DevOps Exercise #1

1) Deploy a web application to a cloud provider of your choice. This web application can be something you have written yourself or an open-source project.

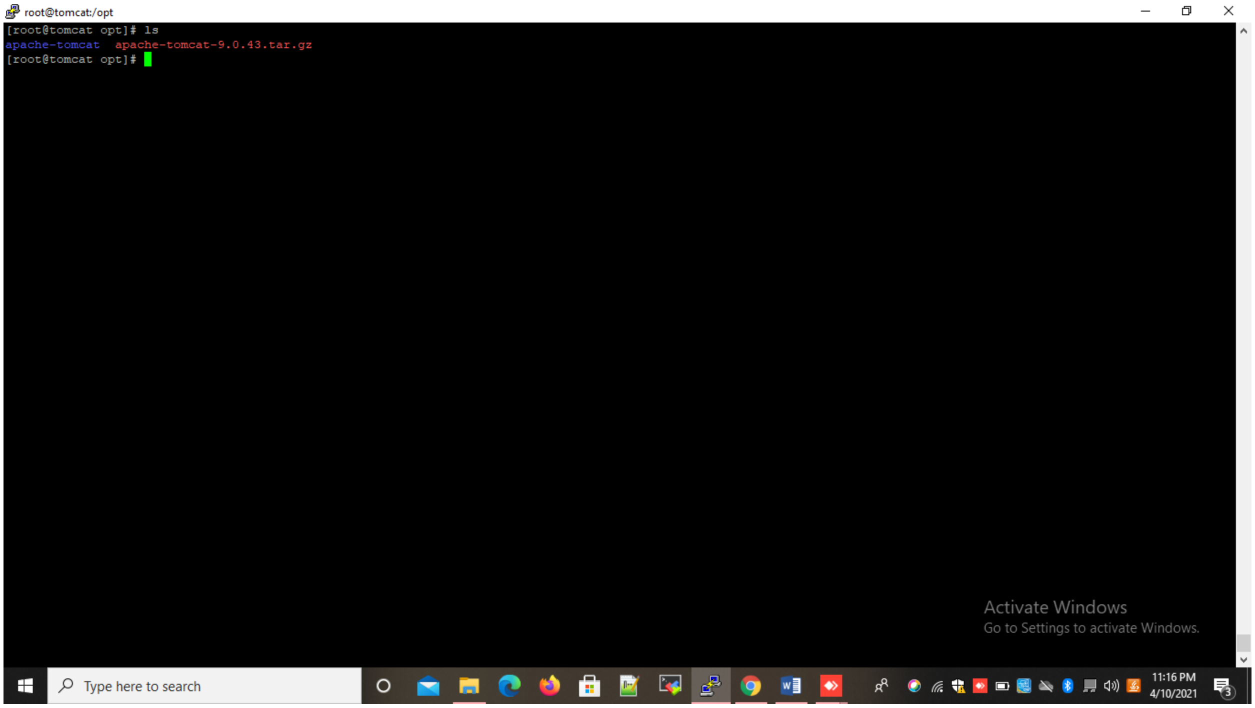
Step1:

First step is I have taken one Ec2 instance (centos) in aws cloud. In that instance I have installed Tomcat server, Git and maven.

1) Tomcat is for deployment.

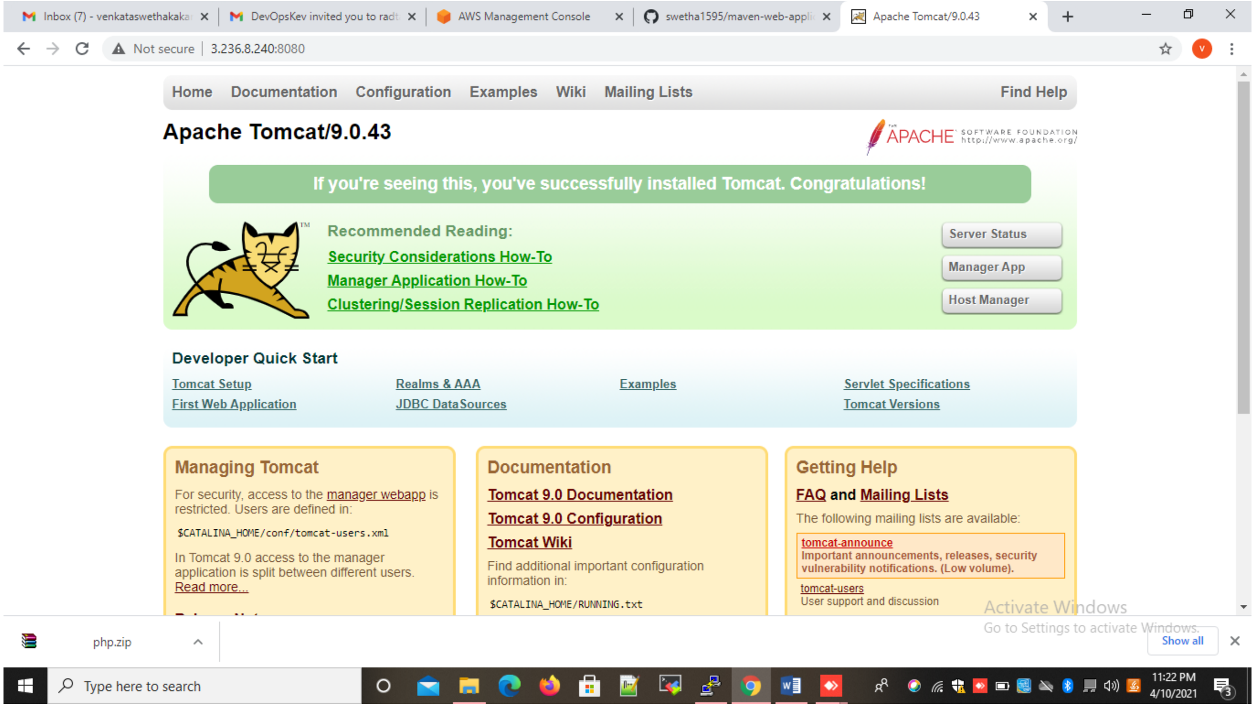
2) Git is for clone the source code from GitHub

3) Maven is for building, packaging, deploying.



```
[root@tomcat opt]# ls
apache-tomcat  apache-tomcat-9.0.43.tar.gz
[root@tomcat opt]#
```

This is my tomcat dashboard in aws ec2 instance



Apache Tomcat/9.0.43

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

Recommended Reading:
Security Considerations How-To
Manager Application How-To
Clustering/Session Replication How-To

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

Managing Tomcat

For security, access to the manager webapp is restricted. Users are defined in:

```
$CATALINA_HOME/conf/tomcat-users.xml
```

In Tomcat 9.0 access to the manager application is split between different users. Read more...

Documentation

Tomcat 9.0 Documentation
Tomcat 9.0 Configuration
Tomcat Wiki

Find additional important configuration information in:

```
$CATALINA_HOME/RUNNING.txt
```

Getting Help

FAQ and Mailing Lists

The following mailing lists are available:

tomcat-announce
Important announcements, releases, security vulnerability notifications. (Low volume).

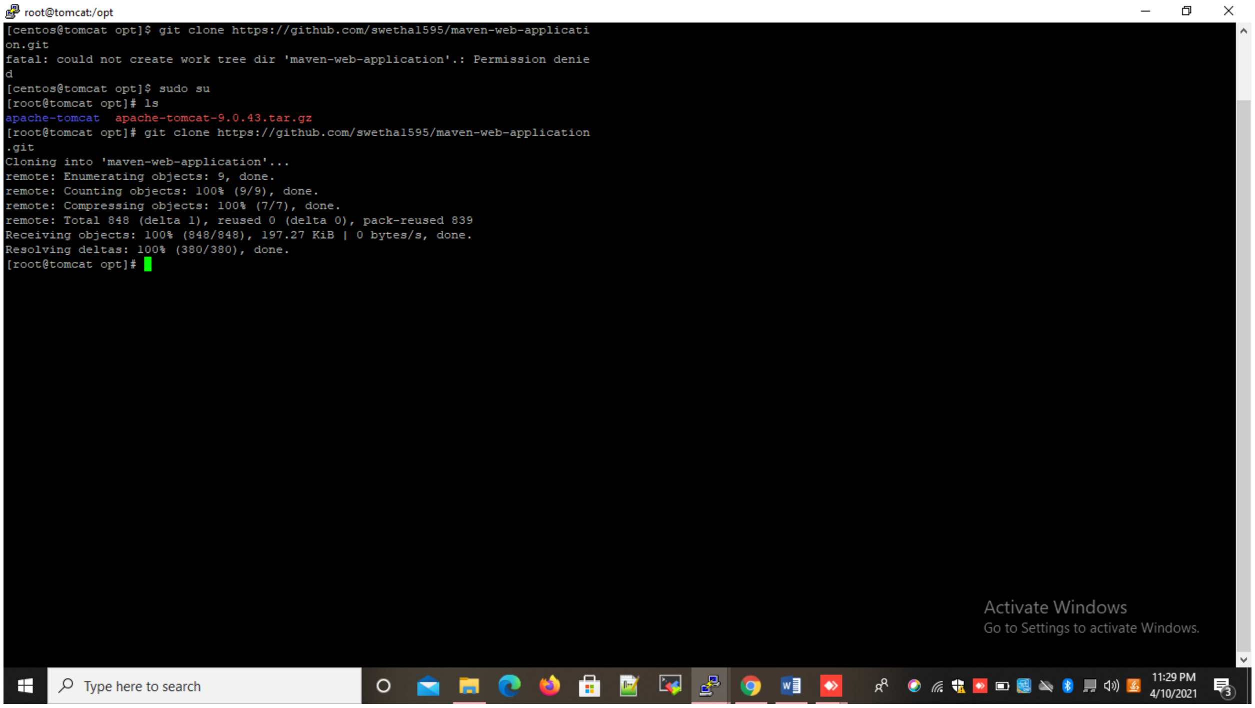
tomcat-users
User support and discussion

Activate Windows
Go to Settings to activate Windows.

Step2:

Now I need one web application. For that I need to clone the web application using this command.

Git clone https://github.com/swetha1595/maven-web-application.git

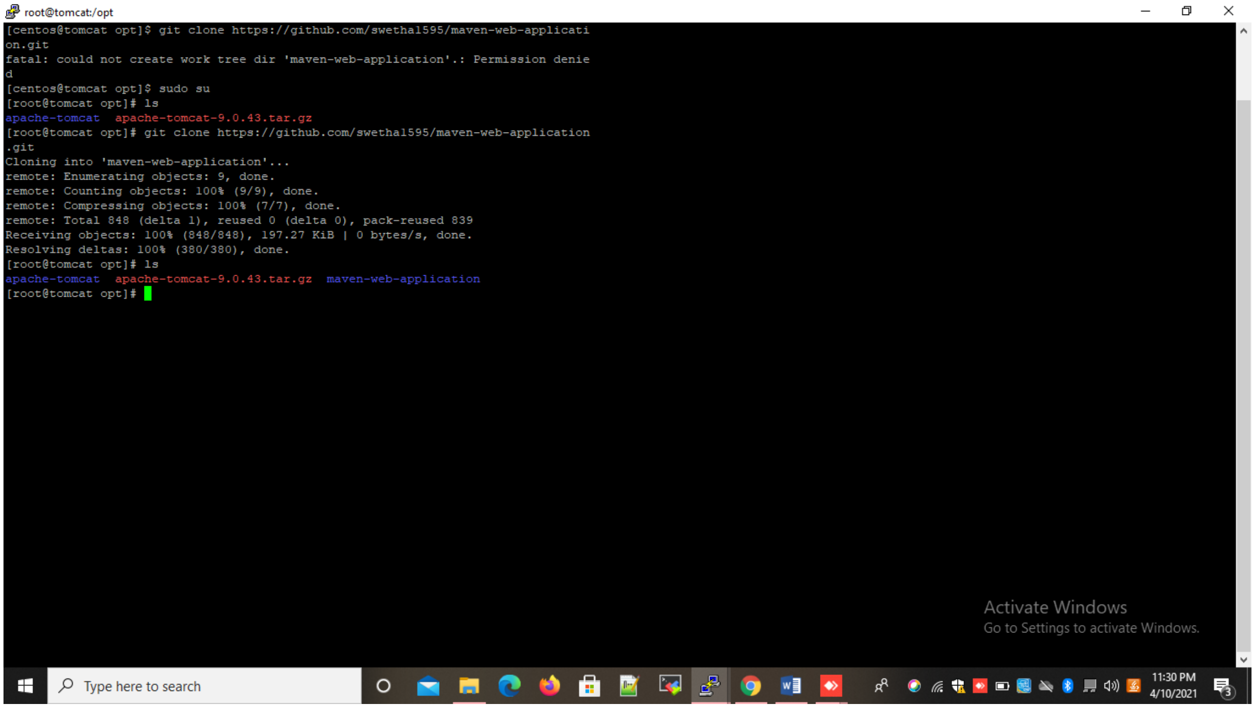


root@tomcat:/opt

```
[centos@tomcat opt]$ git clone https://github.com/swetha1595/maven-web-applicati
on.git
fatal: could not create work tree dir 'maven-web-application'.: Permission denie
d
[centos@tomcat opt]$ sudo su
[root@tomcat opt]# ls
apache-tomcat  apache-tomcat-9.0.43.tar.gz
[root@tomcat opt]# git clone https://github.com/swetha1595/maven-web-application
.git
Cloning into 'maven-web-application'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 848 (delta 1), reused 0 (delta 0), pack-reused 839
Receiving objects: 100% (848/848), 197.27 KiB | 0 bytes/s, done.
Resolving deltas: 100% (380/380), done.
[root@tomcat opt]# 
```

Step3:

After that we have to check that directory, web application is downloaded or not. Using **ls** command.

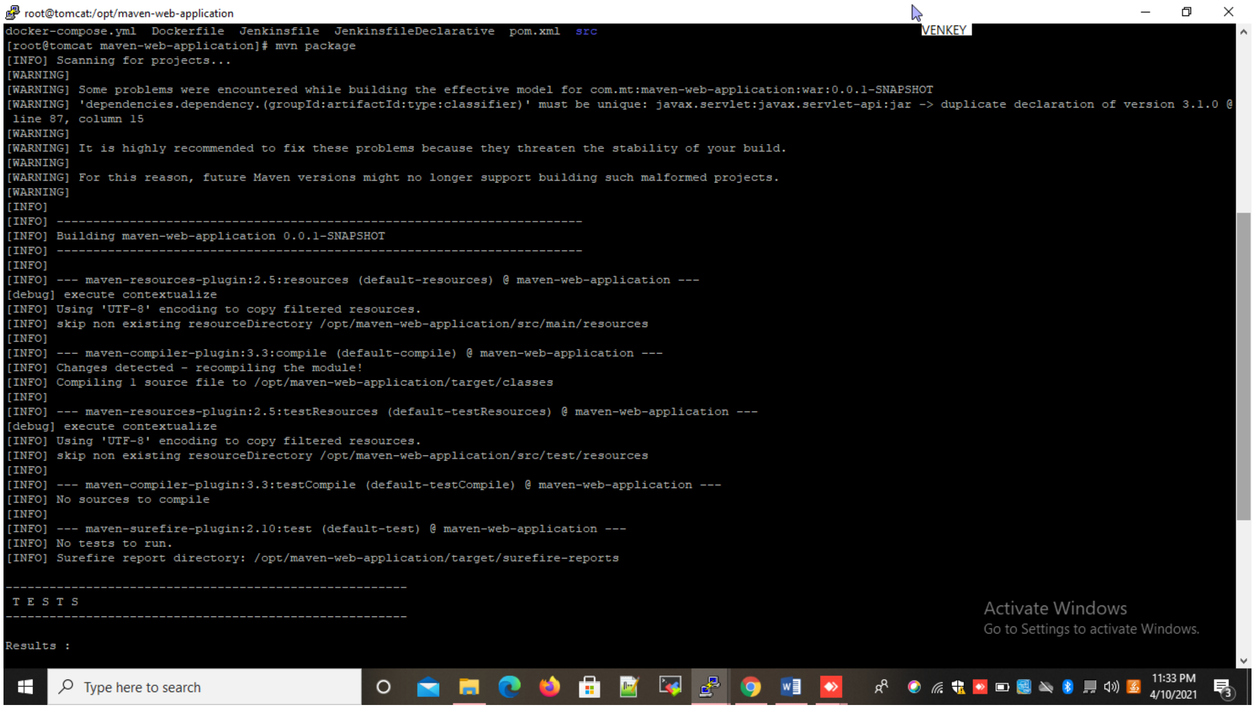


root@tomcat:/opt

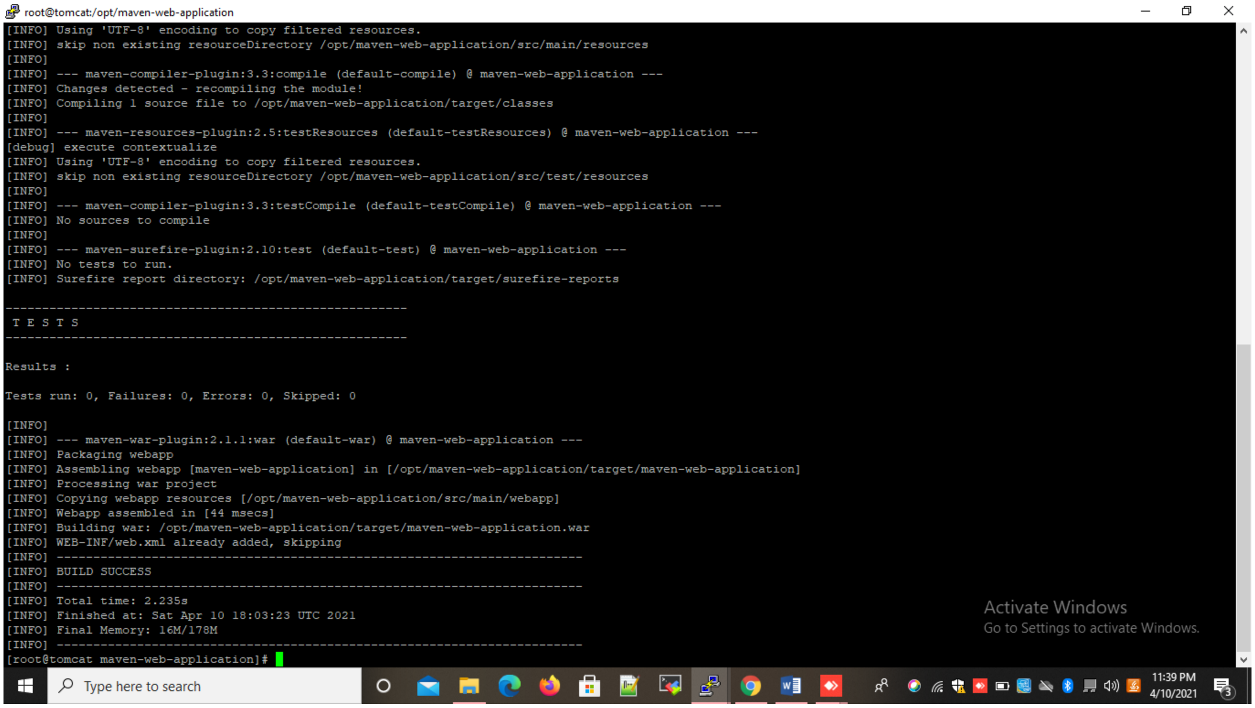
```
[centos@tomcat opt]$ git clone https://github.com/swetha1595/maven-web-applicati
on.git
fatal: could not create work tree dir 'maven-web-application'.: Permission denie
d
[centos@tomcat opt]$ sudo su
[root@tomcat opt]# ls
apache-tomcat  apache-tomcat-9.0.43.tar.gz
[root@tomcat opt]# git clone https://github.com/swetha1595/maven-web-application
.git
Cloning into 'maven-web-application'...
remote: Enumerating objects: 9, done.
remote: Counting objects: 100% (9/9), done.
remote: Compressing objects: 100% (7/7), done.
remote: Total 848 (delta 1), reused 0 (delta 0), pack-reused 839
Receiving objects: 100% (848/848), 197.27 KiB | 0 bytes/s, done.
Resolving deltas: 100% (380/380), done.
[root@tomcat opt]# ls
apache-tomcat  apache-tomcat-9.0.43.tar.gz  maven-web-application
[root@tomcat opt]# 
```

