

# Project Phase - V -> Testing in a DevOps Lifecycle

## **1. CI/CD Deployment for Springboot Application**

This Project is Developed by Anushka Sharma. This project is hosted on the git repository : <https://github.com/AnushkaSharma9/phase5-Project-CI-CD-Deployment-for-Springboot-Application.git>

### **1.1 PROJECT DESCRIPTION**

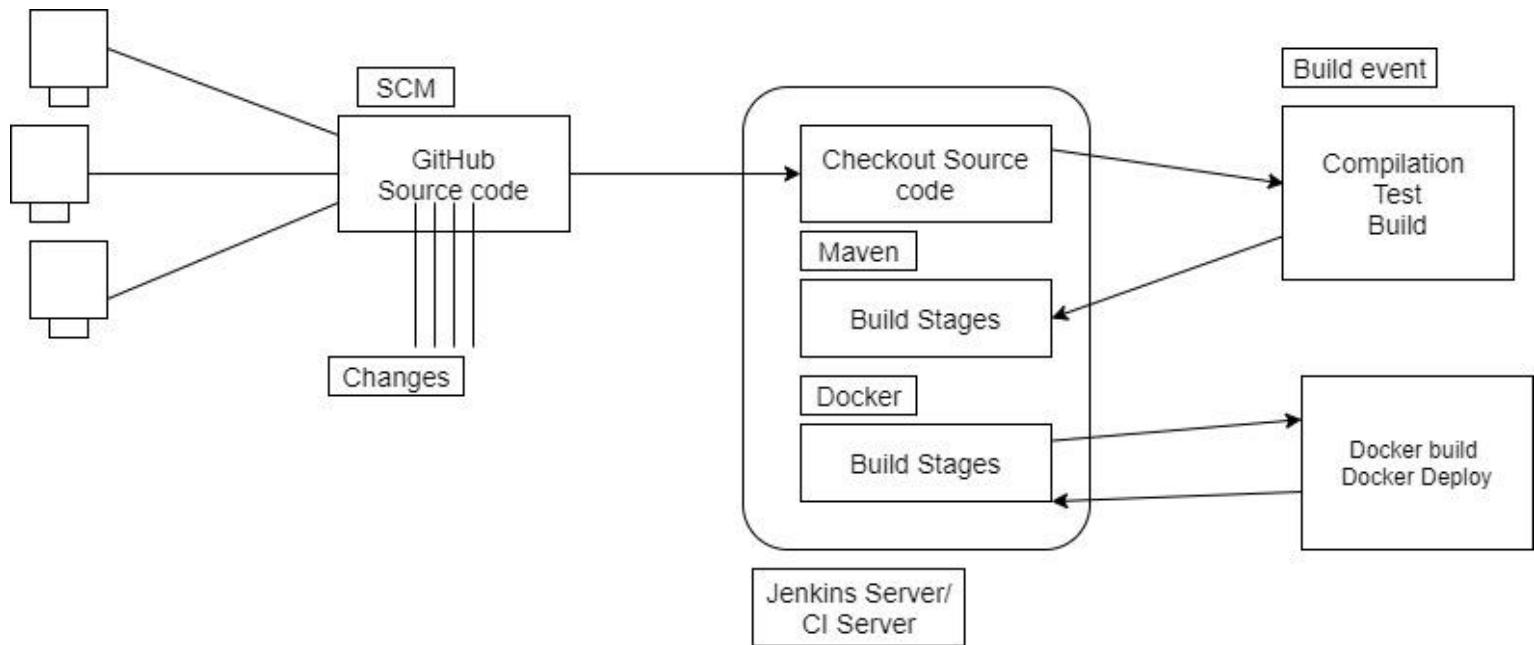
This application is designed and developed to automate the integration and deployment of the web-application, which is in its final stage.

#### **1.1.2 TECH STACK**

- Core Java Concepts - Object Oriented Programming (OOPS) Concepts such as Classes and Objects.
- Eclipse
- Maven
- Spring Boot Framework
- AWS EC2 instance
- Jenkins
- Docker

## **1. FLOW CHART OF THE APPLICATION**

The below given picture depicts the flow of the Deployment :



**FIG 1 - FLOW CHART OF THE DEPLOYMENT**

## **2. PROJECT USER STORIES : (Agile and Scrum)**

- As a user I want an automated integration of a Spring boot Application.
- As a user I want an automated deployment of a Spring boot Application.
- As a developer I want to automate the integration of a Spring boot Application for the user.
- As a developer I want to automate the deployment of a Spring boot Application for the user.

## **3. SPRINTS**

### **Sprint 1**

- Understanding the problem statement of the project .
- Creating the flow chart of the project.
- Creating Maven Project.
- Creating Spring boot Application.
- Adding necessary dependencies.
- Testing at each step for different user inputs.
- Initializing the git repository.
- Pushing the code to the GitHub.
- Creating AWS EC2 instance.
- Downloading MobaXterm.
- Downloading Jenkins and Docker in MobaXterm.
- Deploying the application on Jenkins and docker server.
- Creating the Specification document for deploying the project.

## **4. PROJECT GIT REPOSITORIES**

1. Link to the GitHub Repository :

<https://github.com/AnushkaSharma9/phase5-Project-CI-CD-Deployment-for-Springboot-Application.git>

## 2. Screen Shot of GitHub :

The screenshot shows a GitHub repository page for 'AnushkaSharma9 / phase5-Project-CI-CD-Deployment-for-Springboot-Application'. The repository is public and has 1 branch and 0 tags. The commit history lists 4 commits from 'AnushkaSharma9' made 19 minutes ago, all adding files related to an 'ecom webservice'. The commits are:

- Update EmployeeDAO.java
- .mvn/wrapper added ecom webservice
- src Update EmployeeDAO.java
- .gitignore added ecom webservice
- Dockerfile added ecom webservice
- Jenkinsfile added ecom webservice
- docker-install.txt added ecom webservice
- jenkins-install.txt added ecom webservice
- jenkins-pipeline-setup Create jenkins-pipeline-setup
- mvnw added ecom webservice
- mvnw.cmd added ecom webservice
- pom.xml added ecom webservice

The repository has no description, website, or topics provided. It also shows sections for Releases, Packages, and Languages, with Java being the primary language at 91.1%.

## 3. How to run Project :

### 3.1 First create EC2 Instance on AWS as follows:

The screenshot shows the AWS EC2 Management Console. The left sidebar shows navigation options like EC2 Dashboard, EC2 Global View, Events, Tags, Limits, Instances (selected), and Images. The main content area displays the 'Instances' page with a table header for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability Zone. A message states 'You do not have any instances in this region'. A modal window titled 'Select an instance' is open at the bottom.

Launch instance wizard | EC2 Mai X + https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#LaunchInstanceWizard: Services ▾ Search for services, features, blogs, docs, and more [Alt+S] anushka921 N. Virginia Support ▾

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review Cancel and Exit

### Step 1: Choose an Amazon Machine Image (AMI)

[Launch a database using RDS](#)

 <b>SUSE Linux Enterprise Server 15 SP2 (HVM), SSD Volume Type</b> - ami-0fde50fcbcd46f2f7 (64-bit x86) / ami-05f2f5f76d89313bb (64-bit Arm)	<a href="#">Select</a>
<b>Free tier eligible</b>	<input checked="" type="radio"/> 64-bit (x86) <input type="radio"/> 64-bit (Arm)
SUSE Linux Enterprise Server 15 Service Pack 2 (HVM), EBS General Purpose (SSD) Volume Type. Amazon EC2 AMI Tools preinstalled; Apache 2.2, MySQL 5.5, PHP 5.3, and Ruby 1.8.7 available.	
Root device type: ebs Virtualization type: hvm ENA Enabled: Yes	
 <b>Ubuntu Server 20.04 LTS (HVM), SSD Volume Type</b> - ami-083654bd07b5da81d (64-bit x86) / ami-04fe9398b2a27a600 (64-bit Arm)	<a href="#">Select</a>
<b>Free tier eligible</b>	<input checked="" type="radio"/> 64-bit (x86) <input type="radio"/> 64-bit (Arm)
Ubuntu Server 20.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical ( <a href="http://www.ubuntu.com/cloud/services">http://www.ubuntu.com/cloud/services</a> ).	
Root device type: ebs Virtualization type: hvm ENA Enabled: Yes	
 <b>Ubuntu Server 18.04 LTS (HVM), SSD Volume Type</b> - ami-0279c3b3186e54acd (64-bit x86) / ami-0528007a60177dd84 (64-bit Arm)	<a href="#">Select</a>
<b>Free tier eligible</b>	<input checked="" type="radio"/> 64-bit (x86) <input type="radio"/> 64-bit (Arm)
Ubuntu Server 18.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical ( <a href="http://www.ubuntu.com/cloud/services">http://www.ubuntu.com/cloud/services</a> ).	

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: [All instance families](#) ▾ [Current generation](#) ▾ [Show/Hide Columns](#)

Currently selected: t2.medium (- ECUs, 2 vCPUs, 2.3 GHz, -, 4 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	t2	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	<b>t2.micro</b> Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	t2	<b>t2.medium</b>	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.large	2	8	EBS only	-	Low to Moderate	Yes

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Configure Instance Details](#)

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances: 1 Launch into Auto Scaling Group

Purchasing option: Request Spot instances

Network: vpc-0b339b7f7b4b6d3d0 (default) Create new VPC

Subnet: No preference (default subnet in any Availability Zone) Create new subnet

Auto-assign Public IP: Use subnet setting (Enable)

Placement group: Add instance to placement group

Capacity Reservation: Open

Domain join directory: No directory Create new directory

IAM role: None Create new IAM role

Cancel Previous Review and Launch Next: Add Storage

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 3: Configure Instance Details

Shutdown behavior: Stop

Stop - Hibernate behavior: Enable hibernation as an additional stop behavior

Enable termination protection: Protect against accidental termination

Monitoring: Enable CloudWatch detailed monitoring Additional charges apply.

Tenancy: Shared - Run a shared hardware instance Additional charges will apply for dedicated tenancy.

Elastic Inference: Add an Elastic Inference accelerator Additional charges apply.

Credit specification: Unlimited Additional charges may apply

Add file system Create new file system

Advanced Details

Cancel Previous Review and Launch Next: Add Storage

https://aws.amazon.com/machine-learning/elastic-inference/pricing/ © 2008 - 2021, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use Cookie preferences

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/sda1	snap-0c97f1c43c6bb2043	16	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypt

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

▼ Shared file systems ⓘ

Cancel Previous Review and Launch Next: Add Tags

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key	(128 characters maximum)	Value	(256 characters maximum)	Instances	Volumes	Network Interfaces
Name		webserver		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Add another tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

## Step 6: Configure Security Group

Amazon EC2 security groups.

Assign a security group:  Create a new security group  Select an existing security group

**Security group name:** webserver

**Description:** webserver created 2021-11-16T17:17:02.287+05:30

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	My IP	49.36.222.218/32 Anushka IP
Custom TCP	TCP	80	Anywhere	0.0.0.0/0, ::/0 Open for all
Custom TCP F	TCP	8080	Anywhere	0.0.0.0/0, ::/0 Open for all
Custom TCP F	TCP	8081	Anywhere	0.0.0.0/0, ::/0 Open for all

**Add Rule**

**Warning**  
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

**Cancel** **Previous** **Review and Launch**

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

## Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

**⚠ Improve your instances' security. Your security group, webserver, is open to the world.**  
Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only. You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. [Edit security groups](#)

**⚠ Your instance configuration is not eligible for the free usage tier**  
To launch an instance that's eligible for the free usage tier, check your AMI selection, instance type, configuration options, or storage devices. Learn more about free usage tier eligibility and usage restrictions.

**AMI Details** [Edit AMI](#)  
**Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-083654bd07b5da81d**  
Free tier eligible Ubuntu Server 20.04 LTS (HVM).EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).  
Root Device Type: ebs Virtualization type: hvm

**Instance Type** [Edit instance type](#)  
Free tier eligible [Launch](#)

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

**Step 7: Review Instance Launch**

**eligible** Root Device Type: ebs Virtualization type: hvm

**Instance Type**

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.medium	-	2	4	EBS only	-	Low to Moderate

**Security Groups**

Security group name: webserver  
Description: webserver created 2021-11-16T17:17:02.287+05:30

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	49.36.222.218/32	Anushka IP
HTTP	TCP	80	0.0.0.0/0	Open for all
HTTP	TCP	80	::/0	Open for all
Custom TCP Rule	TCP	8080	0.0.0.0/0	Open for all

[Edit instance type](#) [Edit security groups](#)

[Cancel](#) [Previous](#) [Launch](#)

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

**Step 7: Review Instance Launch**

**eligible** Root Device Type: ebs Virtualization type: hvm

**Instance Type**

Instance Type	ECUs	vCPUs
t2.medium	-	2

**Security Groups**

Security group name: webserver  
Description: webserver created 2021-11-16T17:17:02.287+05:30

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	49.36.222.218/32	Anushka IP
HTTP	TCP	80	0.0.0.0/0	Open for all
HTTP	TCP	80	::/0	Open for all
Custom TCP Rule	TCP	8080	0.0.0.0/0	Open for all

**Select an existing key pair or create a new key pair**

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance. Amazon EC2 supports ED25519 and RSA key pair types.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Create a new key pair

**Key pair type**  
 RSA  ED25519

**Key pair name**  
webserver-ecom

[Download Key Pair](#)

You have to download the **private key file** (\*.pem file) before you can continue. **Store it in a secure and accessible location**. You will not be able to download the file again after it's created.

[Cancel](#) [Previous](#) [Launch](#)

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## Launch Status

### Your instances are now launching

The following instance launches have been initiated: i-070d8b0ef998cdc7e [View launch log](#)

### Get notified of estimated charges

Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

## How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click [View Instances](#) to monitor your instances' status. Once your instances are in the **running** state, you can [connect](#) to them from the Instances screen. [Find out](#) how to connect to your instances.

### Here are some helpful resources to get you started

- [How to connect to your Linux instance](#)
- [Amazon EC2: User Guide](#)
- [Learn about AWS Free Usage Tier](#)
- [Amazon EC2: Discussion Forum](#)

While your instances are launching you can also

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Instances | EC2 Management Cor X + https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances: Services Search for services, features, blogs, docs, and more [Alt+S] anushka921 N. Virginia Support

New EC2 Experience Tell us what you think

EC2 Dashboard

EC2 Global View

Events

Tags

Limits

Instances

Instances New

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances New

Dedicated Hosts

Scheduled Instances

Capacity Reservations

Images

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**Instances (1) Info**

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
webserver	i-070d8b0ef998cdc7e	Pending	t2.medium	-	No alarms	us-east-1d

**Select an instance**

Instances | EC2 Management Con X + https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:

aws Services ▾ Search for services, features, blogs, docs, and more [Alt+S] Connect Instance state Actions Launch Instances

New EC2 Experience Tell us what you think

EC2 Dashboard EC2 Global View Events Tags Limits

Instances Instances New Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances New Dedicated Hosts Scheduled Instances Capacity Reservations

Images

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The screenshot shows the AWS EC2 Instances page. A single instance named 'webserver' is listed in the table, which includes columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability Zone. The instance is currently running. A modal window titled 'Select an instance' is open, indicating the user is about to interact with the selected instance.

