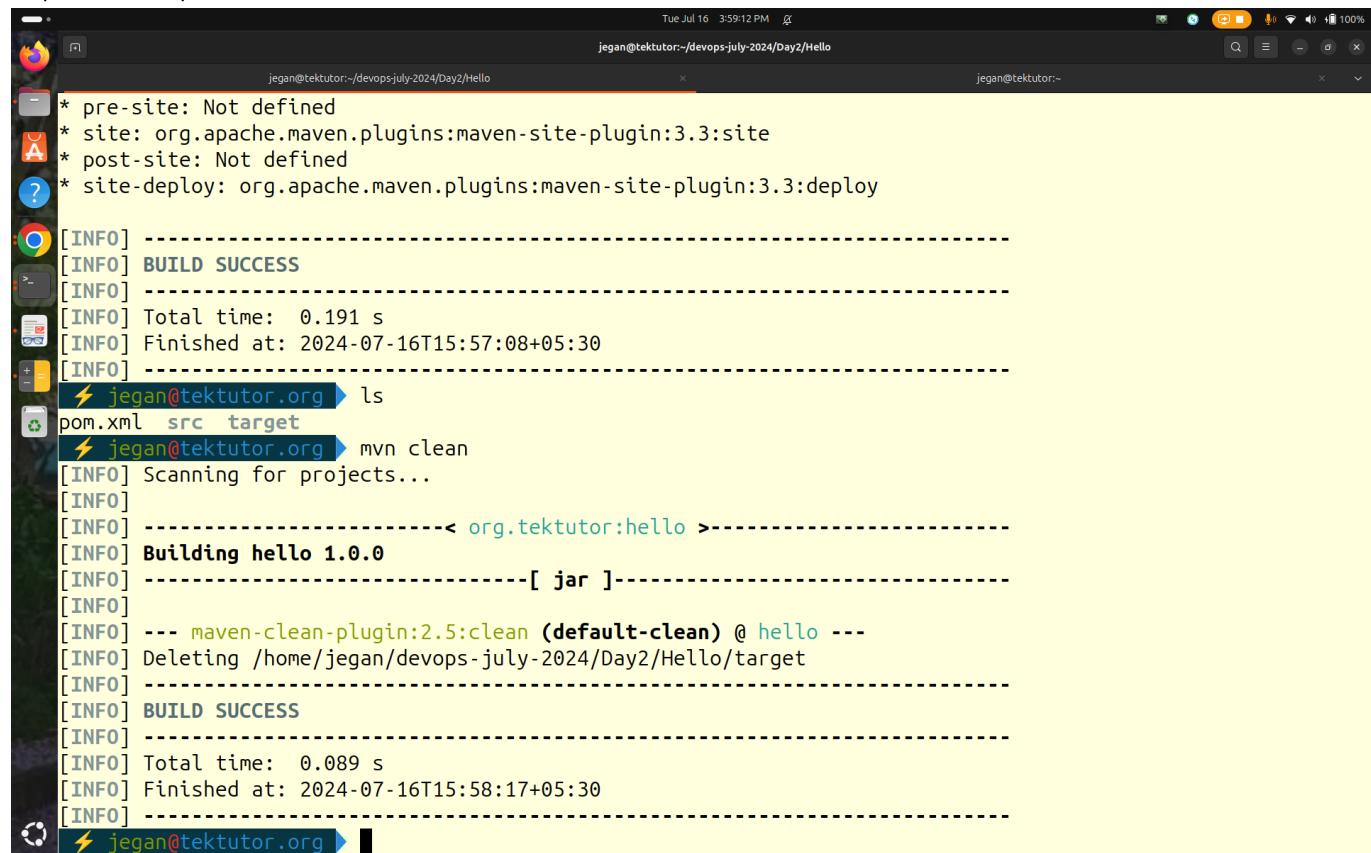
```
jegan@tektutor:~/devops-july-2024/Day2>Hello
Tue Jul 16 3:45:47 PM IST
jegan@tektutor:~/devops-july-2024/Day2>Hello
jegan@tektutor:~
jegan@tektutor.org ~ mvn help:describe -Dcmd=site
[INFO] Scanning for projects...
[INFO]
[INFO] ----- < org.tektutor:hello > -----
[INFO] Building hello 1.0.0
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- maven-help-plugin:3.4.1:describe (default-cli) @ hello ---
[INFO] 'site' is a phase within the 'site' lifecycle, which has the following phases:
* pre-site: Not defined
* site: org.apache.maven.plugins:maven-site-plugin:3.3:site
* post-site: Not defined
* site-deploy: org.apache.maven.plugins:maven-site-plugin:3.3:deploy

[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 0.217 s
[INFO] Finished at: 2024-07-16T15:45:45+05:30
[INFO] -----
```

## Lab - Deleting the target folder using mvn clean command

```
cd ~/devops-july-2024
git pull
cd Day2>Hello
ls -l
mvn clean
ls -l
```

## Expected output



The screenshot shows a terminal window with two tabs. The left tab displays Maven configuration details:

```
* pre-site: Not defined
* site: org.apache.maven.plugins:maven-site-plugin:3.3:site
* post-site: Not defined
* site-deploy: org.apache.maven.plugins:maven-site-plugin:3.3:deploy
```

The right tab shows the output of a Maven build:

```
[INFO] -----
[INFO] BUILD SUCCESS
[INFO] -----
[INFO] Total time: 0.191 s
[INFO] Finished at: 2024-07-16T15:57:08+05:30
[INFO] -----
[INFO] ⚡ jegan@tektutor.org ➤ ls
pom.xml  src  target
⚡ jegan@tektutor.org ➤ mvn clean
[INFO] Scanning for projects...
[INFO]
[INFO] < org.tektutor:hello >
[INFO] Building hello 1.0.0
[INFO] ----- [ jar ] -----
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ hello ---
[INFO] Deleting /home/jegan/devops-july-2024/Day2/Hello/target
[INFO]
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.089 s
[INFO] Finished at: 2024-07-16T15:58:17+05:30
[INFO] -----
```

The terminal prompt is ⚡ jegan@tektutor.org ➤

## Lab - Finding the list of goals a maven plugin supports

```
cd ~/devops-july-2024
git pull
cd Day2/Hello
mvn help:describe -Dplugin=org.apache.maven.plugins:maven-compiler-plugin
mvn help:describe -Dplugin=org.apache.maven.plugins:maven-clean-plugin
mvn help:describe -Dplugin=org.apache.maven.plugins:maven-jar-plugin
```

## Expected output

```
Tue Jul 16 4:08:28 PM jx
jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~
```

jegan@tektutor.org ➤ mvn help:describe -Dplugin=org.apache.maven.plugins:maven-compiler-plugin

[INFO] Scanning for projects...  
[INFO] **< org.tektutor:hello >**  
[INFO] **Building hello 1.0.0**  
[INFO] **[ jar ]**  
[INFO]  
[INFO] --- maven-help-plugin:3.4.1:describe (default-cli) @ hello ---  
[INFO] org.apache.maven.plugins:maven-compiler-plugin:3.1  
  
Name: **Maven Compiler Plugin**  
Description: The Compiler Plugin is used to compile the sources of your project.  
Group Id: org.apache.maven.plugins  
Artifact Id: maven-compiler-plugin  
Version: 3.1  
Goal Prefix: **compiler**  
  
This plugin has 3 goals:  
  
**compiler:compile**  
Description: Compiles application sources  
  
**compiler:help**  
Description: Display help information on maven-compiler-plugin.  
Call mvn compiler:help -Ddetail=true -Dgoal=<goal-name> to display parameter details.

```
Tue Jul 16 4:08:37 PM jx
jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~/devops-july-2024/Day2/Hello
jegan@tektutor:~
```

Description: The Compiler Plugin is used to compile the sources of your project.  
Group Id: org.apache.maven.plugins  
Artifact Id: maven-compiler-plugin  
Version: 3.1  
Goal Prefix: **compiler**  
  
This plugin has 3 goals:  
  
**compiler:compile**  
Description: Compiles application sources  
  
**compiler:help**  
Description: Display help information on maven-compiler-plugin.  
Call mvn compiler:help -Ddetail=true -Dgoal=<goal-name> to display parameter details.  
  
**compiler:testCompile**  
Description: Compiles application test sources.  
  
For more information, run 'mvn help:describe [...] -Ddetail'  
  
[INFO] -----  
[INFO] BUILD SUCCESS  
[INFO] -----  
[INFO] Total time: 0.388 s  
[INFO] Finished at: 2024-07-16T16:08:25+05:30  
[INFO] -----

## Lab - Using maven site to generate html documentation about your project

```
cd ~/devops-july-2024
git pull
```

```
cd Day2/Hello
mvn site
```

## Expected output

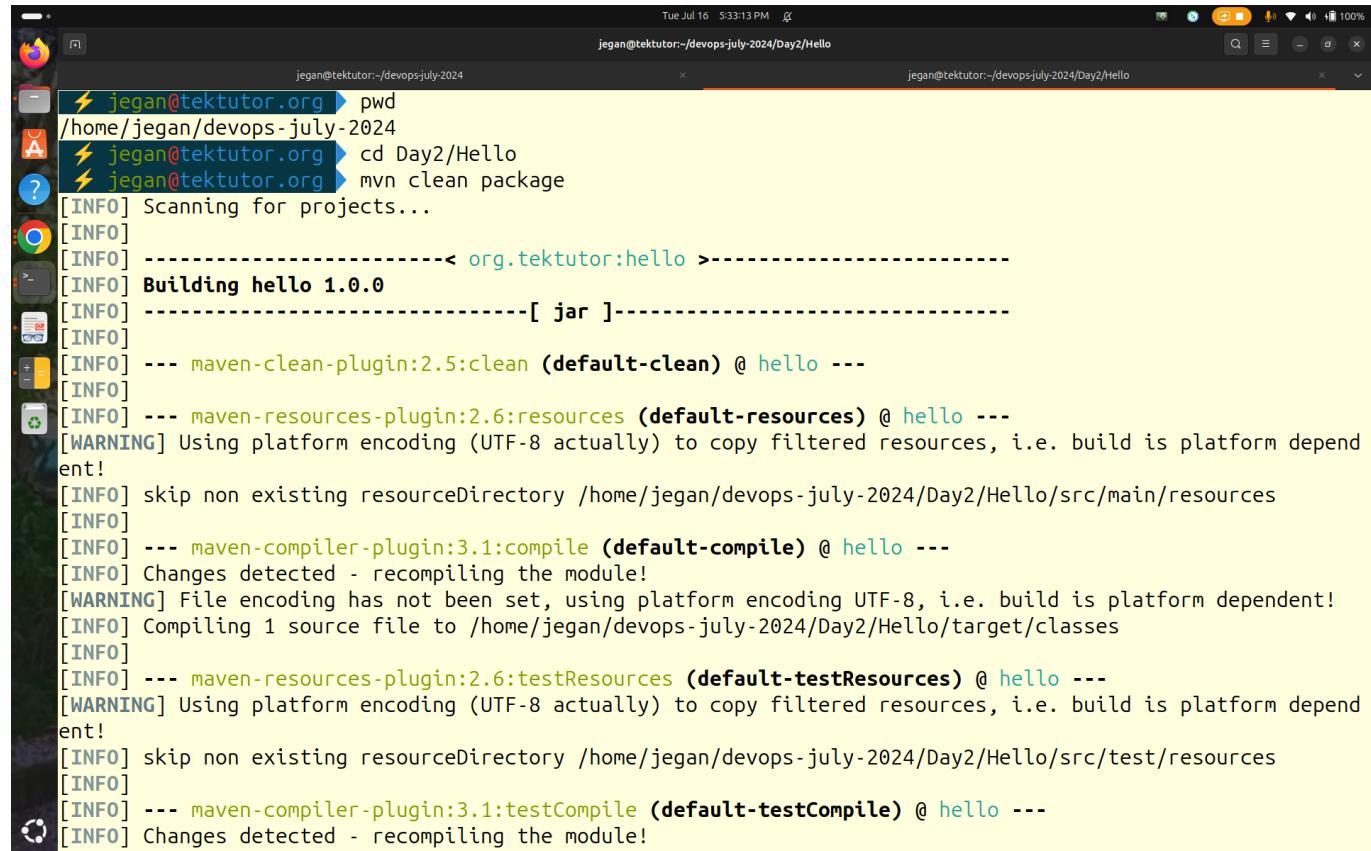
```
jegan@tektutor.org ~
jegan@tektutor.org ~ ls
pom.xml  src  target
jegan@tektutor.org ~ vim pom.xml
jegan@tektutor.org ~ vim pom.xml
jegan@tektutor.org ~ mvn site
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:hello >-----
[INFO] Building hello 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-site-plugin:4.0.0-M15:site (default-site) @ hello ---
[WARNING] Input file encoding has not been set, using platform encoding UTF-8, i.e. build is platform dependent!
[INFO] Rendering site for default locale
[INFO] Configuring report plugin maven-project-info-reports-plugin:3.6.2
[INFO] Detected 15 reports for maven-project-info-reports-plugin:3.6.2: ci-management, dependencies, dependency-info, dependency-management, distribution-management, index, issue-management, licenses, mailing-lists, modules, plugin-management, plugins, scm, summary, team
[WARNING] No project URL defined - site links will not be relativized!
[INFO] Rendering content with org.apache.maven.skins:maven-fluido-skin:jar:2.0.0-M9 skin
[INFO] Rendering 8 report documents
[INFO] Generating "Dependencies" report --- maven-project-info-reports-plugin:3.6.2:dependencies
[INFO] Generating "Maven Coordinates" report --- maven-project-info-reports-plugin:3.6.2:dependency-info
[INFO] Generating "About" report --- maven-project-info-reports-plugin:3.6.2:index
[INFO] Generating "Plugin Management" report --- maven-project-info-reports-plugin:3.6.2:plugin-management
[INFO] Generating "Plugins" report --- maven-project-info-reports-plugin:3.6.2:plugins
[INFO] Generating "Summary" report --- maven-project-info-reports-plugin:3.6.2:summary
[INFO] Generating "Team" report --- maven-project-info-reports-plugin:3.6.2:team
[INFO] Generating "Project Information" report --- maven-site-plugin:4.0.0-M15:project-info
[INFO]
[INFO] -----< org.tektutor:hello >-----
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time:  1.172 s
[INFO] Finished at: 2024-07-16T16:21:35+05:30
[INFO]
[INFO] -----< org.tektutor:hello >-----
```