Step4:

Go to that directory using this command **cd maven-web application/.** After that build the package from maven-web application folder. Using **mvn package** command.


root@tomcat:/opt/maven-web-application
VENKEY
Activate Windows
Go to Settings to activate Windows.
Type here to search
11:33 PM
4/10/2021

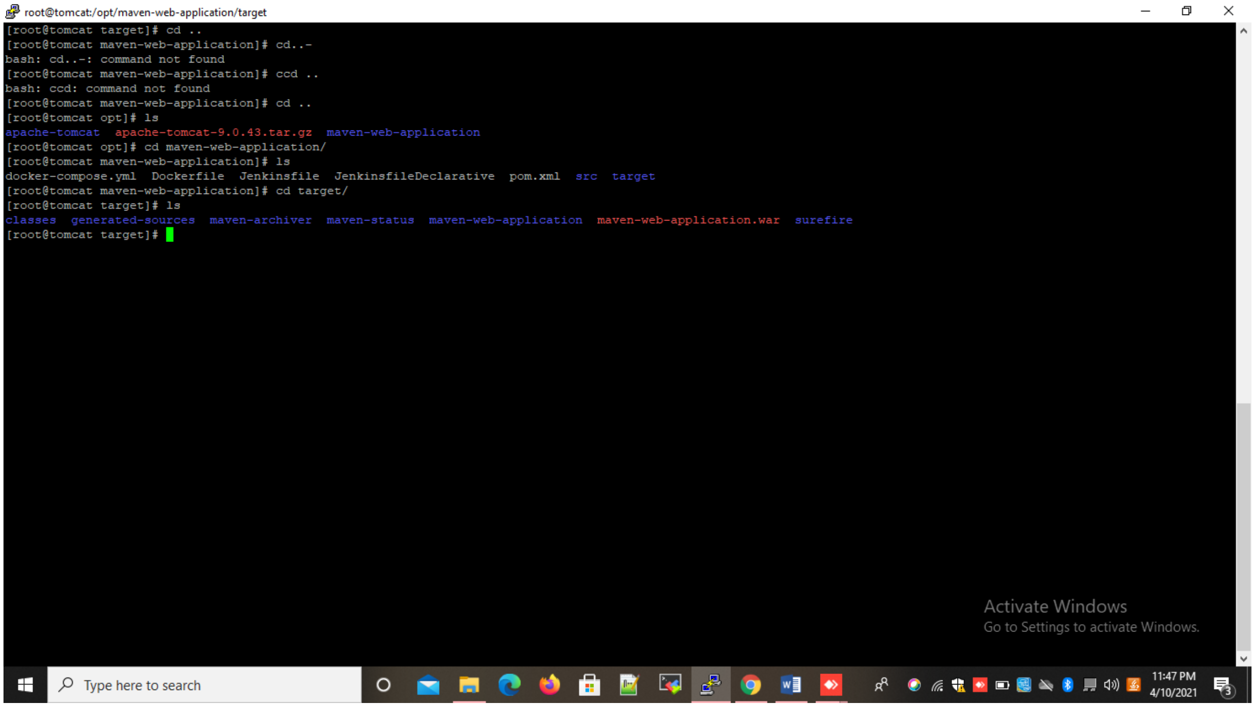
```
docker-compose.yml  Dockerfile  Jenkinsfile  JenkinsfileDeclarative  pom.xml  src
[root@tomcat maven-web-application]# mvn package
[INFO] Scanning for projects...
[WARNING]
[WARNING] Some problems were encountered while building the effective model for com.mt:maven-web-application:war:0.0.1-SNAPSHOT
[WARNING] 'dependencies.dependency.(groupId:artifactId:type:classifier)' must be unique: javax.servlet:javax.servlet-api:jar -> duplicate declaration of version 3.1.0 @
 line 87, column 15
[WARNING]
[WARNING] It is highly recommended to fix these problems because they threaten the stability of your build.
[WARNING]
[WARNING] For this reason, future Maven versions might no longer support building such malformed projects.
[WARNING]
[INFO]
[INFO] ------------------------------------------------------------------------
[INFO] Building maven-web-application 0.0.1-SNAPSHOT
[INFO] ------------------------------------------------------------------------
[INFO]
[INFO] --- maven-resources-plugin:2.5:resources (default-resources) @ maven-web-application ---
[debug] execute contextualize
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /opt/maven-web-application/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.3:compile (default-compile) @ maven-web-application ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to /opt/maven-web-application/target/classes
[INFO]
[INFO] --- maven-resources-plugin:2.5:testResources (default-testResources) @ maven-web-application ---
[debug] execute contextualize
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /opt/maven-web-application/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.3:testCompile (default-testCompile) @ maven-web-application ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-surefire-plugin:2.10:test (default-test) @ maven-web-application ---
[INFO] No tests to run.
[INFO] Surefire report directory: /opt/maven-web-application/target/surefire-reports

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

Results :
```


root@tomcat:/opt/maven-web-application
Activate Windows
Go to Settings to activate Windows.
Type here to search
11:39 PM
4/10/2021

```
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /opt/maven-web-application/src/main/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.3:compile (default-compile) @ maven-web-application ---
[INFO] Changes detected - recompiling the module!
[INFO] Compiling 1 source file to /opt/maven-web-application/target/classes
[INFO]
[INFO] --- maven-resources-plugin:2.5:testResources (default-testResources) @ maven-web-application ---
[debug] execute contextualize
[INFO] Using 'UTF-8' encoding to copy filtered resources.
[INFO] skip non existing resourceDirectory /opt/maven-web-application/src/test/resources
[INFO]
[INFO] --- maven-compiler-plugin:3.3:testCompile (default-testCompile) @ maven-web-application ---
[INFO] No sources to compile
[INFO]
[INFO] --- maven-surefire-plugin:2.10:test (default-test) @ maven-web-application ---
[INFO] No tests to run.
[INFO] Surefire report directory: /opt/maven-web-application/target/surefire-reports

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

Results :

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

[INFO]
[INFO] --- maven-war-plugin:2.1.1:war (default-war) @ maven-web-application ---
[INFO] Packaging webapp
[INFO] Assembling webapp [maven-web-application] in [/opt/maven-web-application/target/maven-web-application]
[INFO] Processing war project
[INFO] Copying webapp resources [/opt/maven-web-application/src/main/webapp]
[INFO] Webapp assembled in [44 msecs]
[INFO] Building war: /opt/maven-web-application/target/maven-web-application.war
[INFO] WEB-INF/web.xml already added, skipping
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time: 2.235s
[INFO] Finished at: Sat Apr 10 18:03:23 UTC 2021
[INFO] Final Memory: 16M/178M
[INFO] ------------------------------------------------------------------------
[root@tomcat maven-web-application]#
```

When you run the **mvn package** command .war file will be generated.

Go to maven web application using this command **cd /web application**, after that go to t**arget** folder here we can see .war file is generated or not.



root@tomcat:/opt/maven-web-application/target
Activate Windows
Go to Settings to activate Windows.
Type here to search
11:47 PM
4/10/2021

```
[root@tomcat target]# cd ..
[root@tomcat maven-web-application]# cd..-
bash: cd..-: command not found
[root@tomcat maven-web-application]# ccd ..
bash: ccd: command not found
[root@tomcat maven-web-application]# cd ..
[root@tomcat opt]# ls
apache-tomcat  apache-tomcat-9.0.43.tar.gz  maven-web-application
[root@tomcat opt]# cd maven-web-application/
[root@tomcat maven-web-application]# ls
docker-compose.yml  Dockerfile  Jenkinsfile  JenkinsfileDeclarative  pom.xml  src  target
[root@tomcat maven-web-application]# cd target/
[root@tomcat target]# ls
classes  generated-sources  maven-archiver  maven-status  maven-web-application  maven-web-application.war  surefire
[root@tomcat target]#
```

Step5:

After that we need to deploy war file in tomcat server.

We can deploy the war file in tomcat is different ways.

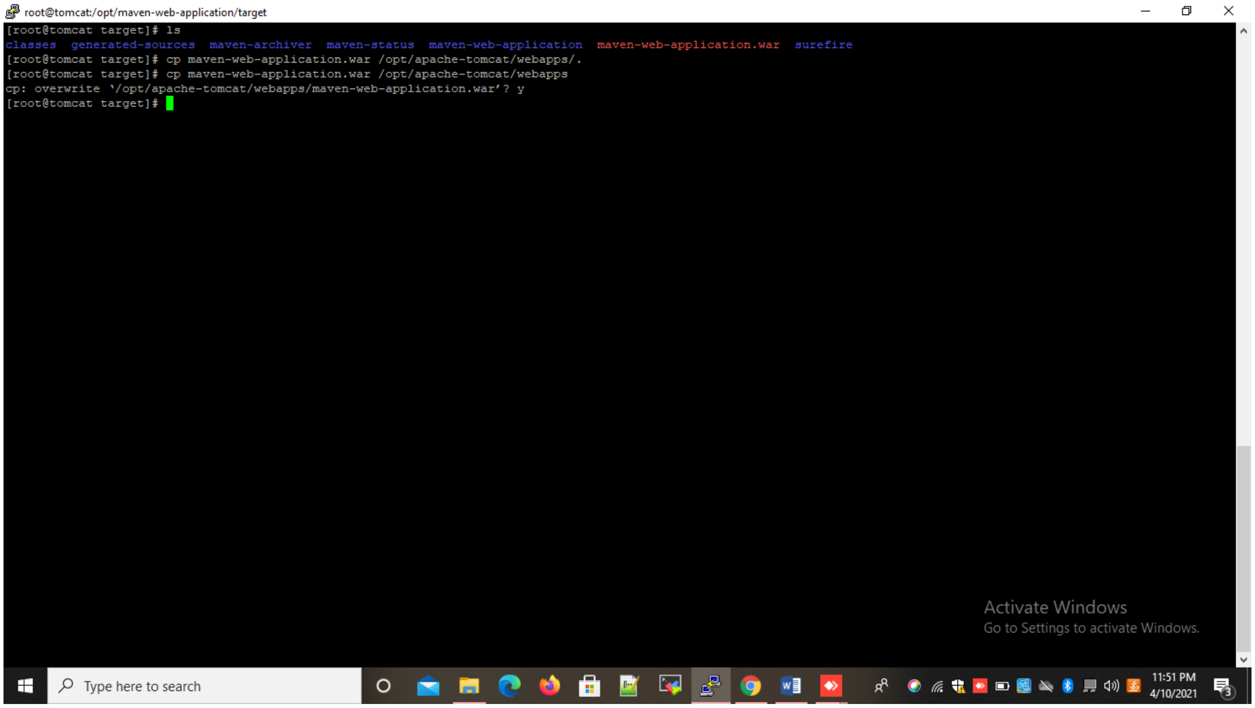
1) Manually we can copy the war file from target folder to tomcat server using the copy command.

cp maven-web-application. War /opt/apache-tomcat/webapps/

2) Or we can run the command mvn deploy.

Below diagram we can see how to copy war file from target folder to tomcat webapps folder.

3) Or use Jenkins automatically deploy package in tomcat.



root@tomcat:/opt/maven-web-application/target
Activate Windows
Go to Settings to activate Windows.
Type here to search
11:51 PM
4/10/2021

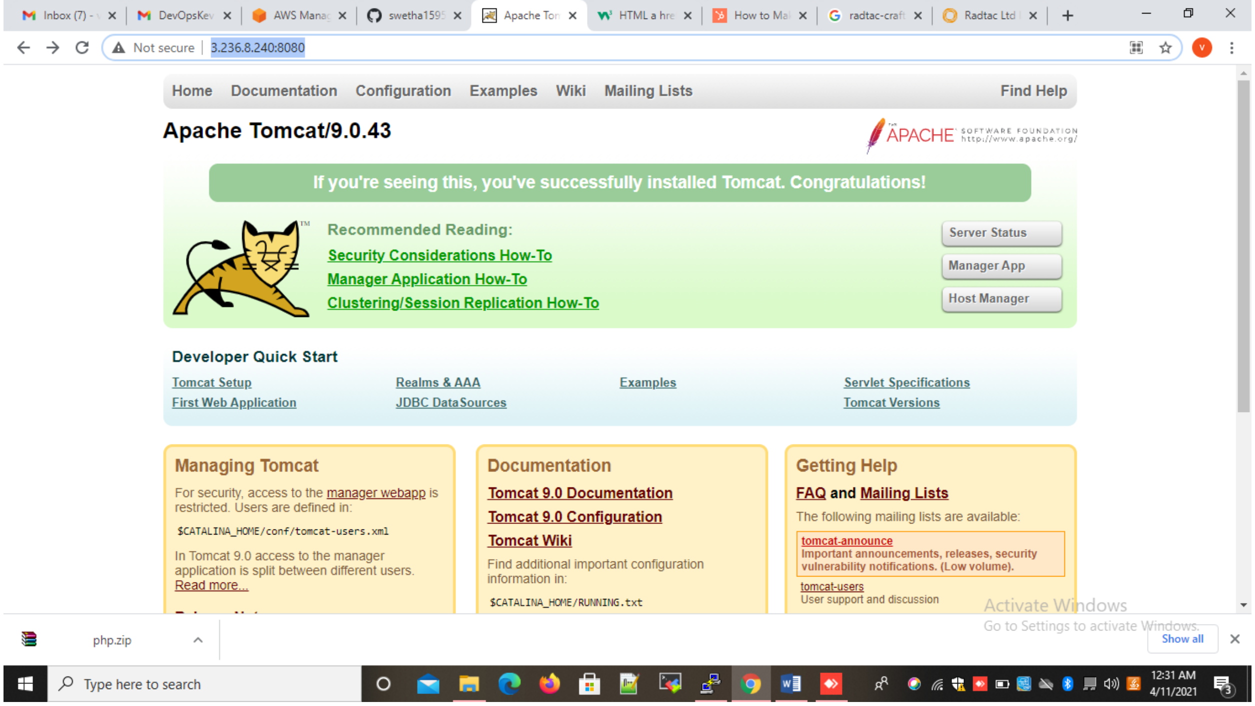
```
[root@tomcat target]# ls
classes  generated-sources  maven-archiver  maven-status  maven-web-application  maven-web-application.war  surefire
[root@tomcat target]# cp maven-web-application.war /opt/apache-tomcat/webapps/.
[root@tomcat target]# cp maven-web-application.war /opt/apache-tomcat/webapps
cp: overwrite '/opt/apache-tomcat/webapps/maven-web-application.war'? y
[root@tomcat target]# 
```

Step6:

After that use the instance **ip** and port number of tomcat is 8080 using this URL we can login to the tomcat instance.

http://3.236.8.240:8080/

When u hit this URL tomcat page is opened.



Apache Tomcat/9.0.43

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

Recommended Reading:
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Manager Application How-To
Clustering/Session Replication How-To

Developer Quick Start

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

Managing Tomcat

For security, access to the manager webapp is restricted. Users are defined in:

```
$CATALINA_HOME/conf/tomcat-users.xml
```

In Tomcat 9.0 access to the manager application is split between different users. Read more...

Documentation

Tomcat 9.0 Documentation
Tomcat 9.0 Configuration
Tomcat Wiki

Find additional important configuration information in:

```
$CATALINA_HOME/RUNNING.txt
```

Getting Help

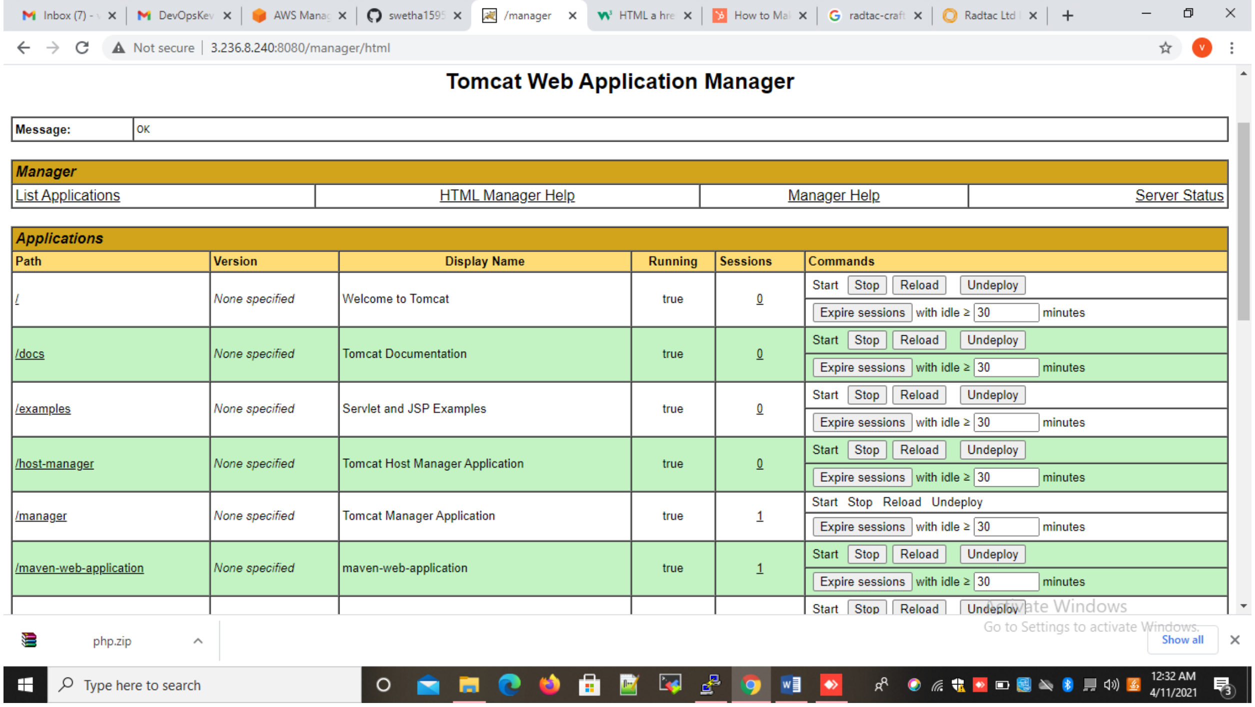
FAQ and Mailing Lists

The following mailing lists are available:

tomcat-announce
Important announcements, releases, security vulnerability notifications. (Low volume).

tomcat-users
User support and discussion

After that go to manager app and check webapplication deployed or not.