Instances | EC2 Management Con X + https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#Instances:

aws Services ▾ Search for services, features, blogs, docs, and more [Alt+S] Connect Instance state Actions Launch Instances

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EC2 Dashboard EC2 Global View Events Tags Limits

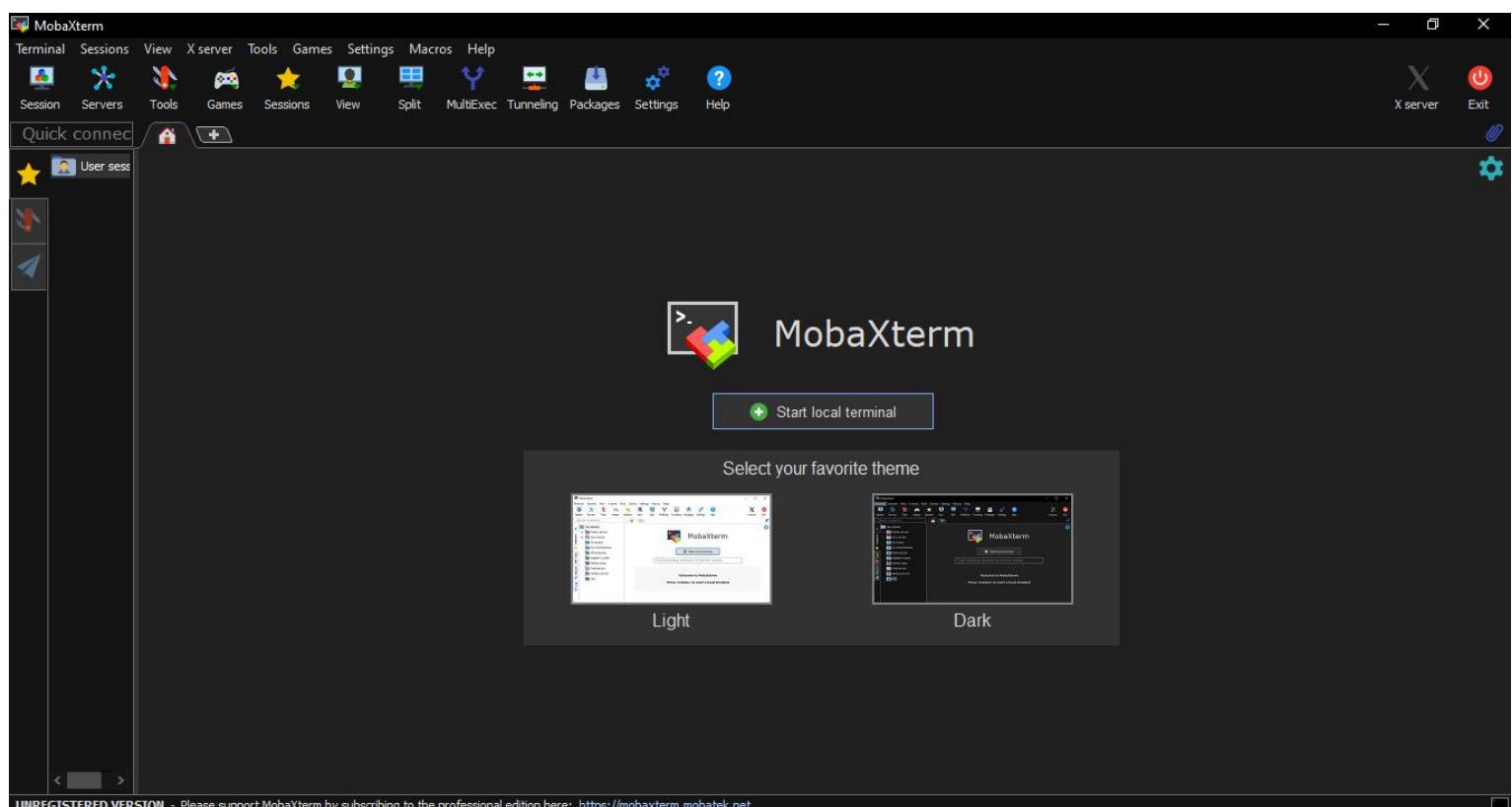
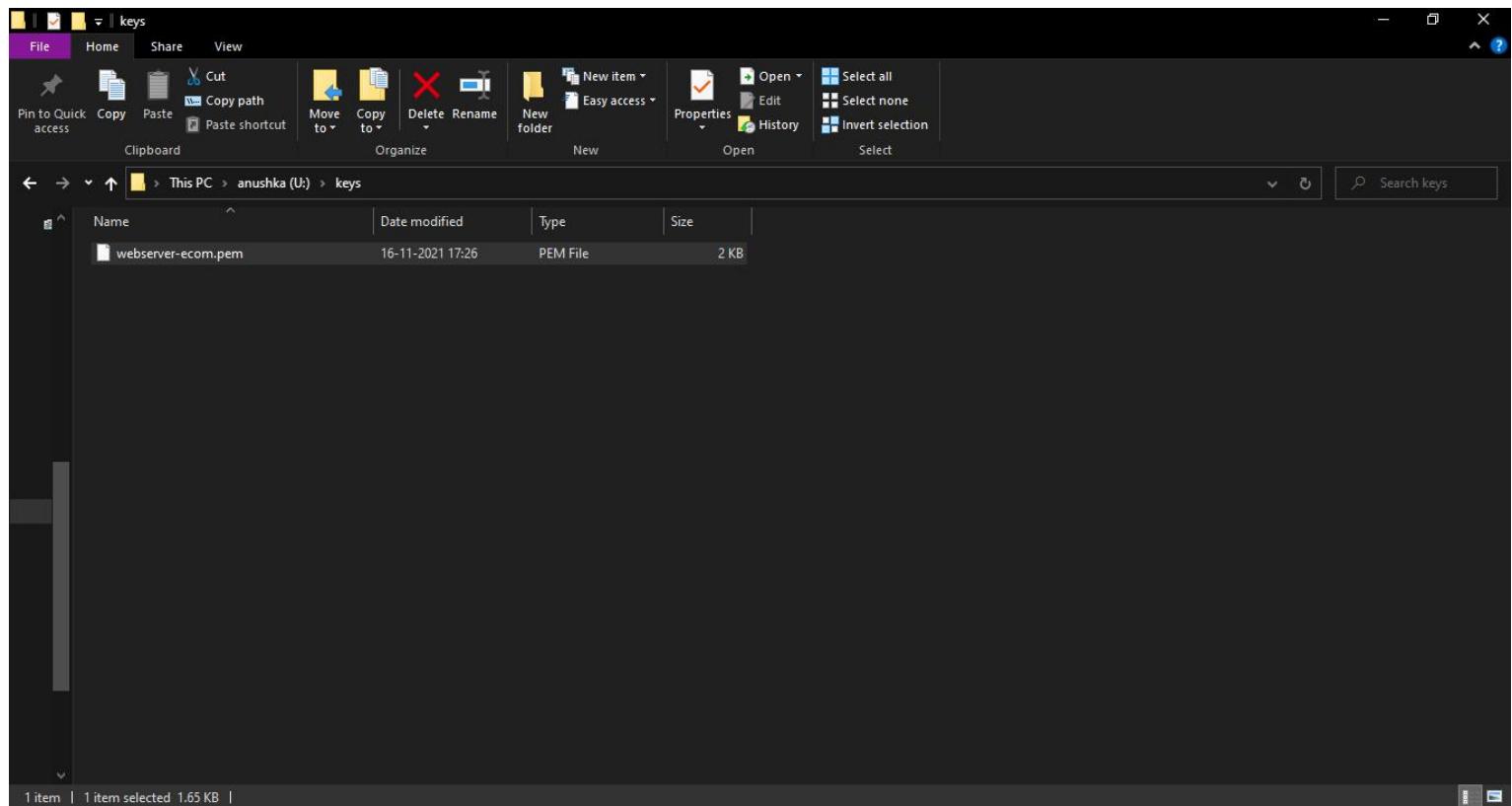
Instances Instances New Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances New Dedicated Hosts Scheduled Instances Capacity Reservations

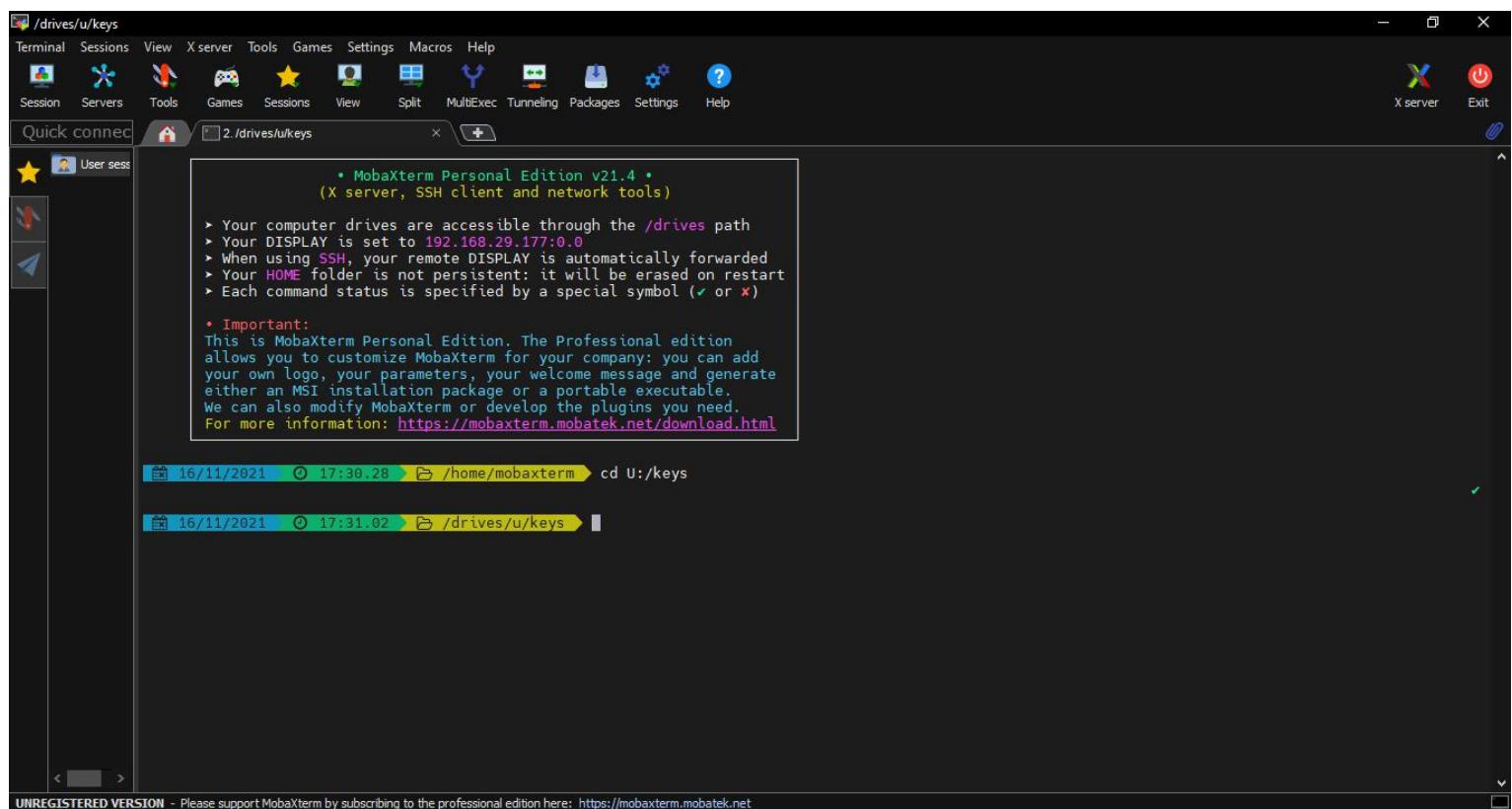
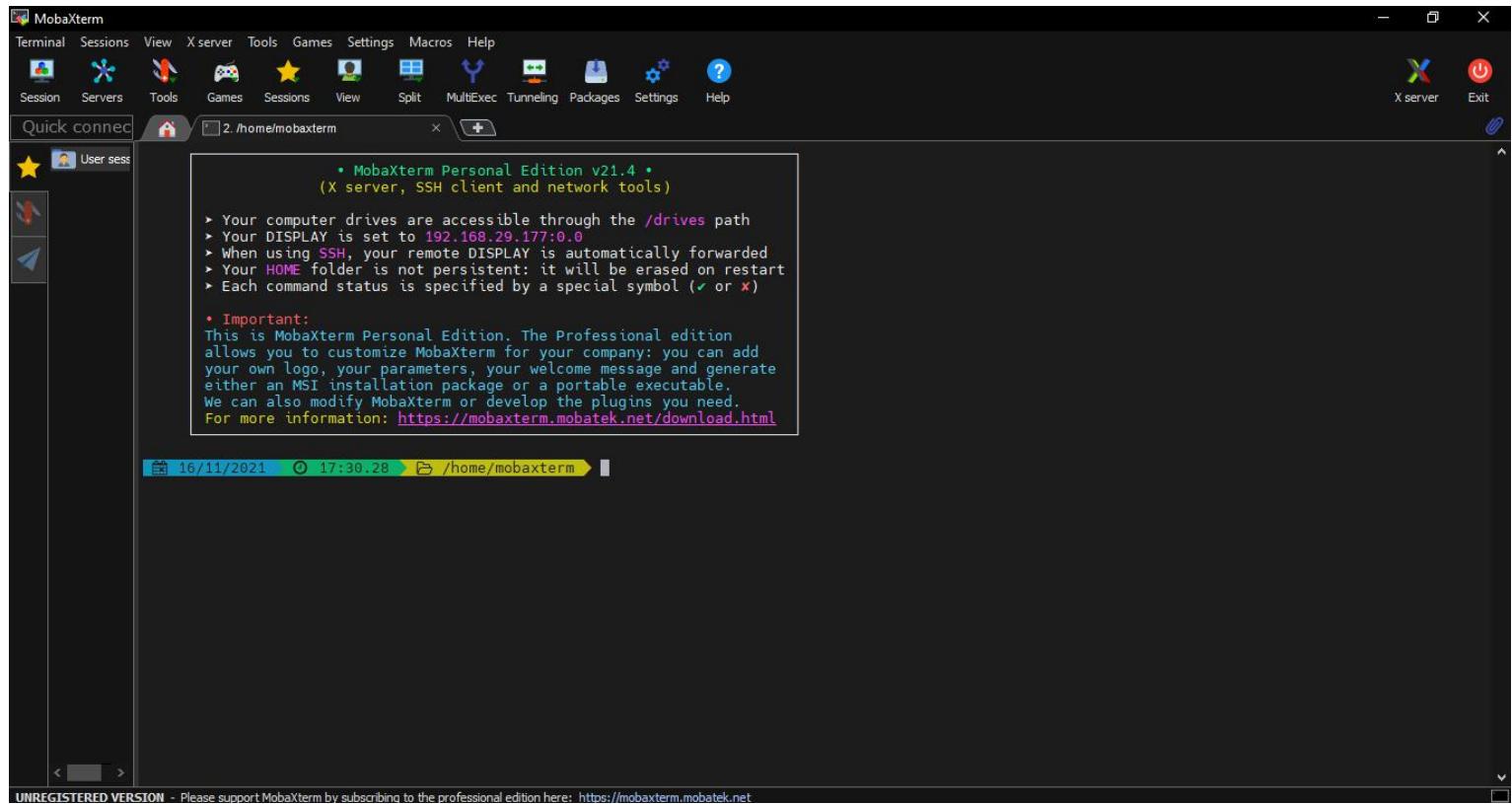
Images

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The screenshot shows the AWS EC2 Instances page with the 'webserver' instance selected. The table row for 'webserver' has a checked checkbox next to it. A detailed view of the selected instance is shown below, titled 'Instance: i-070d8b0ef998cdc7e (webserver)'. The 'Details' tab is active, displaying the instance summary, which includes the Instance ID (i-070d8b0ef998cdc7e), Public IPv4 address (184.73.136.225), Private IPv4 addresses (172.31.20.101), and Public IPv4 DNS (ec2-184-73-136-225.compute-1.amazonaws.com).

