

Module 6: Jenkins Assignment - 1

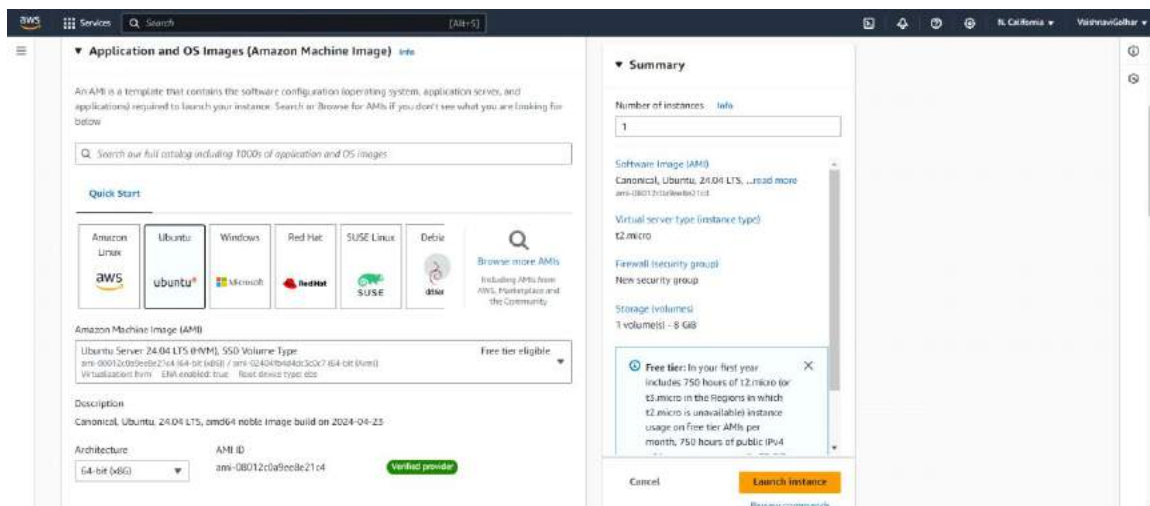
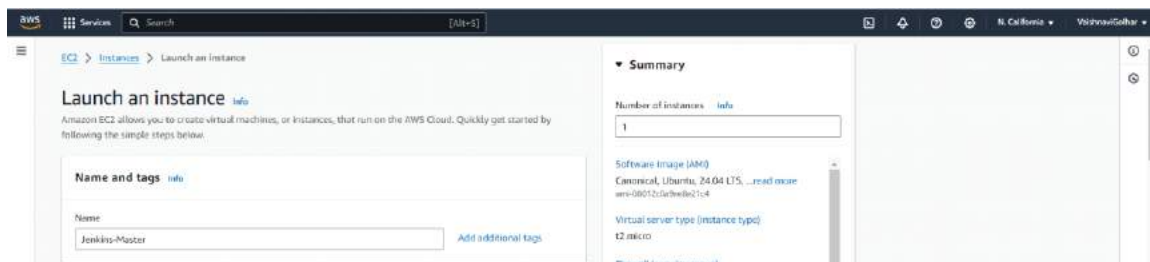
Tasks To Be Performed:

1. Trigger a pipeline using Git when push on develop branch
2. Pipeline should pull Git content to a folder

Answer:

Step 1: Install to server Jenkins-Master and Jenkins-Slave

a) Jenkins-Master



The screenshot displays two panels from the AWS Management Console. The left panel shows the 'Network settings' tab for an EC2 instance named 'ec2-02ecc81d9362000d2'. It includes fields for Network (vpc-02ecc81d9362000d2), Subnet (No preference), Auto-assign public IP (Enabled), and Firewall (security group). A dropdown menu for 'Common security groups' shows 'group1 sg-07854c7500e44336c' selected. The right panel shows the 'Summary' tab with details like Number of instances (1), Software image (Canonical, Ubuntu 24.04 LTS), Virtual server type (t2.micro), Firewall (security group), and Storage (1 volume @ ~\$ GB).

Network settings

Network
vpc-02ecc81d9362000d2

Subnet
No preference (Default subnet in any availability zone)

Auto-assign public IP
Enable

Additional charges apply when outside of free tier allowance

Firewall (security group)
A security group is a set of firewall rules that control the traffic for your instances. Add rules to allow specific traffic to reach your instance.