Tomcat Web Application Manager

Message:	OK

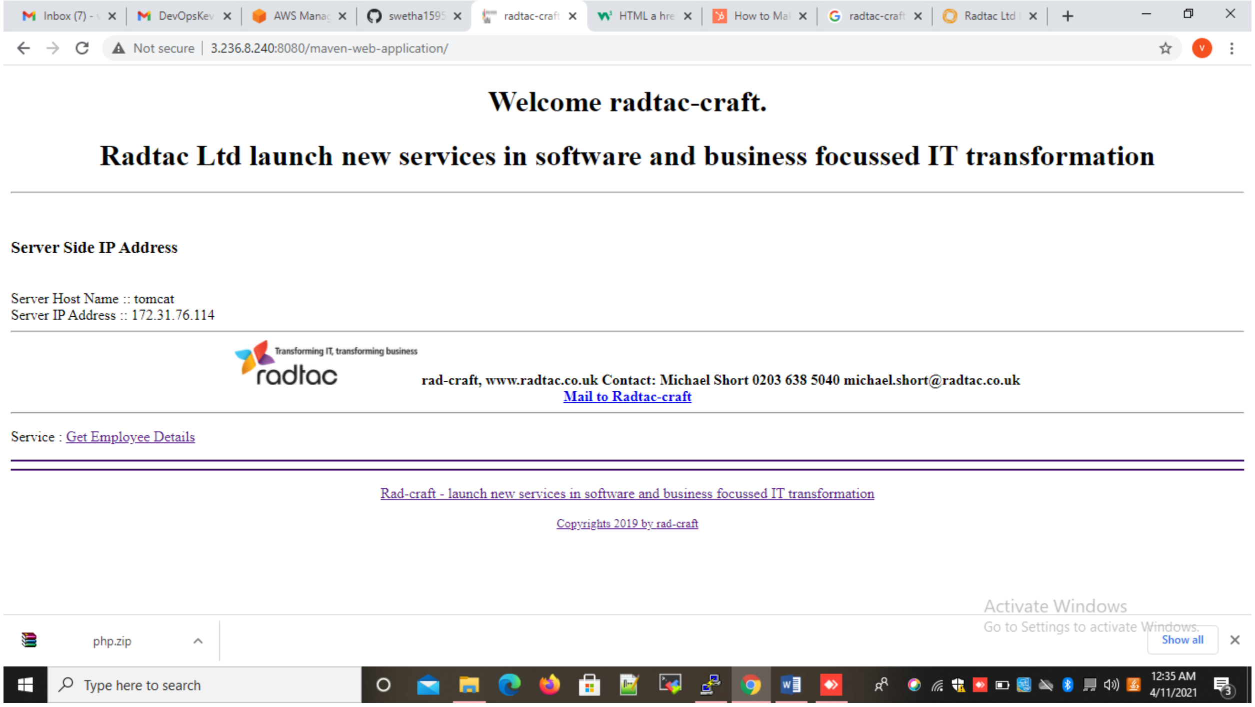
Manager

List Applications	HTML Manager Help	Manager Help	Server Status

Applications

Path	Version	Display Name	Running	Sessions	Commands
/	None specified	Welcome to Tomcat	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/docs	None specified	Tomcat Documentation	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/examples	None specified	Servlet and JSP Examples	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/host-manager	None specified	Tomcat Host Manager Application	true	0	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/manager	None specified	Tomcat Manager Application	true	1	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
/maven-web-application	None specified	maven-web-application	true	1	Start Stop Reload Undeploy Expire sessions with idle ≥ 30 minutes
					Start Stop Reload Undeploy

Here left side we can see the maven-web-application. After that if you click that application it will redirected into another page.



Welcome radtac-craft.

Radtac Ltd launch new services in software and business focussed IT transformation

Server Side IP Address

Server Host Name :: tomcat
Server IP Address :: 172.31.76.114

rad-craft, www.radtac.co.uk Contact: Michael Short 0203 638 5040 michael.short@radtac.co.uk
Mail to Radtac-craft

Service : Get Employee Details

Rad-craft - launch new services in software and business focussed IT transformation

Copyrights 2019 by rad-craft

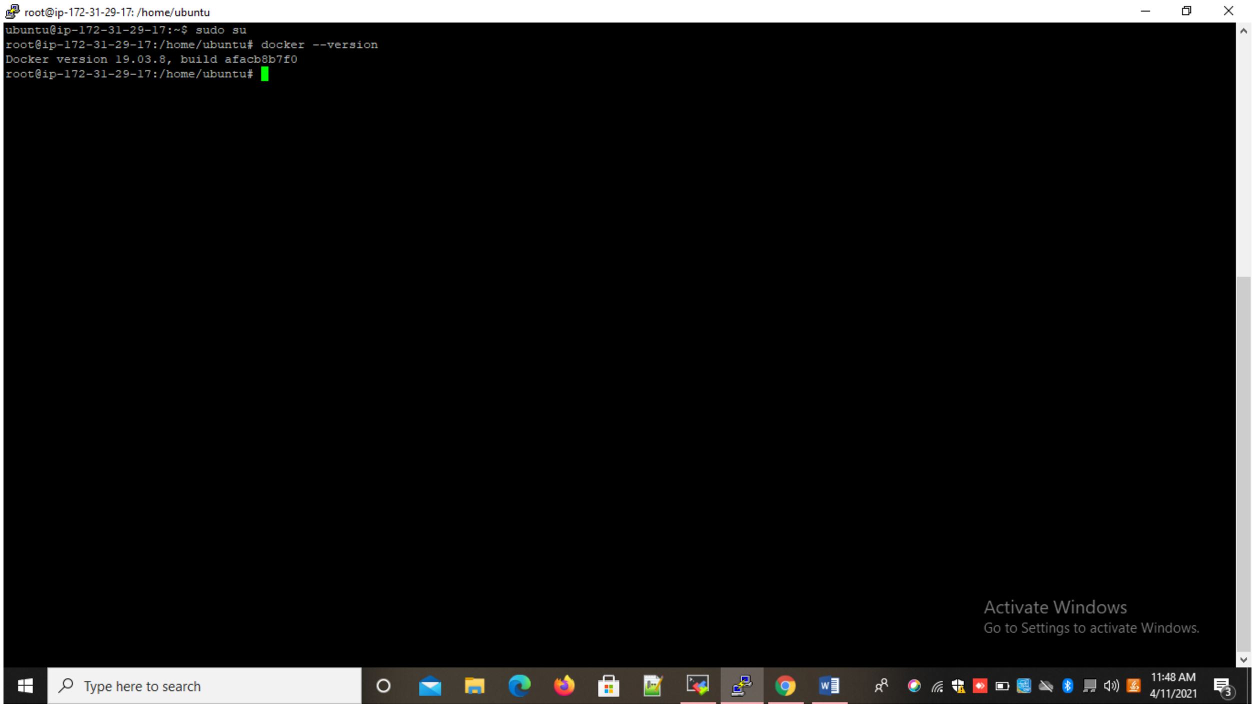
This is the output of web application. It is successfully deployed in aws ec2instance.

2) Deploy the web application as a Docker Container?

Step1:

deploy webapplication in docker container,on that time first step is I need one docker server,I installed docker in aws ubuntu server.

below diagram we can see docker is present on that machine or not by using **docker –version command,here I installed 19 version.**


root@ip-172-31-29-17: /home/ubuntu
Activate Windows
Go to Settings to activate Windows.
Type here to search
11:48 AM
4/11/2021

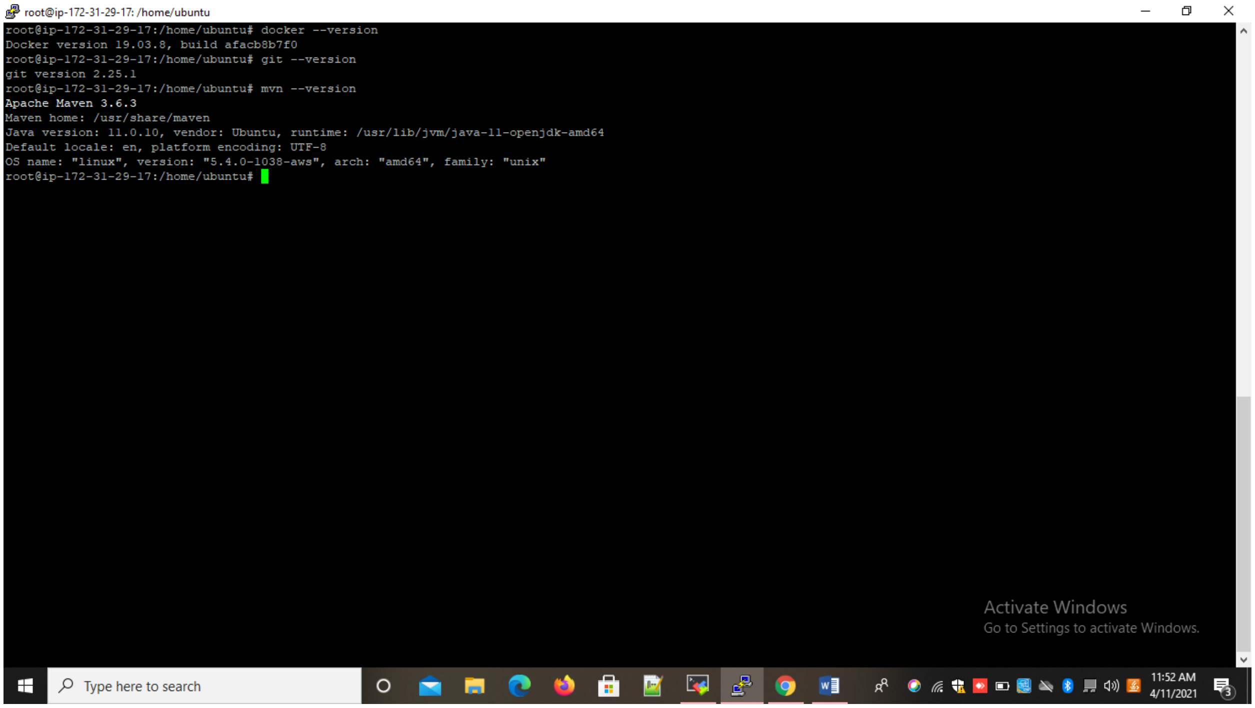
```
ubuntu@ip-172-31-29-17:~$ sudo su
root@ip-172-31-29-17:/home/ubuntu# docker --version
Docker version 19.03.8, build afacb8b7f0
root@ip-172-31-29-17:/home/ubuntu#
```

Step2:

Next step is we need to check whether Git and maven installed or not,in Ubuntu server by default git is installed.

Git –version

mvn –version

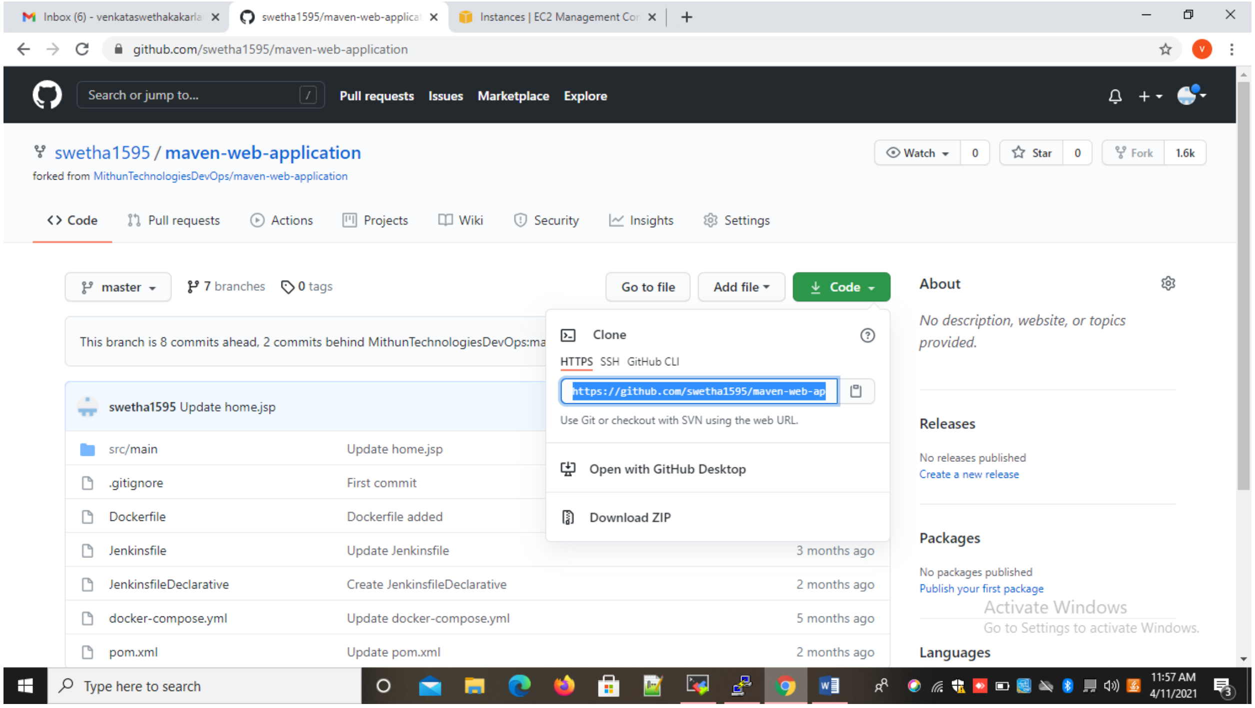


root@ip-172-31-29-17: /home/ubuntu
Activate Windows
Go to Settings to activate Windows.
Type here to search
11:52 AM
4/11/2021

```
root@ip-172-31-29-17:/home/ubuntu# docker --version
Docker version 19.03.8, build afacb8b7f0
root@ip-172-31-29-17:/home/ubuntu# git --version
git version 2.25.1
root@ip-172-31-29-17:/home/ubuntu# mvn --version
Apache Maven 3.6.3
Maven home: /usr/share/maven
Java version: 11.0.10, vendor: Ubuntu, runtime: /usr/lib/jvm/java-11-openjdk-amd64
Default locale: en, platform encoding: UTF-8
OS name: "linux", version: "5.4.0-1038-aws", arch: "amd64", family: "unix"
root@ip-172-31-29-17:/home/ubuntu# 
```

Step3:

Next step is we need to clone the web application from GitHub.by using Git clone.



swetha1595 / maven-web-application

forked from MithunTechnologiesDevOps/maven-web-application

This branch is 8 commits ahead, 2 commits behind MithunTechnologiesDevOps:ma

swetha1595 Update home.jsp

```
src/main                   Update home.jsp
.gitignore                 First commit
Dockerfile                 Dockerfile added
Jenkinsfile                Update Jenkinsfile                 3 months ago
JenkinsfileDeclarative     Create JenkinsfileDeclarative      2 months ago
docker-compose.yml         Update docker-compose.yml          5 months ago
pom.xml                    Update pom.xml                     2 months ago
```

https://github.com/swetha1595/maven-web-ap

Use Git or checkout with SVN using the web URL.

No description, website, or topics provided.

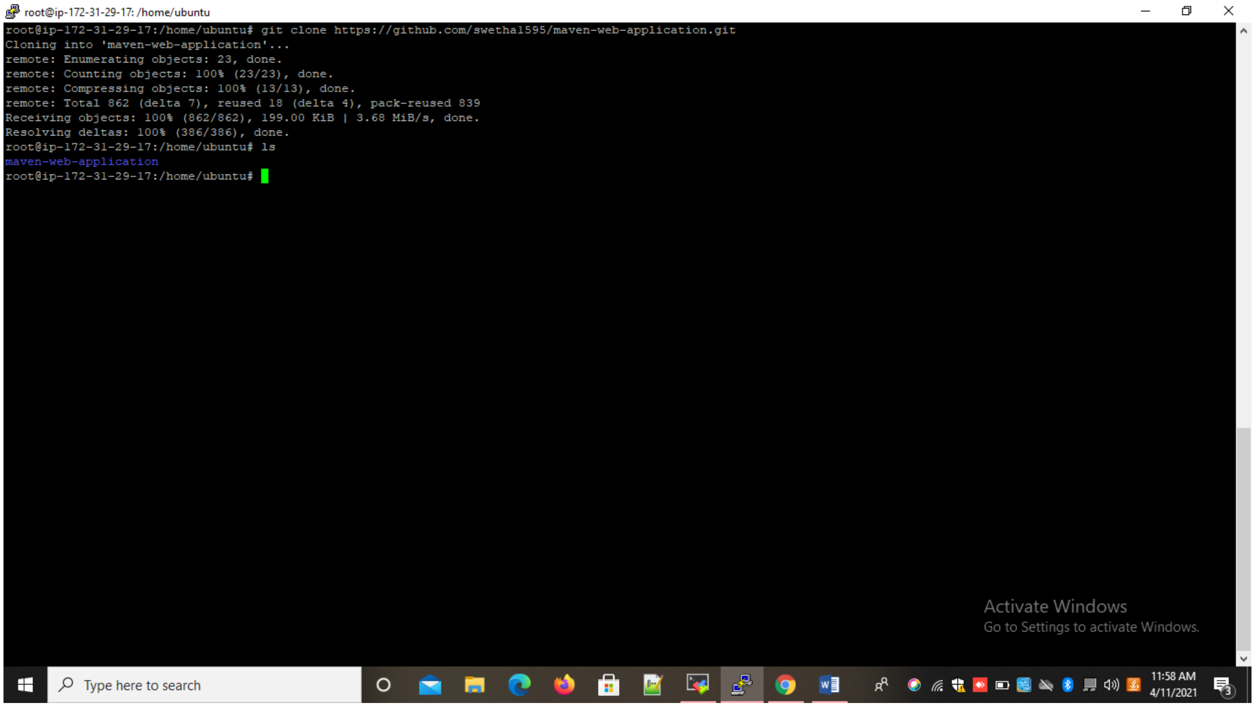
No releases published

Create a new release

No packages published

Publish your first package

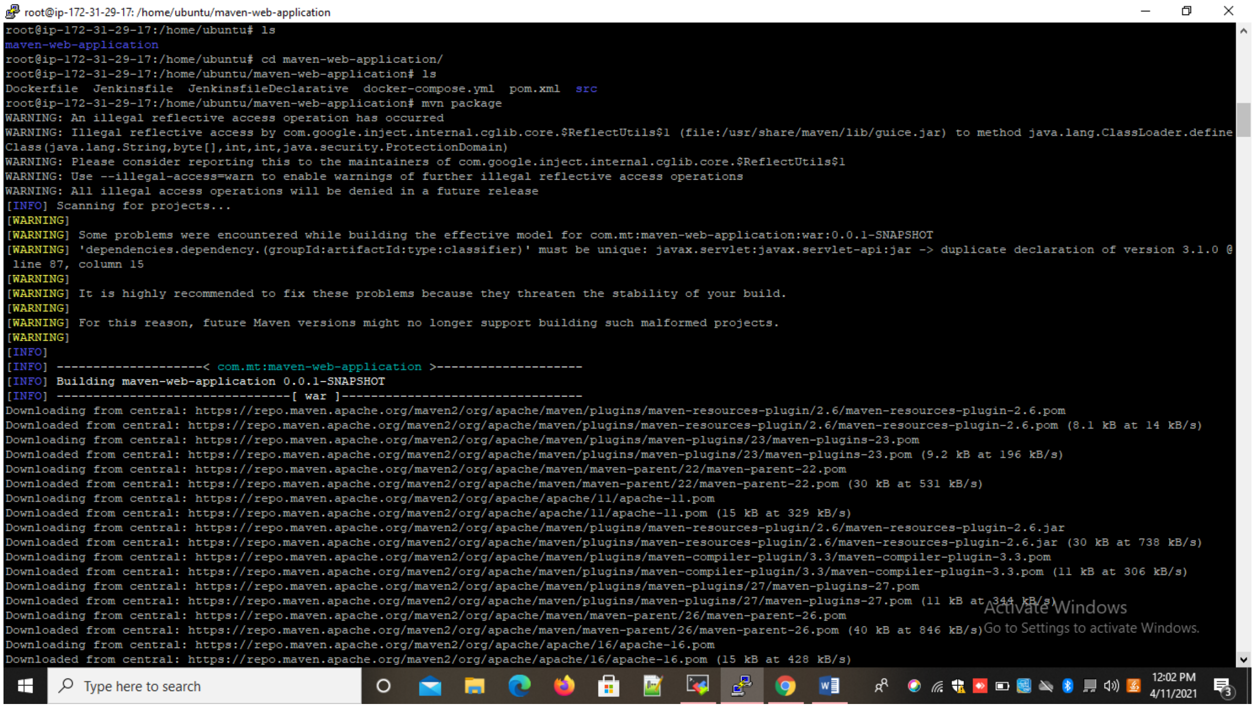
Below diagram we can see web application is cloned or not.