3.2 Put key In MobaXterm :-> ssh -i "webserver-ecom.pem" ubuntu@ec2-184-73-136-225.compute-1.amazonaws.com





Connect to instance | EC2 Manager + https://console.aws.amazon.com/ec2/v2/home?region=us-east-1#ConnectToInstance:instanceId=i-070d8b0ef998cdc7e

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EC2 Instances i-070d8b0ef998cdc7e Connect to instance

**Connect to instance** Info

Connect to your instance i-070d8b0ef998cdc7e (webserver) using any of these options

EC2 Instance Connect Session Manager **SSH client** EC2 Serial Console

Instance ID

i-070d8b0ef998cdc7e (webserver)

1. Open an SSH client.  
2. Locate your private key file. The key used to launch this instance is webserver-ecom.pem  
3. Run this command, if necessary, to ensure your key is not publicly viewable.

chmod 400 webserver-ecom.pem

4. Connect to your instance using its Public DNS:

ec2-184-73-136-225.compute-1.amazonaws.com

Example:

ssh -i "webserver-ecom.pem" ubuntu@ec2-184-73-136-225.compute-1.amazonaws.com

**Note:** In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

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ubuntu@ec2-184-73-136-225.compute-1.amazonaws.com

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 2.ubuntu@ec2-184-73-136-225.co +

MobaXterm Personal Edition v21.4 • (X server, SSH client and network tools)

Your computer drives are accessible through the /drives path  
Your DISPLAY is set to 192.168.29.177:0.0  
When using SSH, your remote DISPLAY is automatically forwarded  
Your HOME folder is not persistent: it will be erased on restart  
Each command status is specified by a special symbol (✓ or ✘)

Important:  
This is MobaXterm Personal Edition. The Professional edition allows you to customize MobaXterm for your company: you can add your own logo, your parameters, your welcome message and generate either an MSI installation package or a portable executable.  
We can also modify MobaXterm or develop the plugins you need.  
For more information: <https://mobaxterm.mobatek.net/download.html>

```
16/11/2021 17:30:28 /home/mobaxterm cd U:/keys
```

```
16/11/2021 17:31:02 /drives/u:/keys ssh -i "webserver-ecom.pem" ubuntu@ec2-184-73-136-225.compute-1.amazonaws.com
Warning: Permanently added 'ec2-184-73-136-225.compute-1.amazonaws.com' (RSA) to the list of known hosts.
```

UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>

```
ubuntu@ip-172-31-20-101:~  
Terminal Sessions View X server Tools Games Settings Macros Help  
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help  
Quick connect 2. ubuntu@ip-172-31-20-101:~  
16/11/2021 17:30:28 /home/mobaxterm cd U:/keys  
16/11/2021 17:31:02 ssh -i "webserver-ecom.pem" ubuntu@ec2-184-73-136-225.compute-1.amazonaws.com  
Warning: Permanently added 'ec2-184-73-136-225.compute-1.amazonaws.com' (RSA) to the list of known hosts.  
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.11.0-1020-aws x86_64)  
* Documentation: https://help.ubuntu.com  
* Management: https://landscape.canonical.com  
* Support: https://ubuntu.com/advantage  
System information as of Tue Nov 16 12:01:53 UTC 2021  
System load: 0.01 Processes: 113  
Usage of /: 8.8% of 15.45GB Users logged in: 0  
Memory usage: 5% IPv4 address for eth0: 172.31.20.101  
Swap usage: 0%  
1 update can be applied immediately.  
To see these additional updates run: apt list --upgradable  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*copyright.  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
/usr/bin/xauth: file /home/ubuntu/.Xauthority does not exist  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
ubuntu@ip-172-31-20-101:~$
```

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```
ubuntu@ip-172-31-20-101:~  
Terminal Sessions View X server Tools Games Settings Macros Help  
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help  
Quick connect 2. ubuntu@ip-172-31-20-101:~  
1 update can be applied immediately.  
To see these additional updates run: apt list --upgradable  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
The programs included with the Ubuntu system are free software;  
the exact distribution terms for each program are described in the  
individual files in /usr/share/doc/*copyright.  
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by  
applicable law.  
/usr/bin/xauth: file /home/ubuntu/.Xauthority does not exist  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
ubuntu@ip-172-31-20-101:~$ sudo apt update  
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal InRelease  
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]  
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease [101 kB]  
Get:4 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]  
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 Packages [8628 kB]  
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe Translation-en [5124 kB]  
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadata [265 kB]  
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [144 kB]  
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [104 kB]  
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metadata [9136 B]  
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages [1344 kB]  
Get:12 http://security.ubuntu.com/ubuntu focal-security/main amd64 Packages [987 kB]  
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main Translation-en [276 kB]  
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Metadata [14.5 kB]  
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Packages [569 kB]  
Get:16 http://us-east-1.archive.ubuntu.com/ubuntu focal-updates/restricted Translation-en [81.6 kB]  
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 c-n-f Metadata [528 B]  
Get:18 http://security.ubuntu.com/ubuntu focal-security/main Translation-en [183 kB]
```

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```
ubuntu@ip-172-31-20-101: ~
Terminal Sessions View X server Tools Games Settings Macros Help
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Quick connect 2.ubuntu@ip-172-31-20-101: ~
Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help
Name
/home/ubuntu
Reading state information... Done
31 packages can be upgraded. Run 'apt list --upgradable' to see them.
ubuntu@ip-172-31-20-101:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
  linux-aws-5.11-headers-5.11.0-1021 linux-headers-5.11.0-1021-aws linux-image-5.11.0-1021-aws linux-modules-5.11.0-1021-aws
The following packages will be upgraded:
  apport bind9-dnsutils bind9-host bind9-libs cloud-initramfs-copymods cloud-initramfs-dyn-netconf libasound2 libasound2-data libnetplan0 libssl1.1
  libtbb1 linux-aws linux-base linux-headers-aws linux-image-aws netplan.io open-vm-tools openssl overlayroot python3-apport python3-problem-report
  python3-software-properties software-properties-common tzdata ubuntu-advantage-tools ufw vim vim-common vim-runtime vim-tiny xxd
31 upgraded, 4 newly installed, 0 to remove and 0 not upgraded.
16 standard security updates
Need to get 56.9 MB of archives.
After this operation, 215 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libssl1.1 amd64 1.1.1f-1ubuntu2.9 [1321 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 open-vm-tools amd64 2:11.3.0-2ubuntu0~ubuntu20.04.2 [647 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnetplan0 amd64 0.103-0ubuntu5~20.04.2 [52.3 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 netplan.io amd64 0.103-0ubuntu5~20.04.2 [123 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 openssl amd64 1.1.1f-1ubuntu2.9 [622 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 tzdata all 2021e-0ubuntu0.20.04 [295 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 ubuntu-advantage-tools amd64 27.3~20.04.1 [854 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 vim amd64 2:8.1.2269-1ubuntu5.4 [1239 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 vim-tiny amd64 2:8.1.2269-1ubuntu5.4 [579 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 vim-runtime all 2:8.1.2269-1ubuntu5.4 [5875 kB]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 xxd amd64 2:8.1.2269-1ubuntu5.4 [50.7 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 vim-common all 2:8.1.2269-1ubuntu5.4 [85.7 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 bind9-dnsutils amd64 1:9.16.1-0ubuntu2.9 [134 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 bind9-libs amd64 1:9.16.1-0ubuntu2.9 [1107 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 bind9-host amd64 1:9.16.1-0ubuntu2.9 [43.0 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 ufw all 0.36-6ubuntu1 [147 kB]
Get:17 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-problem-report all 2.20.11-0ubuntu27.21 [9896 B]
Get:18 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-apport all 2.20.11-0ubuntu27.21 [85.9 kB]
Get:19 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 apport all 2.20.11-0ubuntu27.21 [129 kB]
Get:20 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libasound2 amd64 1.2.2-2.1ubuntu2.5 [335 kB]

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```

```
ubuntu@ip-172-31-20-101: ~
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 2. ubuntu@ip-172-31-20-101: ~ +
Setting up software-properties-common (0.99.9.8) ...
Setting up apport (2.20.11-0ubuntu27.21) ...
apport-autoreport.service is a disabled or a static unit, not starting it.
Setting up bind9-host (1:9.16.1-0ubuntu2.9) ...
Setting up bind9-dnsutils (1:9.16.1-0ubuntu2.9) ...
Setting up linux-image-5.11.0-1021-aws (5.11.0-1021.22~20.04.2) ...
I: /boot/vmlinuz is now a symlink to vmlinuz-5.11.0-1021-aws
I: /boot/initrd.img is now a symlink to initrd.img-5.11.0-1021-aws
Setting up linux-image-aws (5.11.0-1021.22~20.04.20) ...
Setting up linux-modules-5.11.0-1021-aws (5.11.0-1021.22~20.04.2) ...
Setting up linux-aws (5.11.0-1021.22~20.04.20) ...
Setting up linux-aws (5.11.0-1021.22~20.04.20) ...
Processing triggers for rsyslog (8.2001.0-1ubuntu1.1) ...
Processing triggers for systemd (245.4-0ubuntu3.13) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for dbus (1.12.16-2ubuntu2.1) ...
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.2) ...
Processing triggers for initramfs-tools (0.136ubuntu6.6) ...
update-initramfs: Generating /boot/initrd.img-5.11.0-1020-aws
Processing triggers for linux-image-5.11.0-1021-aws (5.11.0-1021.22~20.04.2) ...
/etc/kernel/postinst.d/initramfs-tools:
update-initramfs: Generating /boot/initrd.img-5.11.0-1021-aws
/etc/kernel/postinst.d/zz-update-grub:
Sourcing file '/etc/default/grub'
Sourcing file '/etc/default/grub.d/40-force-partuuid.cfg'
Sourcing file '/etc/default/grub.d/50-cloudimg-settings.cfg'
Sourcing file '/etc/default/grub.d/init-select.cfg'
Generating grub configuration file...
GRUB_FORCE_PARTUUID is set, will attempt initrdless boot
Found linux image: /boot/vmlinuz-5.11.0-1021-aws
Found initrd image: /boot/microcode.cpio /boot/initrd.img-5.11.0-1021-aws
Found linux image: /boot/vmlinuz-5.11.0-1020-aws
Found initrd image: /boot/microcode.cpio /boot/initrd.img-5.11.0-1020-aws
Found Ubuntu 20.04.3 LTS (20.04) on /dev/xvda1
done
ubuntu@ip-172-31-20-101:~$
```

### 3.3 Install Jenkins server on MobaXterm : -

```
ubuntu@ip-172-31-20-101: ~
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
Reconnect SSH-browse
/home/ubuntu
Name
2. ubuntu@ip-172-31-20-101: ~
ubuntu@ip-172-31-20-101:~$ sudo apt install default-jdk -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  at-spi2-core ca-certificates-java default-jdk-headless default-jre default-jre-headless fontconfig-config fonts-dejavu-core fonts-dejavu-extra
  java-common libatk-bridge2.0-0 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0 libatk1.0-data libatspi2.0-0 libavahi-client3
  libavahi-common-data libavahi-common3 libcurl2 libdrm-amdgpu1 libdrm-intel libdrm-nouveau2 libdrm-radeon1 libfontconfig1 libfontenc1 libgfif7 libgl1
  libgl1-mesa-dri libglapi-mesa libglvnd libglx-mesa0 libglx0 libgraphite2-3 libharfbuzz0 libice-dev libice6 libjpeg-turbo8 libjpeg8 liblcms2-2
  libllvm12 libpcaccess0 libpcslite1 libpthread-stubs0-dev libsensors-config libsensors5 libsm-dev libsm6 libvulkan1 libwayland-client0 libx11-dev
  libx11-xcb1 libxau-dev libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0 libxcb-shape0 libxcb-shm0 libxcb-sync1
  libxcb-xfixes0 libxcb1-dev libxcomposite1 libxdmcp-dev libxfixed3 libxft2 libxi6 libxinerama1 libxbfile1 libxmu6 libxpm4 libxrandr2 libxrender1
  libxshmfence1 libxvt-dev libxtst6 libxv1 libxxf86dga1 libxxf86vm1 mesa-vulkan-drivers openjdk-11-jdk openjdk-11-jdk-headless openjdk-11-jre
  openjdk-11-jre-headless x11-common x11-utils x11proto-core-dev x11proto-dev xorg-sgml-doctools xtrans-dev
Suggested packages:
  cups-common libICE-doc liblcms2-utils pscd lm-sensors libSM-doc libxcb-doc libxt-doc openjdk-11-demo openjdk-11-source visualvm
  libnss-mdns fonts-ipafont-gothic fonts-ipafont-mincho fonts-wqy-microhei | fonts-wqy-zenhei fonts-indic mesa-utils
The following NEW packages will be installed:
  at-spi2-core ca-certificates-java default-jdk-headless default-jre default-jre-headless fontconfig-config fonts-dejavu-core
  fonts-dejavu-extra java-common libatk-bridge2.0-0 libatk-wrapper-java libatk-wrapper-java-jni libatk1.0-0 libatk1.0-data libatspi2.0-0
  libavahi-client3 libavahi-common-data libavahi-common3 libcurl2 libdrm-amdgpu1 libdrm-intel libdrm-nouveau2 libdrm-radeon1 libfontconfig1
  libfontenc1 libgfif7 libgl1 libglapi-mesa-dri libglvnd libglx-mesa0 libglx0 libgraphite2-3 libharfbuzz0 libice-dev libice6
  libjpeg-turbo8 libjpeg8 liblcms2-2 libllvm12 libpcaccess0 libpcslite1 libpthread-stubs0-dev libsensors-config libsensors5 libsm-dev libsm6
  libvulkan1 libwayland-client0 libx11-dev libx11-xcb1 libxau-dev libxaw7 libxcb-dri2-0 libxcb-dri3-0 libxcb-glx0 libxcb-present0 libxcb-randr0
  libxcb-shape0 libxcb-shm0 libxcb-sync1 libxcb-composite1 libxdmcp-dev libxfixed3 libxft2 libxi6 libxinerama1 libxbfile1 libxmu6 libxpm4 libxrandr2
  libxrender1 libxshmfence1 libxvt-dev libxtst6 libxv1 libxxf86dga1 libxxf86vm1 mesa-vulkan-drivers openjdk-11-jdk openjdk-11-jdk-headless
  openjdk-11-jre openjdk-11-jre-headless x11-common x11-utils x11proto-core-dev x11proto-dev xorg-sgml-doctools xtrans-dev
0 upgraded, 93 newly installed, 0 to remove and 0 not upgraded.
Need to get 304 MB of archives.
After this operation, 890 MB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 libatspi2.0-0 amd64 2.36.0-2 [64.2 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 x11-common all 1:7.7+19ubuntu14 [22.3 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 libxtst6 amd64 2:1.2.3-1 [12.8 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 at-spi2-core amd64 2.36.0-2 [48.7 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 java-common all 0.72 [6816 B]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libavahi-common-data amd64 0.7-4ubuntu7.1 [21.4 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libavahi-common3 amd64 0.7-4ubuntu7.1 [21.7 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/main amd64 libavahi-client3 amd64 0.7-4ubuntu7.1 [25.5 kB]

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```

```
ubuntu@ip-172-31-20-101: ~
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
Reconnect SSH-browse
/home/ubuntu
Name
2. ubuntu@ip-172-31-20-101: ~
done.
Processing triggers for mime-support (3.64ubuntu1) ...
Processing triggers for libc-bin (2.31-0ubuntu9.2) ...
ubuntu@ip-172-31-20-101:~$ sudo apt install maven -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  libaoapalliance-java libapache-pom-java libatinject-jsr330-api-java libcdi-api-java libcommons-cli-java libcommons-io-java libcommons-lang3-java
  libcommons-parent-java libgeronimo-annotation-1.3-spec-java libgeronimo-interceptor-3.0-spec-java libguava-java libguice-java
  libhawtjni-runtime-java libjansi-java libjansi-native-java libjsr305-java libmaven-parent-java libmaven-resolver-java libmaven-shared-utils-java
  libmaven3-core-java libplexus-cipher-java libplexus-classworlds-java libplexus-component-annotations-java libplexus-interpolation-java
  libplexus-sec-dispatcher-java libplexus-utils2-java libsisu-inject-java libsisu-plexus-java libslf4j-java libwagon-file-java
  libwagon-http-shaded-java libwagon-provider-api-java
Suggested packages:
  libaoapalliance-java-doc libatinject-jsr330-api-java-doc libservlets3.1-java libcommons-io-java-doc libcommons-lang3-java-doc libasm-java
  libcglib-java libjsr305-java-doc libmaven-shared-utils-java-doc liblogback-java libplexus-cipher-java libplexus-classworlds-java-doc
  libplexus-sec-dispatcher-java-doc libplexus-utils2-java-doc junit4 testing libcommons-logging-java liblog4j1.2-java
The following NEW packages will be installed:
  libaoapalliance-java libapache-pom-java libatinject-jsr330-api-java libcdi-api-java libcommons-cli-java libcommons-io-java libcommons-lang3-java
  libcommons-parent-java libgeronimo-annotation-1.3-spec-java libgeronimo-interceptor-3.0-spec-java libguava-java libguice-java
  libhawtjni-runtime-java libjansi-java libjansi-native-java libjsr305-java libmaven-parent-java libmaven-resolver-java libmaven-shared-utils-java
  libmaven3-core-java libplexus-cipher-java libplexus-classworlds-java libplexus-component-annotations-java libplexus-interpolation-java
  libplexus-sec-dispatcher-java libplexus-utils2-java libsisu-inject-java libsisu-plexus-java libslf4j-java libwagon-file-java
  libwagon-http-shaded-java libwagon-provider-api-java maven
0 upgraded, 33 newly installed, 0 to remove and 0 not upgraded.
Need to get 9208 kB of archives.
After this operation, 12.1 MB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 libapache-pom-java all 18-1 [4720 B]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 libatinject-jsr330-api-java all 1.0+ds1-5 [5348 B]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 libgeronimo-interceptor-3.0-spec-java all 1.0.1-4fakesync [8616 B]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 libcdi-api-java all 1.2-2 [54.5 kB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 libcommons-cli-java all 1.4-1 [53.8 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 libcommons-parent-java all 43-1 [10.8 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates/universe amd64 libcommons-io-java all 2.6-zubuntu0.20.04.1 [198 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 libcommons-lang3-java all 3.8-2 [458 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 libgeronimo-annotation-1.3-spec-java all 1.0-1 [10.7 kB]

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```