Document	Description
Dependencies	This document lists the project's dependencies and provides information on each dependency.
Maven Coordinates	This document describes how to include this project as a dependency using various dependency management tools.
About	There is currently no description associated with this project.
Plugin Management	This document lists the plugins that are defined through pluginManagement.
Plugins	This document lists the build plugins and the report plugins used by this project.
Summary	This document lists other related information of this project
Team	This document provides information on the members of this project. These are the individuals who have contributed to the project in one form or another.

## Lab - Packaging application binary as jar files

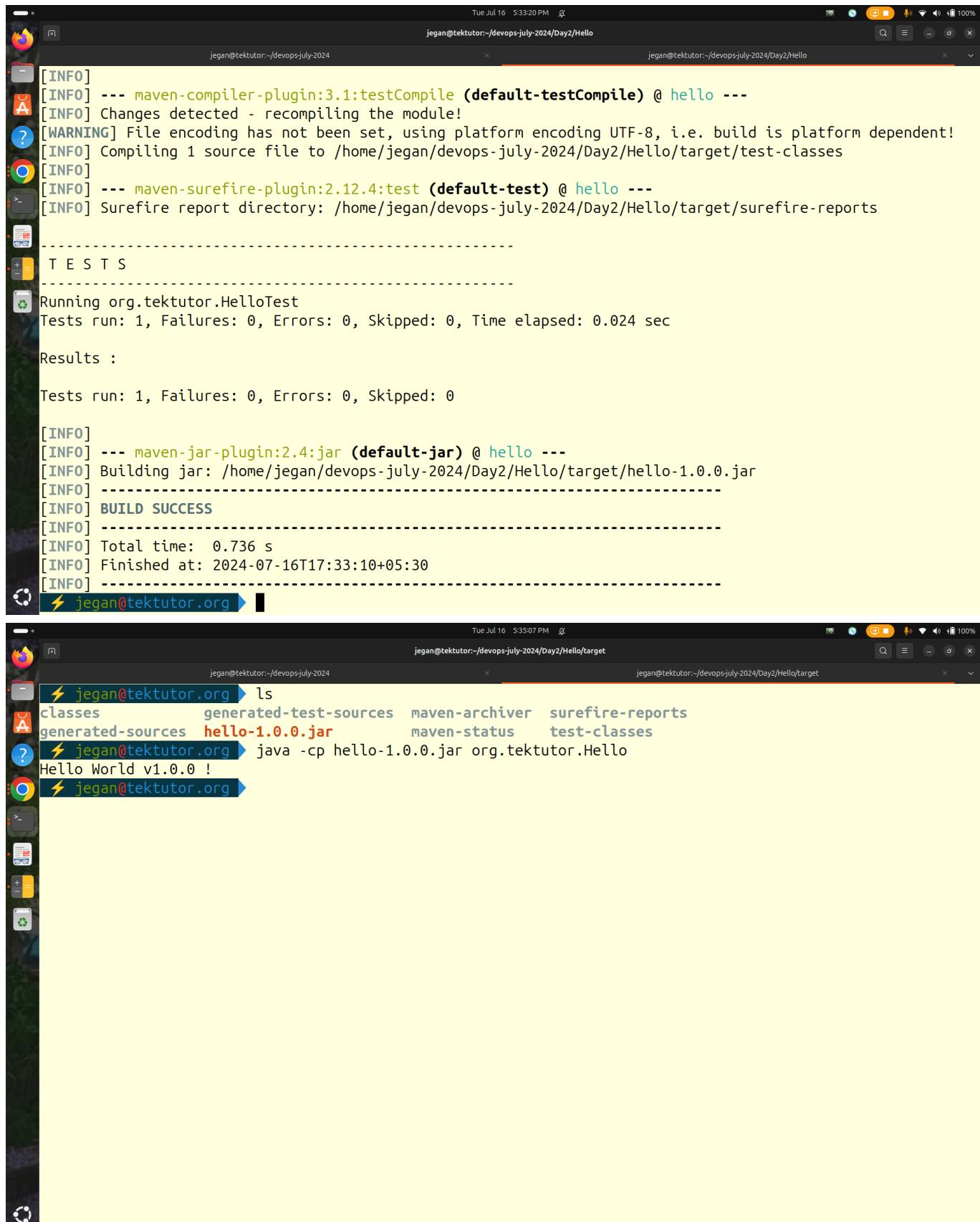
```
cd ~/devops-july-2024
git pull
cd Day2/Hello
mvn clean package
cd target
java -cp hello-1.0.0.jar org.tektutor.Hello
```

## Expected output



The screenshot shows a terminal window with two tabs. The left tab shows the command history: 'pwd', '/home/jegan/devops-july-2024', 'cd Day2/Hello', and 'mvn clean package'. The right tab displays the Maven build logs for the 'hello' module:

```
jegan@tektutor:~/devops-july-2024$ cd Day2/Hello
jegan@tektutor:~/devops-july-2024/Day2>Hello$ mvn clean package
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:hello >-----
[INFO] Building hello 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-clean-plugin:2.5:clean (default-clean) @ hello ---
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ hello ---
[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/Day2>Hello/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ hello ---
[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/Day2>Hello/target/classes
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ hello ---
[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/Day2>Hello/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ hello ---
[INFO] Changes detected - recompiling the module!
```



```
[INFO] [INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ hello ---
[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/Day2/Hello/target/test-classes
[INFO]
[INFO] --- maven-surefire-plugin:2.12.4:test (default-test) @ hello ---
[INFO] Surefire report directory: /home/jegan/devops-july-2024/Day2/Hello/target/surefire-reports
-----
T E S T S
-----
Running org.tektutor.HelloTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.024 sec
Results :

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ hello ---
[INFO] Building jar: /home/jegan/devops-july-2024/Day2/Hello/target/hello-1.0.0.jar
[INFO]
[INFO] -----
[INFO] BUILD SUCCESS
[INFO]
[INFO] -----
[INFO] Total time: 0.736 s
[INFO] Finished at: 2024-07-16T17:33:10+05:30
[INFO]
[INFO] -----
jegan@tektutor.org ~

Tue Jul 16 5:35:07 PM IST
jegan@tektutor:~/devops-july-2024/Day2/Hello/target
jegan@tektutor:~/devops-july-2024/Day2/Hello/target

jegan@tektutor.org ~ ls
classes generated-test-sources maven-archiver surefire-reports
generated-sources hello-1.0.0.jar maven-status test-classes
jegan@tektutor.org ~ java -cp hello-1.0.0.jar org.tektutor.Hello
Hello World v1.0.0 !
jegan@tektutor.org ~
```

## Lab - Create a JFrog Artifactory server container with opensource docker image

```
docker run -d --name jfrog --hostname jfrog -p 8081:8081 -p 8082:8082
releases-docker.jfrog.io/jfrog/artifactory-oss:7.77.5
```

```
docker ps
```