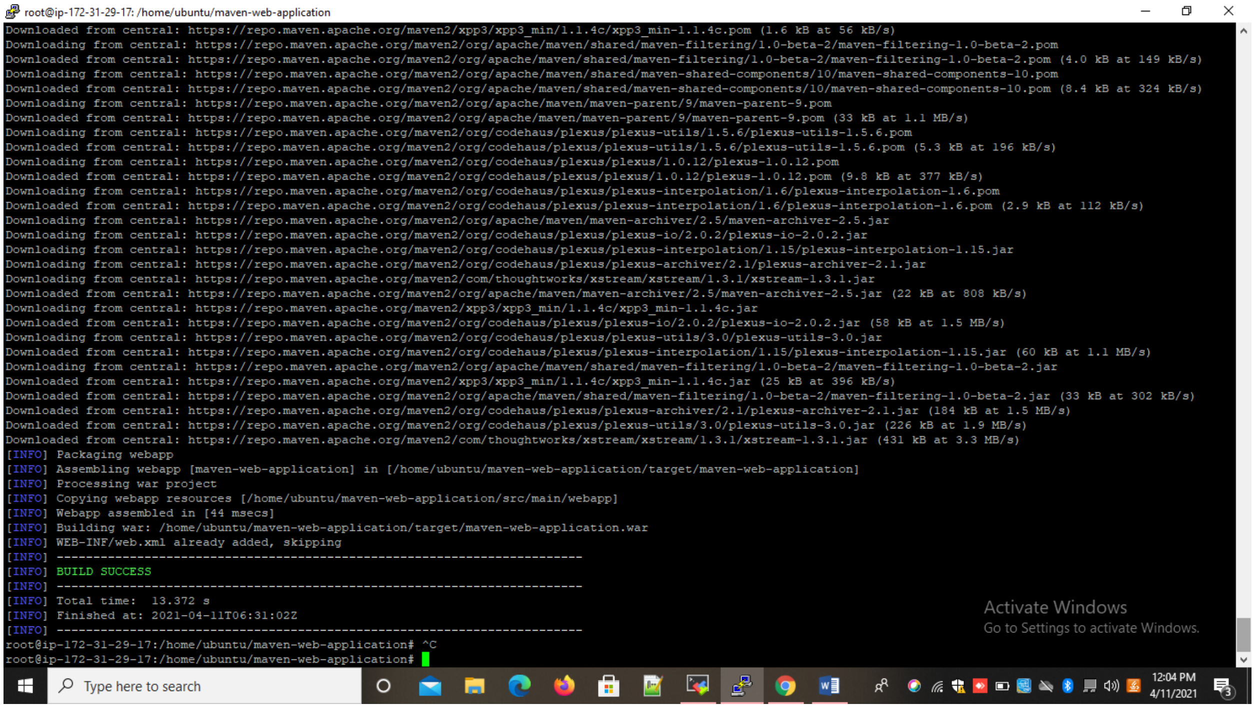
```
root@ip-172-31-29-17:/home/ubuntu# git clone https://github.com/swetha1595/maven-web-application.git
Cloning into 'maven-web-application'...
remote: Enumerating objects: 23, done.
remote: Counting objects: 100% (23/23), done.
remote: Compressing objects: 100% (13/13), done.
remote: Total 862 (delta 7), reused 18 (delta 4), pack-reused 839
Receiving objects: 100% (862/862), 199.00 KiB | 3.68 MiB/s, done.
Resolving deltas: 100% (386/386), done.
root@ip-172-31-29-17:/home/ubuntu# ls
maven-web-application
root@ip-172-31-29-17:/home/ubuntu#
```

Step4:

After that go to that maven web application directory and run **mvn package** command. When u run that command war file is generated in target folder.

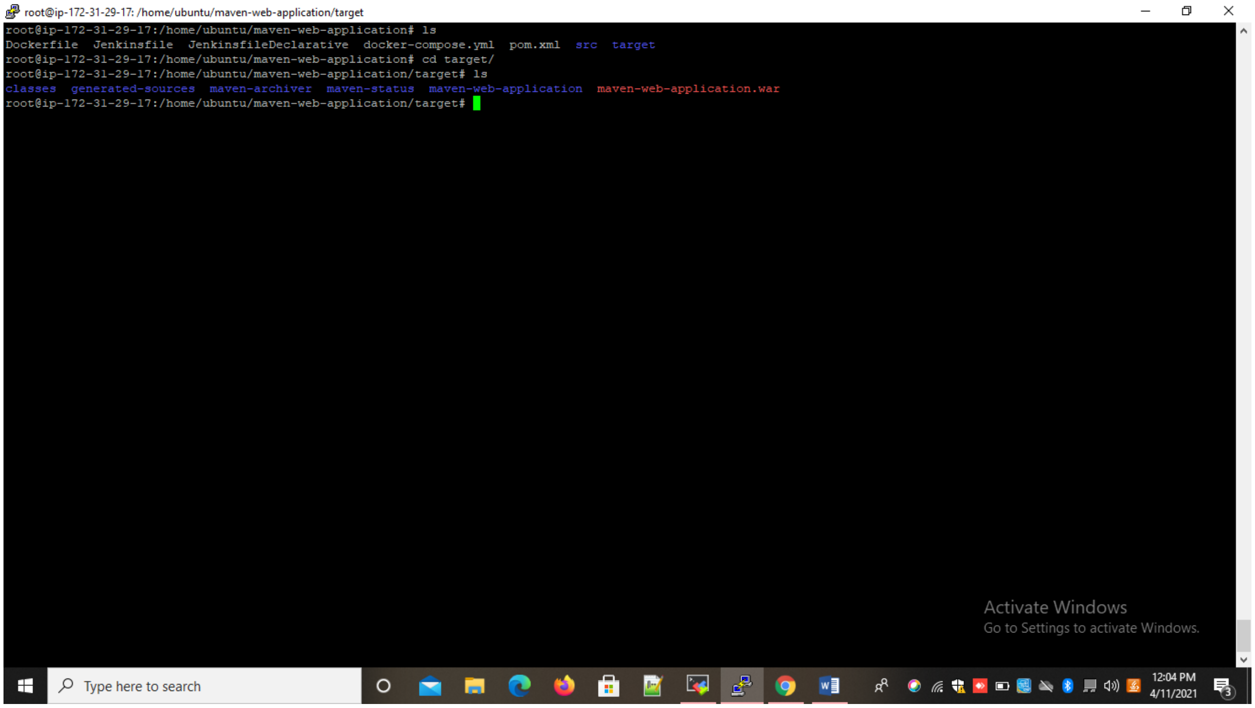

root@ip-172-31-29-17: /home/ubuntu/maven-web-application

```
root@ip-172-31-29-17:/home/ubuntu# ls
maven-web-application
root@ip-172-31-29-17:/home/ubuntu# cd maven-web-application/
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# ls
Dockerfile  Jenkinsfile  JenkinsfileDeclarative  docker-compose.yml  pom.xml  src
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# mvn package
WARNING: An illegal reflective access operation has occurred
WARNING: Illegal reflective access by com.google.inject.internal.cglib.core.$ReflectUtils$1 (file:/usr/share/maven/lib/guice.jar) to method java.lang.ClassLoader.define
Class(java.lang.String,byte[],int,int,java.security.ProtectionDomain)
WARNING: Please consider reporting this to the maintainers of com.google.inject.internal.cglib.core.$ReflectUtils$1
WARNING: Use --illegal-access=warn to enable warnings of further illegal reflective access operations
WARNING: All illegal access operations will be denied in a future release
[INFO] Scanning for projects...
[WARNING]
[WARNING] Some problems were encountered while building the effective model for com.mt:maven-web-application:war:0.0.1-SNAPSHOT
[WARNING] 'dependencies.dependency.(groupId:artifactId:type:classifier)' must be unique: javax.servlet:javax.servlet-api:jar -> duplicate declaration of version 3.1.0 @
 line 87, column 15
[WARNING]
[WARNING] It is highly recommended to fix these problems because they threaten the stability of your build.
[WARNING]
[WARNING] For this reason, future Maven versions might no longer support building such malformed projects.
[WARNING]
[INFO]
[INFO] --------------------< com.mt:maven-web-application >--------------------
[INFO] Building maven-web-application 0.0.1-SNAPSHOT
[INFO] --------------------------------[ war ]---------------------------------
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/2.6/maven-resources-plugin-2.6.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/2.6/maven-resources-plugin-2.6.pom (8.1 kB at 14 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/23/maven-plugins-23.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/23/maven-plugins-23.pom (9.2 kB at 196 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/22/maven-parent-22.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/22/maven-parent-22.pom (30 kB at 531 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/11/apache-11.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/11/apache-11.pom (15 kB at 329 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/2.6/maven-resources-plugin-2.6.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-resources-plugin/2.6/maven-resources-plugin-2.6.jar (30 kB at 738 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.3/maven-compiler-plugin-3.3.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-compiler-plugin/3.3/maven-compiler-plugin-3.3.pom (11 kB at 306 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/27/maven-plugins-27.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/plugins/maven-plugins/27/maven-plugins-27.pom (11 kB at 344 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/26/maven-parent-26.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/26/maven-parent-26.pom (40 kB at 846 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/apache/16/apache-16.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/apache/16/apache-16.pom (15 kB at 428 kB/s)
```


root@ip-172-31-29-17: /home/ubuntu/maven-web-application

```
Downloaded from central: https://repo.maven.apache.org/maven2/xpp3/xpp3_min/1.1.4c/xpp3_min-1.1.4c.pom (1.6 kB at 56 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-filtering/1.0-beta-2/maven-filtering-1.0-beta-2.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-filtering/1.0-beta-2/maven-filtering-1.0-beta-2.pom (4.0 kB at 149 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-components/10/maven-shared-components-10.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-shared-components/10/maven-shared-components-10.pom (8.4 kB at 324 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/9/maven-parent-9.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-parent/9/maven-parent-9.pom (33 kB at 1.1 MB/s)
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 196 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 377 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-interpolation/1.6/plexus-interpolation-1.6.pom
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-interpolation/1.6/plexus-interpolation-1.6.pom (2.9 kB at 112 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-archiver/2.5/maven-archiver-2.5.jar
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-io/2.0.2/plexus-io-2.0.2.jar
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-interpolation/1.15/plexus-interpolation-1.15.jar
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/2.1/plexus-archiver-2.1.jar
Downloading from central: https://repo.maven.apache.org/maven2/com/thoughtworks/xstream/xstream/1.3.1/xstream-1.3.1.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-archiver/2.5/maven-archiver-2.5.jar (22 kB at 808 kB/s)
Downloading from central: https://repo.maven.apache.org/maven2/xpp3/xpp3_min/1.1.4c/xpp3_min-1.1.4c.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-io/2.0.2/plexus-io-2.0.2.jar (58 kB at 1.5 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.0/plexus-utils-3.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-interpolation/1.15/plexus-interpolation-1.15.jar (60 kB at 1.1 MB/s)
Downloading from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-filtering/1.0-beta-2/maven-filtering-1.0-beta-2.jar
Downloaded from central: https://repo.maven.apache.org/maven2/xpp3/xpp3_min/1.1.4c/xpp3_min-1.1.4c.jar (25 kB at 396 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-filtering/1.0-beta-2/maven-filtering-1.0-beta-2.jar (33 kB at 302 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-archiver/2.1/plexus-archiver-2.1.jar (184 kB at 1.5 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.0/plexus-utils-3.0.jar (226 kB at 1.9 MB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/com/thoughtworks/xstream/xstream/1.3.1/xstream-1.3.1.jar (431 kB at 3.3 MB/s)
[INFO] Packaging webapp
[INFO] Assembling webapp [maven-web-application] in [/home/ubuntu/maven-web-application/target/maven-web-application]
[INFO] Processing war project
[INFO] Copying webapp resources [/home/ubuntu/maven-web-application/src/main/webapp]
[INFO] Webapp assembled in [44 msecs]
[INFO] Building war: /home/ubuntu/maven-web-application/target/maven-web-application.war
[INFO] WEB-INF/web.xml already added, skipping
[INFO] ------------------------------------------------------------------------
[INFO] BUILD SUCCESS
[INFO] ------------------------------------------------------------------------
[INFO] Total time:  13.372 s
[INFO] Finished at: 2021-04-11T06:31:02Z
[INFO] ------------------------------------------------------------------------
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# ^C
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# 
```

Here we can see in target folder war file is generated or not.

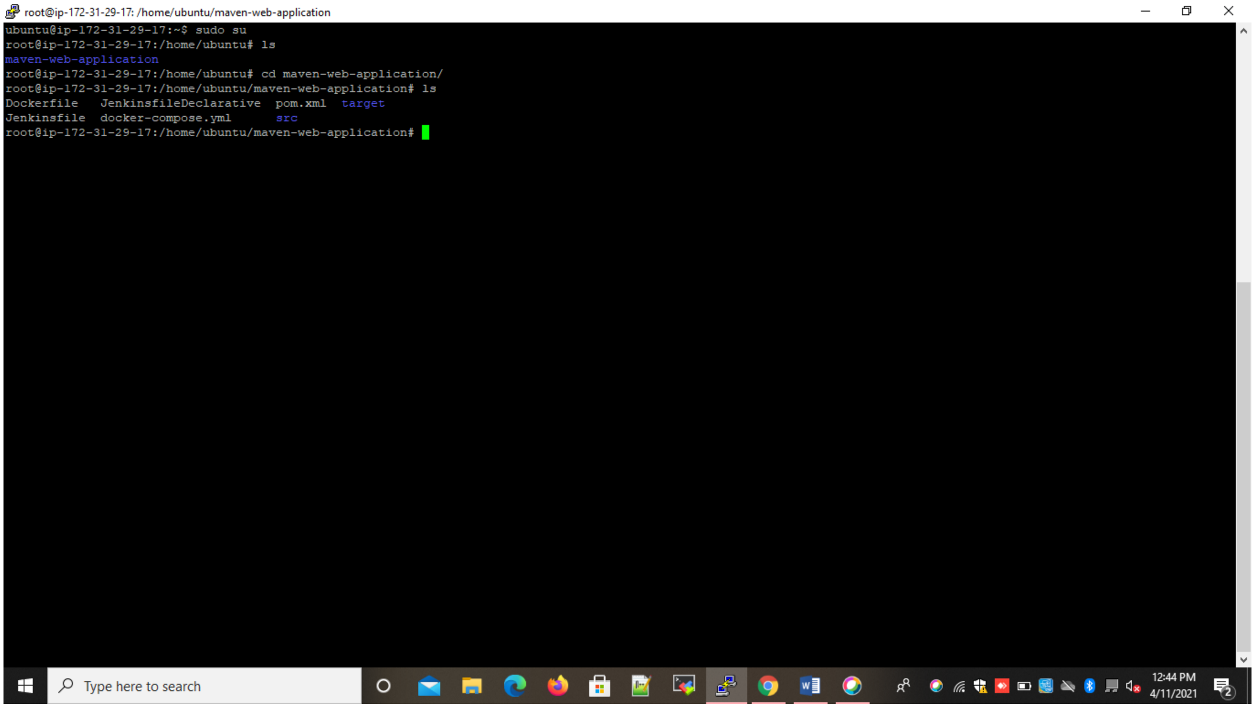

root@ip-172-31-29-17: /home/ubuntu/maven-web-application/target
Activate Windows
Go to Settings to activate Windows.
Type here to search
12:04 PM
4/11/2021

```
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# ls
Dockerfile  Jenkinsfile  JenkinsfileDeclarative  docker-compose.yml  pom.xml  src  target
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# cd target/
root@ip-172-31-29-17:/home/ubuntu/maven-web-application/target# ls
classes  generated-sources  maven-archiver  maven-status  maven-web-application  maven-web-application.war
root@ip-172-31-29-17:/home/ubuntu/maven-web-application/target# 
```

Step5:

After that go to that web application directory in that directory I have one Docker file to copy the war file from target folder to tomcat webapps folder.

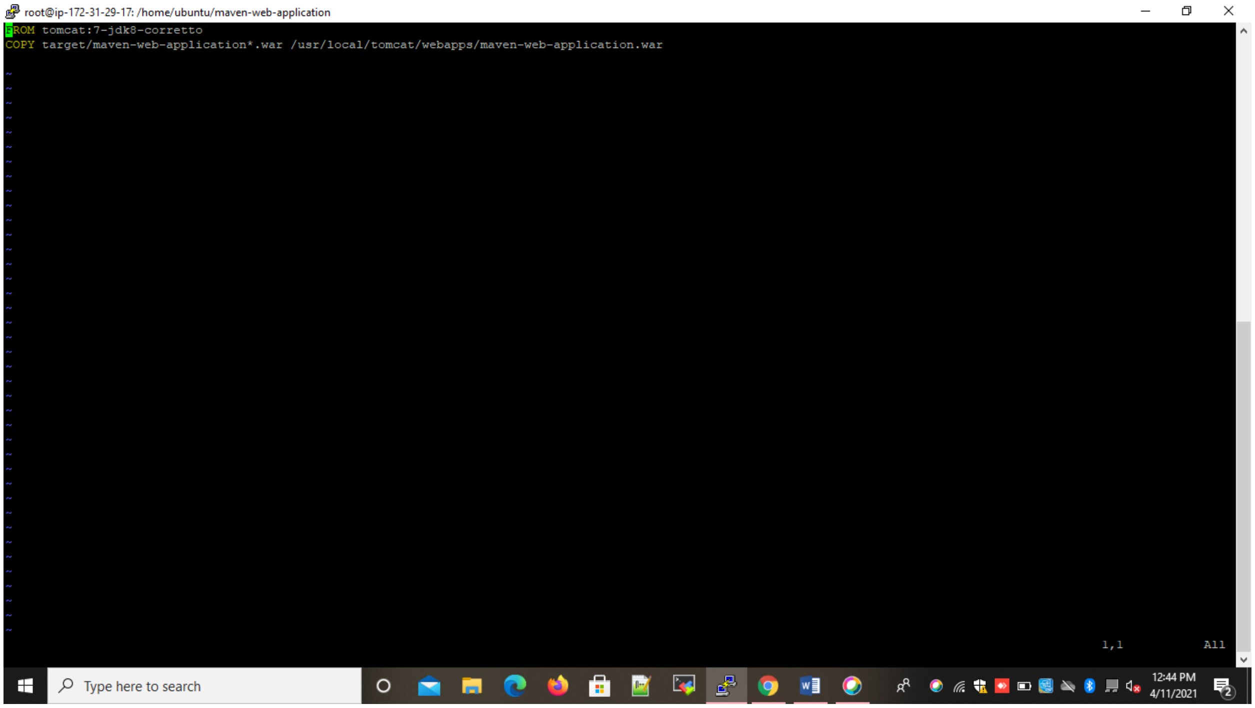
Below diagram we can see the Docker file.



root@ip-172-31-29-17: /home/ubuntu/maven-web-application

```
ubuntu@ip-172-31-29-17:~$ sudo su
root@ip-172-31-29-17:/home/ubuntu# ls
maven-web-application
root@ip-172-31-29-17:/home/ubuntu# cd maven-web-application/
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# ls
Dockerfile   JenkinsfileDeclarative  pom.xml  target
Jenkinsfile  docker-compose.yml      src
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# 
```

After that open the Dockerfile using **vi Dockerfile** command. Below diagram we can see Docker file content.



root@ip-172-31-29-17: /home/ubuntu/maven-web-application

```
FROM tomcat:7-jdk8-corretto
COPY target/maven-web-application*.war /usr/local/tomcat/webapps/maven-web-application.war
```

Step6:

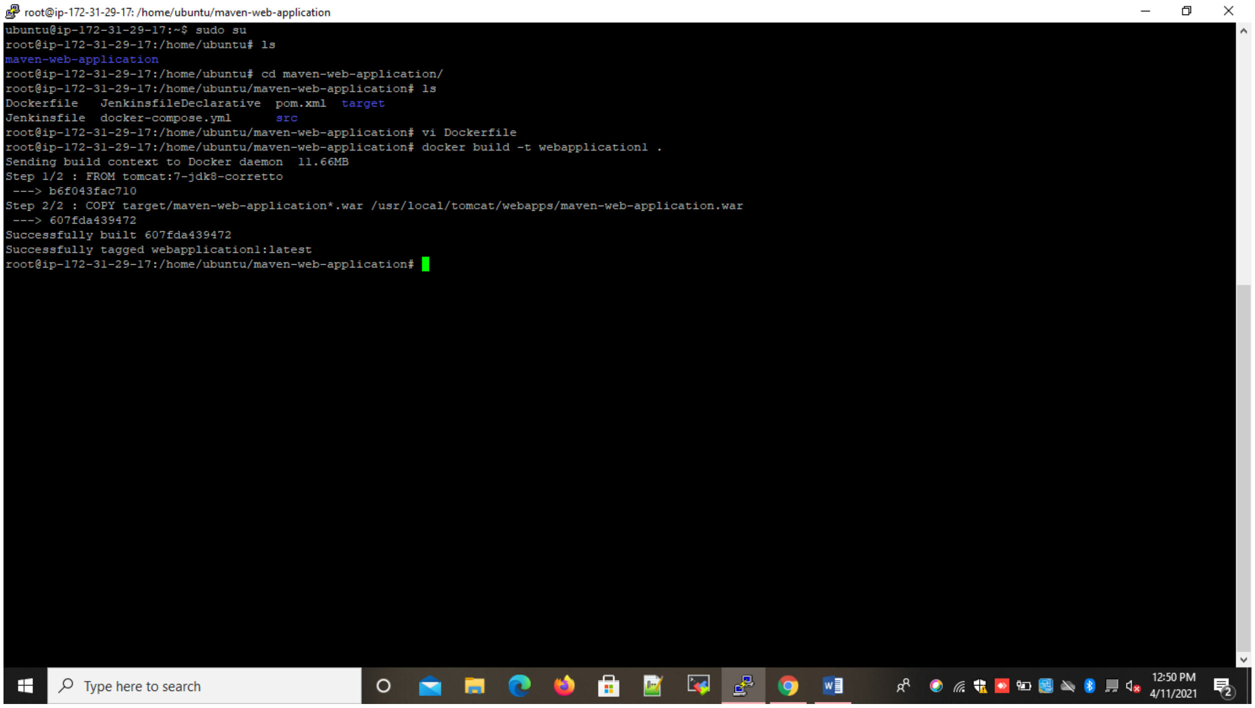
Next step is go to that dockerfile directory and run the command

Docker build –t webapplication1 .