```
ubuntu@ip-172-31-20-101:~ Terminal Sessions View X server Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help Quick connect 2. ubuntu@ip-172-31-20-101:~ + Unpacking maven (3.6.3-1) ... Setting up libslf4j-java (1.7.25-3) ... Setting up libplexus-utils2-java (3.3.0-1) ... Setting up libplexus-classworlds-java (2.6.0-1) ... Setting up libjsr305-java (0.1~+svn49-11) ... Setting up libaopalliance-java (20070526-6) ... Setting up libcommons-cli-java (1.4-1) ... Setting up libplexus-component-annotations-java (2.1.0-1) ... Setting up libplexus-cipher-java (1.7-3) ... Setting up libgeronimo-annotation-1.3-spec-java (1.0-1) ... Setting up libgeronimo-interceptor-3.0-spec-java (1.0.1-4fakesync) ... Setting up libapache-pom-java (18-1) ... Setting up libatinject-jsr30-api-java (1.0+ds1-5) ... Setting up libplexus-interpolation-java (1.26-1) ... Setting up libplexus-sec-dispatcher-java (1.4-4) ... Setting up libwagon-http-shaded-java (3.3.4-1) ... Setting up libcdi-api-java (1.2-2) ... Setting up libhawtjni-runtime-java (1.17-1) ... Setting up libmaven-provider-api-java (3.3.4-1) ... Setting up libmaven-parent-java (31-2) ... Setting up libcommons-parent-java (43-1) ... Setting up libmaven-resolver-java (1.4.1-1) ... Setting up libguava-java (19.0-1) ... Setting up libcommons-lang3-java (3.8-2) ... Setting up libjansi-native-java (1.8-1) ... Setting up libwagon-file-java (3.3.4-1) ... Setting up libcommons-io-java (2.6-2ubuntu0.20.04.1) ... Setting up libguice-java (4.2.1-1) ... Setting up libjansi-java (1.18-1) ... Setting up libmaven-shared-utils-java (3.3.0-1) ... Setting up libsisu-inject-java (0.3.3-1) ... Setting up libsisu-plexus-java (0.3.3-3) ... Setting up libmaven3-core-java (3.6.3-1) ... Setting up maven (3.6.3-1) ... update-alternatives: using /usr/share/maven/bin/mvn to provide /usr/bin/mvn (mvn) in auto mode ubuntu@ip-172-31-20-101:~$
```

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```
ubuntu@ip-172-31-20-101:~ Terminal Sessions View X server Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help Quick connect 2. ubuntu@ip-172-31-20-101:~ + Setting up libslf4j-java (1.7.25-3) ... Setting up libplexus-utils2-java (3.3.0-1) ... Setting up libplexus-classworlds-java (2.6.0-1) ... Setting up libjsr305-java (0.1~+svn49-11) ... Setting up libaopalliance-java (20070526-6) ... Setting up libcommons-cli-java (1.4-1) ... Setting up libplexus-component-annotations-java (2.1.0-1) ... Setting up libplexus-cipher-java (1.7-3) ... Setting up libgeronimo-annotation-1.3-spec-java (1.0-1) ... Setting up libgeronimo-interceptor-3.0-spec-java (1.0.1-4fakesync) ... Setting up libapache-pom-java (18-1) ... Setting up libatinject-jsr30-api-java (1.0+ds1-5) ... Setting up libplexus-interpolation-java (1.26-1) ... Setting up libplexus-sec-dispatcher-java (1.4-4) ... Setting up libwagon-http-shaded-java (3.3.4-1) ... Setting up libcdi-api-java (1.2-2) ... Setting up libhawtjni-runtime-java (1.17-1) ... Setting up libmaven-provider-api-java (3.3.4-1) ... Setting up libmaven-parent-java (31-2) ... Setting up libcommons-parent-java (43-1) ... Setting up libmaven-resolver-java (1.4.1-1) ... Setting up libguava-java (19.0-1) ... Setting up libcommons-lang3-java (3.8-2) ... Setting up libjansi-native-java (1.8-1) ... Setting up libwagon-file-java (3.3.4-1) ... Setting up libcommons-io-java (2.6-2ubuntu0.20.04.1) ... Setting up libguice-java (4.2.1-1) ... Setting up libjansi-java (1.18-1) ... Setting up libmaven-shared-utils-java (3.3.0-1) ... Setting up libsisu-inject-java (0.3.3-1) ... Setting up libsisu-plexus-java (0.3.3-3) ... Setting up libmaven3-core-java (3.6.3-1) ... Setting up maven (3.6.3-1) ... update-alternatives: using /usr/share/maven/bin/mvn to provide /usr/bin/mvn (mvn) in auto mode ubuntu@ip-172-31-20-101:~$ wget -q -O https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo apt-key add - OK ubuntu@ip-172-31-20-101:~$ sudo sh -c 'echo deb https://pkg.jenkins.io/debian-stable binary/ > /etc/apt/sources.list.d/jenkins.list' ubuntu@ip-172-31-20-101:~$
```

UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>

```
ubuntu@ip-172-31-20-101:~ Terminal Sessions View X server Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help Quick connect Reconnect SSH-browse 2. ubuntu@ip-172-31-20-101:~ Setting up libatinject-jsr330-api-java (1.0+ds1-5) ... Setting up libplexus-interpolation-java (1.26-1) ... Setting up libplexus-sec-dispatcher-java (1.4-4) ... Setting up libwagon-http-shaded-java (3.3.4-1) ... Setting up libcdi-api-java (1.2-2) ... Setting up libhawtjni-runtime-java (1.17-1) ... Setting up libwagon-provider-api-java (3.3.4-1) ... Setting up libmaven-parent-java (31-2) ... Setting up libcommons-parent-java (43-1) ... Setting up libmaven-resolver-java (1.4.1-1) ... Setting up libguava-java (19.0-1) ... Setting up libcommons-lang3-java (3.8-2) ... Setting up libjansi-native-java (1.8-1) ... Setting up libwagon-file-java (3.3.4-1) ... Setting up libcommons-io-java (2.6-2ubuntu0.20.04.1) ... Setting up libguice-java (4.2.1-1) ... Setting up libjansi-java (1.18-1) ... Setting up libmaven-shared-utils-java (3.3.0-1) ... Setting up libsisu-inject-java (0.3.3-1) ... Setting up libsisu-plexus-java (0.3.3-3) ... Setting up libmaven3-core-java (3.6.3-1) ... Setting up maven (3.6.3-1) ... update-alternatives: using /usr/share/maven/bin/mvn to provide /usr/bin/mvn (mvn) in auto mode ubuntu@ip-172-31-20-101:~$ wget -q -O - https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo apt-key add - OK ubuntu@ip-172-31-20-101:~$ sudo sh -c 'echo deb https://pkg.jenkins.io/debian-stable binary/ > /etc/apt/sources.list.d/jenkins.list' ubuntu@ip-172-31-20-101:~$ sudo apt-get update Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal InRelease Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease Ign:4 https://pkg.jenkins.io/debian-stable binary/ InRelease Get:5 https://pkg.jenkins.io/debian-stable binary/ Release [2044 B] Get:6 https://pkg.jenkins.io/debian-stable binary/ Release.gpg [833 B] Get:7 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB] Get:8 https://pkg.jenkins.io/debian-stable binary/ Packages [20.9 kB] Fetched 138 kB in 1s (271 kB/s) Reading package lists... Done ubuntu@ip-172-31-20-101:~$ now terminal
```

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```
ubuntu@ip-172-31-20-101:~ Terminal Sessions View X server Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help Quick connect Reconnect SSH-browse 2. ubuntu@ip-172-31-20-101:~ Setting up libcommons-lang3-java (3.8-2) ... Setting up libjansi-native-java (1.8-1) ... Setting up libwagon-file-java (3.3.4-1) ... Setting up libcommons-io-java (2.6-2ubuntu0.20.04.1) ... Setting up libguice-java (4.2.1-1) ... Setting up libjansi-java (1.18-1) ... Setting up libmaven-shared-utils-java (3.3.0-1) ... Setting up libsisu-inject-java (0.3.3-1) ... Setting up libsisu-plexus-java (0.3.3-3) ... Setting up libmaven3-core-java (3.6.3-1) ... Setting up maven (3.6.3-1) ... update-alternatives: using /usr/share/maven/bin/mvn to provide /usr/bin/mvn (mvn) in auto mode ubuntu@ip-172-31-20-101:~$ wget -q -O - https://pkg.jenkins.io/debian-stable/jenkins.io.key | sudo apt-key add - OK ubuntu@ip-172-31-20-101:~$ sudo sh -c 'echo deb https://pkg.jenkins.io/debian-stable binary/ > /etc/apt/sources.list.d/jenkins.list' ubuntu@ip-172-31-20-101:~$ sudo apt-get update Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal InRelease Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease Ign:4 https://pkg.jenkins.io/debian-stable binary/ InRelease Get:5 https://pkg.jenkins.io/debian-stable binary/ Release [2044 B] Get:6 https://pkg.jenkins.io/debian-stable binary/ Release.gpg [833 B] Get:7 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB] Get:8 https://pkg.jenkins.io/debian-stable binary/ Packages [20.9 kB] Fetched 138 kB in 1s (271 kB/s) Reading package lists... Done ubuntu@ip-172-31-20-101:~$ sudo apt-get install jenkins Reading package lists... Done Building dependency tree Reading state information... Done The following additional packages will be installed: daemon net-tools The following NEW packages will be installed: daemon jenkins net-tools 0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded. Need to get 72.2 MB of archives. After this operation, 73.5 MB of additional disk space will be used. Do you want to continue? [Y/n] y now terminal
```

UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>

### 3.4 Install Docker server in MobaXterm :-

```
ubuntu@ip-172-31-20-101:~ Terminal Sessions View X server Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help Quick connect 2.ubuntu@ip-172-31-20-101:~ + Reconnect SSH-browse daemon jenkins net-tools 0 upgraded, 3 newly installed, 0 to remove and 0 not upgraded. Need to get 72.2 MB of archives. After this operation, 73.5 MB of additional disk space will be used. Do you want to continue? [Y/n] y Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 daemon amd64 0.6.4-1build2 [96.3 kB] Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/main amd64 net-tools amd64 1.60+git20180626.aebd88e-1ubuntu1 [196 kB] Get:2 https://pkg.jenkins.io/debian-stable binary/ jenkins 2.303.3 [71.9 MB] Fetched 72.2 MB in 24s (3049 kB/s) Selecting previously unselected package daemon. (Reading database ... 98018 files and directories currently installed.) Preparing to unpack .../daemon_0.6.4-1build2_amd64.deb ... Unpacking daemon (0.6.4-1build2) ... Selecting previously unselected package net-tools. Preparing to unpack .../net-tools_1.60+git20180626.aebd88e-1ubuntu1_amd64.deb ... Unpacking net-tools (1.60+git20180626.aebd88e-1ubuntu1) ... Selecting previously unselected package jenkins. Preparing to unpack .../jenkins_2.303.3_all.deb ... Unpacking jenkins (2.303.3) ... Setting up net-tools (1.60+git20180626.aebd88e-1ubuntu1) ... Setting up daemon (0.6.4-1build2) ... Setting up jenkins (2.303.3) ... Processing triggers for man-db (2.9.1-1) ... Processing triggers for systemd (245.4-4ubuntu3.13) ... ubuntu@ip-172-31-20-101:~$ sudo apt-get update E: Could not open lock file /var/lib/apt/lists/lock - open (13: Permission denied) E: Unable to lock directory /var/lib/apt/lists/ W: Problem unlinking the file /var/cache/apt/pkgs cache.bin - RemoveCaches (13: Permission denied) W: Problem unlinking the file /var/cache/apt/srcpkgs cache.bin - RemoveCaches (13: Permission denied) ubuntu@ip-172-31-20-101:~$ sudo apt-get update Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal InRelease Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease Ign:5 https://pkg.jenkins.io/debian-stable binary/ InRelease Hit:6 https://pkg.jenkins.io/debian-stable binary/ Release Reading package lists... Done ubuntu@ip-172-31-20-101:~$
```

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```
ubuntu@ip-172-31-20-101:~ Terminal Sessions View X server Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help Quick connect 2.ubuntu@ip-172-31-20-101:~ + Reconnect SSH-browse Selecting previously unselected package jenkins. Preparing to unpack .../jenkins_2.303.3_all.deb ... Unpacking jenkins (2.303.3) ... Setting up net-tools (1.60+git20180626.aebd88e-1ubuntu1) ... Setting up daemon (0.6.4-1build2) ... Setting up jenkins (2.303.3) ... Processing triggers for man-db (2.9.1-1) ... Processing triggers for systemd (245.4-4ubuntu3.13) ... ubuntu@ip-172-31-20-101:~$ sudo apt-get update E: Could not open lock file /var/lib/apt/lists/lock - open (13: Permission denied) E: Unable to lock directory /var/lib/apt/lists/ W: Problem unlinking the file /var/cache/apt/pkgs cache.bin - RemoveCaches (13: Permission denied) W: Problem unlinking the file /var/cache/apt/srcpkgs cache.bin - RemoveCaches (13: Permission denied) ubuntu@ip-172-31-20-101:~$ sudo apt-get update Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal InRelease Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease Ign:5 https://pkg.jenkins.io/debian-stable binary/ InRelease Hit:6 https://pkg.jenkins.io/debian-stable binary/ Release Reading package lists... Done ubuntu@ip-172-31-20-101:~$ sudo apt-get install ca-certificates curl gnupg lsb-release -y E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied) E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root? ubuntu@ip-172-31-20-101:~$ sudo apt-get install ca-certificates curl gnupg lsb-release -y Reading package lists... Done Building dependency tree Reading state information... Done lsb-release is already the newest version (11.1.ubuntu2). lsb-release set to manually installed. ca-certificates is already the newest version (20210119~20.04.2). ca-certificates set to manually installed. curl is already the newest version (7.68.0-1ubuntu2.7). curl set to manually installed. gnupg is already the newest version (2.2.19-3ubuntu2.1). gnupg set to manually installed. 0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded. ubuntu@ip-172-31-20-101:~$
```

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```
ubuntu@ip-172-31-20-101:~ Terminal Sessions View X server Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help Quick connect Reconnect SSH-browser 2. ubuntu@ip-172-31-20-101:~ Setting up daemon (0.6.4-1build2) ... Setting up jenkins (2.303.3) ... Processing triggers for man-db (2.9.1-1) ... Processing triggers for systemd (245.4-4ubuntu3.13) ... ubuntu@ip-172-31-20-101:~$ sudo apt-get update E: Could not open lock file /var/lib/apt/lists/lock - open (13: Permission denied) E: Unable to lock directory /var/lib/apt/lists/ W: Problem unlinking the file /var/cache/apt/pkgcache.bin - RemoveCaches (13: Permission denied) W: Problem unlinking the file /var/cache/apt/srcpkgcache.bin - RemoveCaches (13: Permission denied) ubuntu@ip-172-31-20-101:~$ sudo apt-get update Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal InRelease Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease Hit:4 http://security.ubuntu.com/ubuntu focal-security InRelease Ign:5 https://pkg.jenkins.io/debian-stable binary/ InRelease Hit:6 https://pkg.jenkins.io/debian-stable binary/ Release Reading package lists... Done ubuntu@ip-172-31-20-101:~$ sudo apt-get install ca-certificates curl gnupg lsb-release -y E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied) E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root? ubuntu@ip-172-31-20-101:~$ sudo apt-get install ca-certificates curl gnupg lsb-release -y Reading package lists... Done Building dependency tree Reading state information... Done lsb-release is already the newest version (11.1.0ubuntu2). lsb-release set to manually installed. ca-certificates is already the newest version (20210119~20.04.2). ca-certificates set to manually installed. curl is already the newest version (7.68.0-1ubuntu2.7). curl set to manually installed. gnupg is already the newest version (2.2.19-3ubuntu2.1). gnupg set to manually installed. 0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded. ubuntu@ip-172-31-20-101:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg ubuntu@ip-172-31-20-101:~$ echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null ubuntu@ip-172-31-20-101:~$ now terminal UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net
```