Create security group Select existing security group

Common security groups info
Select security groups

group1 sg-07854c7500e44336c X
VPC vpc-02ecc81d9362000d2

Complete security group rules

Summary

Number of instances
1

Software image (AMI)
Canonical, Ubuntu 24.04 LTS, _read more
ami-00f1c7bf8ee17c1d4

Virtual server type (Instance type)
t2.micro

Firewall (Security group)
group1

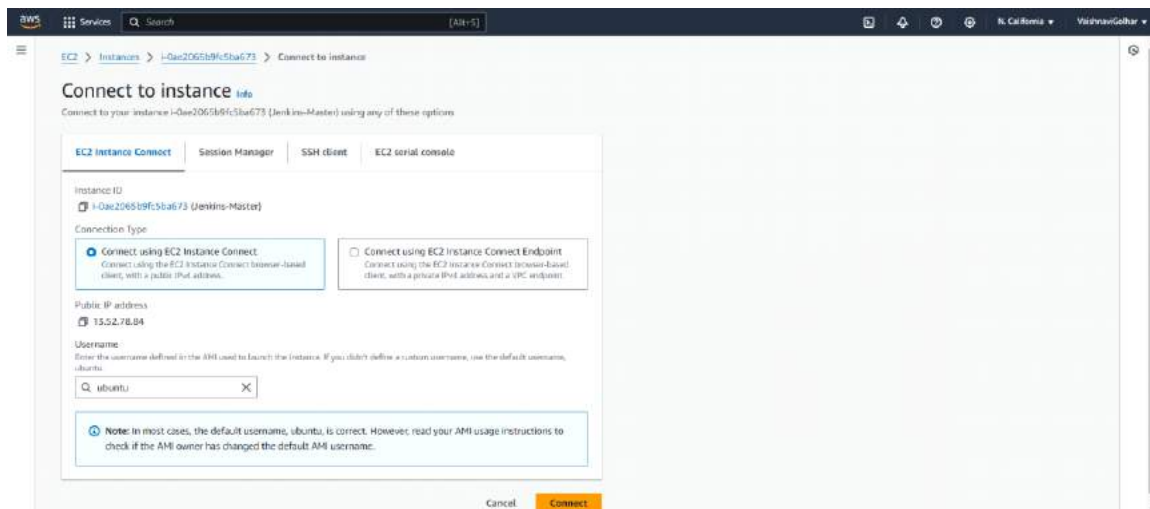
Storage (Volumes)
1 volume(s) - \$ GB

Free tier: In your first year:
Includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance

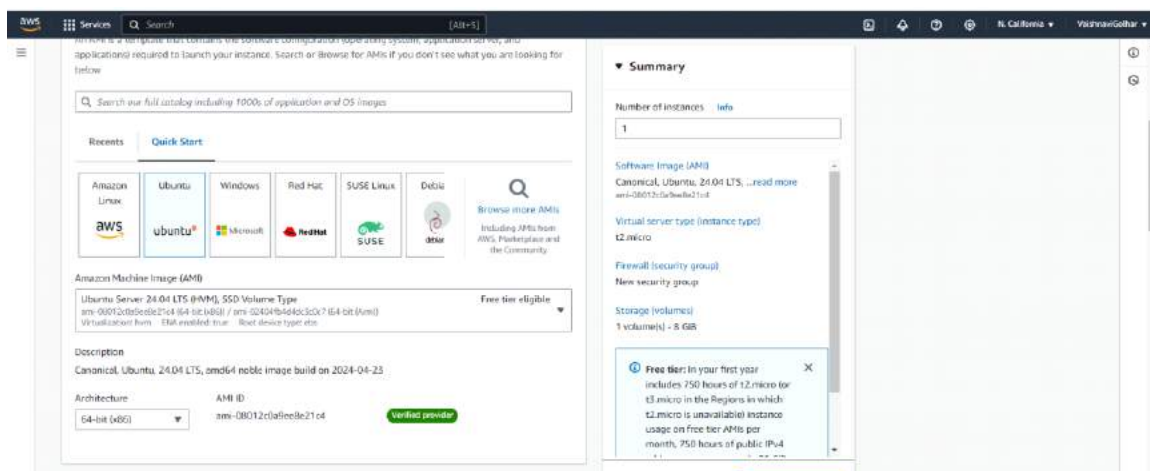
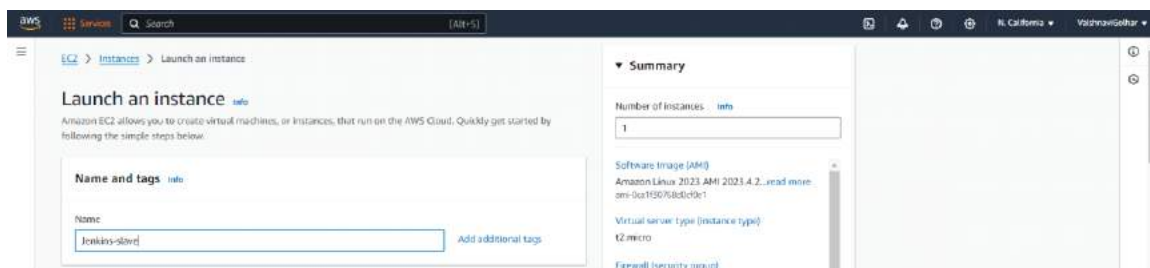
The screenshot displays the AWS Management Console interface during the creation of a new EC2 instance. The top navigation bar includes the AWS logo, account information (N. California), and user details (VidyanSathya). The main content area is divided into several sections:

- Security Groups:** A dropdown menu shows "group1 sg-07864c75D0A4433d6". Below it, a note states: "Security groups that you add or remove here will be added to or removed from all your network interfaces."
- Configure storage:** This section is expanded, showing advanced options. It includes a field for "1x" volumes, currently set to "8 GB" with a "gp3" type. A note indicates "Boot volume: (Not encrypted)". A blue callout box states: "Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage." There is an "Add new volume" button.
- Summary:** This section provides a overview of the configuration:
 - Number of instances:** Set to "1".
 - Software Image (AMI):** Canonical, Ubuntu, 24.04 LTS, ...read more
 - Virtual server type (instance type):** t2.micro
 - Finality (security group):** group1
 - Storage (volumes):** 1 volume(s); 8 GB

At the bottom right, there are two buttons: "Cancel" and "Launch Instance". Below the launch button is a link to "Review commands".



b) Jenkins-Slave



Instance type [info](#) | [Get advice](#)

Instance type

t2.micro Free tier eligible

Family: t2 1 vCPU 1 GB Memory Current generation: true

On-Demand RHEL base pricing: 0.0754 USD per Hour

On-Demand SLES base pricing: 0.0754 USD per Hour

On-Demand Windows base pricing: 0.0784 USD per Hour

On-Demand Linux base pricing: 0.0754 USD per Hour

Additional costs apply for AMIs with pre-installed software

☐ All generations [Compare instance types](#)

Key pair (login) [info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required

Ncalifornia

[Create new key pair](#)

Summary

Number of instances [info](#)

1

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro for t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GiB of

Network settings [info](#) [Edit](#)

Network [info](#)

vpc-02ace41d98620d0d2

Subnet [info](#)

No preference (Default subnet in any availability zone)

Auto-assign public IP [info](#)

Enable

Additional charges apply when outside of free tier allowance

Firewall (security group) [info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☐ Create security group ☒ Select existing security group

Common security groups [info](#)

Select security groups

group1 sg-0766e7500d4433e6 [X](#)

VPC vpc-02ace41d98620d0d2

Security groups that you add or remove here will be added to or removed from all your network interfaces

[Compare security group rules](#)

Configure storage [info](#) [Advanced](#)

1x 8 GiB gp3 Root volume (Not encrypted)

Summary

Number of instances [info](#)

1

t2.micro

Firewall (security group)

group1

Storage (volumes)

1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro for t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the Internet.