Above command is used to build the Docker image from dockerfile. –t means terminal and webapplication1 means image name

. (Dot means)-Docker file is present in the same directory that's y I mentioned dot, suppose if Docker file is present in the different path we need to mention that path name.

If u run this command Docker image is successfully created. We can observe on below diagram.



root@ip-172-31-29-17: /home/ubuntu/maven-web-application

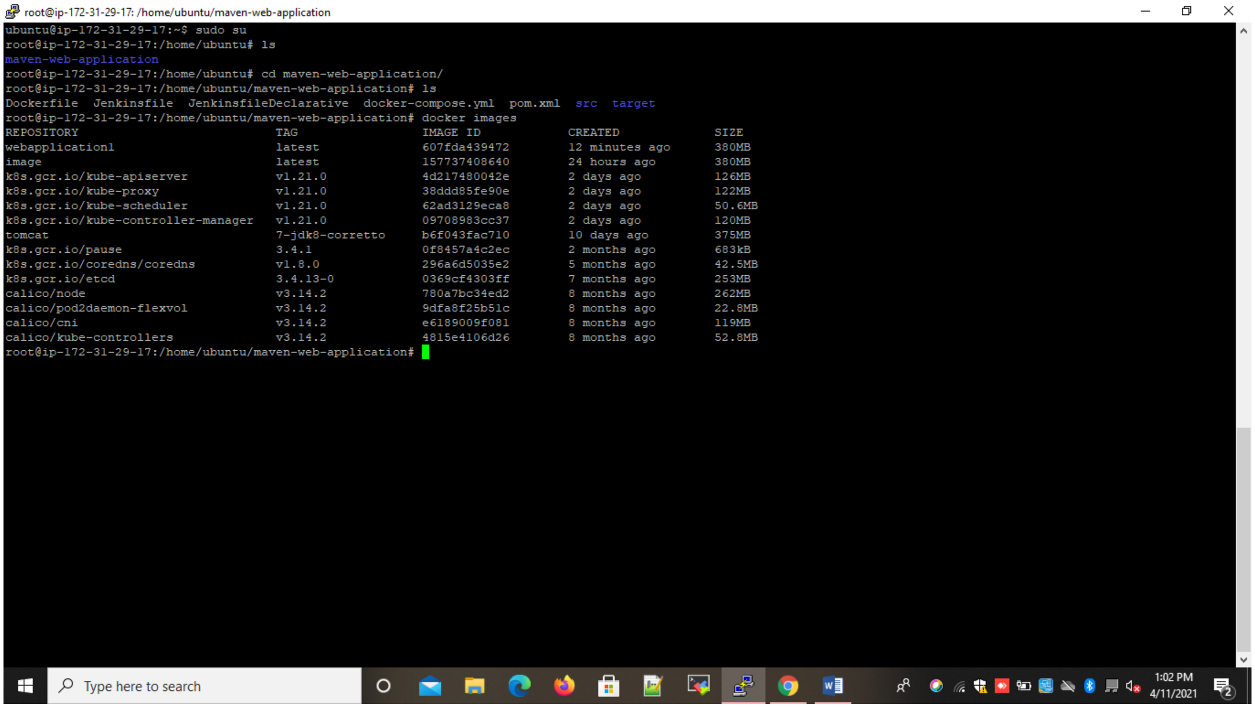
```
ubuntu@ip-172-31-29-17:~$ sudo su
root@ip-172-31-29-17:/home/ubuntu# ls
maven-web-application
root@ip-172-31-29-17:/home/ubuntu# cd maven-web-application/
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# ls
Dockerfile   JenkinsfileDeclarative  pom.xml  target
Jenkinsfile  docker-compose.yml      src
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# vi Dockerfile
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker build -t webapplication1 .
Sending build context to Docker daemon  11.66MB
Step 1/2 : FROM tomcat:7-jdk8-corretto
 ---> b6f043fac710
Step 2/2 : COPY target/maven-web-application*.war /usr/local/tomcat/webapps/maven-web-application.war
 ---> 607fda439472
Successfully built 607fda439472
Successfully tagged webapplication1:latest
root@ip-172-31-29-17:/home/ubuntu/maven-web-application#
```

Step7:

If you run this docker images command, it will list out images.

docker images

In this below diagram we can see webapplication1 image is generated or not.



root@ip-172-31-29-17: /home/ubuntu/maven-web-application

```
ubuntu@ip-172-31-29-17:~$ sudo su
root@ip-172-31-29-17:/home/ubuntu# ls
maven-web-application
root@ip-172-31-29-17:/home/ubuntu# cd maven-web-application/
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# ls
Dockerfile  Jenkinsfile  JenkinsfileDeclarative  docker-compose.yml  pom.xml  src  target
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker images
REPOSITORY                           TAG                 IMAGE ID            CREATED             SIZE
webapplication1                      latest              607fda439472        12 minutes ago      380MB
image                                latest              157737408640        24 hours ago        380MB
k8s.gcr.io/kube-apiserver            v1.21.0             4d217480042e        2 days ago          126MB
k8s.gcr.io/kube-proxy                v1.21.0             38ddd85fe90e        2 days ago          122MB
k8s.gcr.io/kube-scheduler            v1.21.0             62ad3129eca8        2 days ago          50.6MB
k8s.gcr.io/kube-controller-manager   v1.21.0             09708983cc37        2 days ago          120MB
tomcat                               7-jdk8-corretto     b6f043fac710        10 days ago         375MB
k8s.gcr.io/pause                     3.4.1               0f8457a4c2ec        2 months ago        683kB
k8s.gcr.io/coredns/coredns           v1.8.0              296a6d5035e2        5 months ago        42.5MB
k8s.gcr.io/etcd                      3.4.13-0            0369cf4303ff        7 months ago        253MB
calico/node                          v3.14.2             780a7bc34ed2        8 months ago        262MB
calico/pod2daemon-flexvol            v3.14.2             9dfa8f25b51c        8 months ago        22.8MB
calico/cni                           v3.14.2             e6189009f081        8 months ago        119MB
calico/kube-controllers              v3.14.2             4815e4106d26        8 months ago        52.8MB
root@ip-172-31-29-17:/home/ubuntu/maven-web-application#
```

Step8:

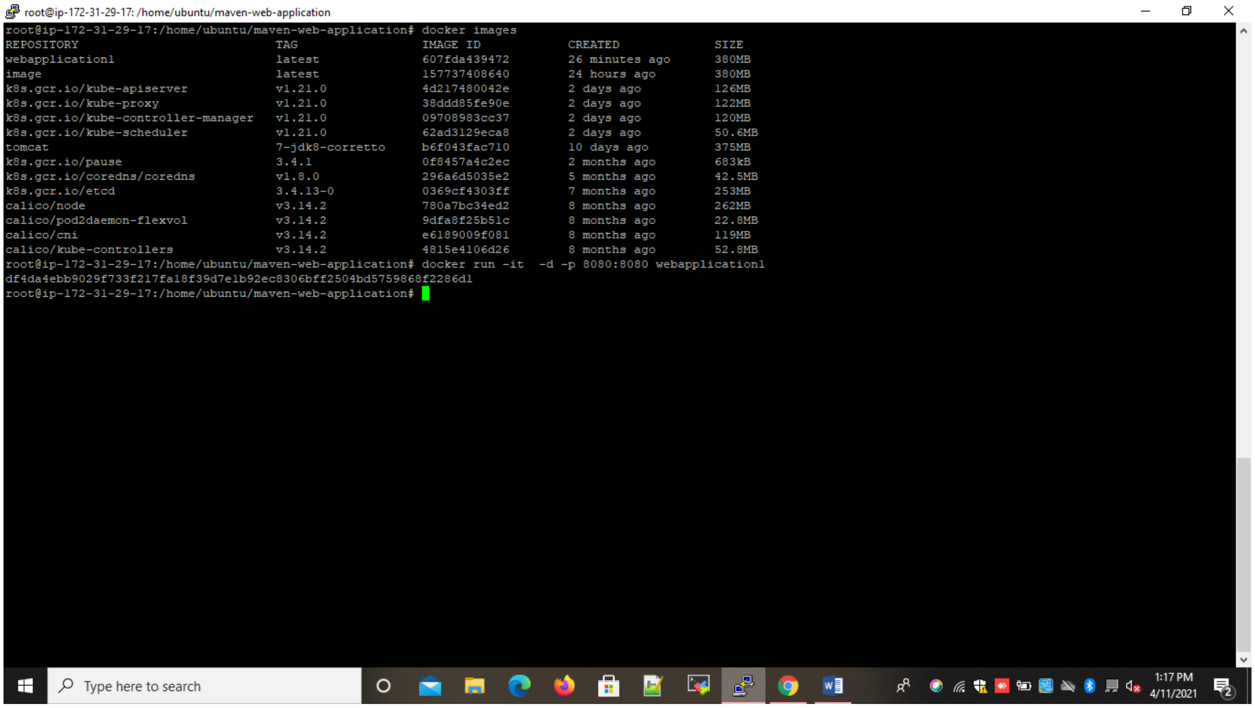
Next step is to create the container from docker image, by using the run command.

docker run -it -d -p 8080:8080 webapplication1

Here i means-interactive terminal interact o that host system

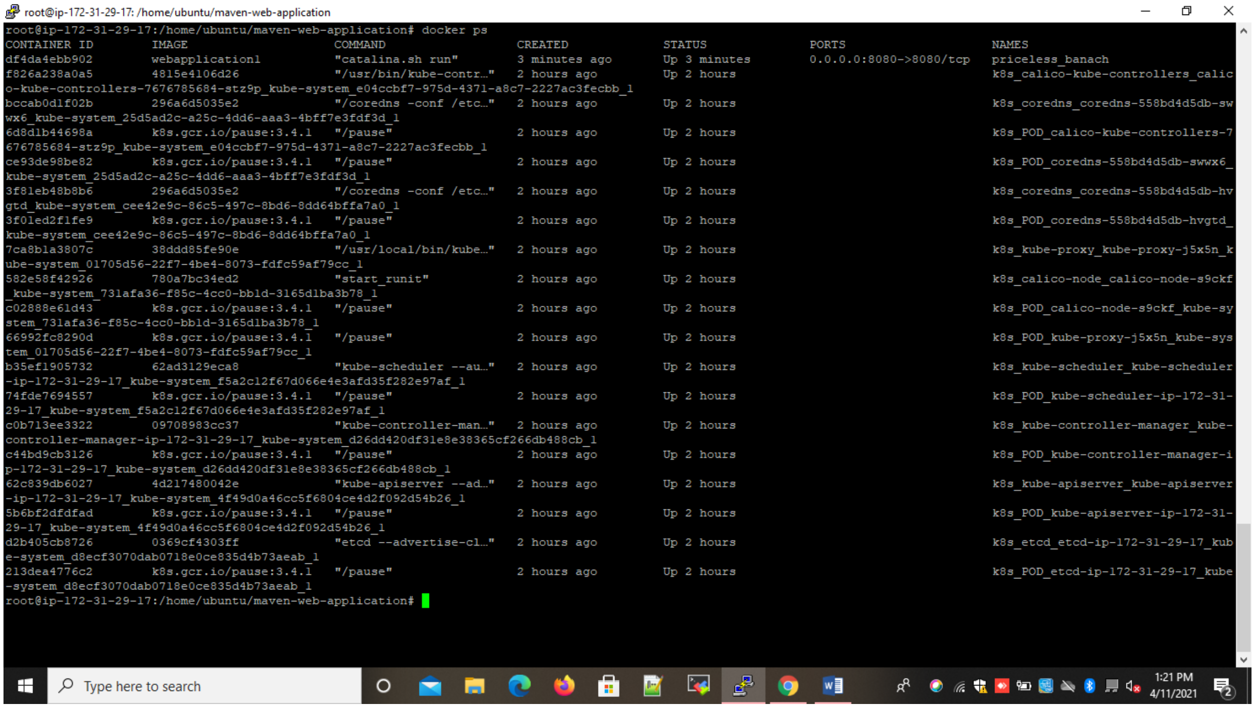
-d means – detached mode (run the container in background)

8080:8080 means- we map this container port to host port to access the application



```
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker images
REPOSITORY                           TAG                 IMAGE ID            CREATED             SIZE
webapplication1                      latest              607fda439472        26 minutes ago      380MB
image                                latest              157737408640        24 hours ago        380MB
k8s.gcr.io/kube-apiserver            v1.21.0             4d217480042e        2 days ago          126MB
k8s.gcr.io/kube-proxy                v1.21.0             38ddd85fe90e        2 days ago          122MB
k8s.gcr.io/kube-controller-manager   v1.21.0             09708983cc37        2 days ago          120MB
k8s.gcr.io/kube-scheduler            v1.21.0             62ad3129eca8        2 days ago          50.6MB
tomcat                               7-jdk8-corretto     b6f043fac710        10 days ago         375MB
k8s.gcr.io/pause                     3.4.1               0f8457a4c2ec        2 months ago        683kB
k8s.gcr.io/coredns/coredns           v1.8.0              296a6d5035e2        5 months ago        42.5MB
k8s.gcr.io/etcd                      3.4.13-0            0369cf4303ff        7 months ago        253MB
calico/node                          v3.14.2             780a7bc34ed2        8 months ago        262MB
calico/pod2daemon-flexvol            v3.14.2             9dfa8f25b51c        8 months ago        22.8MB
calico/cni                           v3.14.2             e6189009f081        8 months ago        119MB
calico/kube-controllers              v3.14.2             4815e4106d26        8 months ago        52.8MB
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker run -it  -d -p 8080:8080 webapplication1
df4da4ebb9029f733f217fa18f39d7e1b92ec8306bff2504bd5759868f2286d1
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# 
```