```
ubuntu@ip-172-31-20-101:~ Terminal Sessions View X server Tools Games Settings Macros Help Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help Quick connect Reconnect SSH-browser 2. ubuntu@ip-172-31-20-101:~ Reading package lists... Done ubuntu@ip-172-31-20-101:~$ sudo apt-get install ca-certificates curl gnupg lsb-release -y E: Could not open lock file /var/lib/dpkg/lock-frontend - open (13: Permission denied) E: Unable to acquire the dpkg frontend lock (/var/lib/dpkg/lock-frontend), are you root? ubuntu@ip-172-31-20-101:~$ sudo apt-get install ca-certificates curl gnupg lsb-release -y Reading package lists... Done Building dependency tree Reading state information... Done lsb-release is already the newest version (11.1.0ubuntu2). lsb-release set to manually installed. ca-certificates is already the newest version (20210119~20.04.2). ca-certificates set to manually installed. curl is already the newest version (7.68.0-1ubuntu2.7). curl set to manually installed. gnupg is already the newest version (2.2.19-3ubuntu2.1). gnupg set to manually installed. 0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded. ubuntu@ip-172-31-20-101:~$ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo gpg --dearmor -o /usr/share/keyrings/docker-archive-keyring.gpg ubuntu@ip-172-31-20-101:~$ echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/docker-archive-keyring.gpg] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable" | sudo tee /etc/apt/sources.list.d/docker.list > /dev/null ubuntu@ip-172-31-20-101:~$ sudo apt-get update E: Could not open lock file /var/lib/apt/lists/lock - open (13: Permission denied) E: Unable to lock directory /var/lib/apt/lists/ W: Problem unlinking the file /var/cache/apt/pkgcache.bin - RemoveCaches (13: Permission denied) W: Problem unlinking the file /var/cache/apt/srcpkgcache.bin - RemoveCaches (13: Permission denied) ubuntu@ip-172-31-20-101:~$ sudo apt-get update Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal InRelease Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease Ign:4 https://pkg.jenkins.io/debian-stable binary/ InRelease Hit:5 https://pkg.jenkins.io/debian-stable binary/ Release Get:6 https://download.docker.com/linux/ubuntu focal InRelease [57.7 kB] Hit:7 http://security.ubuntu.com/ubuntu focal-security InRelease Get:9 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages [12.3 kB] Fetched 70.0 kB in 1s (125 kB/s) Reading package lists... Done ubuntu@ip-172-31-20-101:~$ sudo apt-get install docker-ce docker-ce-cli containerd.io -y now terminal UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net
```

ubuntu@ip-172-31-20-101: ~

Terminal Sessions View X server Tools Games Settings Macros Help

Session Servers Tools Games Sessions View Split MultiExec Tunneling Packages Settings Help

Quick connect

Reconnect SSH-browse

Name

```

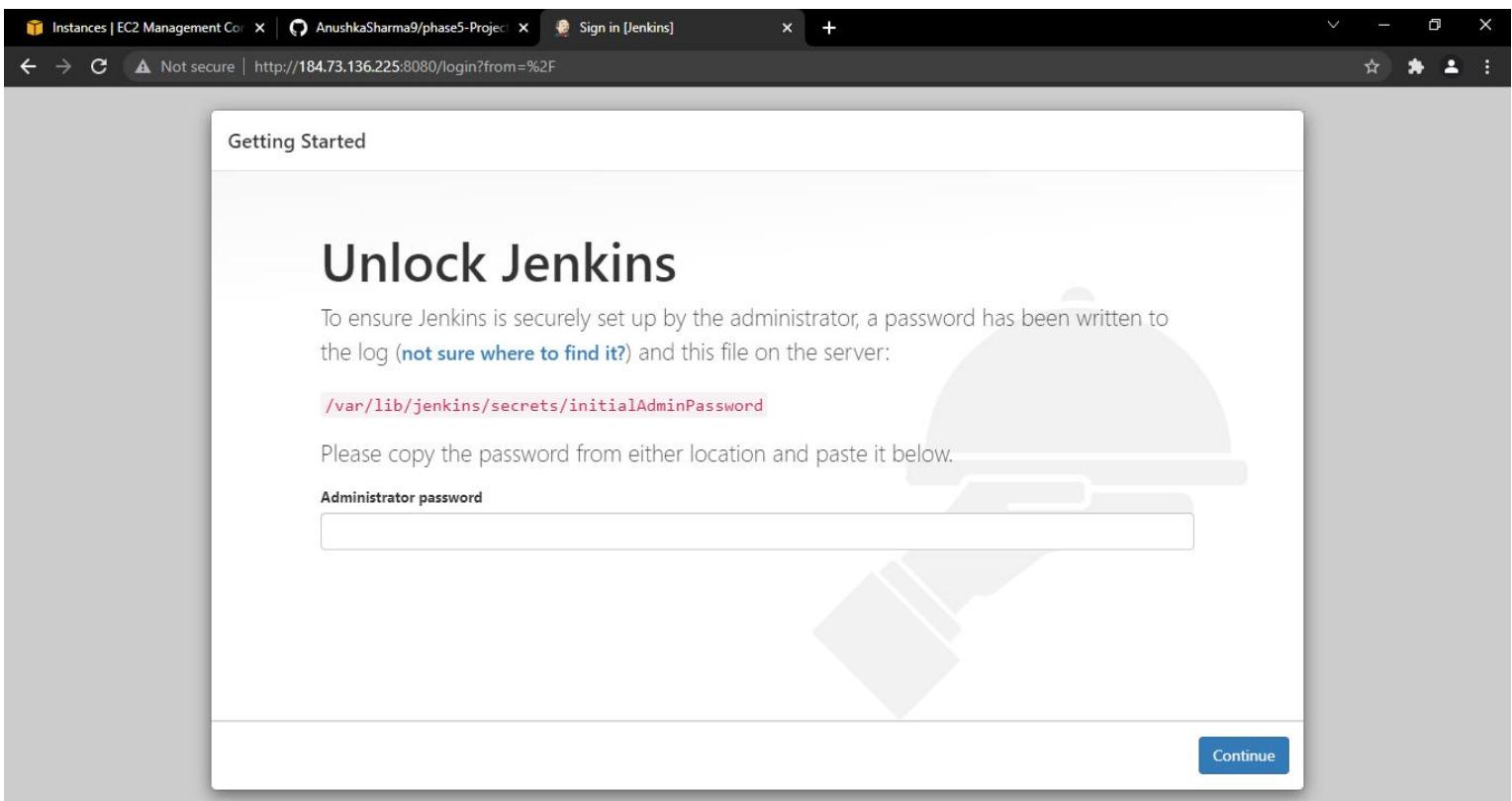
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal-backports InRelease
Ign:4 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:5 https://pkg.jenkins.io/debian-stable binary/ Release
Get:6 https://download.docker.com/linux/ubuntu focal InRelease [57.7 kB]
Hit:7 http://security.ubuntu.com/ubuntu focal-security InRelease
Get:9 https://download.docker.com/linux/ubuntu focal/stable amd64 Packages [12.3 kB]
Fetched 70.0 kB in 1s (125 kB/s)
Reading package lists... Done
ubuntu@ip-172-31-20-101:~$ sudo apt-get install docker-ce docker-ce-cli containerd.io -y
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  docker-ce-rootless-extras docker-scan-plugin pigz slirp4netns
Suggested packages:
  aufs-tools cgroupfs-mount | cgroup-lite
The following NEW packages will be installed:
  containerd.io docker-ce docker-ce-cli docker-ce-rootless-extras docker-scan-plugin pigz slirp4netns
0 upgraded, 7 newly installed, 0 to remove and 0 not upgraded.
Need to get 95.3 MB of archives.
After this operation, 402 MB of additional disk space will be used.
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 pigz amd64 2.4-1 [57.4 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu focal/universe amd64 slirp4netns amd64 0.4.3-1 [74.3 kB]
Get:3 https://download.docker.com/linux/ubuntu focal/stable amd64 containerd.io amd64 1.4.11-1 [23.7 MB]
Get:4 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce-cli amd64 5:20.10.10~3~0~ubuntu-focal [38.8 MB]
Get:5 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce amd64 5:20.10.10~3~0~ubuntu-focal [21.2 MB]
Get:6 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-ce-rootless-extras amd64 5:20.10.10~3~0~ubuntu-focal [7922 kB]
Get:7 https://download.docker.com/linux/ubuntu focal/stable amd64 docker-scan-plugin amd64 0.9.0~ubuntu-focal [3518 kB]
Fetched 95.3 MB in 2s (50.7 MB/s)
Selecting previously unselected package pigz.
(Reading database ... 98086 files and directories currently installed.)
Preparing to unpack .../0-pigz_2.4-1_amd64.deb ...
Unpacking pigz (2.4-1) ...
Selecting previously unselected package containerd.io.
Preparing to unpack .../1-containerd.io_1.4.11-1_amd64.deb ...
Unpacking containerd.io (1.4.11-1) ...

```

ow terminal

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### 3.5 Run Jenkins on port /0.0.0.0:8080



- Put the Administrator password as shown in the picture -