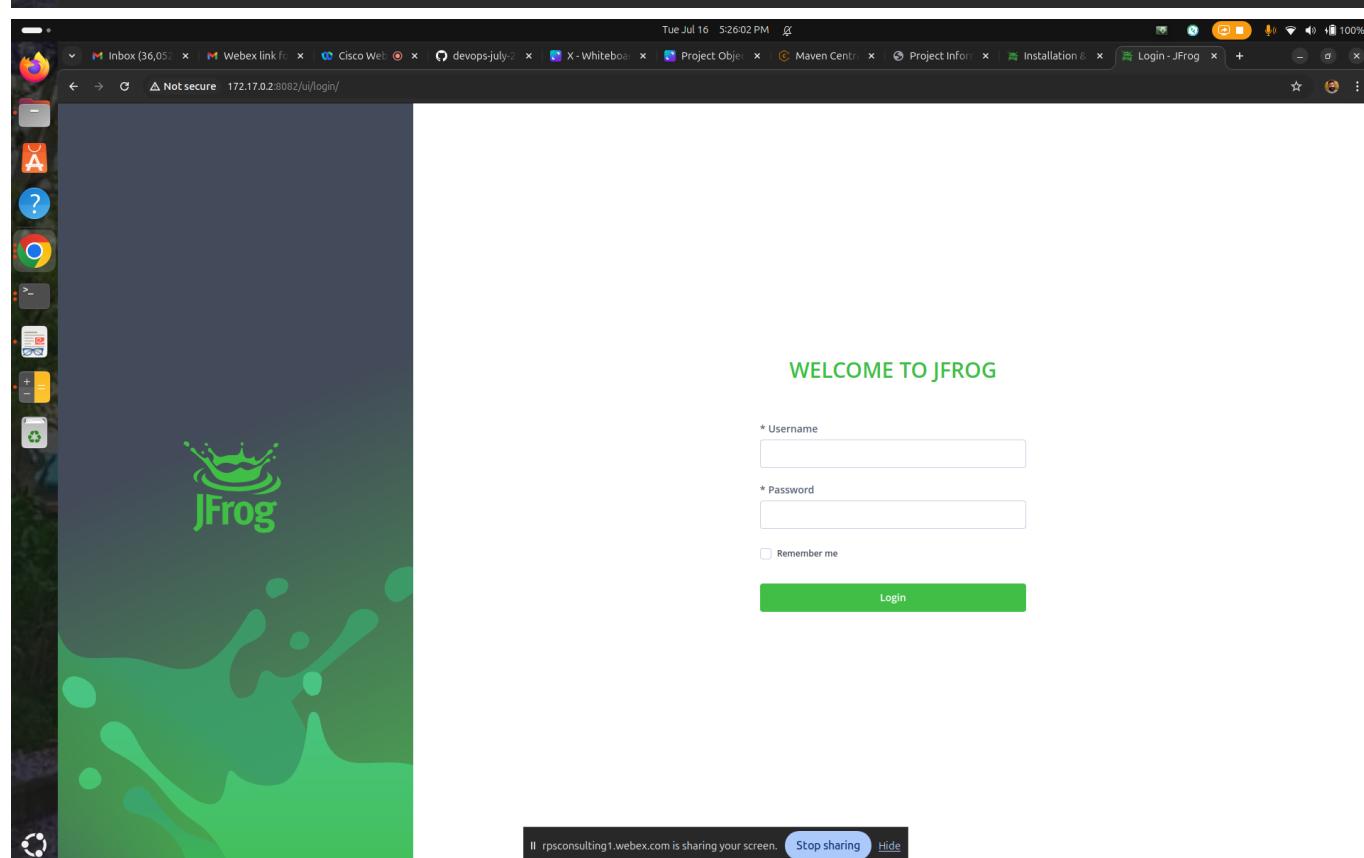
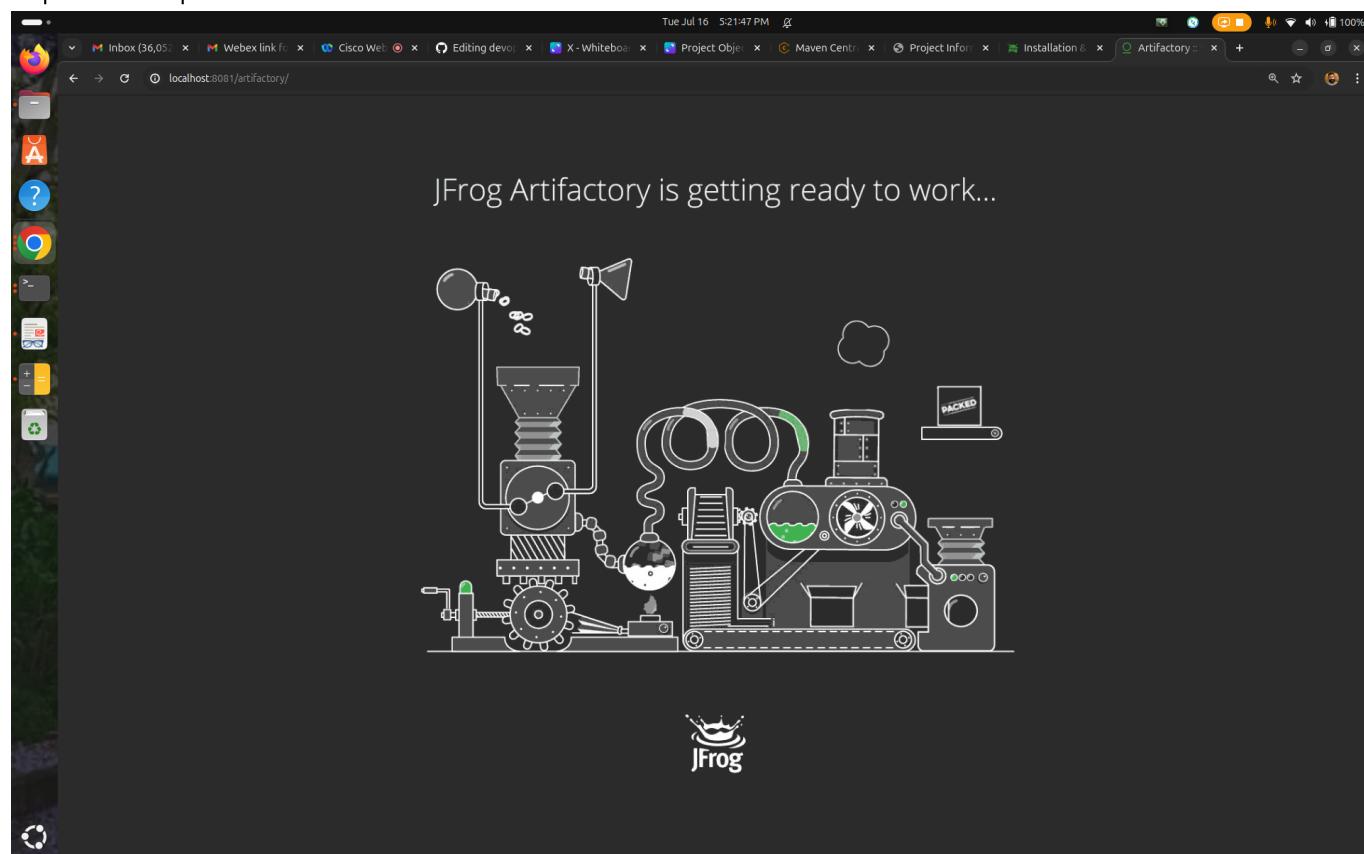
### Expected output

```
Tue Jul 16 5:09:30 PM PT
jegan@tektutor:~/devops-july-2024
jegan@tektutor.org ~ % docker run -d --name jfrog --hostname jfrog -p 8081:8081 -p 8082:8080 releases-docker.jfrog.io/jfrog/artifactory-oss:7.77.5
f3e64e2e304c453c9275857d7b7793bcd58c61f818ee86b80d1eb631c17e8ba3
jegan@tektutor.org ~ % docker images
REPOSITORY          TAG      IMAGE ID      CREATED       SIZE
tektutor/spring-ms  1.0      75521a221b1b  23 hours ago  405MB
hello               2.0      6c0cc2421dee  4 days ago   335MB
tektutor/hello      1.0      6c0cc2421dee  4 days ago   335MB
tektutor/hello      2.0      6c0cc2421dee  4 days ago   335MB
tektutor/nodejs     2.0      6c0cc2421dee  4 days ago   335MB
tektutor/nodejs     1.0      fb137bf412d8  5 days ago   333MB
tektutor/dotnet-weather-ms  1.0      51ff08e3e97d  5 days ago   221MB
tektutor/hello-python-ms  1.0      e49cae150e40  5 days ago   484MB
tektutor/python-hello  1.0      e49cae150e40  5 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   d2c94e258dc5  14 months ago  13.3kB
ubuntu              16.04   b6f507652425  2 years ago   135MB
jegan@tektutor.org ~ % docker ps
CONTAINER ID        IMAGE               COMMAND             CREATED          STATUS            PORTS
MES
f3e64e2e304c        releases-docker.jfrog.io/jfrog/artifactory-oss:7.77.5   "/entrypoint-artifac..."   9 seconds ago
o Up 9 seconds      0.0.0.0:8081->8081/tcp, :::8081->8081/tcp, 0.0.0.0:8082->8080/tcp, :::8082->8080/tcp   jfrog
rog
jegan@tektutor.org ~ %
```

### Accessing the JFrog Artifactory server webconsole

```
docker inspect -f {{.NetworkSettings.IPAddress}} jfrog
http://172.17.0.2:8081
```