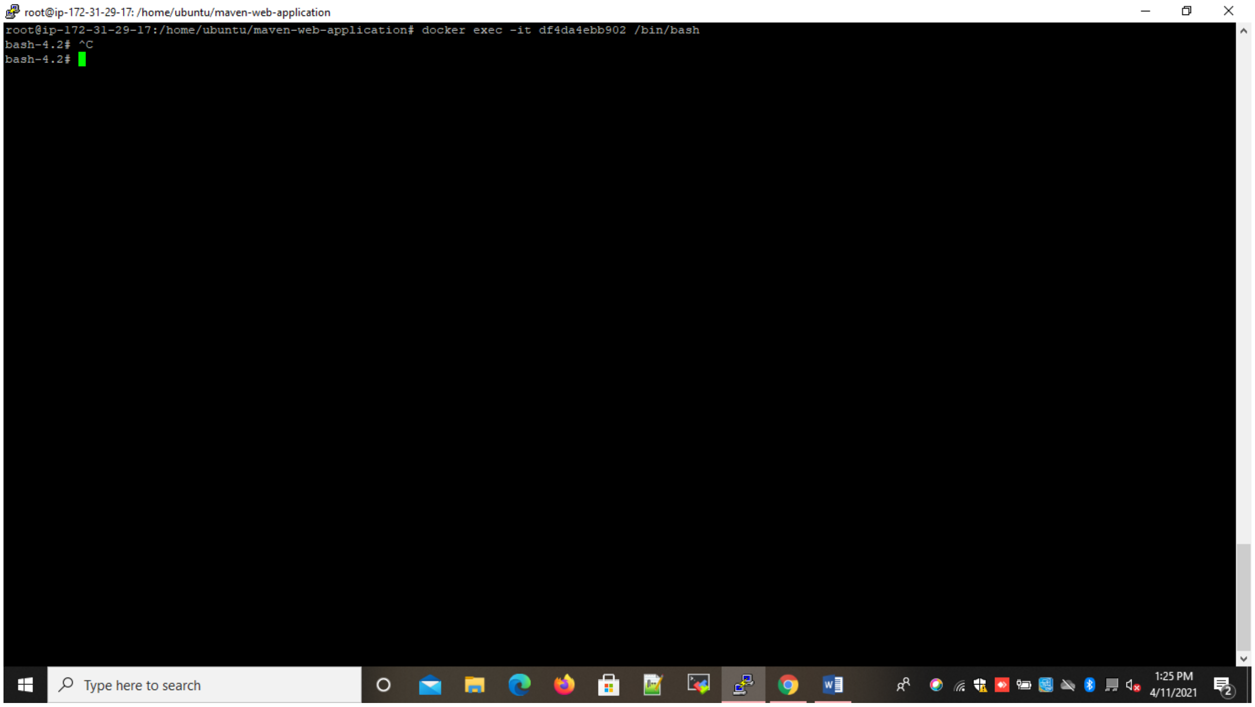
When u run that **docker ps** command we can see the running container list.in this below diagram we can see the container, container id is **df4da4ebb902.**



```
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker ps
CONTAINER ID        IMAGE                    COMMAND                  CREATED             STATUS              PORTS                    NAMES
df4da4ebb902        webapplication1          "catalina.sh run"        3 minutes ago       Up 3 minutes        0.0.0.0:8080->8080/tcp   priceless_banach
f826a238a0a5        4815e4106d26             "/usr/bin/kube-contr…"   2 hours ago         Up 2 hours                                   k8s_calico-kube-controllers_calic
o-kube-controllers-7676785684-stz9p_kube-system_e04ccbf7-975d-4371-a8c7-2227ac3fecbb_1
bccab0d1f02b        296a6d5035e2             "/coredns -conf /etc…"   2 hours ago         Up 2 hours                                   k8s_coredns_coredns-558bd4d5db-sw
wx6_kube-system_25d5ad2c-a25c-4dd6-aaa3-4bff7e3fdf3d_1
6d8d1b44698a        k8s.gcr.io/pause:3.4.1   "/pause"                 2 hours ago         Up 2 hours                                   k8s_POD_calico-kube-controllers-7
676785684-stz9p_kube-system_e04ccbf7-975d-4371-a8c7-2227ac3fecbb_1
ce93de98be82        k8s.gcr.io/pause:3.4.1   "/pause"                 2 hours ago         Up 2 hours                                   k8s_POD_coredns-558bd4d5db-swwx6_
kube-system_25d5ad2c-a25c-4dd6-aaa3-4bff7e3fdf3d_1
3f81eb48b8b6        296a6d5035e2             "/coredns -conf /etc…"   2 hours ago         Up 2 hours                                   k8s_coredns_coredns-558bd4d5db-hv
gtd_kube-system_cee42e9c-86c5-497c-8bd6-8dd64bffa7a0_1
3f01ed2f1fe9        k8s.gcr.io/pause:3.4.1   "/pause"                 2 hours ago         Up 2 hours                                   k8s_POD_coredns-558bd4d5db-hvgtd_
kube-system_cee42e9c-86c5-497c-8bd6-8dd64bffa7a0_1
7ca8b1a3807c        38ddd85fe90e             "/usr/local/bin/kube…"   2 hours ago         Up 2 hours                                   k8s_kube-proxy_kube-proxy-j5x5n_k
ube-system_01705d56-22f7-4be4-8073-fdfc59af79cc_1
582e58f42926        780a7bc34ed2             "start_runit"            2 hours ago         Up 2 hours                                   k8s_calico-node_calico-node-s9ckf
_kube-system_731afa36-f85c-4cc0-bb1d-3165d1ba3b78_1
c02888e61d43        k8s.gcr.io/pause:3.4.1   "/pause"                 2 hours ago         Up 2 hours                                   k8s_POD_calico-node-s9ckf_kube-sy
stem_731afa36-f85c-4cc0-bb1d-3165d1ba3b78_1
66992fc8290d        k8s.gcr.io/pause:3.4.1   "/pause"                 2 hours ago         Up 2 hours                                   k8s_POD_kube-proxy-j5x5n_kube-sys
tem_01705d56-22f7-4be4-8073-fdfc59af79cc_1
b35ef1905732        62ad3129eca8             "kube-scheduler --au…"   2 hours ago         Up 2 hours                                   k8s_kube-scheduler_kube-scheduler
-ip-172-31-29-17_kube-system_f5a2c12f67d066e4e3afd35f282e97af_1
74fde7694557        k8s.gcr.io/pause:3.4.1   "/pause"                 2 hours ago         Up 2 hours                                   k8s_POD_kube-scheduler-ip-172-31-
29-17_kube-system_f5a2c12f67d066e4e3afd35f282e97af_1
c0b713ee3322        09708983cc37             "kube-controller-man…"   2 hours ago         Up 2 hours                                   k8s_kube-controller-manager_kube-
controller-manager-ip-172-31-29-17_kube-system_d26dd420df31e8e38365cf266db488cb_1
c44bd9cb3126        k8s.gcr.io/pause:3.4.1   "/pause"                 2 hours ago         Up 2 hours                                   k8s_POD_kube-controller-manager-i
p-172-31-29-17_kube-system_d26dd420df31e8e38365cf266db488cb_1
62c839db6027        4d217480042e             "kube-apiserver --ad…"   2 hours ago         Up 2 hours                                   k8s_kube-apiserver_kube-apiserver
-ip-172-31-29-17_kube-system_4f49d0a46cc5f6804ce4d2f092d54b26_1
5b6bf2dfdfad        k8s.gcr.io/pause:3.4.1   "/pause"                 2 hours ago         Up 2 hours                                   k8s_POD_kube-apiserver-ip-172-31-
29-17_kube-system_4f49d0a46cc5f6804ce4d2f092d54b26_1
d2b405cb8726        0369cf4303ff             "etcd --advertise-cl…"   2 hours ago         Up 2 hours                                   k8s_etcd_etcd-ip-172-31-29-17_kub
e-system_d8ecf3070dab0718e0ce835d4b73aeab_1
213dea4776c2        k8s.gcr.io/pause:3.4.1   "/pause"                 2 hours ago         Up 2 hours                                   k8s_POD_etcd-ip-172-31-29-17_kube
-system_d8ecf3070dab0718e0ce835d4b73aeab_1
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# 
```

Suppose if want to enter into that container we can run the command.

docker exec -it df4da4ebb902 /bin/bash

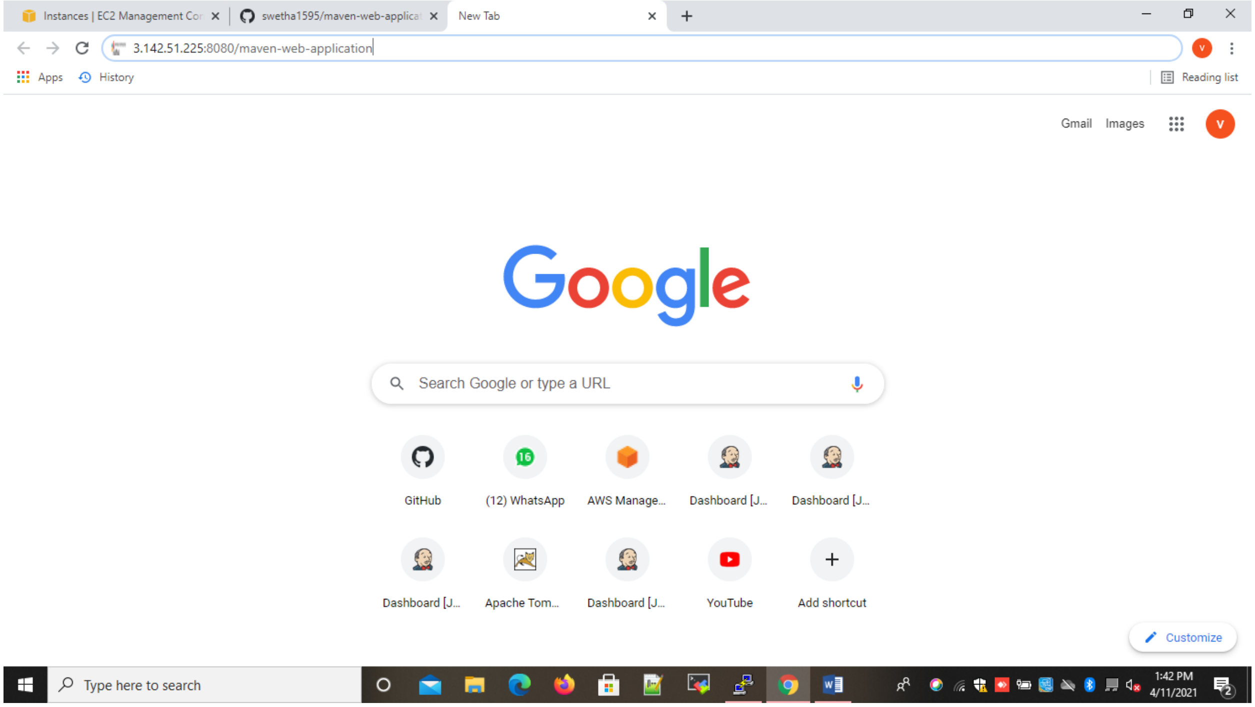


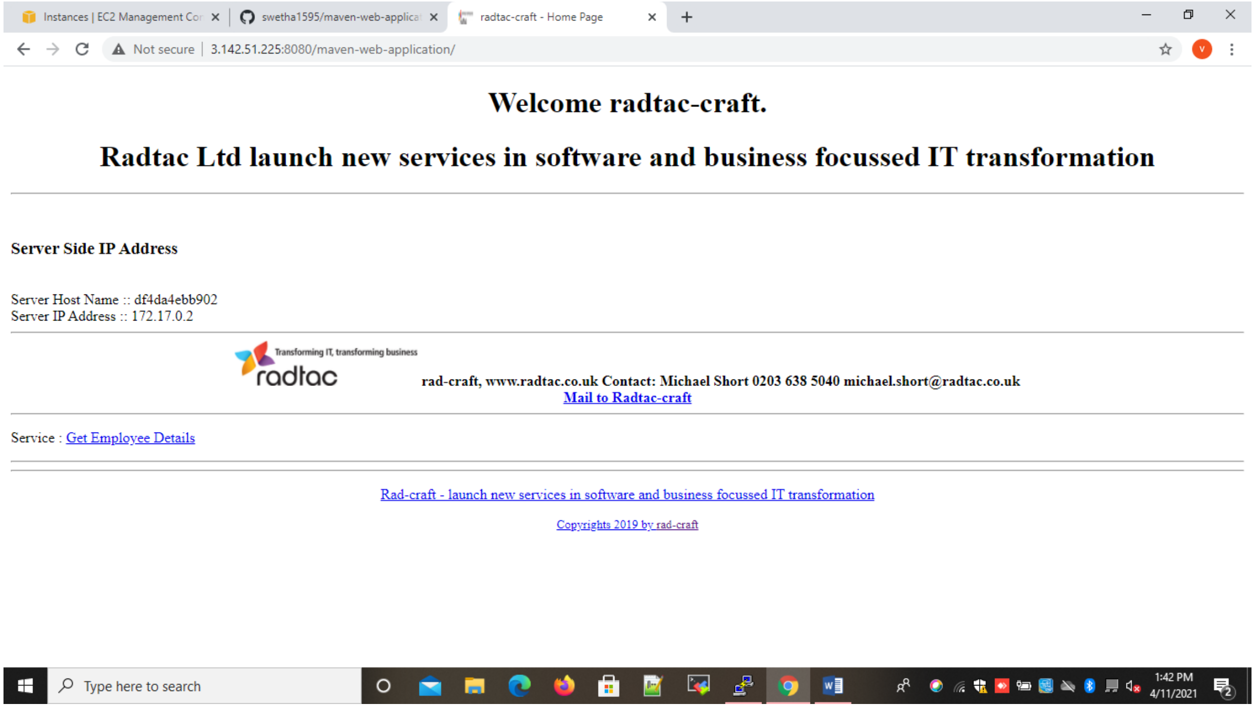
```
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker exec -it df4da4ebb902 /bin/bash
bash-4.2# ^C
bash-4.2# 
```

Step9:

Here we can see container is running successfully, after that we can take that instance ip and port number and name of package we should mention in google and hit enter we can see the webapllication is deployed successfully or not In container.

3.142.51.225:8080/maven-web-application




Instances | EC2 Management Cor
swetha1595/maven-web-applica
radtac-craft - Home Page
Not secure | 3.142.51.225:8080/maven-web-application/
Type here to search
1:42 PM
4/11/2021

Welcome radtac-craft.

Radtac Ltd launch new services in software and business focussed IT transformation

Server Side IP Address

Server Host Name :: df4da4ebb902
Server IP Address :: 172.17.0.2

Transforming IT, transforming business radtac

rad-craft, www.radtac.co.uk Contact: Michael Short 0203 638 5040 michael.short@radtac.co.uk
Mail to Radtac-craft

Service : Get Employee Details

Rad-craft - launch new services in software and business focussed IT transformation

Copyrights 2019 by rad-craft

Step10:

Successfully deployed web application in docker container.

3) Deploy the Docker Container using Kubernetes?

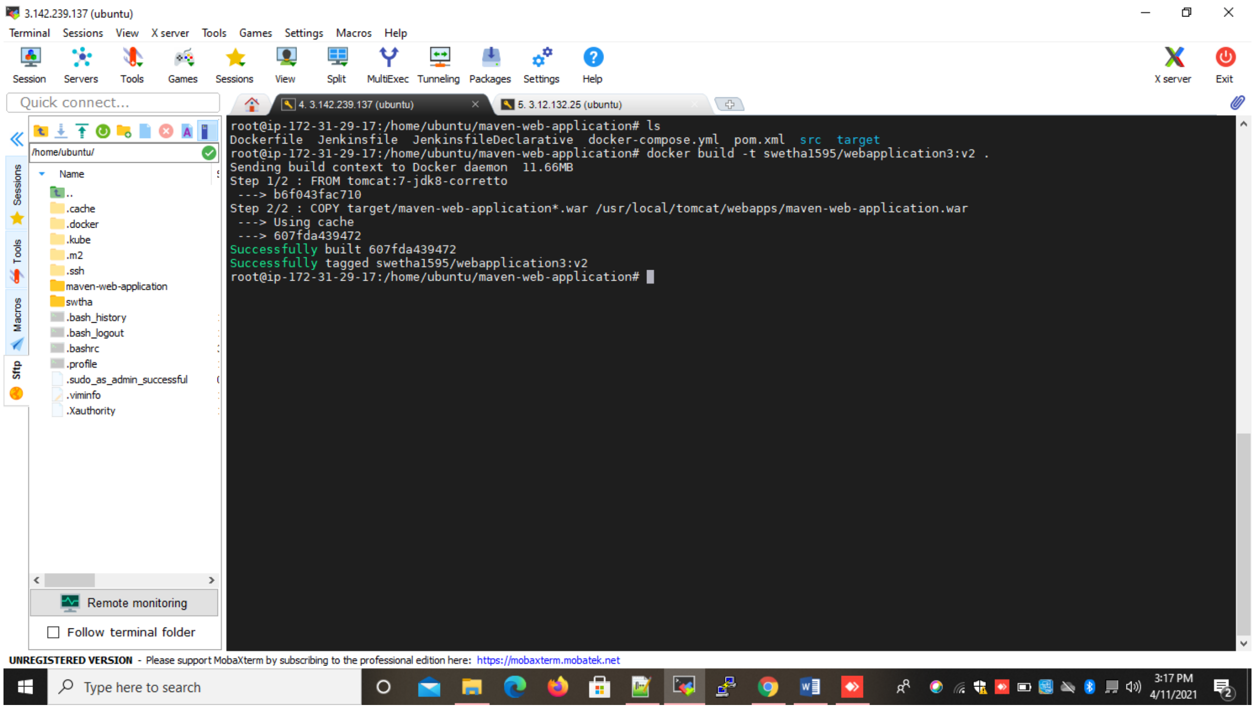
Step1:

First step is build the docker image from docker file. After that push that docker image into docker hub.

docker build -t swetha1595/webapplication3:v2

Swetha1595-username of dockerhub
webapplication3: image name
v2- tag name

Here we can see image is successfully build or not.



3.142.239.137 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
4. 3.142.239.137 (ubuntu)
5. 3.12.132.25 (ubuntu)
/home/ubuntu/
Name
..
.cache
.docker
.kube
.m2
.ssh
maven-web-application
swtha
.bash_history
.bash_logout
.bashrc
.profile
.sudo_as_admin_successful
.viminfo
.Xauthority
Sessions
Tools
Macros
Sftp
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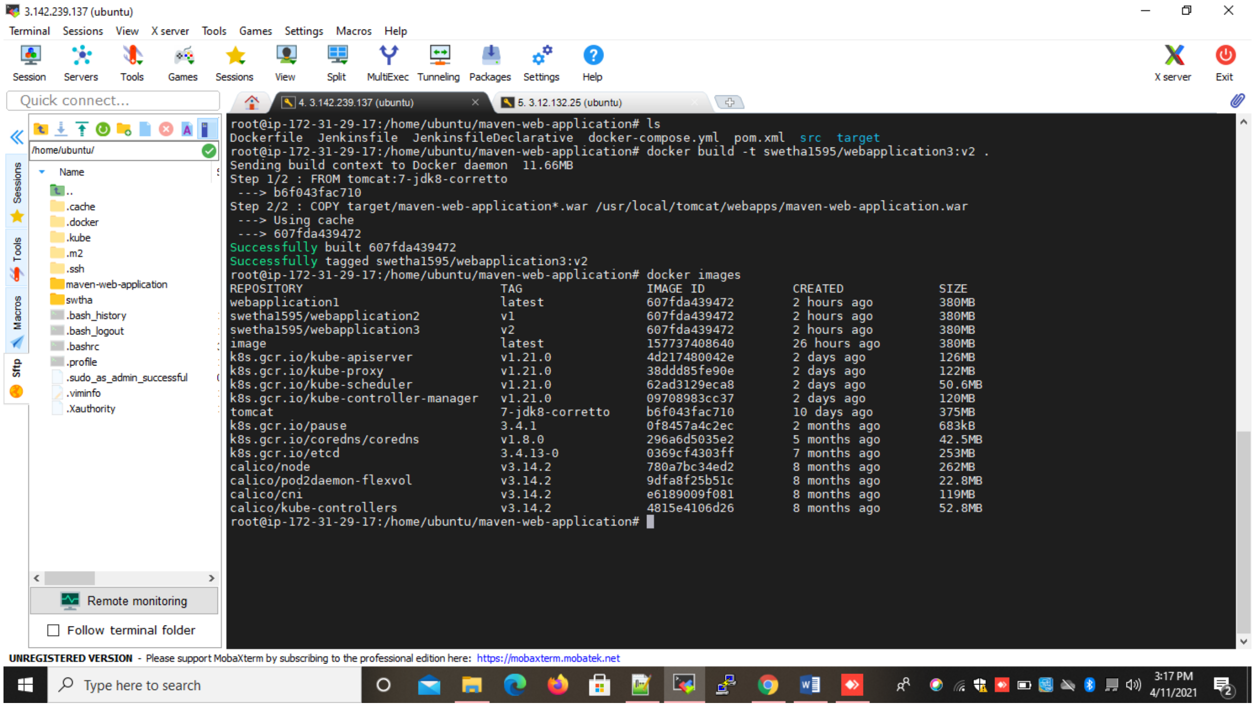
```
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# ls
Dockerfile  Jenkinsfile  JenkinsfileDeclarative  docker-compose.yml  pom.xml  src  target
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker build -t swetha1595/webapplication3:v2 .
Sending build context to Docker daemon  11.66MB
Step 1/2 : FROM tomcat:7-jdk8-corretto
 ---> b6f043fac710
Step 2/2 : COPY target/maven-web-application*.war /usr/local/tomcat/webapps/maven-web-application.war
 ---> Using cache
 ---> 607fda439472
Successfully built 607fda439472
Successfully tagged swetha1595/webapplication3:v2
root@ip-172-31-29-17:/home/ubuntu/maven-web-application#
```

Below diagram we can see image is successfully created or not.