[Cancel](#) [Launch instance](#) [Review commands](#)

Instances [info](#)

[Find instance by attribute or tag \(case-sensitive\)](#) [All states](#)

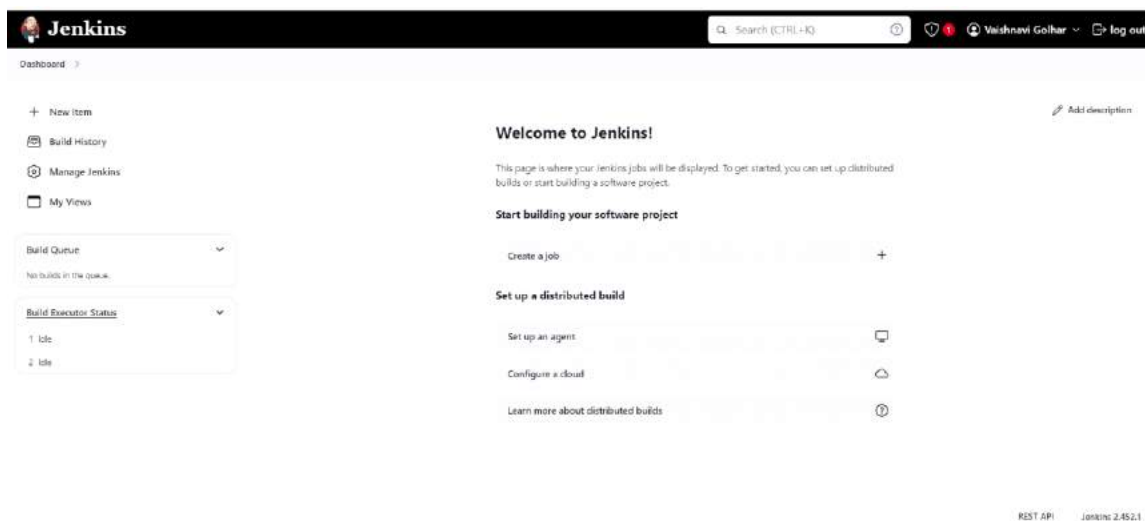
	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public
<input checked="" type="checkbox"/>	Jenkins-slave	i-017b080780a945bb3	Running	t2.micro	2/2 checks passed	View alarms	us-west-1c	ec2-54-219-179-238.us-...	54.21...
<input type="checkbox"/>	Jenkins-Master	i-0ae206389f5ba675	Running	t2.micro	2/2 checks passed	View alarms	us-west-1c	ec2-13-52-78-84.us-we...	13.52...

c) Install “Jenkins” Over the Master (Jenkins-Master) Machine

```
aws
Services
Search
[Alt+G]
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-13-177:~$ sudo systemctl enable jenkins
Synchronizing state of jenkins.service with SysV service script with /usr/lib/systemd/systemd-sysv-install.
Executing: /usr/lib/systemd/systemd-sysv-install enable jenkins
ubuntu@ip-172-31-13-177:~$ sudo systemctl start jenkins
* jenkins.service - Jenkins Continuous Integration Server
   Loaded: loaded (/usr/lib/systemd/system/jenkins.service; enabled; preset: enabled)
   Active: active (running) since Tue 2024-06-11 15:04:53 UTC; 1min 19s ago
     Main PID: 2057 (java)
       Tasks: 39 (limit: 1130)
      Memory: 255.0M (peak: 349.3M)
         CPU: 49.342s
    CGroup: /system.slice/jenkins.service
            └─2057 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpport=8080

Jun 11 15:04:14 ip-172-31-13-177 jenkins[2887]: 668a45b5445bb5f09d2360118cf14cd9
Jun 11 15:04:14 ip-172-31-13-177 jenkins[2887]: This may also be found at: /usr/lib/jenkins/secrets/initialAdminPassword
Jun 11 15:04:14 ip-172-31-13-177 jenkins[2887]: *****
Jun 11 15:04:14 ip-172-31-13-177 jenkins[2887]: *****
Jun 11 15:04:14 ip-172-31-13-177 jenkins[2887]: *****
Jun 11 15:04:53 ip-172-31-13-177 jenkins[2887]: 2024-06-11 15:04:53.054+0000 [id=21] INFO Jenkins.InitReactorRunner$1.onAttained: Completed initialization
Jun 11 15:04:53 ip-172-31-13-177 jenkins[2887]: 2024-06-11 15:04:53.063+0000 [id=24] INFO Hudson.lifecycle.Lifecycle$onReady: Jenkins is fully up and running
Jun 11 15:04:53 ip-172-31-13-177 systemd[1]: Started jenkins.service - Jenkins Continuous Integration Server.
Jun 11 15:04:54 ip-172-31-13-177 jenkins[2887]: 2024-06-11 15:04:54.435+0000 [id=47] INFO h.m.DownloadService$Downloadable$load: checked the updated data file for h
Jun 11 15:04:54 ip-172-31-13-177 jenkins[2887]: 2024-06-11 15:04:54.431+0000 [id=47] INFO Hudson.util.Retrier$start: performed the action check updates Server success
Jun 11 15:04:54 ip-172-31-13-177 jenkins[2887]: *****

f-0ae2065b9fc5ba673 (Jenkins-Master)
PublicPki: 13.52.78.84 PrivatePki: 172.31.13.177
```