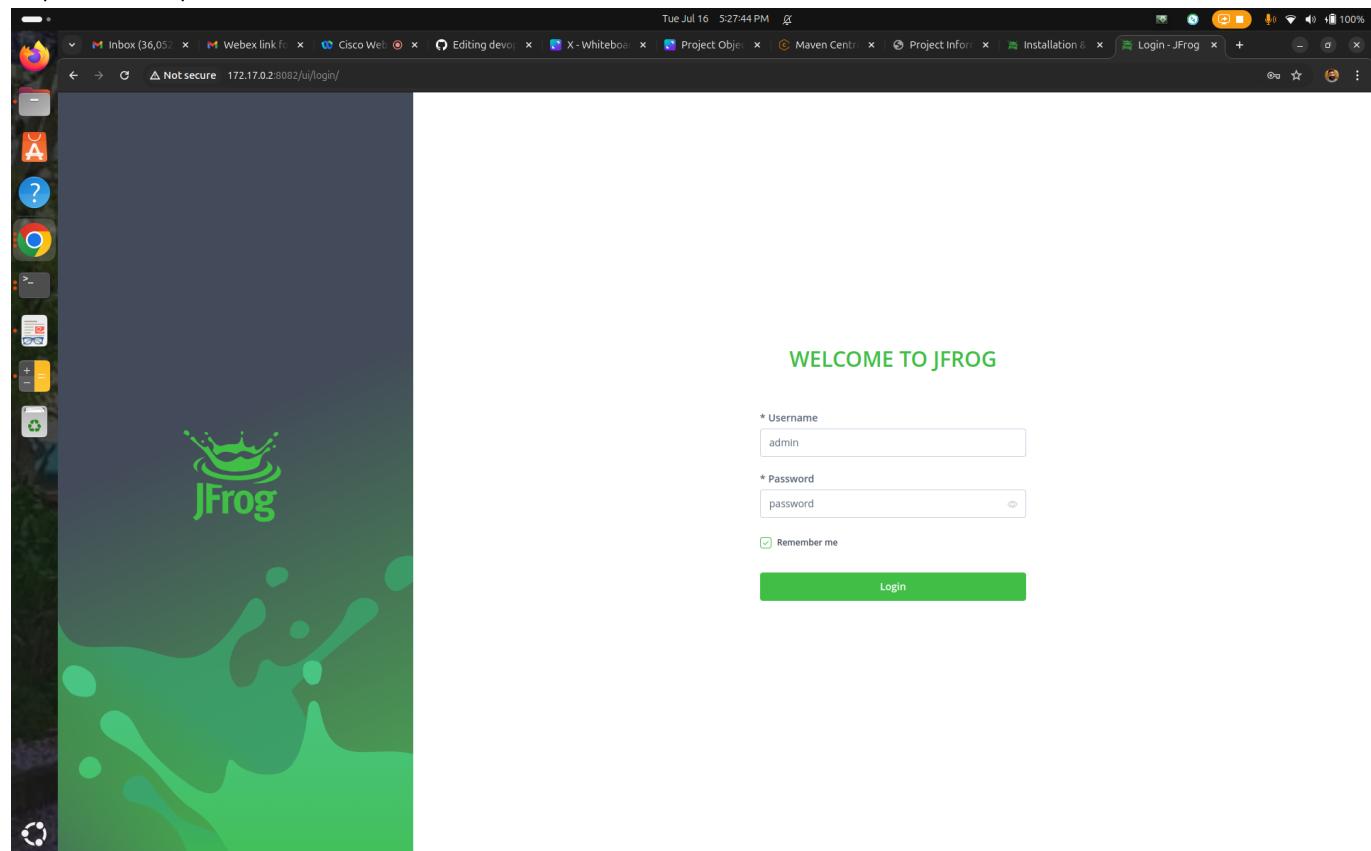
## Expected output



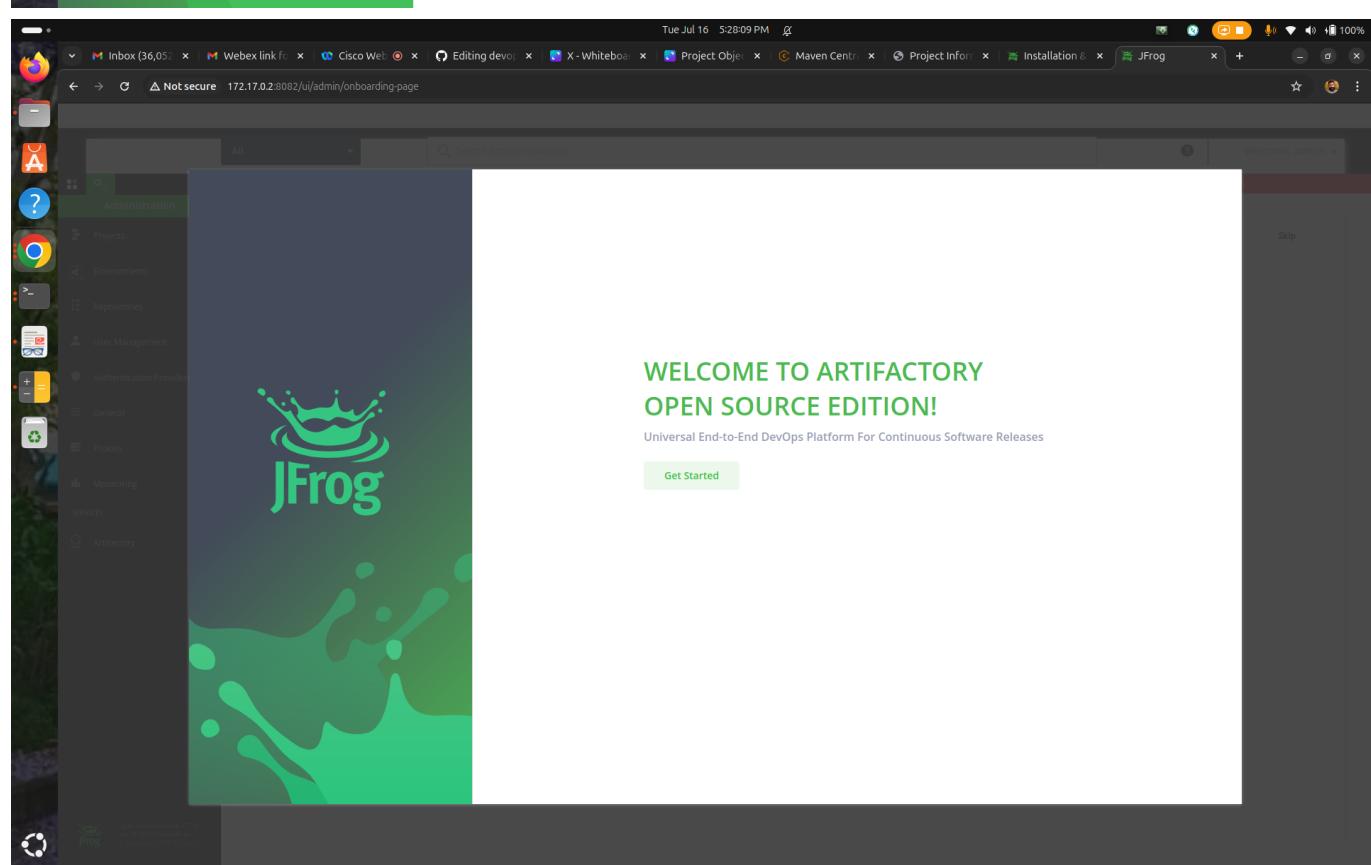
## Default JFrog Container - Login Credentials

```
username - admin  
password - password
```

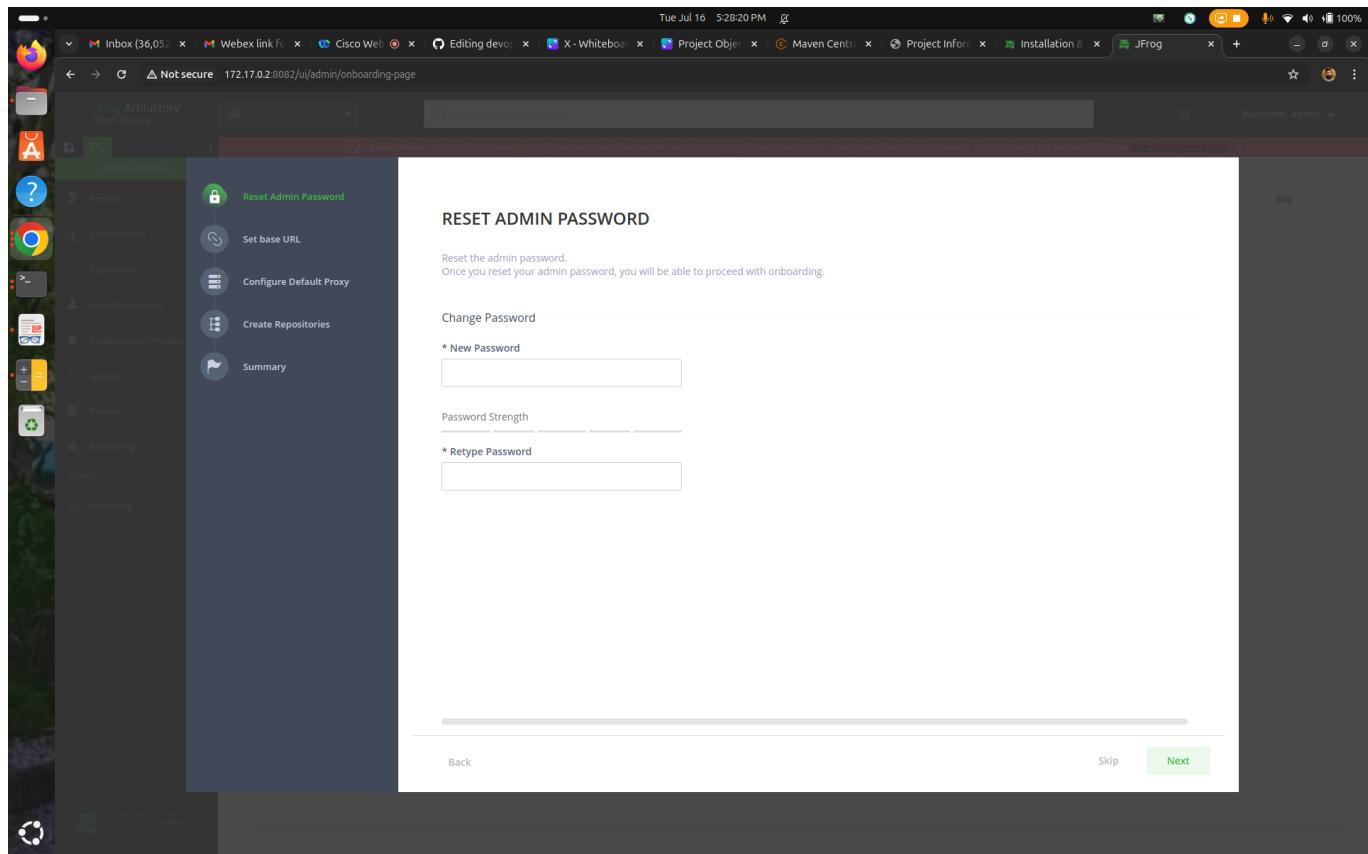
## Expected output



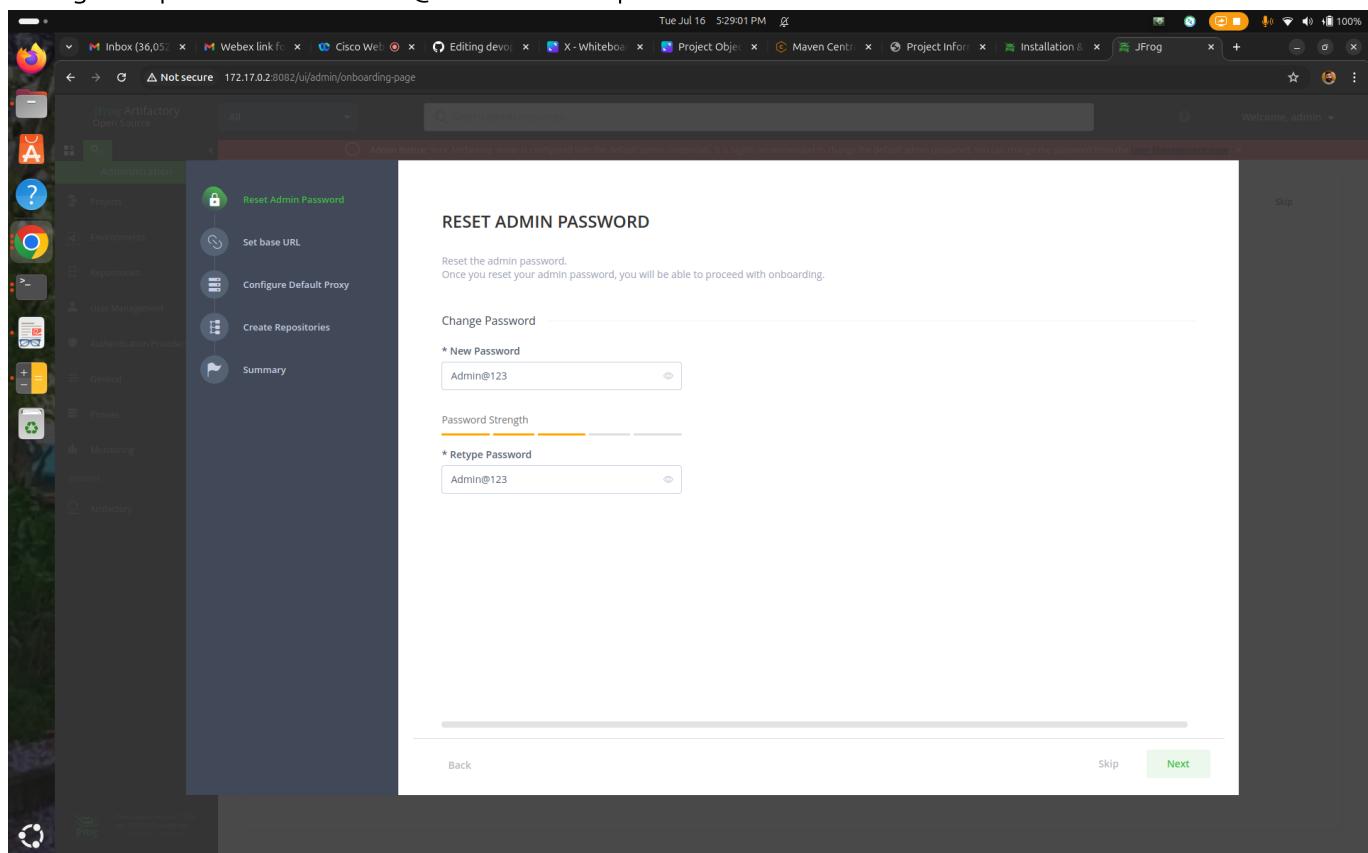
The screenshot shows the JFrog UI login interface. On the left is a large green splash graphic with the JFrog logo. On the right, the text "WELCOME TO JFROG" is displayed in green. Below it is a form with fields for "Username" (containing "admin") and "Password" (containing "password"). There is also a "Remember me" checkbox and a green "Login" button.

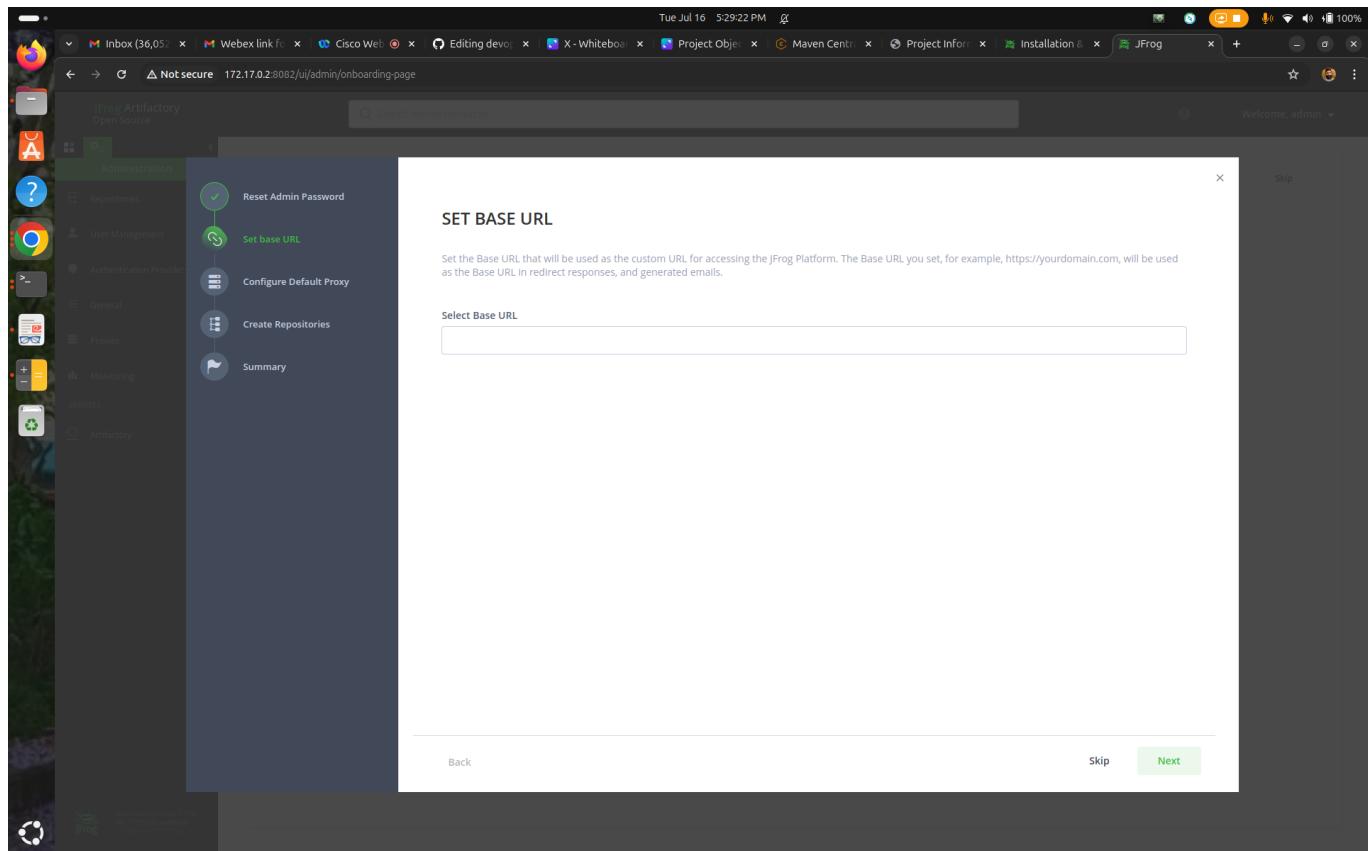
The screenshot shows the Artifactory UI onboarding page. On the left is a large green splash graphic with the JFrog logo. On the right, the text "WELCOME TO ARTIFACTORY OPEN SOURCE EDITION!" is displayed in green, followed by the subtitle "Universal End-to-End DevOps Platform For Continuous Software Releases". A green "Get Started" button is visible. The left sidebar shows navigation options like Administration, Projects, Environments, Repositories, User Management, and Artifactory.