3.142.239.137 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
4. 3.142.239.137 (ubuntu)
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/home/ubuntu/
Name
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.bash_logout
.bashrc
.profile
.sudo_as_admin_successful
.viminfo
.Xauthority
Remote monitoring
Follow terminal folder
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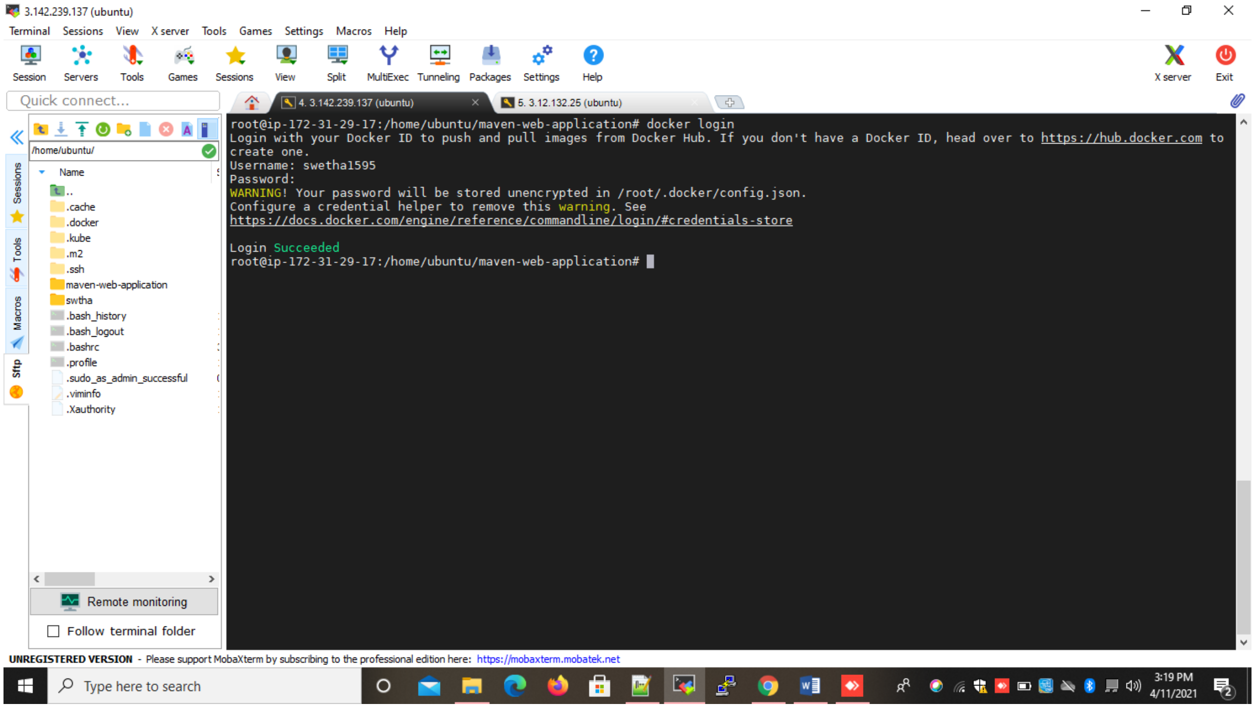
```
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# ls
Dockerfile  Jenkinsfile  JenkinsfileDeclarative  docker-compose.yml  pom.xml  src  target
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker build -t swetha1595/webapplication3:v2 .
Sending build context to Docker daemon  11.66MB
Step 1/2 : FROM tomcat:7-jdk8-corretto
 ---> b6f043fac710
Step 2/2 : COPY target/maven-web-application*.war /usr/local/tomcat/webapps/maven-web-application.war
 ---> Using cache
 ---> 607fda439472
Successfully built 607fda439472
Successfully tagged swetha1595/webapplication3:v2
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker images
REPOSITORY                          TAG                 IMAGE ID            CREATED             SIZE
webapplication1                     latest              607fda439472        2 hours ago         380MB
swetha1595/webapplication2          v1                  607fda439472        2 hours ago         380MB
swetha1595/webapplication3          v2                  607fda439472        2 hours ago         380MB
image                               latest              157737408640        26 hours ago        380MB
k8s.gcr.io/kube-apiserver           v1.21.0             4d217480042e        2 days ago          126MB
k8s.gcr.io/kube-proxy               v1.21.0             38ddd85fe90e        2 days ago          122MB
k8s.gcr.io/kube-scheduler           v1.21.0             62ad3129eca8        2 days ago          50.6MB
k8s.gcr.io/kube-controller-manager  v1.21.0             09708983cc37        2 days ago          120MB
tomcat                              7-jdk8-corretto     b6f043fac710        10 days ago         375MB
k8s.gcr.io/pause                    3.4.1               0f8457a4c2ec        2 months ago        683kB
k8s.gcr.io/coredns/coredns          v1.8.0              296a6d5035e2        5 months ago        42.5MB
k8s.gcr.io/etcd                     3.4.13-0            0369cf4303ff        7 months ago        253MB
calico/node                         v3.14.2             780a7bc34ed2        8 months ago        262MB
calico/pod2daemon-flexvol           v3.14.2             9dfa8f25b51c        8 months ago        22.8MB
calico/cni                          v3.14.2             e6189009f081        8 months ago        119MB
calico/kube-controllers             v3.14.2             4815e4106d26        8 months ago        52.8MB
root@ip-172-31-29-17:/home/ubuntu/maven-web-application#
```

Step2:

Push that image into docker hub account. Before that u need to login into dockerhub account using docker login command after that give the username of dockerhub and password u need to give.

Here we can see successfully logged in or not.


3.142.239.137 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
4. 3.142.239.137 (ubuntu)
5. 3.12.132.25 (ubuntu)
/home/ubuntu/
Name
..
.cache
.docker
.kube
.m2
.ssh
maven-web-application
swtha
.bash_history
.bash_logout
.bashrc
.profile
.sudo_as_admin_successful
.viminfo
.Xauthority
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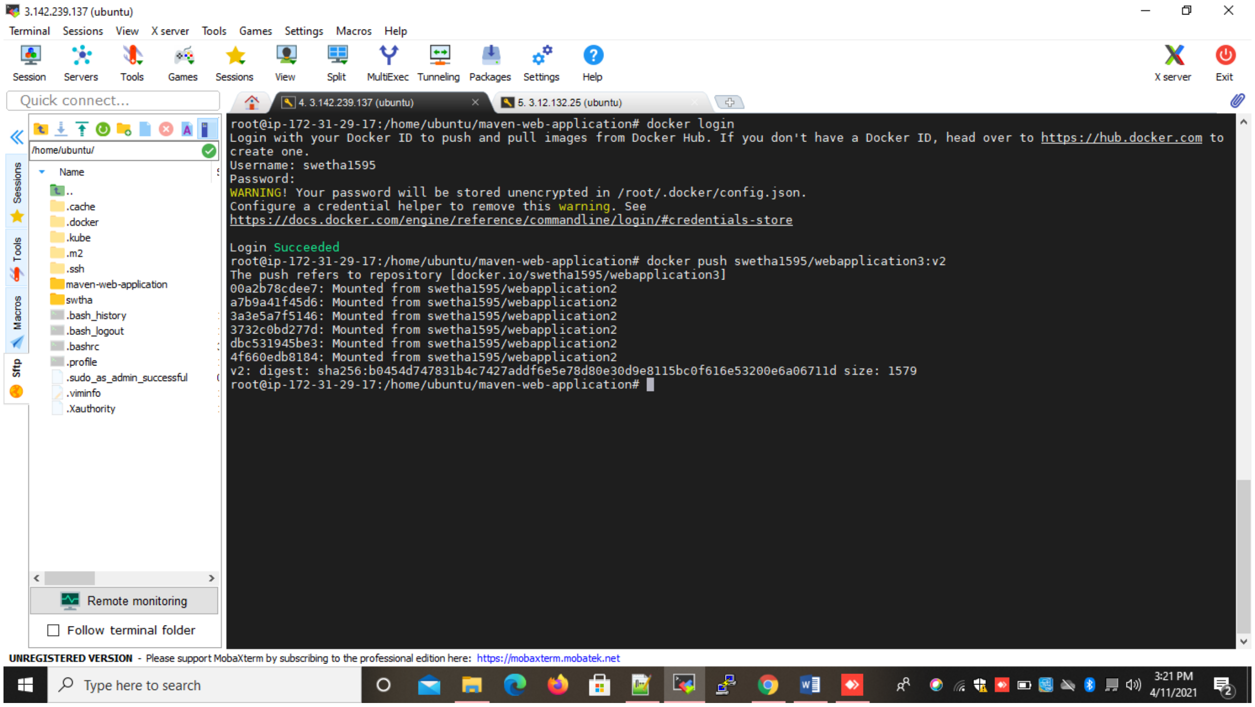
3:19 PM
4/11/2021

```
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to
create one.
Username: swetha1595
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
root@ip-172-31-29-17:/home/ubuntu/maven-web-application#
```

After that Using this command u need to push that docker image into docker hub

docker push swetha1595/webapplication3:v2



```
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to
create one.
Username: swetha1595
Password:
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# docker push swetha1595/webapplication3:v2
The push refers to repository [docker.io/swetha1595/webapplication3]
00a2b78cdee7: Mounted from swetha1595/webapplication2
a7b9a41f45d6: Mounted from swetha1595/webapplication2
3a3e5a7f5146: Mounted from swetha1595/webapplication2
3732c0bd277d: Mounted from swetha1595/webapplication2
dbc531945be3: Mounted from swetha1595/webapplication2
4f660edb8184: Mounted from swetha1595/webapplication2
v2: digest: sha256:b0454d747831b4c7427addf6e5e78d80e30d9e8115bc0f616e53200e6a06711d size: 1579
root@ip-172-31-29-17:/home/ubuntu/maven-web-application# 
```

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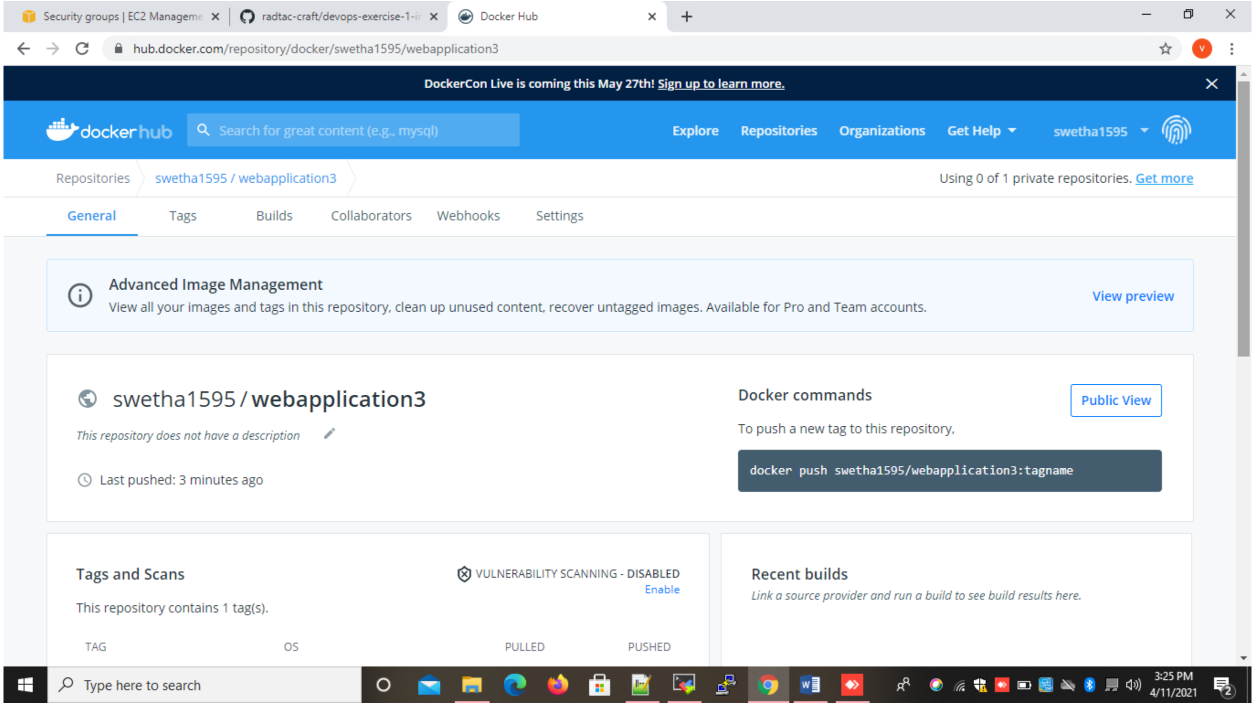
Then u need to check that dockerhub account and image is pushed or not.

Below diagram we can see image is present or not.


Security groups | EC2 Manageme
radtac-craft/devops-exercise-1-i
Docker Hub
hub.docker.com/repository/docker/swetha1595/webapplication3
docker hub
Search for great content (e.g., mysql)
Explore Repositories Organizations Get Help
swetha1595
Repositories
swetha1595 / webapplication3
General Tags Builds Collaborators Webhooks Settings
View preview
Public View
Enable
TAG OS PULLED PUSHED
Type here to search
3:25 PM
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DockerCon Live is coming this May 27th! Sign up to learn more.

Using 0 of 1 private repositories. Get more

Advanced Image Management

View all your images and tags in this repository, clean up unused content, recover untagged images. Available for Pro and Team accounts.

swetha1595 / webapplication3

This repository does not have a description

Last pushed: 3 minutes ago

Docker commands

To push a new tag to this repository,

```
docker push swetha1595/webapplication3:tagname
```

Tags and Scans

VULNERABILITY SCANNING - DISABLED

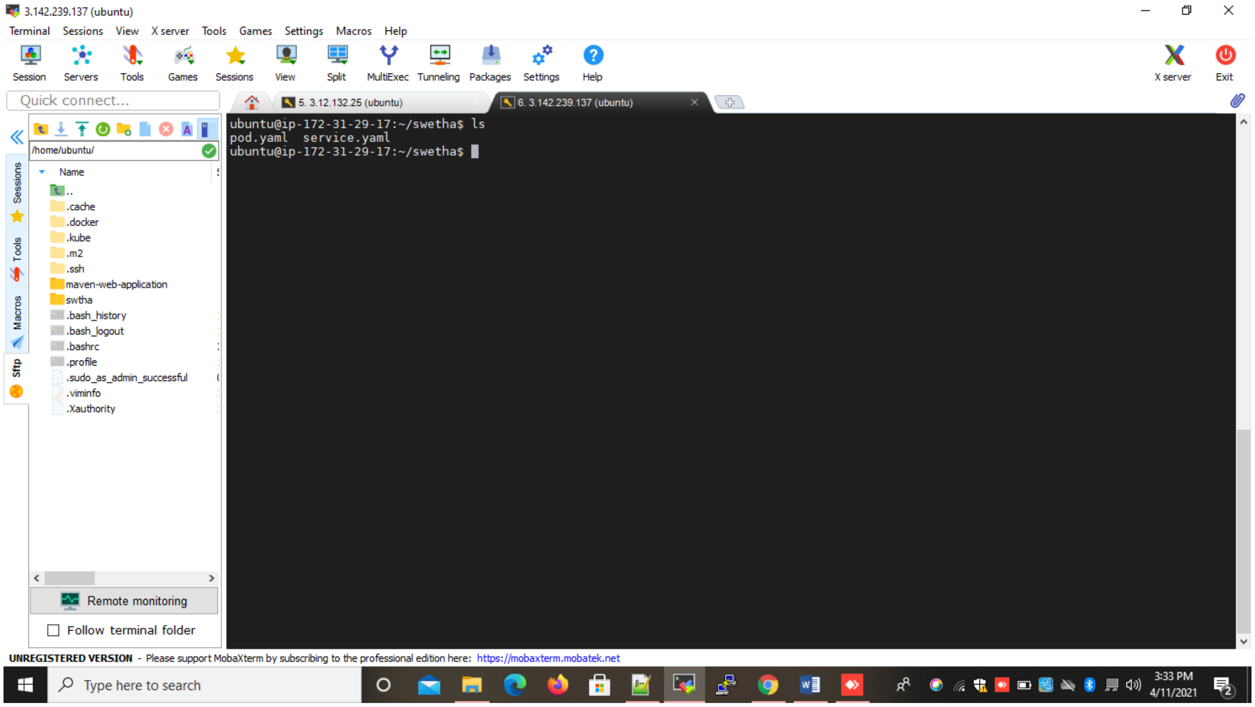
This repository contains 1 tag(s).

Recent builds

Link a source provider and run a build to see build results here.

Step3:

Next step is a Create a one directory and we need to write pod yaml file and service file. Here I created a one directory name swetha, in that directory I have created 2 files one is **pod yaml** file and 2nd is **service** file.


3.142.239.137 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
5. 3.12.132.25 (ubuntu)
6. 3.142.239.137 (ubuntu)
/home/ubuntu/
Name
..
.cache
.docker
.kube
.m2
.ssh
maven-web-application
swtha
.bash_history
.bash_logout
.bashrc
.profile
.sudo_as_admin_successful
.viminfo
.Xauthority
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3:33 PM
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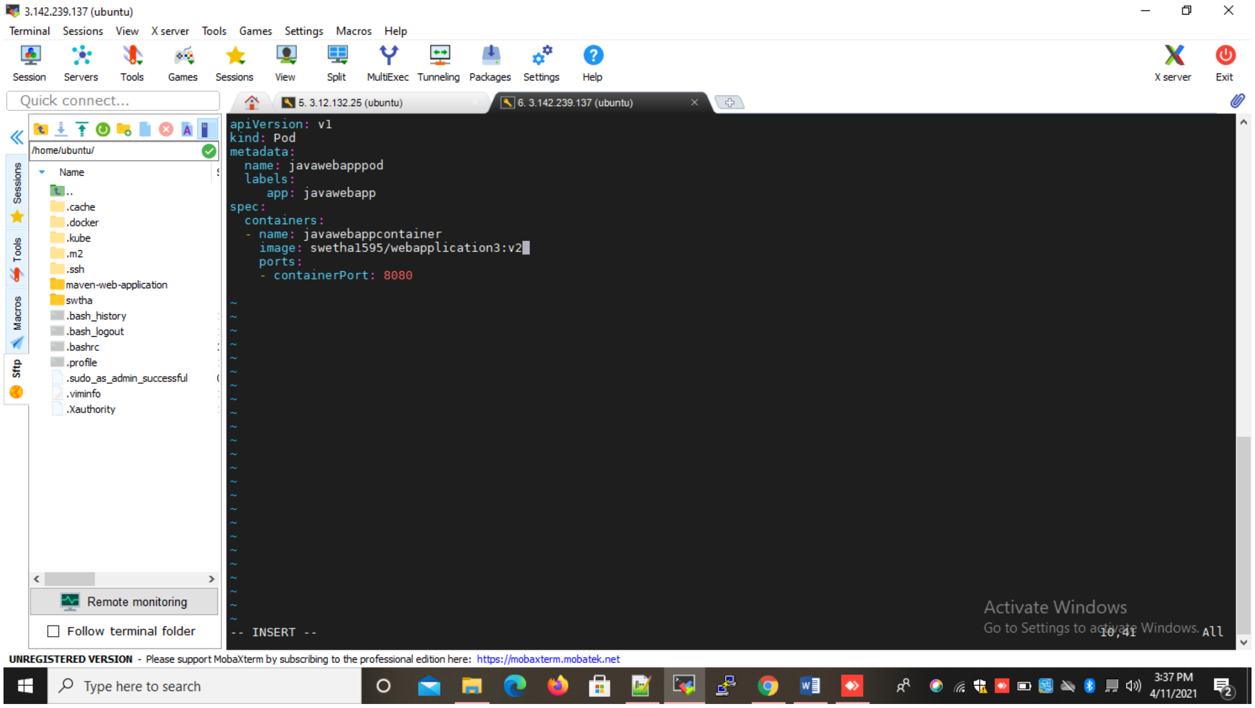
```
ubuntu@ip-172-31-29-17:~/swetha$ ls
pod.yaml  service.yaml
ubuntu@ip-172-31-29-17:~/swetha$ 
```

Here we can see that pod yaml file.