d) Install “Java” Over Slave (Jenkins-Slave) Machine

```
aws
Services
Search
[Alt+G]
System information as of Tue Jun 11 15:13:40 UTC 2024
System load: 0.21          Processes: 107
Usage of /: 23.2% of 6.71GB Users logged in: 0
Memory usage: 19%         IPv4 address for eno0: 172.31.13.251
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.
0 updates can be applied immediately.
Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

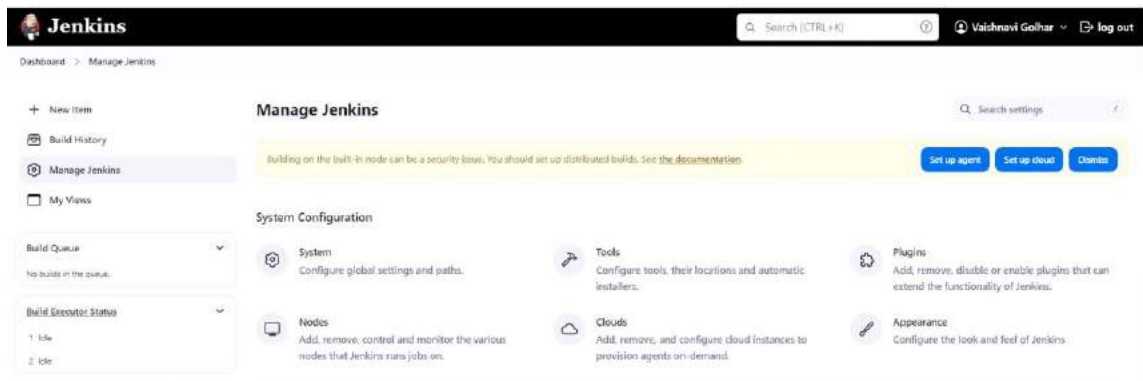
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/*copyright.
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-13-251:~$

f-017b080780a445bb5 (Jenkins-slave)
PublicPki: 54.219.179.258 PrivatePki: 172.31.13.251
```

e) Add a Node in Jenkins-Master using “Private Key”



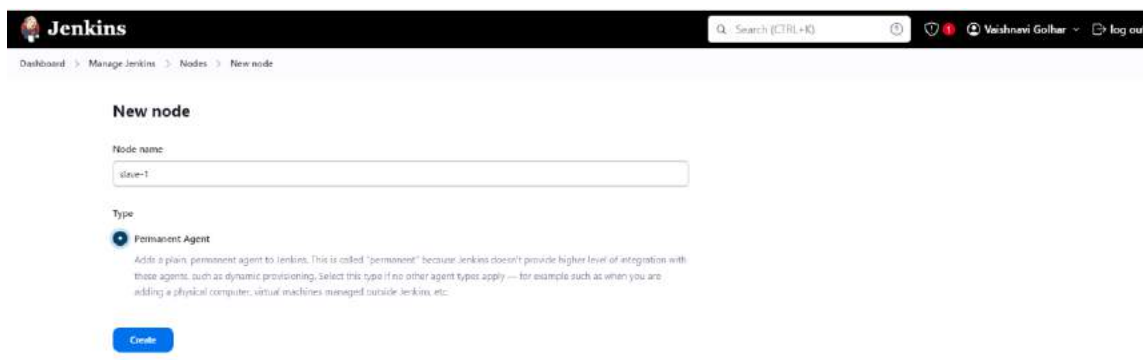
The screenshot shows the Jenkins 'Manage Jenkins' page. The left sidebar contains links for 'New Item', 'Build History', 'Manage Jenkins' (selected), and 'My Views'. Below these are two dropdown menus: 'Build Queue' (showing 'No builds in the queue') and 'Build Executor Status' (showing '1 idle' and '2 idle' executors). The main content area is titled 'Manage Jenkins' and includes a search bar. A yellow warning banner states: 'Building on the built-in node can be a security issue. You should set up distributed builds. See the documentation.' Below this is a 'System Configuration' section with six cards: 'System' (Configure global settings and paths), 'Tools' (Configure tools, their locations and automatic installers), 'Plugins' (Add, remove, disable or enable plugins that can extend the functionality of Jenkins), 'Nodes' (Add, remove, control and monitor the various nodes that Jenkins runs jobs on), 'Clouds' (Add, remove, and configure cloud instances to provision agents on-demand), and 'Appearance' (Configure the look and feel of Jenkins).