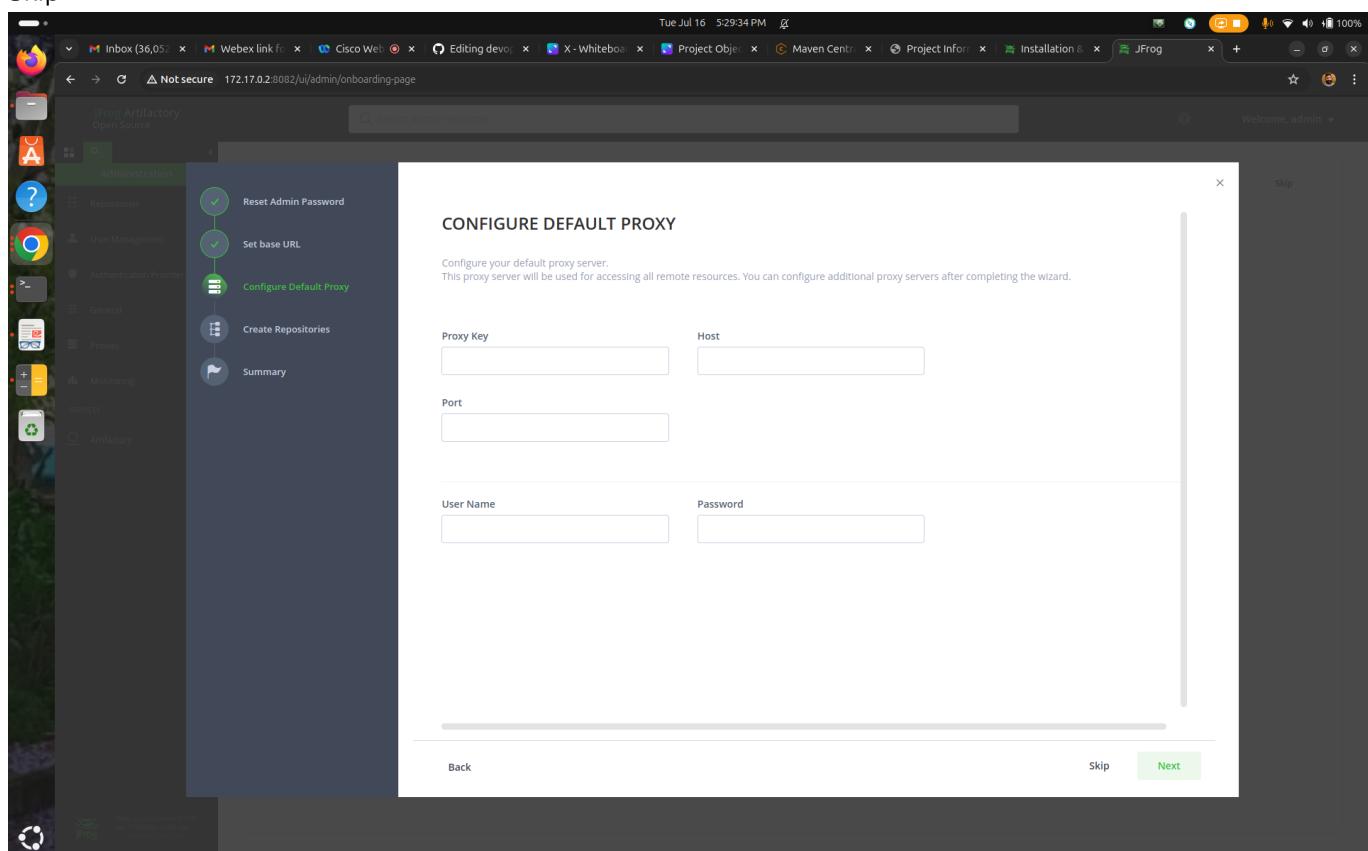
Change the password to "Admin@123" without quotes