3.142.239.137 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
5. 3.12.132.25 (ubuntu)
6. 3.142.239.137 (ubuntu)
/home/ubuntu/
Name
..
.cache
.docker
.kube
.m2
.ssh
maven-web-application
swtha
.bash_history
.bash_logout
.bashrc
.profile
.sudo_as_admin_successful
.viminfo
.Xauthority
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3:37 PM
4/11/2021

```
apiVersion: v1
kind: Pod
metadata:
  name: javawebapppod
  labels:
     app: javawebapp
spec:
  containers:
  - name: javawebappcontainer
    image: swetha1595/webapplication3:v2
    ports:
    - containerPort: 8080

~
~
~
-- INSERT --                                                                10,41         All
```

We can create k8 object in 2 forms 1) json
2) Yaml

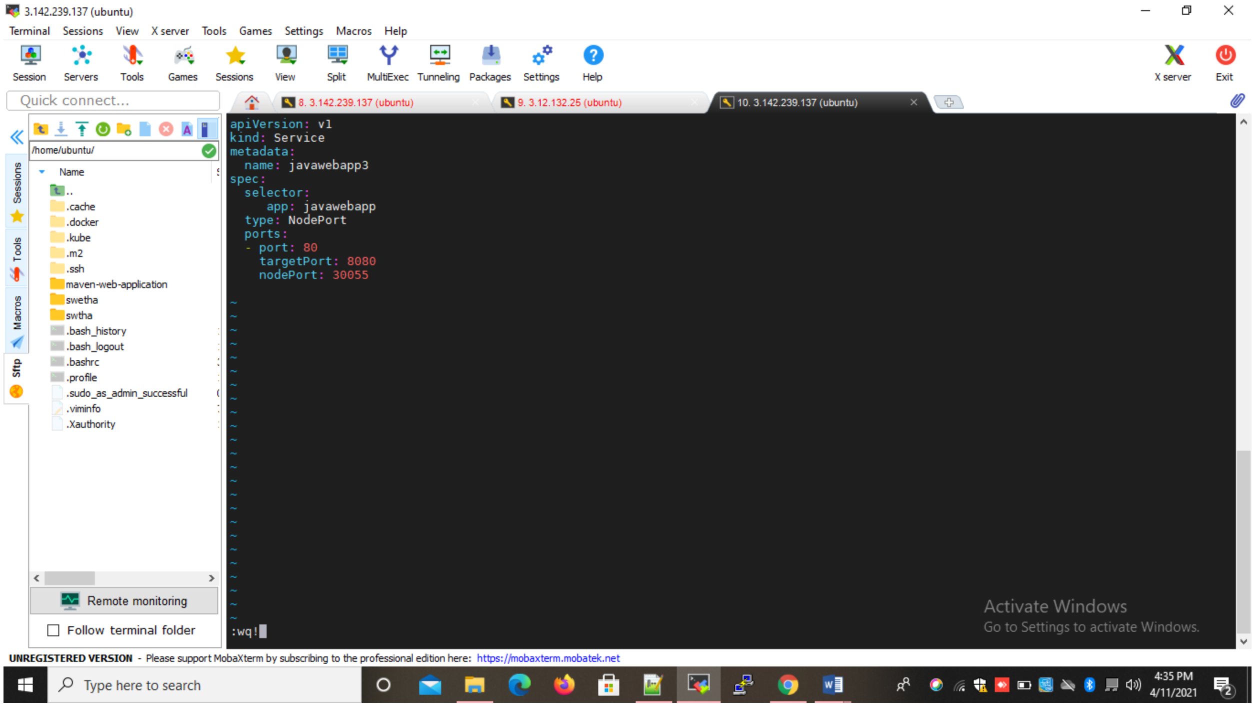
Yaml has the clear and most easy to understand than json.
4 top level fields in this yaml file

1) **API Version**
2) **Kind**
3) **Metadata**
4) **Spec**

1) First **API** version defines the version number, which this k8 object belongs to.v1 version belongs to pod, RC, service. And kind of object is pod.
2) Next comes **metadata** consist of 2 fields one is name and 2nd is label name is the name of object we are created. Labels are just given to the tag given to pod.
3) Next **spec** under the spec file we are going to config container
Container: we are going to deploy web application, we have to take image from docker hub before that what I have pushed. And port number we have to mention.

Step4:

And next step is we have to create one service file, to expose our application. Here we can see the service file.



```
apiVersion: v1
kind: Service
metadata:
  name: javawebapp3
spec:
  selector:
     app: javawebapp
  type: NodePort
  ports:
  - port: 80
    targetPort: 8080
    nodePort: 30055
```

```
:wq!
```

3.142.239.137 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
8. 3.142.239.137 (ubuntu)
9. 3.12.132.25 (ubuntu)
10. 3.142.239.137 (ubuntu)
/home/ubuntu/
Name
..
.cache
.docker
.kube
.m2
.ssh
maven-web-application
swetha
swtha
.bash_history
.bash_logout
.bashrc
.profile
.sudo_as_admin_successful
.viminfo
.Xauthority
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In this file I mentioned
Same as pod yaml file. And extra things is under spec section I mentioned selectors.

Selectors:

Selectors allows to filter the objects based on labels. What u mentioned in yaml file. Currently supports 2 types of selectors 1) equality based2) set based.

Under ports section I gave the node port.

Node port:

It is an open port on every node of your cluster and forwards any traffic that is received on this port to internal services. Mainly it is useful when front end pods are to be exposed outside the cluster for users to access it.

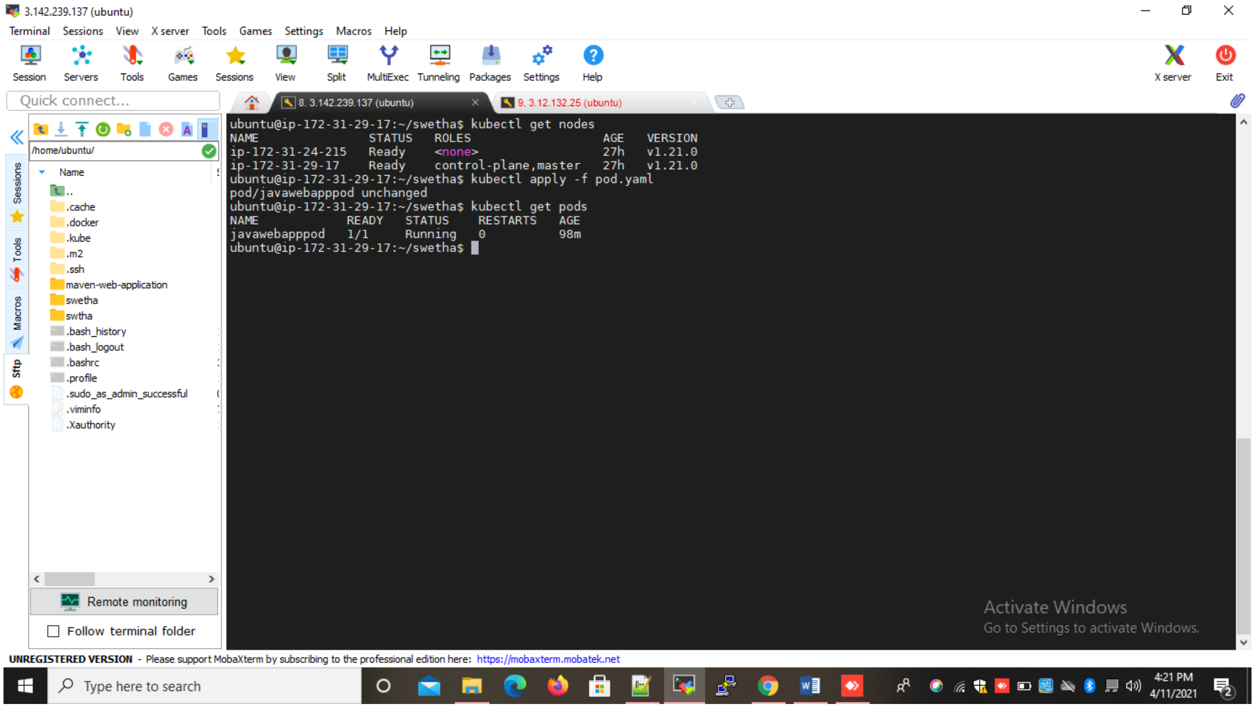
Step5:

Next step is to execute the pod yaml file using this command

kubectl apply –f pod. Yaml

We can check the pods by using this command **kubectl get pods.**

Below we can see the pods or running or not.



3.142.239.137 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
X server Exit
Quick connect...
8. 3.142.239.137 (ubuntu)
9. 3.12.132.25 (ubuntu)
/home/ubuntu/
Name
..
.cache
.docker
.kube
.m2
.ssh
maven-web-application
swetha
swtha
.bash_history
.bash_logout
.bashrc
.profile
.sudo_as_admin_successful
.viminfo
.Xauthority
Remote monitoring
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4:21 PM
4/11/2021

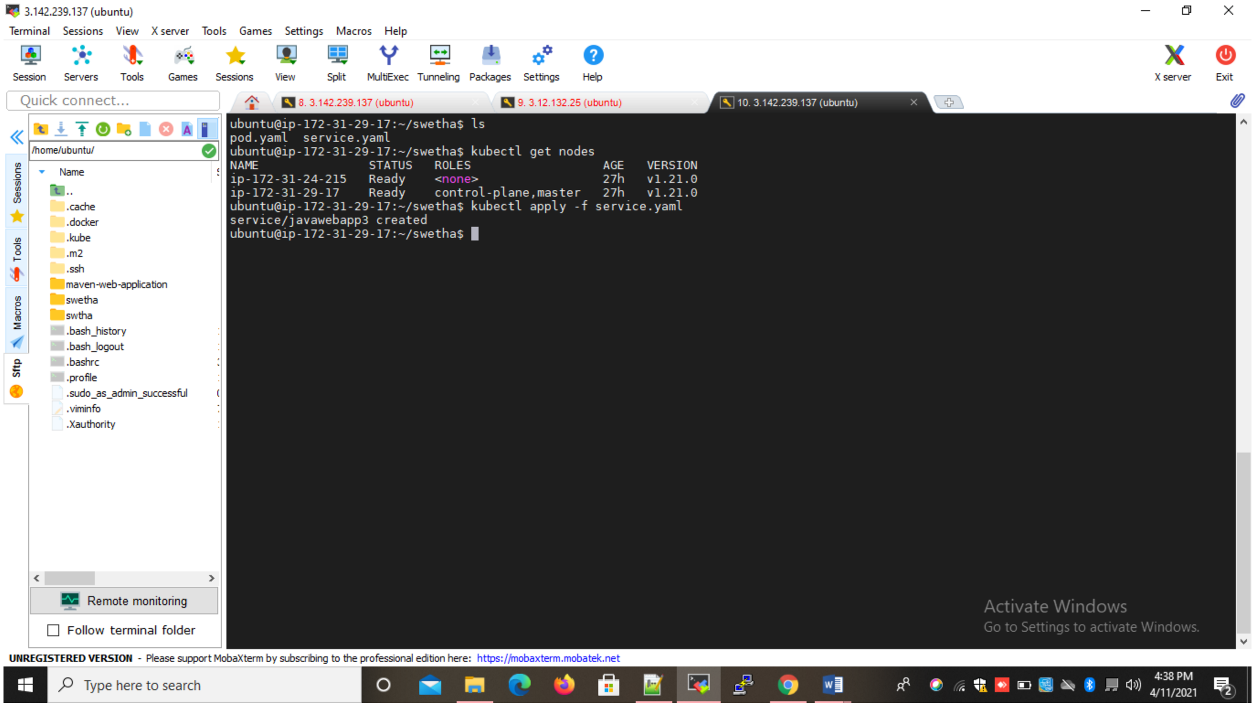
```
ubuntu@ip-172-31-29-17:~/swetha$ kubectl get nodes
NAME               STATUS   ROLES                  AGE   VERSION
ip-172-31-24-215   Ready    <none>                 27h   v1.21.0
ip-172-31-29-17    Ready    control-plane,master   27h   v1.21.0
ubuntu@ip-172-31-29-17:~/swetha$ kubectl apply -f pod.yaml
pod/javawebapppod unchanged
ubuntu@ip-172-31-29-17:~/swetha$ kubectl get pods
NAME            READY   STATUS    RESTARTS   AGE
javawebapppod   1/1     Running   0          98m
ubuntu@ip-172-31-29-17:~/swetha$
```

Step6:

Next step is to execute the service file by using this command

kubectl apply –f service.yaml

Here we can see the service is created or not.



3.142.239.137 (ubuntu)
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help X server Exit
Quick connect...
8. 3.142.239.137 (ubuntu)
9. 3.12.132.25 (ubuntu)
10. 3.142.239.137 (ubuntu)
/home/ubuntu/
Name
..
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swtha
.bash_history
.bash_logout
.bashrc
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.viminfo
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4:38 PM
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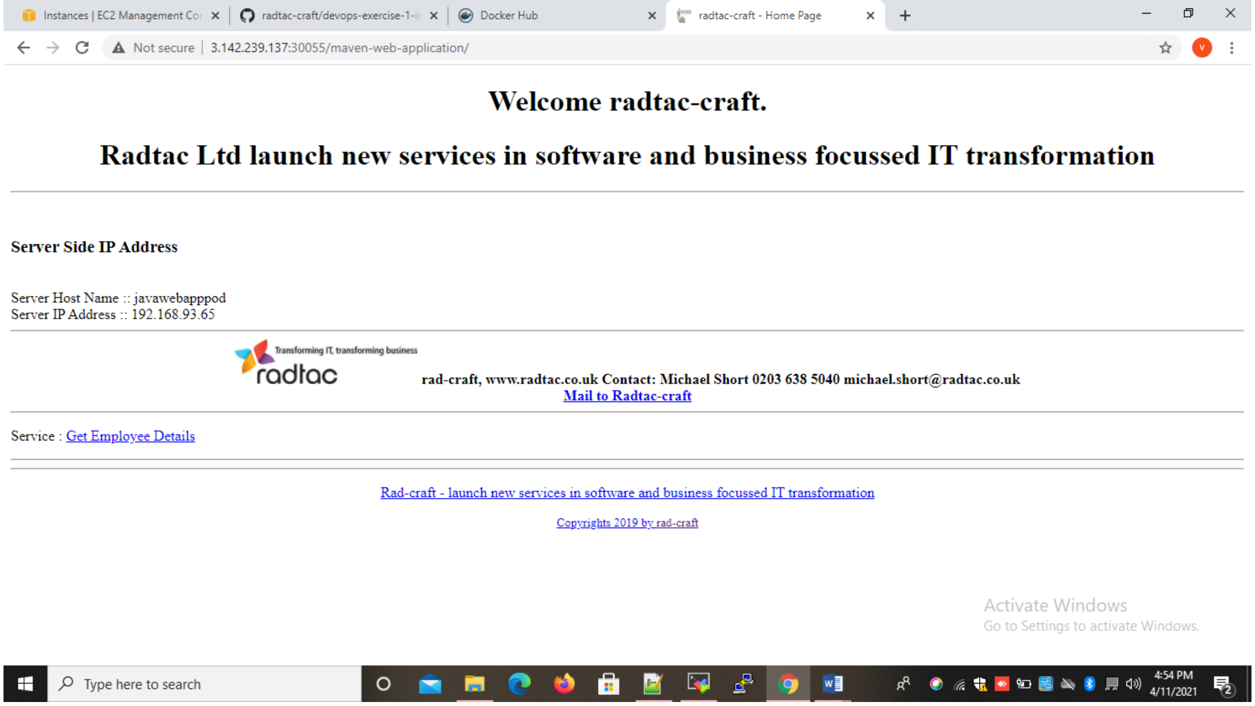
```
ubuntu@ip-172-31-29-17:~/swetha$ ls
pod.yaml  service.yaml
ubuntu@ip-172-31-29-17:~/swetha$ kubectl get nodes
NAME                STATUS   ROLES                  AGE   VERSION
ip-172-31-24-215   Ready    <none>                 27h   v1.21.0
ip-172-31-29-17    Ready    control-plane,master   27h   v1.21.0
ubuntu@ip-172-31-29-17:~/swetha$ kubectl apply -f service.yaml
service/javawebapp3 created
ubuntu@ip-172-31-29-17:~/swetha$
```

Step7:

Now we can access that application using the instance ip and node port and application name.

3.142.239.137:30055/maven-web-application.

Here we can see the application is successfully deployed or not.


Instances | EC2 Management Cor
radtac-craft/devops-exercise-1-i
Docker Hub
radtac-craft - Home Page
Not secure | 3.142.239.137:30055/maven-web-application/
Activate Windows
Go to Settings to activate Windows.
Type here to search
4:54 PM
4/11/2021

Welcome radtac-craft.

Radtac Ltd launch new services in software and business focussed IT transformation

Server Side IP Address

Server Host Name :: javawebapppod
Server IP Address :: 192.168.93.65

Transforming IT, transforming business radtac

rad-craft, www.radtac.co.uk Contact: Michael Short 0203 638 5040 michael.short@radtac.co.uk
Mail to Radtac-craft

Service : Get Employee Details

Rad-craft - launch new services in software and business focussed IT transformation

Copyrights 2019 by rad-craft

By using kubernetes, I deployed the package in Docker container.

4) Any supporting infrastructure should be configured and deployed as code (e.g. Terraform)?

Terraform:

Terraform is an open source infrastructure as a code software (Iac) tool, infrastructure as a code is the process of managing infrastructure in a file or files rather than manually configuring resources in user interface (UI).
Here resources are nothing but VM, Elasticip , sg, n/w interfaces.

Step1:

I taken one terraform script for to install httpd server.

```
mkdir userdata
cd /userdata
[ec2-user@ip-172-31-40-200 userdata]$ cat httpd.sh
#!/bin/bash
sudo yum install httpd -y
sudo systemctl enable httpd
sudo systemctl start httpd

vi main.tf
==========
provider "aws" {
  region     = "us-east-2"
  access_key = "${var.access_key}"
  secret_key = "${var.secret_key}"
}
resource "aws_instance" "swetha" {
  count              = "${var.instance}"
  ami            = "${var.ami}"
  instance_type   = "t2.micro"
  security_groups = [""]
  key_name       = "${var.key_name}"
  user_data      = "${file("httpd.sh")}"
  tags = {
    Name = "jenkins-${count.index}"
  }
}
variable.tf
============
variable "ami" {
  description = "ami"
 default = ""
 }
variable "access_key"{
  default = ""
  }
variable "secret_key"{
  default = ""
  }
variable "key_name"{
  default = ""
  }
variable "instance" {
  default = "1"}
```

Step2:

Above script in Provider section means where we want to run this script like AWS,AZURE we will mention.

Whatever resources ur creating that region we have to select,after access-key,secret-key.

Step3:

First you should initialize the terraform using this **terraform init** command.
Terraform validate: validates whether configuration is syntactically valid or not.
Terraform plan: used to create execution plan.
Terraform apply: actually create the infrastructure in aws.
Terraform destroy: used to destroy the terraform.

5) Bonus points for any build and deployment automation employed in the deployment of the web application?

Step1:

For automation of build and deployment we can use Jenkins.in Jenkins we can write jenkinsfile for continuous build and deployment.

```
node {
    def buildNumber = BUILD_NUMBER
    stage("Git clone"){
      git url: 'https://github.com/MithunTechnologiesDevOps/java-web-app-docker.git',
branch: 'master '
   }
   stage("Maven clean package"){
      def mavenHome= tool name: "maven", type: "maven"
      sh "${mavenHome}/bin/mvn clean package"
   }
   stage ("Build Docker Image"){
              sh "docker build -t swetha1595/java-web-app:${buildNumber} ."
   }
    stage('Push Docker Image'){
         withCredentials([string(credentialsId: 'dockerhub3', variable: 'dockerhub3')]) {
         sh "docker login -u swetha1595 -p ${dockerhub3}"
        sh 'docker push swetha1595/java-web-app:${buildNumber}'
    }
stage(deploy as a container){
          sh “docker run –it  -d java-web-app”
    }

   }
```

Step2:

Above pipeline first stage is git clone to clone the data from github, after that next stage is clean the before builds and package it into distributed format. After that next stage is build the image from war file using docker build command. After that push the image into docker hub then deploy as a container.

And in this pipeline job when u enable the pollscm automatically take the uncommitted changes and build the code and deploy the code automatically.

6) Bonus points for demonstrating the ability to deploy, destroy and re- deploy the web application and any supporting infrastructure.

Using terraform we can deploy the web application and destroy and redeploy using these terraform commands.

Terraform apply, terraform destroy.