The screenshot shows the Jenkins 'Nodes' page. The left sidebar has 'Nodes' (selected), 'Clouds', 'Build Queue' (showing 'No builds in the queue'), and 'Build Executor Status' (showing '1 idle' executor). The main content area is titled 'Nodes' and features a '+ New Node' button and a 'Configure Monitors' link. A table lists the nodes:

\$	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
	Built-In Node	Linux (amd64)	In sync	4.47 GiB	9.0	4.47 GiB	0ms
	Data obtained	16 min	16 min	16 min	16 min	16 min	16 min




Below the table is a legend for the '\$' icon, showing 'S', 'M', and 'L'.



The screenshot shows the Jenkins 'New node' page. The left sidebar has 'Nodes' > 'New node' selected. The main content area is titled 'New node' and contains a 'Node name' field with the value 'slave-1'. Below this is a 'Type' section with a radio button selected for 'Permanent Agent'. A description for 'Permanent Agent' is provided: 'Adds a plain, permanent agent to Jenkins. This is called "permanent" because Jenkins doesn't provide higher level of integration with these agents, such as dynamic provisioning. Select this type if no other agent types apply — for example such as when you are adding a physical computer, virtual machines managed outside Jenkins, etc.' At the bottom is a 'Create' button.

 Jenkins

Search (CTRL + K)

  Vaishnavi Gohar  log out

Dashboard > Manage Jenkins > Nodes >

Name ⓘ

slave-1

Description ⓘ

/home/ubuntu/slave

Plain text [Preview](#)

Number of executors ⓘ

2

Remote root directory ⓘ

/home/ubuntu/slave

Labels ⓘ

slave-1

Dashboard > Manage Jenkins > Nodes >


Usage ⓘ

Use this node as much as possible

Launch method ⓘ


Launch agents via SSH


Host ⓘ

 The Host must be specified

Credentials ⓘ

- none -



 The selected credentials cannot be found

Host Key Verification Strategy ⓘ

Known hosts file Verification Strategy

Advanced ▾

Dashboard > Manage Jenkins > Nodes >

Jenkins Credentials Provider: Jenkins

Add Credentials

Domain

Global credentials (unrestricted)

Kind

SSH Username with private key

Scope ⓘ

Global (Jenkins, nodes, items, all child items, etc)

ID ⓘ

ssh-key

Description ⓘ

ssh-key

Username

ubuntu

Jenkins Credentials Provider: Jenkins

Provider: **Jenkins**

Username:

☐ Treat username as secret

Private Key

☒ Enter directly

Key:

Enter New Secret Below

Passphrase:

Dashboard

>

Manage Jenkins

>

Nodes

>

Usage

Use this node as much as possible

Launch method

Launch agents via SSH

Host

54.219.179.238

Credentials

ubuntu (ssh-key)

+ Add

Host Key Verification Strategy

Non-verifying Verification Strategy

Advanced

Availability

Keep this agent online as much as possible

Save

The screenshot shows the Jenkins web interface. At the top is the Jenkins logo and navigation links like Dashboard, Manage Jenkins, and Nodes. The main header has a search bar and user information. On the left sidebar, there are links for Nodes, Clouds, Build Queue, and Build Executor Status. The central area displays the 'Nodes' page with a table listing available nodes.