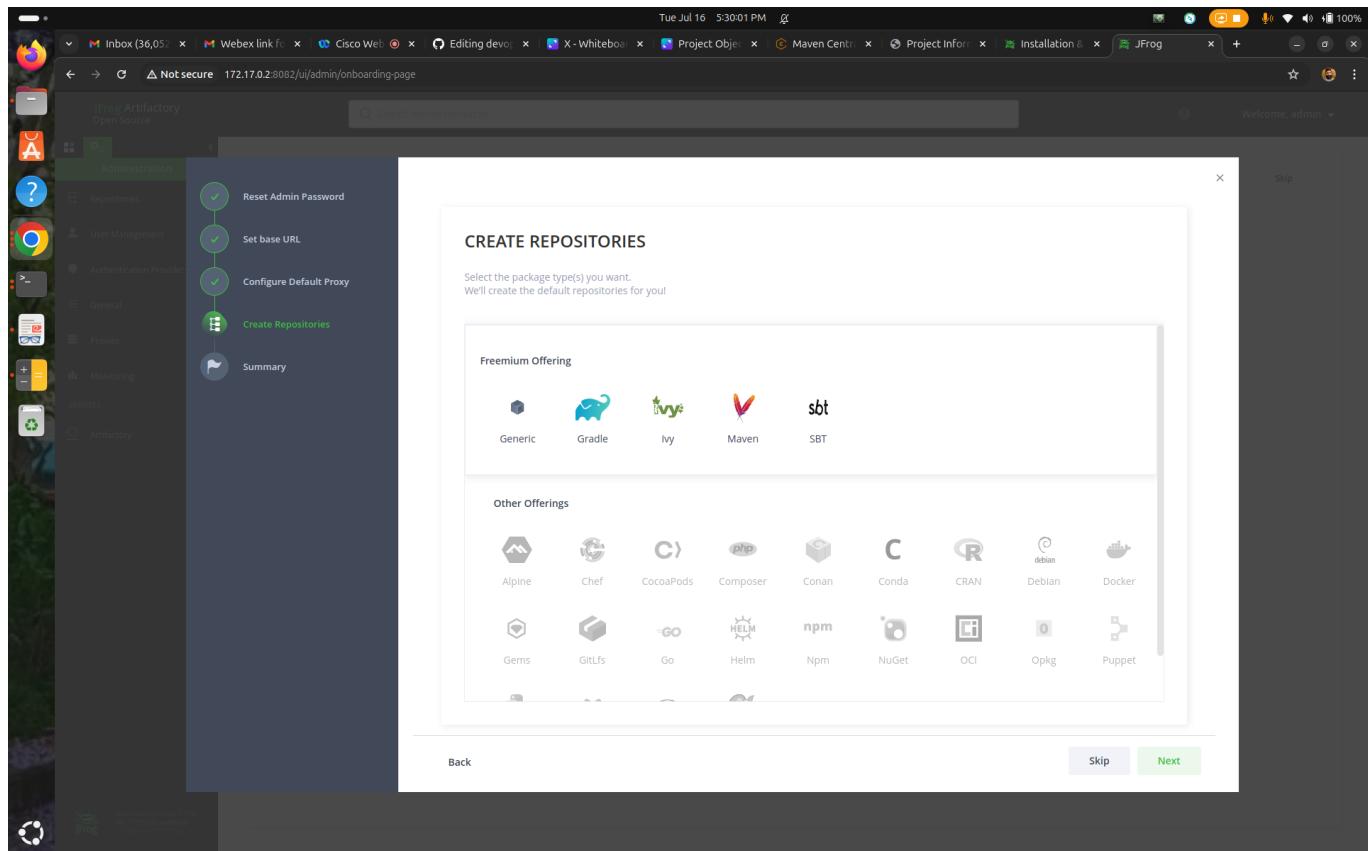
Skip



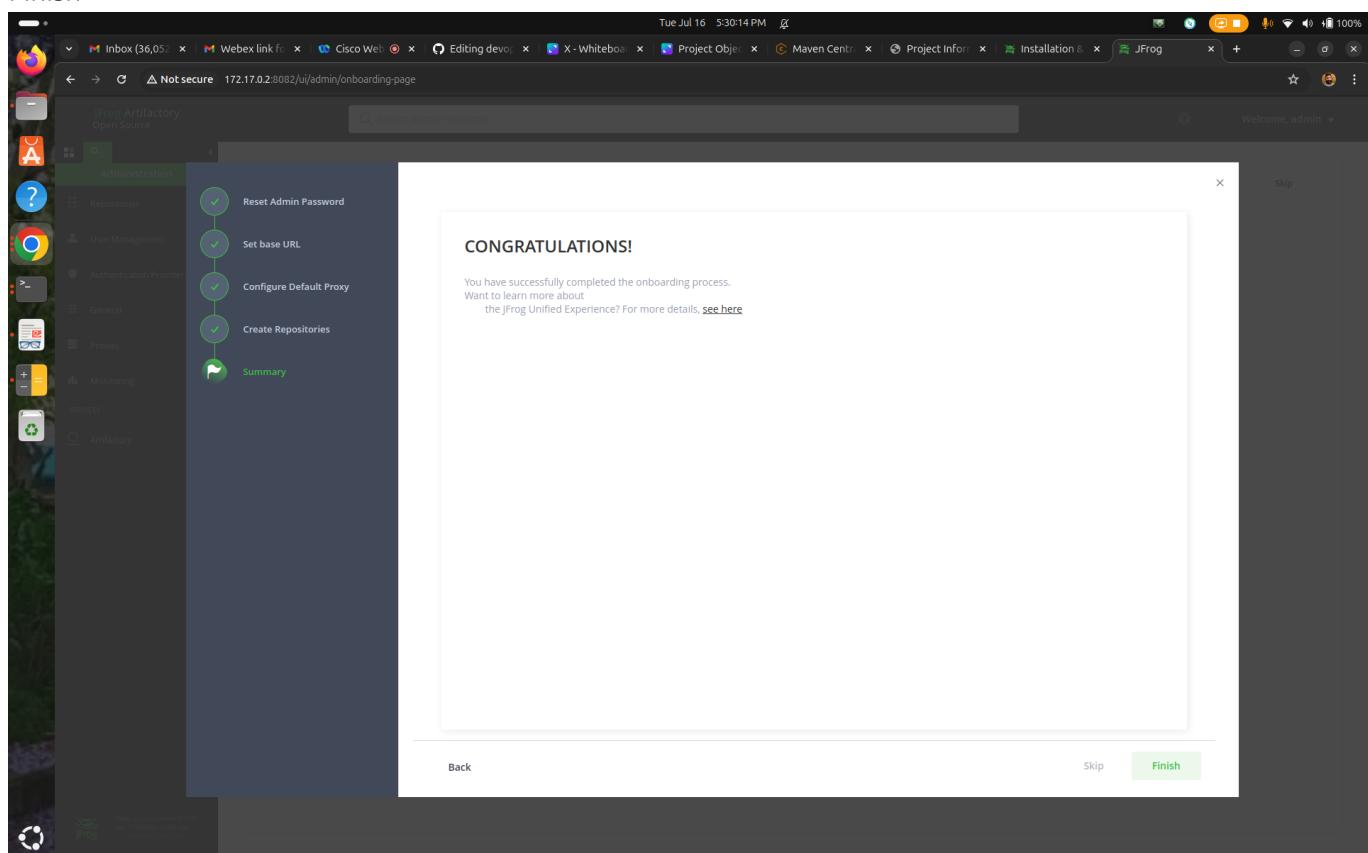
Skip

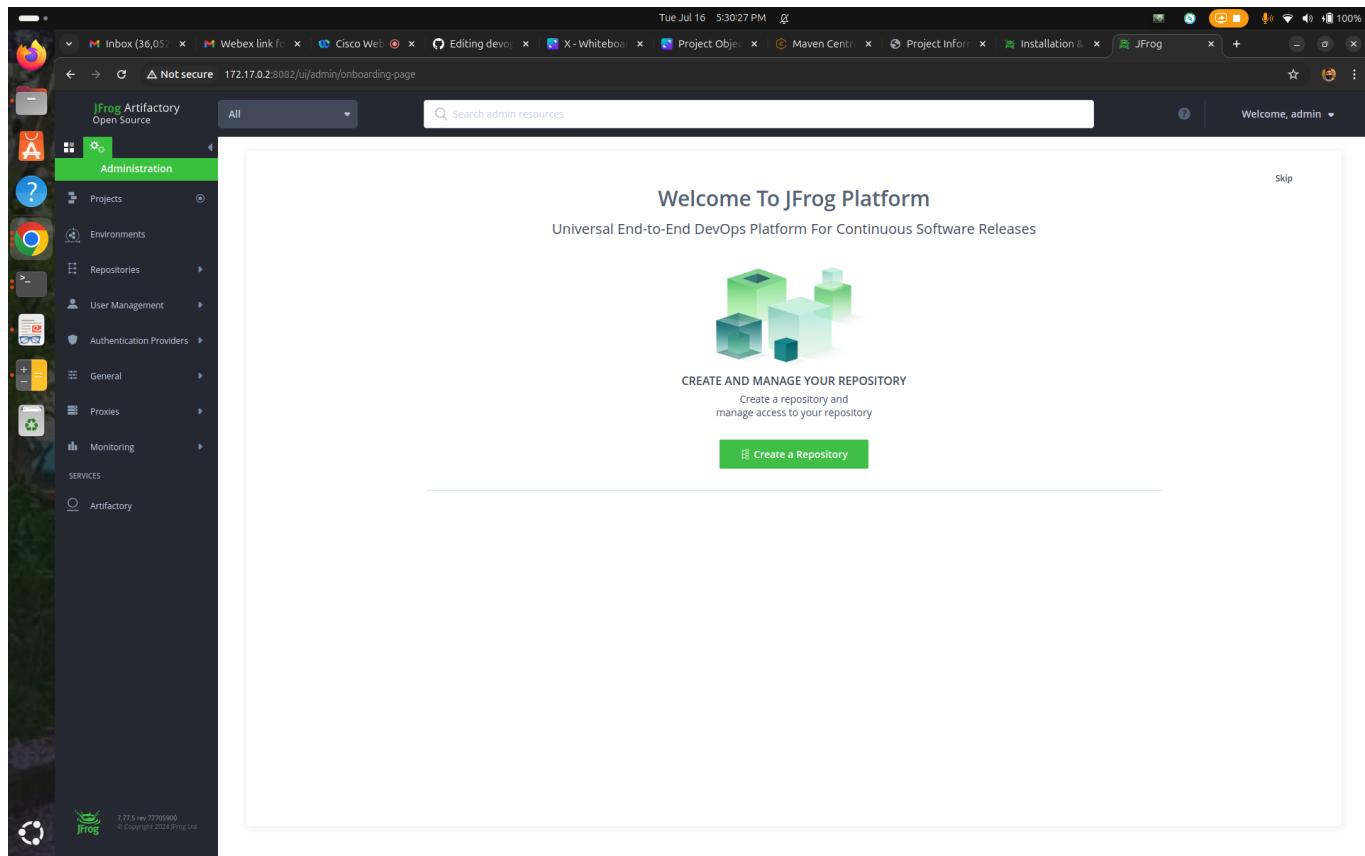


Skip

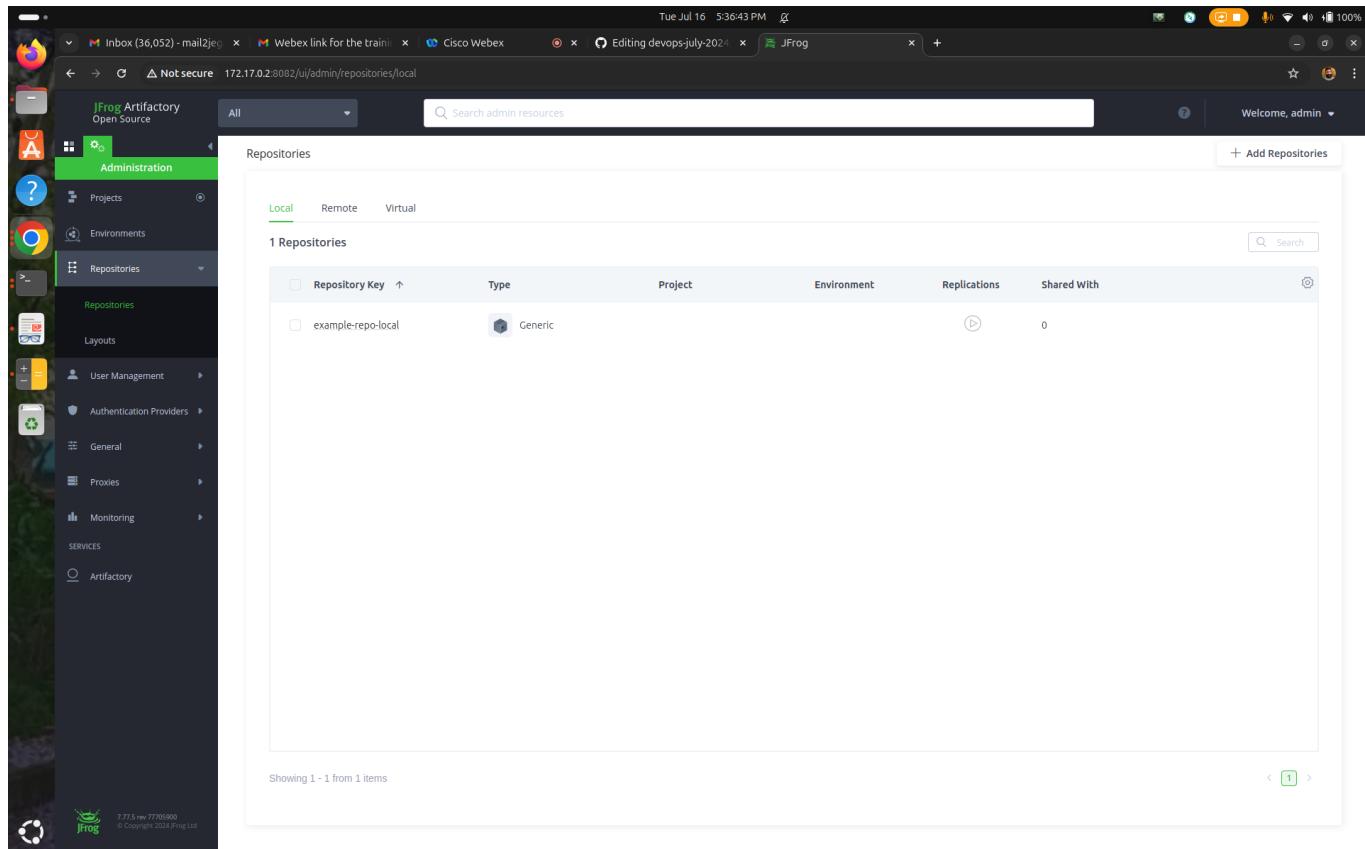


## Finish





Click on "Create Repository"



Click on "Add Repository" in the top right corner and select "Local Repository"

The screenshot shows the JFrog Artifactory administration interface. A modal window titled "Select Package Type" is open, displaying a grid of icons for various package types: Maven, HuggingFace ML, Gradle, Ivy, sbt, Generic, Docker, npm, PyPi, Go, Debian, Rpm, Swift, Terraform, Terraform BE, Alpine, Bower, Cargo, Chef, CocoaPods, Conan, CRAN, Helm, NuGet, Opkg, Composer, Pub, Puppet, Gems, GitLfs, and Vagrant. Below the grid, a note states "This Artifactory instance is not connected to Xray". At the bottom right of the modal are "Close", "Cancel", and "Create Local Repository" buttons.

## Select "Maven"

The screenshot shows the "New Local Repository" configuration page for Maven. The "Basic" tab is selected. The "Repository Key" field contains "tektutor". Under "General Settings", "Repository Layout" is set to "maven-2-default". In the "Maven Settings" section, there are "Include / Exclude Patterns" fields: "Include Patterns" has "New Pattern" and "\*\*/\*"; "Exclude Patterns" has "New Pattern" and "+\*\*/\*". At the bottom right are "Cancel" and "Create Local Repository" buttons.

Type "tektutor" under the Repository Key

The screenshot shows the JFrog Artifactory Admin UI for creating a new local repository. The left sidebar is titled 'Administration' and includes sections for Projects, Environments, Repositories, Layouts, User Management, Authentication Providers, General, Proxies, Monitoring, and Artifactory. The 'Repositories' section is currently selected. The main area is titled 'New Local Repository' and has three tabs: 'Basic' (selected), 'Advanced', and 'Replications'. The 'Basic' tab contains fields for 'Repository Key' (set to 'tekututor'), 'Environments' (set to 'Select Environment'), and 'Include / Exclude Patterns' (with 'New Pattern' and '\*\*/\*' listed). The 'Advanced' tab is partially visible. At the bottom right are 'Cancel' and 'Create Local Repository' buttons.

Click on "Create Local Repository"

The screenshot shows the JFrog Artifactory Admin UI. On the left, there's a sidebar with various icons and sections like 'Administration', 'Projects', 'Environments', 'Repositories', 'User Management', etc. The main area is titled 'Repositories' and shows a table with two entries:

Repository Key	Type	Project	Environment	Replications	Shared With
example-repo-local	Generic			0	
tekutor	Maven			0	

A modal dialog is open in the center, displaying the message: "All repositories were created successfully". It also includes the text: "Your next step is to add users who can access the repository". Below this is a decorative graphic of green 3D cubes. At the bottom of the modal is a green button labeled "Add Users".

## Close the "Add Users" dialog

This screenshot is identical to the one above, except the "Add Users" modal is no longer visible. The table in the main area remains the same, showing the two repositories: 'example-repo-local' (Generic type) and 'tekutor' (Maven type).

On the top left corner, switch to "Application" tab

The screenshot shows the JFrog Artifactory application interface. On the left is a sidebar with various icons and sections: Dashboard, Artifactory (selected), Pipelines, and Integrations. The main area is titled 'Edit tektutor'. It has tabs for 'Basic', 'Advanced', and 'Replications', with 'Basic' selected. Under 'Basic', there's a 'Maven' logo and a 'Repository Key' input field containing 'tektutor'. To the right of this is an 'Environments' dropdown set to 'Select Environment'. Below these are 'General Settings' (Repository Layout: maven-2-default, Public Description, Internal Description) and 'Include / Exclude Patterns' (Include Patterns: New Pattern, \*\*/\*, Exclude Patterns: New Pattern). At the bottom right are 'Cancel' and 'Save' buttons.