```

Processing triggers for systemd (245.4-4ubuntu3.13) ...
ubuntu@ip-172-31-20-101:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
ea1493d6ae2c493089aae967488c35b
ubuntu@ip-172-31-20-101:~$ Connection reset by 184.73.136.225 port 22

```

ow terminal

UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>

Instances | EC2 Management Con X | AnushkaSharma9/phase5-Project X | Setup Wizard [Jenkins] X +

Getting Started

# Customize Jenkins

Plugins extend Jenkins with additional features to support many different needs.

**Install suggested plugins**

Install plugins the Jenkins community finds most useful.

**Select plugins to install**

Select and install plugins most suitable for your needs.

Jenkins 2.303.3

184.73.136.225:8080/#

This screenshot shows the 'Customize Jenkins' section of the Jenkins setup wizard. It contains two main options: 'Install suggested plugins' (which installs community-recommended plugins) and 'Select plugins to install' (which allows users to choose specific plugins based on their needs). A Jenkins icon is visible in the background.

Instances | EC2 Management Con X | AnushkaSharma9/phase5-Project X | Setup Wizard [Jenkins] X +

Getting Started

# Getting Started

✓ Folders	✓ OWASP Markup Formatter	✓ Build Timeout	✓ Credentials Binding	** Pipeline: Stage Tags Metadata ** Pipeline: Declarative ** Lockable Resources Pipeline ** Java JSON Web Token (JWT) ** OKHttp ** Github API Git ** GitHub GitHub Branch Source Pipeline: GitHub Groovy Libraries Pipeline: Stage View SSH Build Agents Matrix Authorization Strategy PAM Authentication LDAP Email Extension Mailer
✓ Timestamper	✓ Workspace Cleanup	✓ Ant	✓ Gradle	
✓ Pipeline	✓ GitHub Branch Source	✓ Pipeline: GitHub Groovy Libraries	✓ Pipeline: Stage View	
✓ Git	✓ SSH Build Agents	✓ Matrix Authorization Strategy	✓ PAM Authentication	
✓ LDAP	✓ Email Extension	✓ Mailer		

Jenkins 2.303.3

This screenshot shows the 'Getting Started' page of Jenkins. It displays a grid of installed and available Jenkins plugins. The grid has four columns: Folders, OWASP Markup Formatter, Build Timeout, and Credentials Binding. The fifth column lists available plugins: Pipeline, Git, GitHub Branch Source, Pipeline: GitHub Groovy Libraries, Pipeline: Stage View, SSH Build Agents, Matrix Authorization Strategy, PAM Authentication, LDAP, Email Extension, and Mailer. A scroll bar is visible on the right side of the plugin list.

### 3.6 Put Username and Password in Jenkins as :

- Username - admin
- Password - admin

Instances | EC2 Management Con X | AnushkaSharma9/phase5-Project X | Setup Wizard [Jenkins] X +

Getting Started

## Create First Admin User

Username: admin

Password: .....

Confirm password: .....

Full name: Anushka Sharma

E-mail address: anushkasharma2109@gm

Jenkins 2.303.3 Skip and continue as admin Save and Continue

Instances | EC2 Management Con X | AnushkaSharma9/phase5-Project X | Setup Wizard [Jenkins] X +

Getting Started

## Instance Configuration

Jenkins URL: http://184.73.136.225:8080/

The Jenkins URL is used to provide the root URL for absolute links to various Jenkins resources. That means this value is required for proper operation of many Jenkins features including email notifications, PR status updates, and the BUILD\_URL environment variable provided to build steps.

The proposed default value shown is **not saved yet** and is generated from the current request, if possible. The best practice is to set this value to the URL that users are expected to use. This will avoid confusion when sharing or viewing links.

Jenkins 2.303.3 Not now Save and Finish

Instances | EC2 Management Con X | AnushkaSharma9/phase5-Project X | Setup Wizard [Jenkins] X +

Not secure | http://184.73.136.225:8080

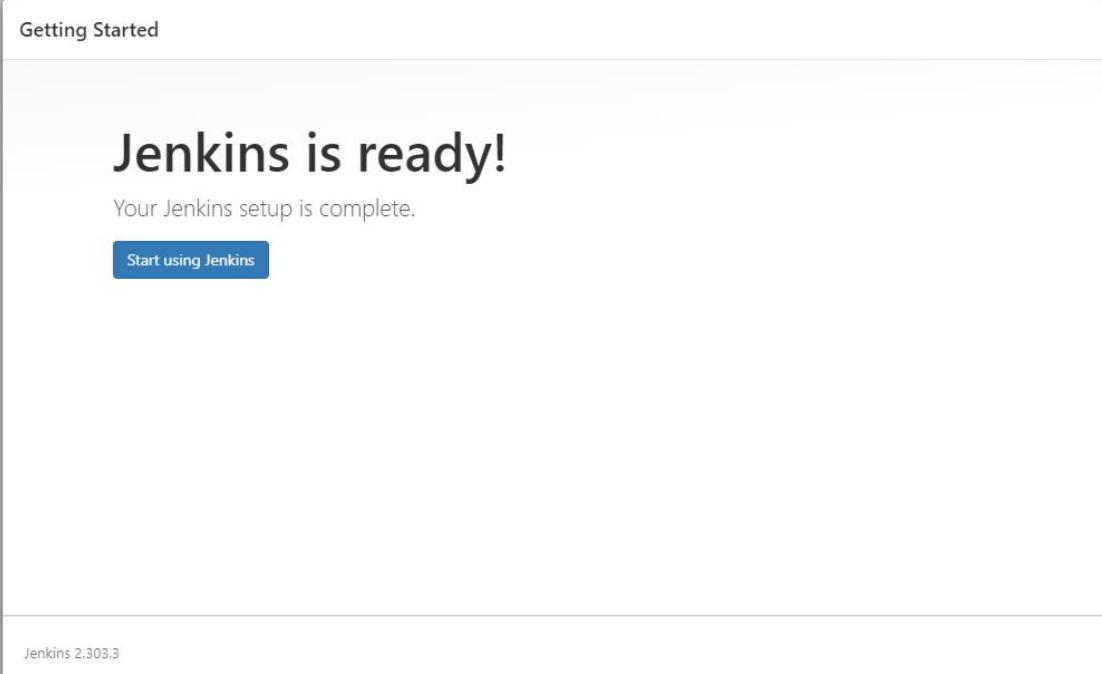
## Getting Started

# Jenkins is ready!

Your Jenkins setup is complete.

[Start using Jenkins](#)

Jenkins 2.303.3



Instances | EC2 Management Con X | AnushkaSharma9/phase5-Project X | Dashboard [Jenkins] X +

Not secure | http://184.73.136.225:8080

# Jenkins

Dashboard

- New Item
- People
- Build History
- Manage Jenkins
- My Views
- Lockable Resources
- New View

**Welcome to Jenkins!**

This page is where your Jenkins jobs will be displayed. To get started, you can set up distributed builds or start building a software project.

**Start building your software project**

[Create a job](#)

**Set up a distributed build**

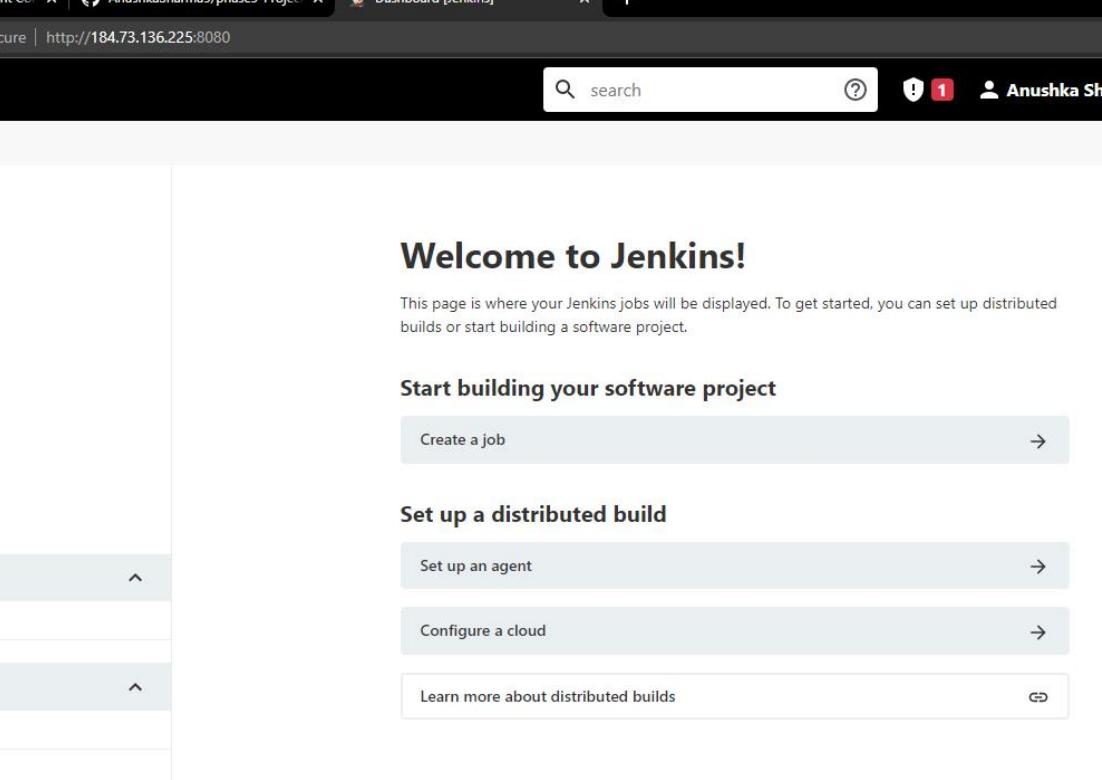
[Set up an agent](#)

[Configure a cloud](#)

[Learn more about distributed builds](#)

**Build Queue**  
No builds in the queue.

**Build Executor Status**  
1 Idle  
2 Idle



Instances | EC2 Management Con X | AnushkaSharma9/phase5-Project X | New Item [Jenkins] X +

← → C A Not secure | http://184.73.136.225:8080/view/all/newJob

# Jenkins

Dashboard All

Enter an item name

ecom-webservice-pipeline

» Required field

**Freestyle project**

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

**Pipeline**

Orchestrates long-running activities that can span multiple build agents. Suitable for building pipelines (formerly known as workflows) and/or organizing complex activities that do not easily fit in free-style job type.

**Multi-configuration project**

Suitable for projects that need a large number of different configurations, such as testing on multiple environments, platform-specific builds, etc.

**Folder**

Container that stores nested items in it. Useful for grouping things together. Unlike view, which is just a filter, a folder creates a namespace, so you can have multiple things of the same name as long as they are in different folders.

Connect to instance | EC2 Manager X | phase5-Project-CI-CD-Deploy X | ecom-webservice-pipeline Config X +

← → C A Not secure | http://184.73.136.225:8080/job/com-webservice-pipeline/configure

# Jenkins

Dashboard ecom-webservice-pipeline

**General** Build Triggers Advanced Project Options Pipeline

Description

This is a spring boot project to be deployed.

[Plain text] Preview

Discard old builds ?  
 Do not allow concurrent builds ?  
 Do not allow the pipeline to resume if the controller restarts ?  
 GitHub project ?  
 Pipeline speed/durability override ?  
 Preserve stashes from completed builds ?  
 This project is parameterized ?  
 Throttle builds ?

**Build Triggers**

Save Apply

Screenshot of the Jenkins 'Build Triggers' configuration page for the 'ecom-webservice-pipeline' job.

The 'Build Triggers' tab is selected. Available triggers include:

- Build after other projects are built
- Build periodically
- GitHub hook trigger for GITScm polling
- Poll SCM
- Disable this project
- Quiet period
- Trigger builds remotely (e.g., from scripts)

Below the triggers, there is an 'Advanced Project Options' section with a 'Pipeline' configuration.

**Pipeline**

**Definition**: Pipeline script from SCM

**SCM**: None

**Script Path**: Jenkinsfile

**Buttons**: Save (highlighted), Apply, Lightweight Checkout

### 3.7 Put the git link in Repository URL : <https://github.com/AnushkaSharma9/phase5-Project-CI-CD-Deployment-for-Springboot-Application.git>

Screenshot of the Jenkins 'Pipeline' configuration page for the 'ecom-webservice-pipeline' job.

The 'Pipeline' tab is selected. The configuration includes:

**Definition**: Pipeline script from SCM

**SCM**: Git

**Repositories**:

- Repository URL**: https://github.com/AnushkaSharma9/phase5-Project-CI-CD-Deployment-for-Springboot-Application.git

**Credentials**: AnushkaSharma9/\*\*\*\*\* (This belongs to Anushka Sharma)

**Branches to build**: Research\_Sprint\_Demo (selected by 'x')

**Buttons**: Save (highlighted), Apply, Advanced..., Add Repository

The screenshot shows the Jenkins Pipeline configuration page for the 'ecom-webservice-pipeline' job. The 'Pipeline' tab is selected. Under the 'Branches to build' section, there is a 'Branch Specifier (blank for 'any')' field containing the value '/master'. A red 'X' button is visible next to the field. Below the field is an 'Add Branch' button. The 'Repository browser' section is set to '(Auto)'. The 'Additional Behaviours' section contains an 'Add' button. At the bottom are 'Script Path' (set to 'Jenkinsfile'), 'Save' and 'Apply' buttons.

The screenshot shows the Jenkins Pipeline configuration page for the 'ecom-webservice-pipeline' job. The 'Pipeline' tab is selected. Under the 'Script Path' section, 'Jenkinsfile' is listed. A checked checkbox labeled 'Lightweight checkout' is present. The 'Pipeline Syntax' section is visible. At the bottom are 'Save' and 'Apply' buttons.

3.8 Click on Build Now to start a build

Instances | EC2 Management Con X | AnushkaSharma9/phase5-Project X | ecom-webservice-pipeline [Jenki X +

Not secure | http://184.73.136.225:8080/job/com-webservice-pipeline/

# Jenkins

Dashboard > ecom-webservice-pipeline >

Back to Dashboard Status Changes Build Now Configure Delete Pipeline Full Stage View Rename Pipeline Syntax

Recent Changes

## Pipeline ecom-webservice-pipeline

Add description Disable Project

### Stage View

No data available. This Pipeline has not yet run.

### Permalinks

Build History trend ^

find

#1 Nov 16, 2021, 12:38 PM 184.73.136.225:8080/job/com-webservice-pipeline/build?delay=0sec

Instances | EC2 Management Con X | AnushkaSharma9/phase5-Project X | ecom-webservice-pipeline [Jenki X +

Not secure | http://184.73.136.225:8080/job/com-webservice-pipeline/

# Jenkins

Dashboard > ecom-webservice-pipeline >

Back to Dashboard Status Changes Build Now Configure Delete Pipeline Full Stage View Rename Pipeline Syntax

Recent Changes

## Pipeline ecom-webservice-pipeline

Add description Disable Project

### Stage View

Declarative: Checkout SCM	Maven Compile
Average stage times: 527ms	3s

Nov 16 18:08 No Changes 527ms

### Permalinks

Build History trend ^

find

#1 Nov 16, 2021, 12:38 PM

Atom feed for all Atom feed for failures

Instances | EC2 Management Con | AnushkaSharma9/phase5-Project | ecom-webservice-pipeline [Jenki | +

Dashboard > ecom-webservice-pipeline

Back to Dashboard Status Changes Build Now Configure Delete Pipeline Full Stage View Rename Pipeline Syntax

**Pipeline ecom-webservice-pipeline**

Recent Changes

**Stage View**

Declarative: Checkout SCM	Maven Compile	Maven Test
Average stage times: 527ms	12s	12s
#1 Nov 16 18:08 No Changes	527ms	12s

**Permalinks**

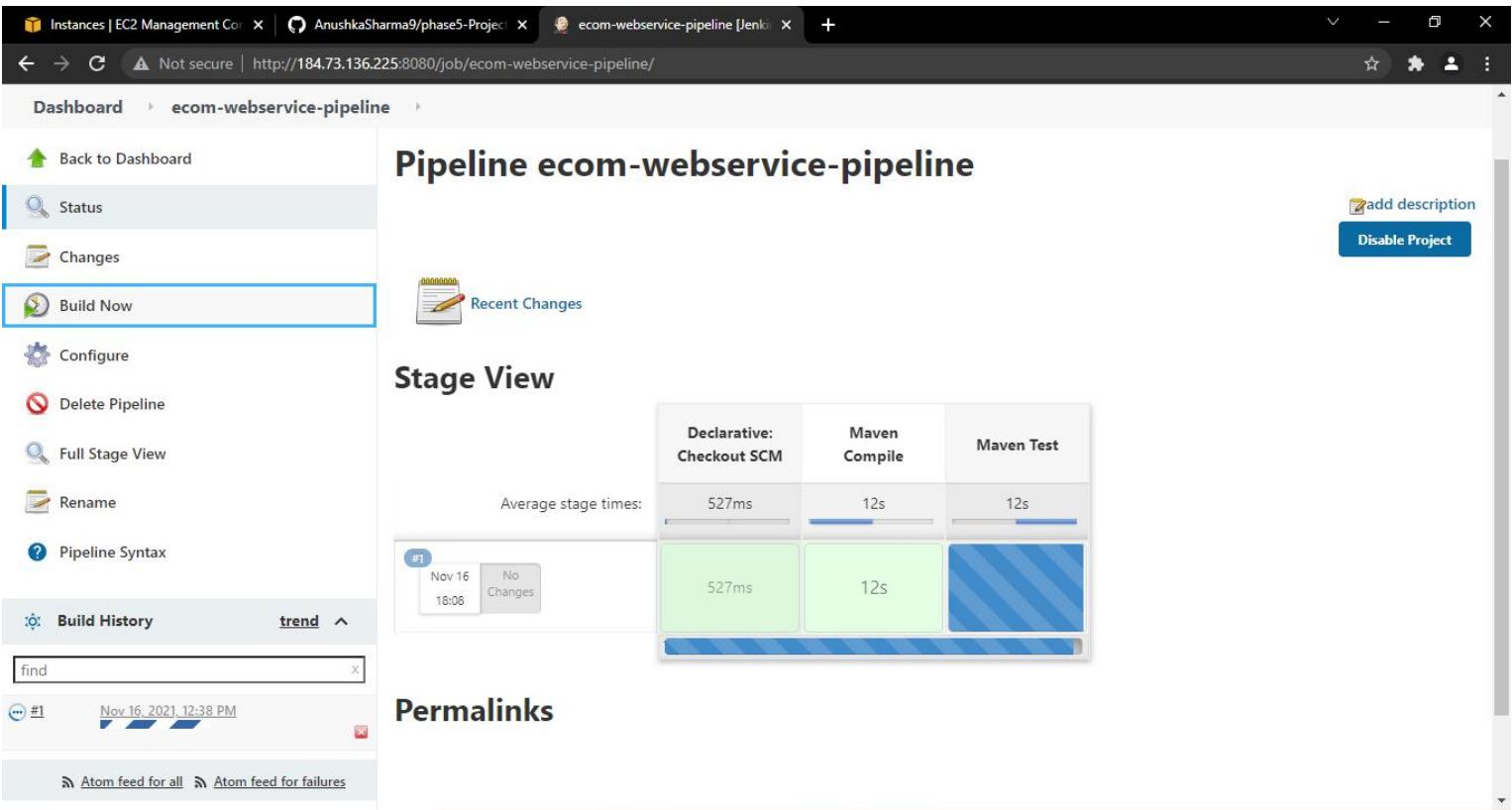
Build History trend ^

find

#1 Nov 16, 2021, 12:38 PM

Atom feed for all Atom feed for failures

Add description Disable Project



Instances | EC2 Management Con | AnushkaSharma9/phase5-Project | ecom-webservice-pipeline [Jenki | +

Dashboard > ecom-webservice-pipeline

Back to Dashboard Status Changes Build Now Configure Delete Pipeline Full Stage View Rename Pipeline Syntax

**Pipeline ecom-webservice-pipeline**

Recent Changes

**Stage View**

Declarative: Checkout SCM	Maven Compile	Maven Test	Maven Build	Docker Build	Docker Deploy
Average stage times: 527ms	12s	13s	8s	523ms	82ms
#1 Nov 16 18:08 No Changes	527ms	12s	13s	8s	523ms failed 82ms failed

**Permalinks**

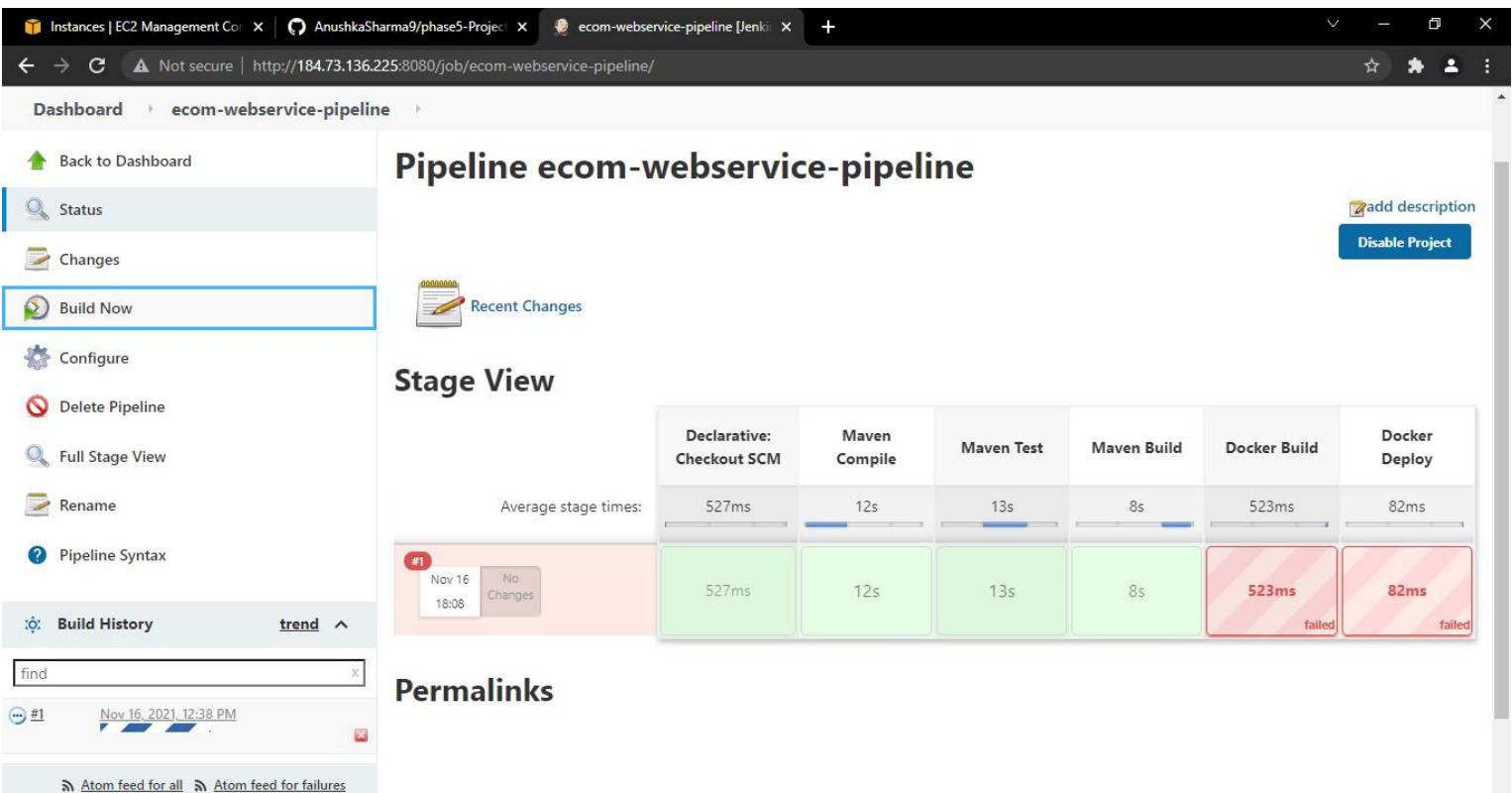
Build History trend ^

find

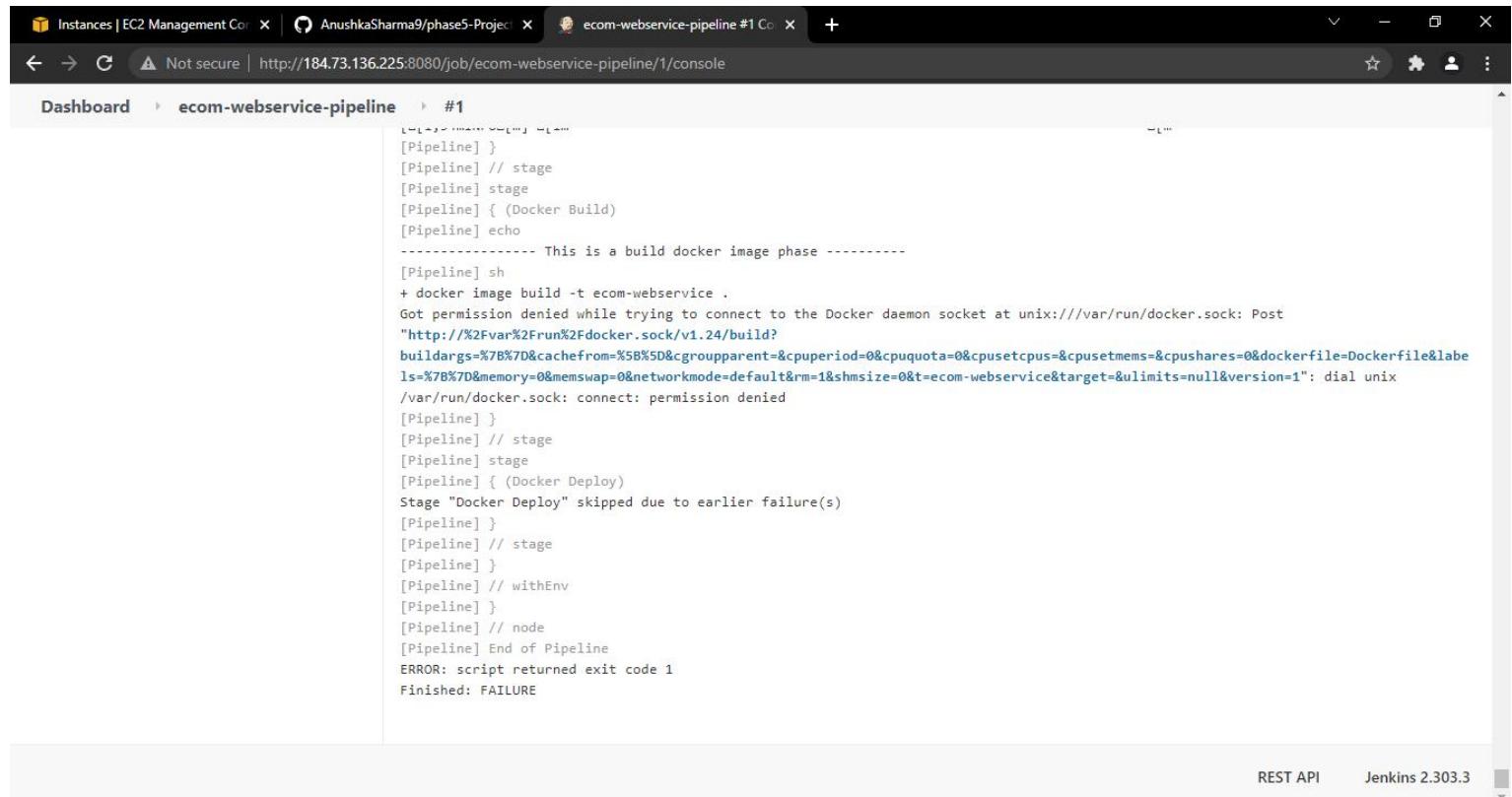
#1 Nov 16, 2021, 12:38 PM

Atom feed for all Atom feed for failures

Add description Disable Project



3.9 Console Output , Build 1 failed due permission denied -

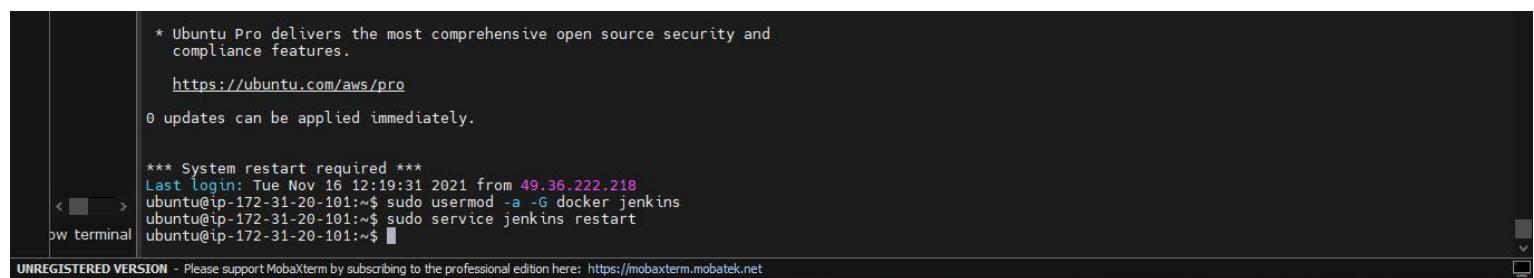


The screenshot shows a Jenkins pipeline log for job 'ecom-webservice-pipeline' #1. The log output is as follows:

```
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Docker Build)
[Pipeline] echo
----- This is a build docker image phase -----
[Pipeline] sh
+ docker image build -t ecom-webservice .
Got permission denied while trying to connect to the Docker daemon socket at unix:///var/run/docker.sock: Post "http:///%2fvar%2frun%2fdocker.sock/v1.24/build"
buildargs=%7B%7D&cachefrom=%5B%5D&cgroupparent=&cpuperiod=0&cpuquota=0&cpusetcpus=&cpusetsmems=&cpushares=0&dockerfile=Dockerfile&label=.%7B%7D&memory=0&nmswap=0&networkmode=default&rm=1&shmsize=0&t=ecom-webservice&target=&ulimits=null&version=1": dial unix /var/run/docker.sock: connect: permission denied
[Pipeline] }
[Pipeline] // stage
[Pipeline] stage
[Pipeline] { (Docker Deploy)
Stage "Docker Deploy" skipped due to earlier failure(s)
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // withEnv
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
ERROR: script returned exit code 1
Finished: FAILURE
```

At the bottom right of the browser window, there are links for 'REST API' and 'Jenkins 2.303.3'.

### 3.10 Running the following commands for permission denied -



The terminal window shows the following output:

```
* Ubuntu Pro delivers the most comprehensive open source security and
  compliance features.

https://ubuntu.com/aws/pro

0 updates can be applied immediately.