## Expand Artifactory

This screenshot is identical to the one above, but the 'Artifactory' section in the sidebar is expanded, revealing sub-options: Packages, Builds, Artifacts (which is selected), Release Lifecycle, Xray, Distribution, Pipelines, and Integrations. The rest of the interface remains the same, showing the 'Edit tektutor' configuration screen.

Click on "Artifacts" and select "tektutor"

The screenshot shows the JFrog Artifactory web interface. The left sidebar has 'Artifactory' selected under 'Application'. The main area shows a tree view with 'tektutor' selected. The details pane for 'tektutor' is open, showing the following information:

Info
Name: tektutor
Package Type: Maven
Repository Path: tektutor/
URL to file: http://172.17.0.2:8082/artifactory/tektutor/
Repository Layout: maven-2-default
Description:
Artifact Count / Size: Show
Created: 16-07-24 12:09:42 +00:00

Below the info section are tabs for 'Effective Permissions', 'Properties', and 'Followers'. There are also sections for 'Package Information', 'Dependency Declaration', 'Virtual Repository Associations', and 'Included Repositories'.

Copy the url

The screenshot shows the same JFrog Artifactory interface as the previous one. The 'tektutor' repository is selected. The URL 'http://172.17.0.2:8082/artifactory/tektutor/' is visible at the bottom of the page, indicating it has been copied to the clipboard.

<http://172.17.0.2:8082/artifactory/tektutor/>

Open the JFrog Artifactory url in a separte web browser tab, you can observe it is empty as of now

The screenshot shows a Linux desktop environment with a terminal window open. The terminal window has tabs for 'Inbox (36,052) - mail2jeg', 'Webex link for the traini...', 'Cisco Webex', 'devops-july-2024/Day2/...', 'JFrog', and 'JFrog'. The current command being run is 'ls' in the 'JFrog' directory. The output shows the contents of the 'tektutor' folder.

```
jegan@tektutor:~/devops-july-2024$ ls
JFrog  pom.xml  tektutor
jegan@tektutor:~/devops-july-2024$ cd tektutor/
jegan@tektutor:~/devops-july-2024/tektutor$ ls
jegan@tektutor:~/devops-july-2024/tektutor$
```

Pom file must be updated as shown below

```
<groupId>org.tektutor</groupId>
<artifactId>hello</artifactId>
<version>1.0.0</version>

<properties>
    <maven.compiler.source>1.8</maven.compiler.source>
    <maven.compiler.target>1.8</maven.compiler.target>
</properties>

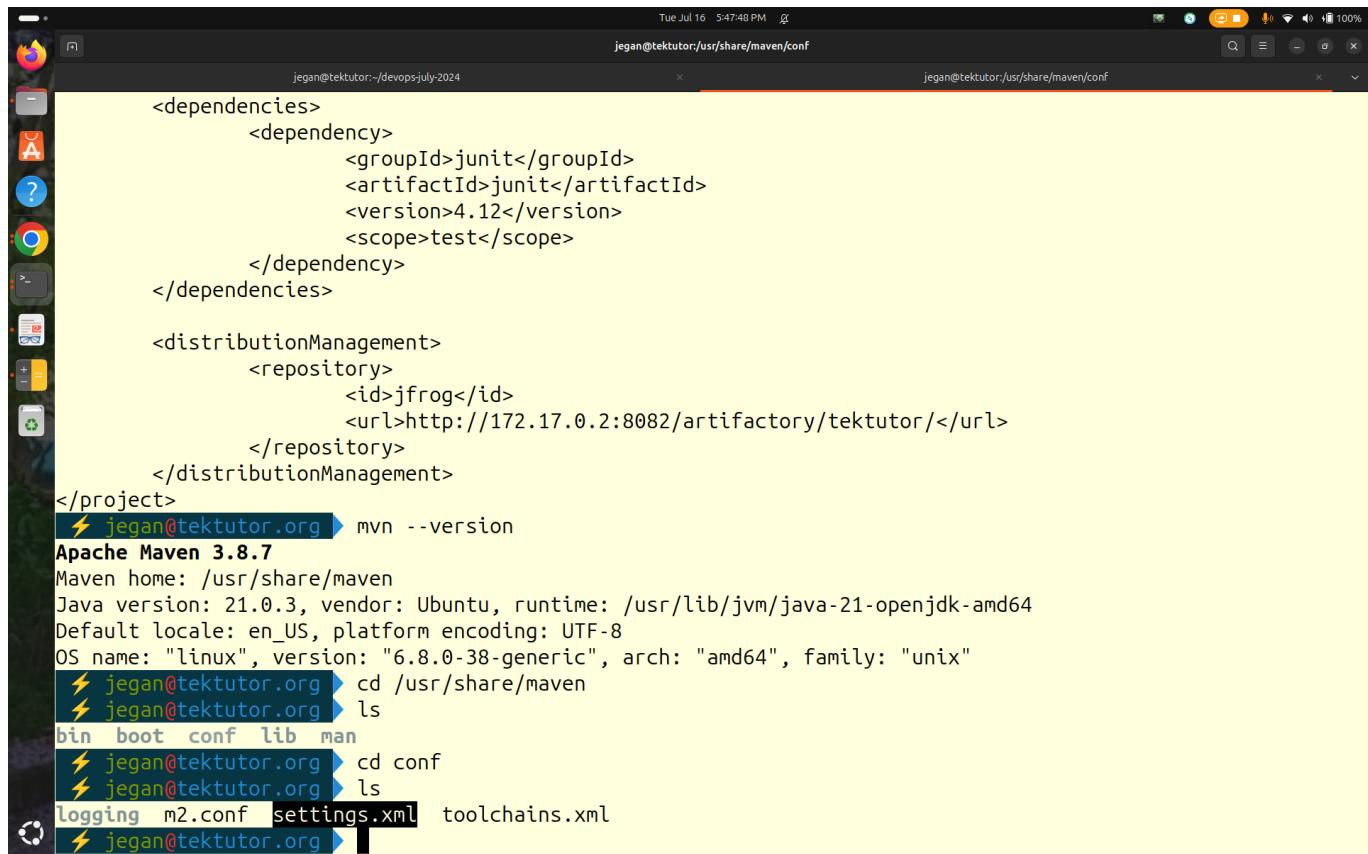
<dependencies>
    <dependency>
        <groupId>junit</groupId>
        <artifactId>junit</artifactId>
        <version>4.12</version>
        <scope>test</scope>
    </dependency>
</dependencies>

<distributionManagement>
    <repository>
        <id>jfrog</id>
        <url>http://172.17.0.2:8082/artifactory/tektutor/</url>
    </repository>
</distributionManagement>
</project>
```

At the bottom of the terminal window, the status bar shows:

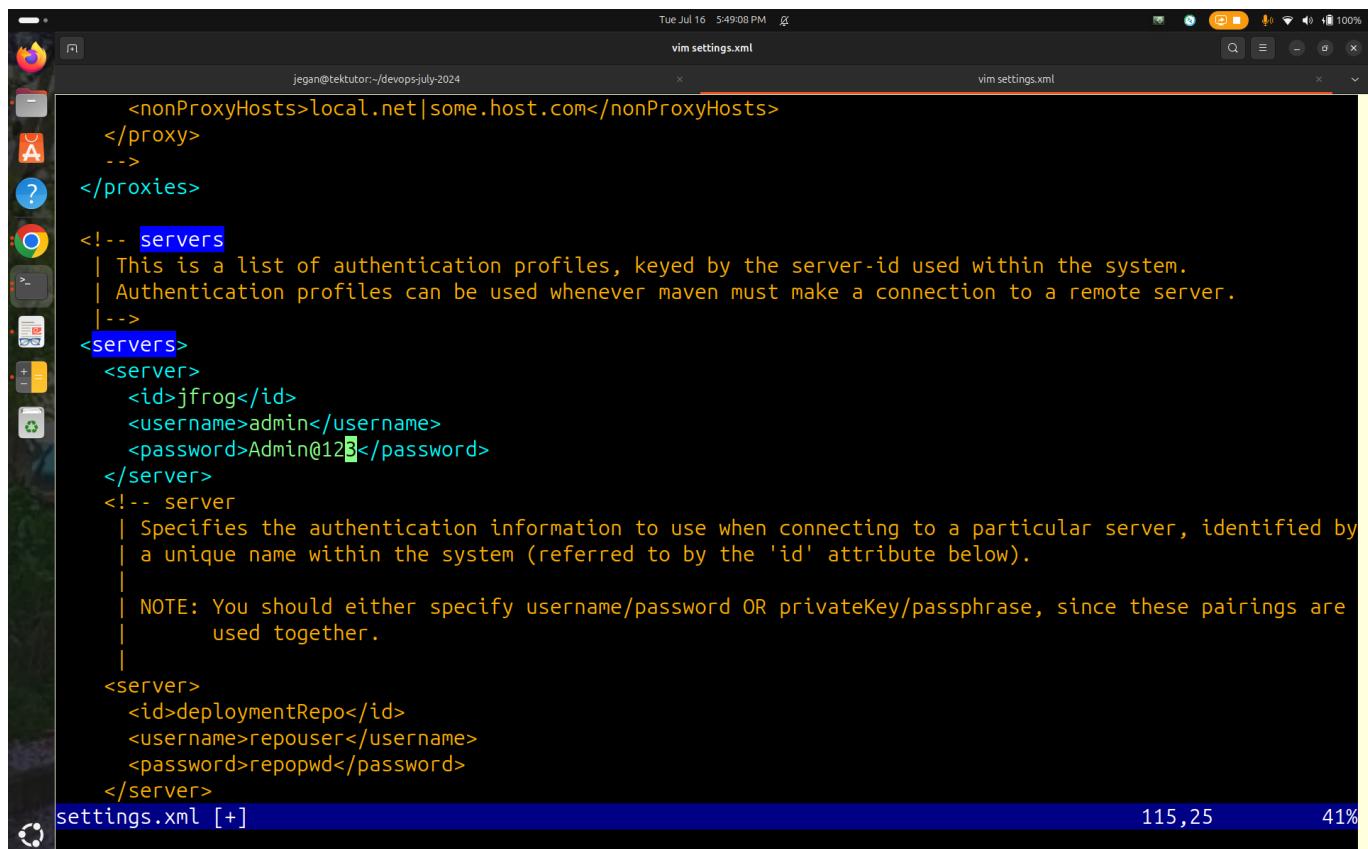
pom.xml 26,15-29 Bot  
"pom.xml" 28L, 624B written

We need to add the JFrog Server login credentials in settings.xml file under /usr/share/maven/conf/settings.xml



```
<dependencies>
    <dependency>
        <groupId>junit</groupId>
        <artifactId>junit</artifactId>
        <version>4.12</version>
        <scope>test</scope>
    </dependency>
</dependencies>

<distributionManagement>
    <repository>
        <id>jfrog</id>
        <url>http://172.17.0.2:8082/artifactory/tektutor/</url>
    </repository>
</distributionManagement>
</project>
⚡ jegan@tektutor.org ➤ mvn --version
Apache Maven 3.8.7
Maven home: /usr/share/maven
Java version: 21.0.3, vendor: Ubuntu, runtime: /usr/lib/jvm/java-21-openjdk-amd64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "6.8.0-38-generic", arch: "amd64", family: "unix"
⚡ jegan@tektutor.org ➤ cd /usr/share/maven
⚡ jegan@tektutor.org ➤ ls
bin boot conf lib man
⚡ jegan@tektutor.org ➤ cd conf
⚡ jegan@tektutor.org ➤ ls
Logging m2.conf settings.xml toolchains.xml
⚡ jegan@tektutor.org ➤
```



```
<nonProxyHosts>local.net|some.host.com</nonProxyHosts>
</proxy>
-->
</proxies>

<!-- servers
| This is a list of authentication profiles, keyed by the server-id used within the system.
| Authentication profiles can be used whenever Maven must make a connection to a remote server.
|-->
<servers>
    <server>
        <id>jfrog</id>
        <username>admin</username>
        <password>Admin@123</password>
    </server>
    <!-- server
    | Specifies the authentication information to use when connecting to a particular server, identified by
    | a unique name within the system (referred to by the 'id' attribute below).
    |
    | NOTE: You should either specify username/password OR privateKey/passphrase, since these pairings are
    | used together.
    |
    <server>
        <id>deploymentRepo</id>
        <username>repouser</username>
        <password>repopwd</password>
    </server>
settings.xml [+] 115,25 41%
```

```

<dependency>
    <groupId>junit</groupId>
    <artifactId>junit</artifactId>
    <version>4.12</version>
    <scope>test</scope>
</dependency>
</dependencies>

<distributionManagement>
    <repository>
        <id>jfrog</id>
        <url>http://172.17.0.2:8082/artifactory/tektutor/</url>
    </repository>
</distributionManagement>
</project>
jegan@tektutor.org ~ mvn --version
Apache Maven 3.8.7
Maven home: /usr/share/maven
Java version: 21.0.3, vendor: Ubuntu, runtime: /usr/lib/jvm/java-21-openjdk-amd64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "6.8.0-38-generic", arch: "amd64", family: "unix"
jegan@tektutor.org ~ cd /usr/share/maven
jegan@tektutor.org ~ ls
bin boot conf lib man
jegan@tektutor.org ~ cd conf
jegan@tektutor.org ~ ls
Logging m2.conf settings.xml toolchains.xml
jegan@tektutor.org ~ vim settings.xml
jegan@tektutor.org ~ sudo vim settings.xml

```

```

Tue Jul 16 5:50:53 PM jct
jegan@tektutor:~/devops-july-2024
sudo vim settings.xml
sudosu vim settings.xml

```

```

<!-- servers
| This is a list of authentication profiles, keyed by the server-id used within the system.
| Authentication profiles can be used whenever maven must make a connection to a remote server.
-->
<servers>
    <server>
        <id>jfrog</id>
        <username>admin</username>
        <password>Admin@123</password>
    </server>
    <!-- server
    | Specifies the authentication information to use when connecting to a particular server, identified by
    | a unique name within the system (referred to by the 'id' attribute below).
    |
    | NOTE: You should either specify username/password OR privateKey/passphrase, since these pairings are
    | used together.
    |
    <server>
        <id>deploymentRepo</id>
        <username>repouser</username>
        <password>repopwd</password>
    </server>
    -->

    <!-- Another sample, using keys to authenticate.
    <server>
        <id>siteServer</id>

```

settings.xml  
"settings.xml" 269L, 10596B written

Let's deploy the hello jar file into JFrog Artifactory Maven Private Repository

```

cd ~/devops-july-2024
git pull
cd Day2/Hello
mvn deploy

```

## Expected output

```
Tue Jul 16 5:53:12 PM jg
jegan@tektutor:~/devops-july-2024/Day2>Hello
jegan@tektutor:~/devops-july-2024/Day2>Hello

jegan@tektutor.org ~]# pwd
/usr/share/maven/conf
jegan@tektutor.org ~]# cd ~/devops-july-2024
jegan@tektutor.org ~]# pwd
/home/jegan/devops-july-2024
jegan@tektutor.org ~]# cd Day2/Hello
jegan@tektutor.org ~]# mvn deploy
[INFO] Scanning for projects...
[INFO]
[INFO] -----< org.tektutor:hello >-----
[INFO] Building hello 1.0.0
[INFO] -----[ jar ]-----
[INFO]
[INFO] --- maven-resources-plugin:2.6:resources (default-resources) @ hello ---
[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/Day2>Hello/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:compile (default-compile) @ hello ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
[INFO] --- maven-resources-plugin:2.6:testResources (default-testResources) @ hello ---
[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/Day2>Hello/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.1:testCompile (default-testCompile) @ hello ---
[INFO] Nothing to compile - all classes are up to date
[INFO]
```

```
Tue Jul 16 5:54:08 PM jg
jegan@tektutor:~/devops-july-2024/Day2>Hello
jegan@tektutor:~/devops-july-2024/Day2>Hello

[INFO] Surefire report directory: /home/jegan/devops-july-2024/Day2>Hello/target/surefire-reports
-----
T E S T S
-----
Running org.tektutor.HelloTest
Tests run: 1, Failures: 0, Errors: 0, Skipped: 0, Time elapsed: 0.018 sec

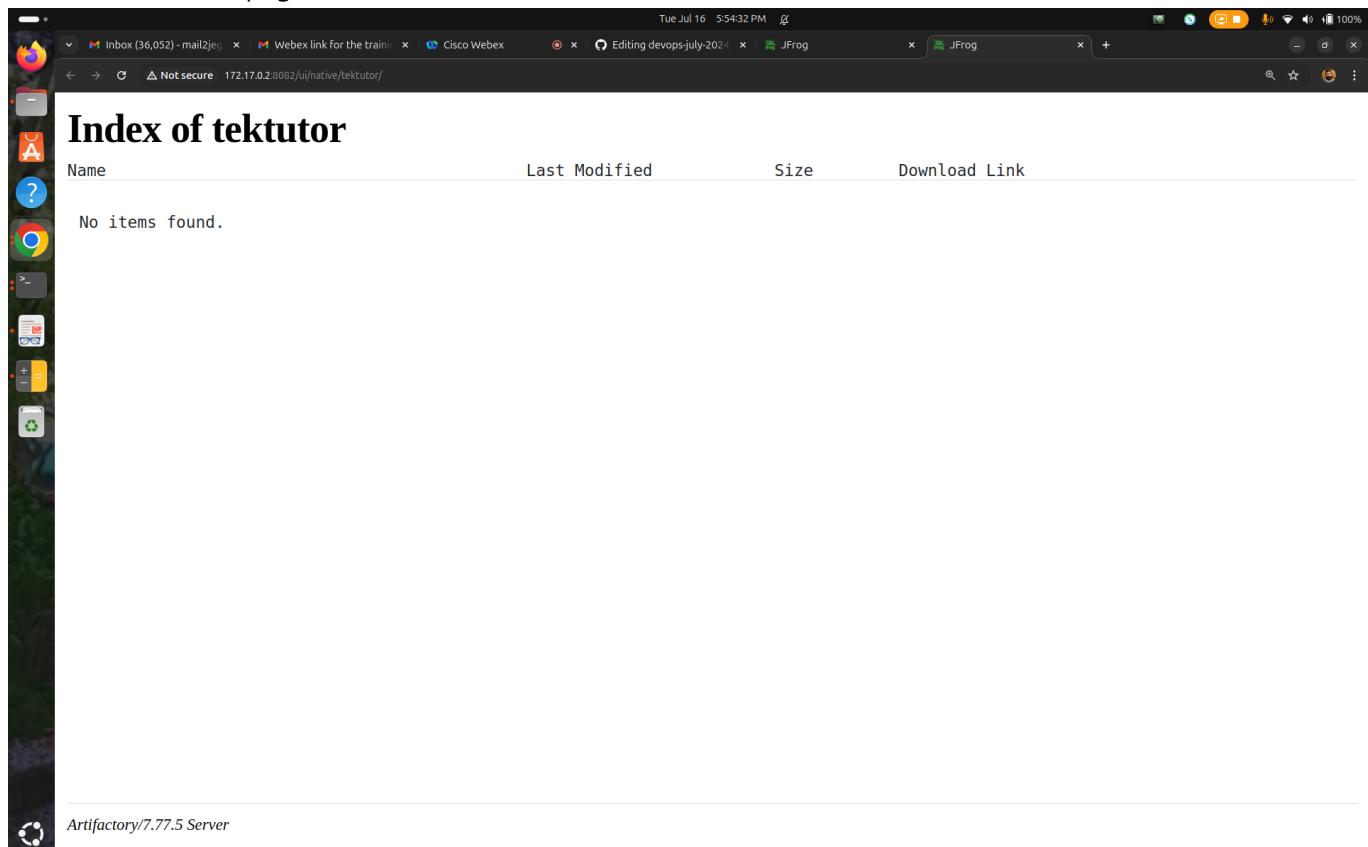
Results :

Tests run: 1, Failures: 0, Errors: 0, Skipped: 0

[INFO]
[INFO] --- maven-jar-plugin:2.4:jar (default-jar) @ hello ---
[INFO] Building jar: /home/jegan/devops-july-2024/Day2>Hello/target/hello-1.0.0.jar
[INFO]
[INFO] --- maven-install-plugin:2.4:install (default-install) @ hello ---
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.0.5/plexus-utils-3.0.5.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.0.5/plexus-utils-3.0.5.pom (2.5 kB at 10 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-3.1/plexus-3.1.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-3.1/plexus-3.1.pom (19 kB at 532 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-digest/1.0/plexus-digest-1.0.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-digest/1.0/plexus-digest-1.0.pom (1.1 kB at 37 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-components/1.1.7/plexus-components-1.1.7.pom
100% 1 1 7 pom
```

```
Tue Jul 16 5:54:22 PM ⓘ  
jegan@tektutor:~/devops-july-2024/Day2>Hello  
jegan@tektutor:~/devops-july-2024/Day2>Hello  
  
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/1.5.6/plexus-utils-1.5.6.pom  
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/1.5.6/plexus-utils-1.5.6.pom (5.3 kB at 161 kB/s)  
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus/1.0.12/plexus-1.0.12.pom  
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus/1.0.12/plexus-1.0.12.pom (9.8 kB at 251 kB/s)  
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/1.5.6/plexus-utils-1.5.6.jar  
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/1.5.6/plexus-utils-1.5.6.jar (251 kB at 6.4 MB/s)  
Uploading to jfrog: http://172.17.0.2:8082/artifactory/tektutor/org/tektutor/hello/1.0.0/hello-1.0.0.jar  
Uploaded to jfrog: http://172.17.0.2:8082/artifactory/tektutor/org/tektutor/hello/1.0.0/hello-1.0.0.jar (2.2 kB at 21 kB/s)  
Uploading to jfrog: http://172.17.0.2:8082/artifactory/tektutor/org/tektutor/hello/1.0.0/hello-1.0.0.pom  
Uploaded to jfrog: http://172.17.0.2:8082/artifactory/tektutor/org/tektutor/hello/1.0.0/hello-1.0.0.pom (624 B at 21 kB/s)  
Downloading from jfrog: http://172.17.0.2:8082/artifactory/tektutor/org/tektutor/hello/maven-metadata.xml  
Uploading to jfrog: http://172.17.0.2:8082/artifactory/tektutor/org/tektutor/hello/maven-metadata.xml  
Uploaded to jfrog: http://172.17.0.2:8082/artifactory/tektutor/org/tektutor/hello/maven-metadata.xml (297 B at 15 kB/s)  
[INFO] -----  
[INFO] BUILD SUCCESS  
[INFO] -----  
[INFO] Total time: 1.370 s  
[INFO] Finished at: 2024-07-16T17:53:09+05:30  
[INFO] -----  
⚡ jegan@tektutor.org ➜
```

Refresh the below page



The screenshot shows a Firefox browser window with multiple tabs open. The active tab displays the JFrog Artifactory interface, specifically the 'Index of tektutor' page. The page lists a single item: 'No items found.' Below the table, a footer indicates 'Artifactory/7.77.5 Server'.

Name	Last Modified	Size	Download Link
No items found.			

Artifactory/7.77.5 Server

The screenshot shows a Linux desktop environment with a dark theme. A dock on the left contains icons for various applications including a terminal, file manager, and system tools. Two browser windows are open in the top panel:

- Index of tektutor**: Shows a single item named [org/](#) last modified on 16-07-24 at 17:53:09 +0530.
- Index of tektutor/org/tektutor/hello/1.0.0**: Shows two items: [hello-1.0.0.jar](#) (2.1 KB) and [hello-1.0.0.pom](#) (624.0 B), both last modified on 16-07-24 at 17:53:09 +0530.

Below the browser windows, a file manager window titled "Artifactory/7.77.5 Server" is visible, showing a single folder named "org".