*** System restart required ***
Last login: Tue Nov 16 12:19:31 2021 from 49.36.222.218
ubuntu@ip-172-31-20-101:~$ sudo usermod -a -G docker jenkins
ubuntu@ip-172-31-20-101:~$ sudo service jenkins restart
ubuntu@ip-172-31-20-101:~$
```

At the bottom left, it says 'pw terminal'. At the bottom, it says 'UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: <https://mobaxterm.mobatek.net>'.

### 3.11 Restarting the Jenkins server again by refreshing the webpage -



## Welcome to Jenkins!

**Sign in**

Keep me signed in

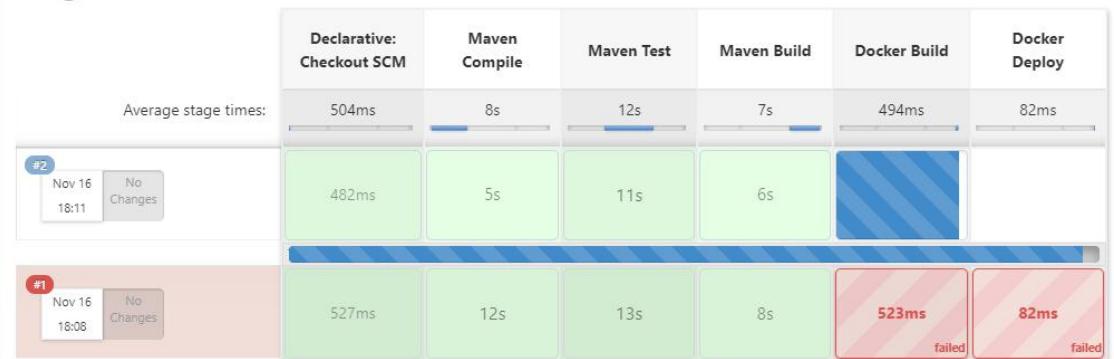
Dashboard > ecom-webservice-pipeline >

## Pipeline ecom-webservice-pipeline

[add description](#)

[Disable Project](#)

### Stage View



Build History	
<input type="text" value="find"/>	<a href="#">trend</a> ^
#2 Nov 16, 2021, 12:41 PM	

Instances | EC2 Management Con | phase5-Project-CI-CD-Deployment | ecom-webservice-pipeline [Jenki | +

Not secure | http://184.73.136.225:8080/job/com-webservice-pipeline/

Dashboard > ecom-webservice-pipeline >

[Back to Dashboard](#)

[Status](#)

[Changes](#)

[Build Now](#)

[Configure](#)

[Delete Pipeline](#)

[Full Stage View](#)

[Rename](#)

[Pipeline Syntax](#)

[Git Polling Log](#)

**Build History** trend ^

find

#2 Nov 16 18:11 No Changes

#1 Nov 16 18:08 No Changes

Average stage times:  
(Average full run time: ~52s)

Declarative: Checkout SCM Maven Compile Maven Test Maven Build Docker Build Docker Deploy

Declarative: Checkout SCM	Maven Compile	Maven Test	Maven Build	Docker Build	Docker Deploy
504ms	8s	12s	7s	9s	638ms
482ms	5s	11s	6s	17s	1s
527ms	12s	13s	8s	523ms failed	82ms failed

**Recent Changes**

**Stage View**

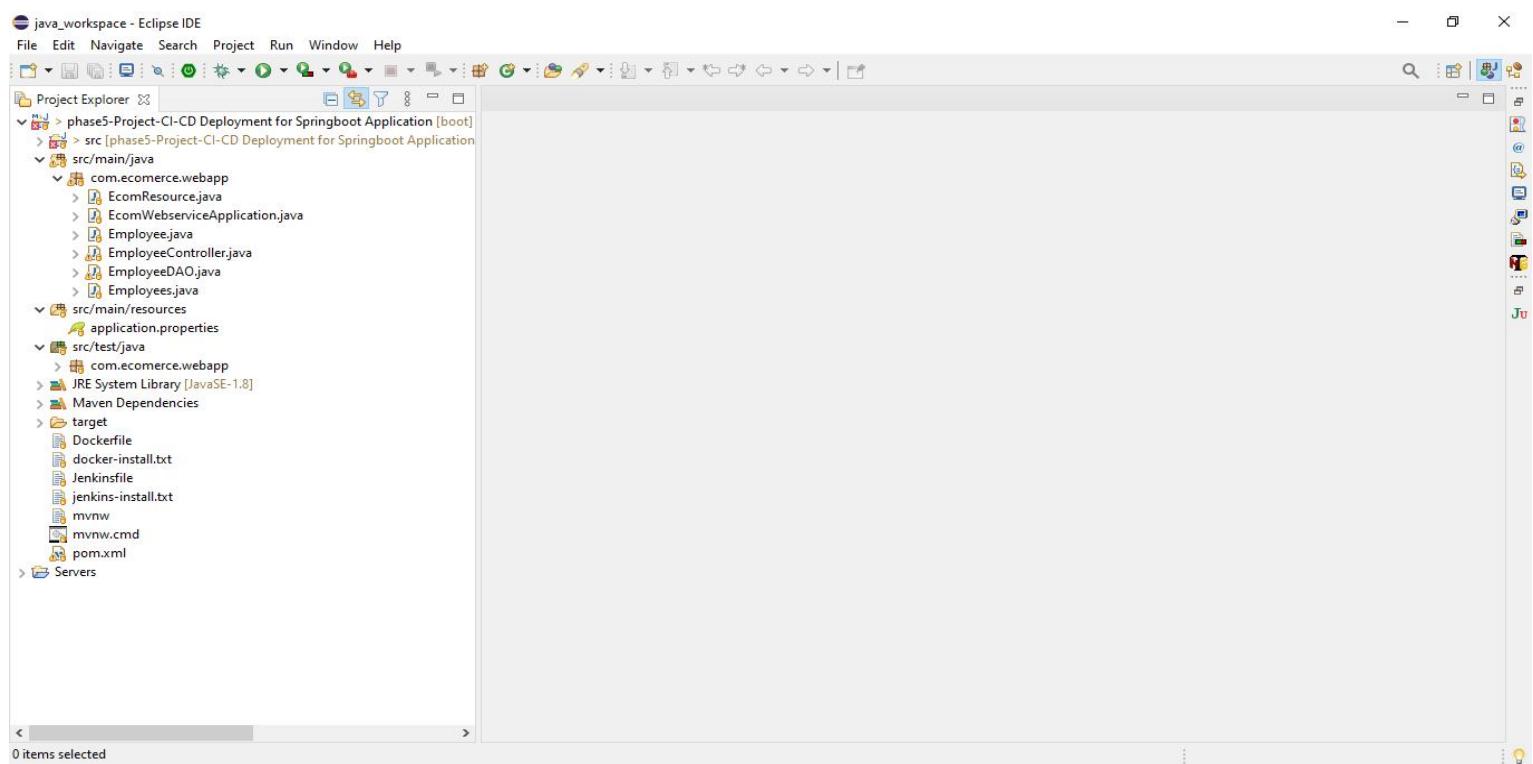
**Permalinks**

[add description](#)

[Disable Project](#)

### 3.12 2<sup>nd</sup> Build Deployed Successfully

- ✧ Name of Project ->>**phase5-Project CI-CD Deployment for Springboot Application**
- ✧ Name of Package ->> **com.ecommerce.webapp**
- ✧ **DIRECTORY STRUCTURE / PACKAGE**



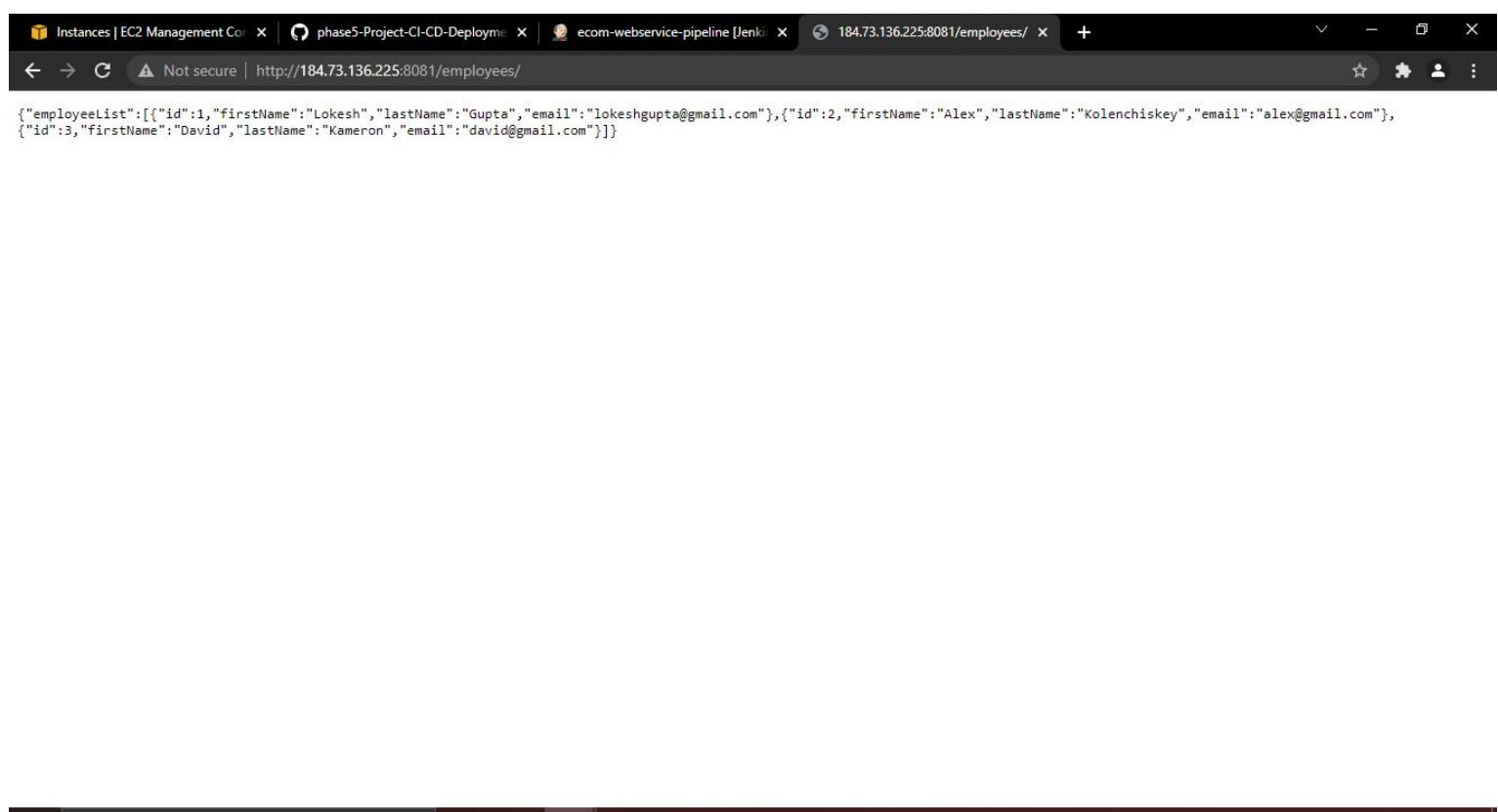
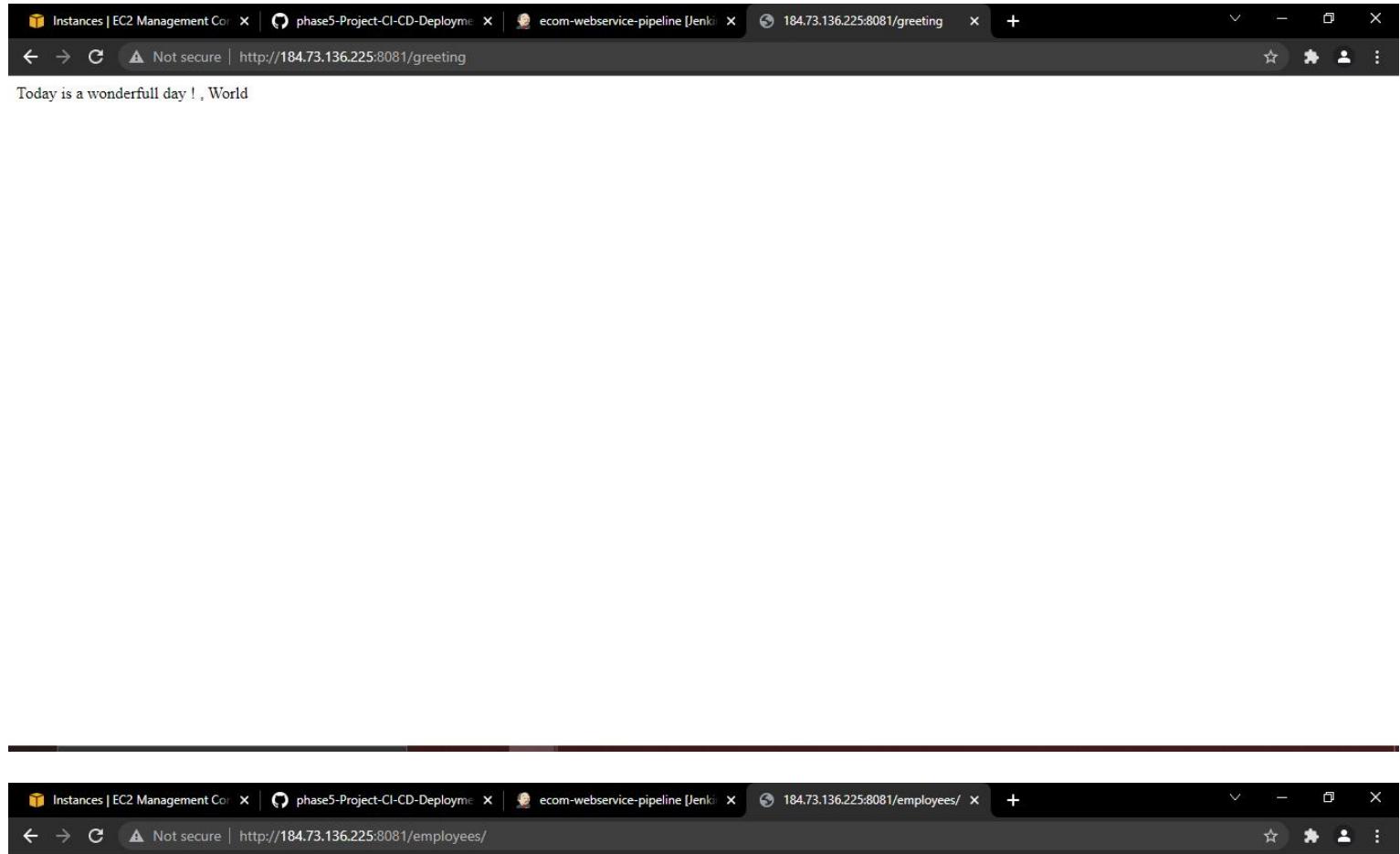
## ✧ SCREENSHOTS OF OUTPUT



Hello, Welcome ecommerce webservice application !



Hello, wonderfull job!



- ✧ Changes committed in Git are reflected in the Jenkins server as Build 3<sup>rd</sup> and Build 4<sup>th</sup> automatically started the integration as well as deployment of the webapplication.
- ✧ Build 3<sup>rd</sup> done successfully after the commit.

Instances | EC2 Management Con | AnushkaSharma9/phase5-Project | ecom-webservice-pipeline [Jenki | 184.73.136.225:8081/employees/ | +

Dashboard > ecom-webservice-pipeline >

Build Now Recent Changes

## Stage View

	Declarative: Checkout SCM	Maven Compile	Maven Test	Maven Build	Docker Build	Docker Deploy
Average stage times: (Average full run time: ~52s)	504ms	8s	12s	7s	9s	638ms
#2 Nov 16 18:11 No Changes	482ms	5s	11s	6s	17s	1s
#1 Nov 16 18:08 No Changes	527ms	12s	13s	8s	523ms failed	82ms failed

## Permalinks

- Last build (#1), 3 min 20 sec ago
- Last failed build (#1), 3 min 20 sec ago
- Last unsuccessful build (#1), 3 min 20 sec ago
- Last completed build (#1), 3 min 20 sec ago

Instances | EC2 Management Con | AnushkaSharma9/phase5-Project | ecom-webservice-pipeline [Jenki | 184.73.136.225:8081/employees/ | +

Dashboard > ecom-webservice-pipeline >

Build Now Recent Changes

## Stage View

	Declarative: Checkout SCM	Maven Compile	Maven Test	Maven Build	Docker Build	Docker Deploy
Average stage times: (Average full run time: ~52s)	449ms	7s	8s	7s	9s	638ms
#3 Nov 16 18:16 1 commit	339ms	5s	44s			
#2 Nov 16 18:11 No Changes	482ms	5s	11s	6s	17s	1s
#1 Nov 16 18:08 No Changes	527ms	12s	13s	8s	523ms failed	82ms failed

## Permalinks

- Last build (#1), 3 min 20 sec ago

Instances | EC2 Management Con | AnushkaSharma9/phase5-Project | ecom-webservice-pipeline [Jenki | 184.73.136.225:8081/employees/ | +

Dashboard > ecom-webservice-pipeline >

Build Now Recent Changes

Configure  
Delete Pipeline  
Full Stage View  
Rename  
Pipeline Syntax  
Git Polling Log

**Build History** trend ^

	Declarative: Checkout SCM	Maven Compile	Maven Test	Maven Build	Docker Build	Docker Deploy
Average stage times: (Average full run time: ~39s)	449ms	7s	11s	7s	6s	916ms
#3 Nov 16 18:16 1 commit	339ms	5s	9s	6s	2s	1s
#2 Nov 16 18:11 No Changes	482ms	5s	11s	6s	17s	1s
#1 Nov 16 18:08 No Changes	527ms	12s	13s	8s	<b>523ms</b> failed	<b>82ms</b> failed

**Permalinks**

- Last build (#1), 3 min 20 sec ago
- Last failed build (#1), 3 min 20 sec ago

✧ Build 4<sup>th</sup> Done Successfully after the commit

Instances | EC2 Management Con | phase5-Project-CI-CD-Deployme | ecom-webservice-pipeline [Jenki | 184.73.136.225:8081/employees/ | +

Dashboard > ecom-webservice-pipeline >

Build Now Recent Changes

Configure  
Delete Pipeline  
Full Stage View  
Rename  
Pipeline Syntax  
Git Polling Log

**Build History** trend ^

	Declarative: Checkout SCM	Maven Compile	Maven Test	Maven Build	Docker Build	Docker Deploy
Average stage times: (Average full run time: ~39s)	449ms	7s	11s	7s	6s	916ms
#3 Nov 16 18:16 1 commit	339ms	5s	9s	6s	2s	1s
#2 Nov 16 18:11 No Changes	482ms	5s	11s	6s	17s	1s
#1 Nov 16 18:08 No Changes	527ms	12s	13s	8s	<b>523ms</b> failed	<b>82ms</b> failed

**Permalinks**

- Last build (#1), 3 min 20 sec ago
- Last failed build (#1), 3 min 20 sec ago

Screenshot of the Jenkins Stage View for the ecom-webservice-pipeline. The pipeline consists of six stages: Declarative: Checkout SCM, Maven Compile, Maven Test, Maven Build, Docker Build, and Docker Deploy.

**Average stage times:** (Average full run time: ~39s)

	Declarative: Checkout SCM	Maven Compile	Maven Test	Maven Build	Docker Build	Docker Deploy
#4 Nov 16 18:18 1 commit	419ms	7s	11s	7s	6s	916ms
#3 Nov 16 18:16 1 commit	330ms	5s	9s	6s	2s	1s
#2 Nov 16 18:11 No Changes	482ms	5s	11s	6s	17s	1s
#1 Nov 16 18:08 No Changes	527ms	12s	13s	8s	523ms failed	82ms failed

**Build History:**

- #4 Nov 16, 2021, 12:48 PM
- #3 Nov 16, 2021, 12:46 PM
- #2 Nov 16, 2021, 12:41 PM
- #1 Nov 16, 2021, 12:38 PM

[Atom feed for all](#) [Atom feed for failures](#)

Screenshot of the Jenkins Stage View for the ecom-webservice-pipeline. The pipeline consists of six stages: Declarative: Checkout SCM, Maven Compile, Maven Test, Maven Build, Docker Build, and Docker Deploy.

**Average stage times:** (Average full run time: ~34s)

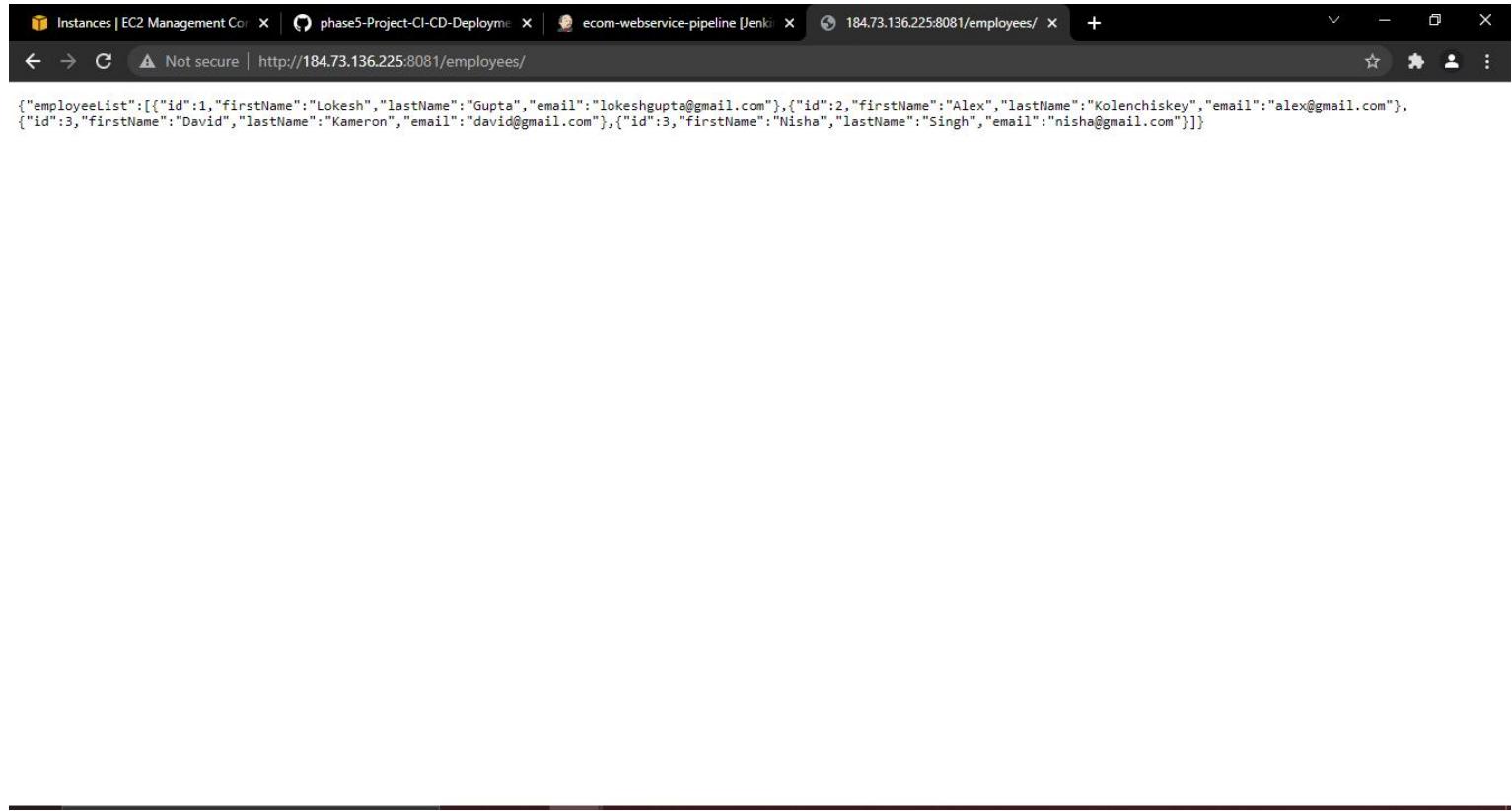
	Declarative: Checkout SCM	Maven Compile	Maven Test	Maven Build	Docker Build	Docker Deploy
#4 Nov 16 18:18 1 commit	419ms	7s	11s	6s	5s	1s
#3 Nov 16 18:16 1 commit	330ms	5s	9s	5s	2s	1s
#2 Nov 16 18:11 No Changes	482ms	5s	11s	6s	17s	1s
#1 Nov 16 18:08 No Changes	527ms	12s	13s	8s	523ms failed	82ms failed

**Build History:**

- #4 Nov 16, 2021, 12:48 PM
- #3 Nov 16, 2021, 12:46 PM
- #2 Nov 16, 2021, 12:41 PM
- #1 Nov 16, 2021, 12:38 PM

[Atom feed for all](#) [Atom feed for failures](#)

- Added employee name as Nisha Singh and email id - nisha@gmail.com in git and committed the changes .



- ✧ Container and images running in Jenkins and docker server can be seen by using the commands below as shown in the picture.

```
ubuntu@ip-172-31-20-101:~$ sudo service jenkins restart
ubuntu@ip-172-31-20-101:~$ Connection reset by 184.73.136.225 port 22

16/11/2021 18:20:23 /drives/u/keys ssh -i "webserver-ecom.pem" ubuntu@ec2-184-73-136-225.compute-1.amazonaws.com
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.11.0-1020-aws x86_64)

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

 System information as of Tue Nov 16 12:50:39 UTC 2021

 System load: 0.22      Processes:          137
 Usage of /: 25.7% of 15.45GB   Users logged in:    1
 Memory usage: 48%           IPv4 address for docker0: 172.17.0.1
 Swap usage: 0%              IPv4 address for eth0: 172.31.20.101

 * Ubuntu Pro delivers the most comprehensive open source security and
 compliance features.

 https://ubuntu.com/aws/pro

0 updates can be applied immediately.

*** System restart required ***
Last login: Tue Nov 16 12:40:20 2021 from 49.36.222.218
ubuntu@ip-172-31-20-101:~$ sudo docker ps -a
CONTAINER ID        IMAGE               COMMAND                  CREATED             STATUS              PORTS
f9798da31a3c        ecom-webservice   "java -jar ecom-webs..."   2 minutes ago     Up 2 minutes      0.0.0.0:8081->8081/tcp, :::8081->8081/tcp   NAMES
ubuntu@ip-172-31-20-101:~$ sudo docker images
REPOSITORY          TAG      IMAGE ID            CREATED             SIZE
ecom-webservice    latest   47c0726b3396   2 minutes ago     543MB
<none>              <none>   48dceeb4767f   4 minutes ago     543MB
<none>              <none>   f8740dbf16e7   8 minutes ago     543MB
openjdk             8-jdk    3fdc4c6136de   3 weeks ago       526MB
ubuntu@ip-172-31-20-101:~$
```

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