S	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
	Built-In Node	Linux (amd64)	In sync	4.47 GiB	0 B	4.47 GiB	0ms
	slave-1		N/A	N/A	N/A	N/A	N/A
Data obtained		6 ms	4 ms	3 ms	5 ms	4 ms	1 ms

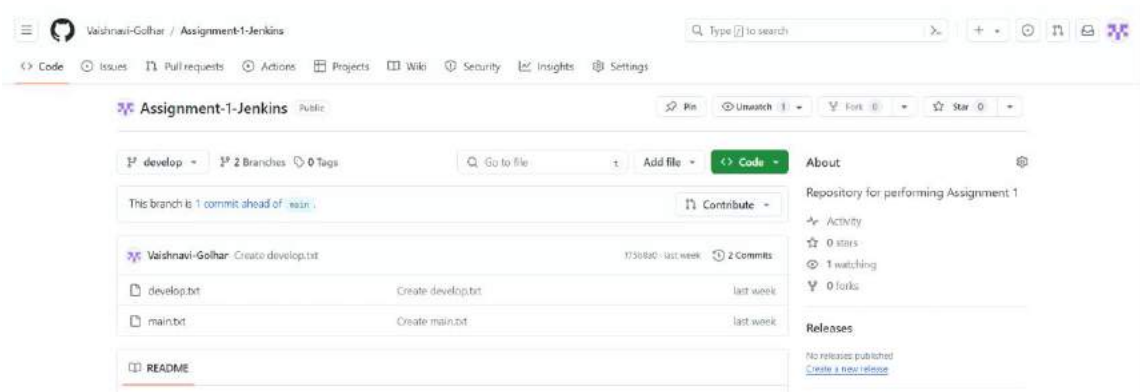
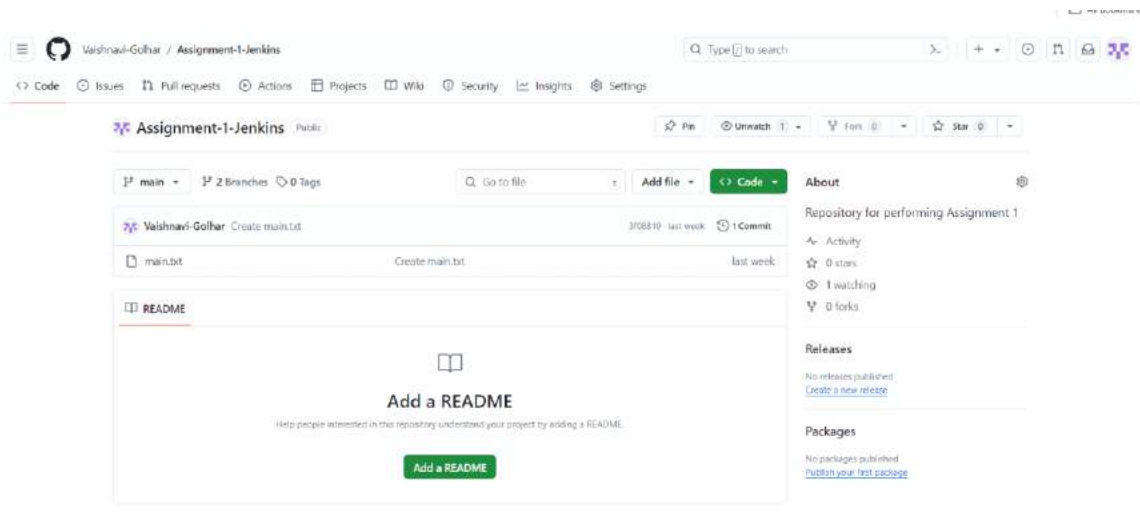
Below the table, there's a legend for node icons: S (Slave), M (Master), and L (Label).

Problem (1) Solution: Trigger a pipeline using Git when pushing on the develop branch:

Solution:

a) First Create a Repository named “Assignment1” in "GitHub"

Create the “Main” & “Develop” Branches with .txt File



b) Create a Job in “Jenkins” to Trigger the Pipeline

Dashboard > Assignment1-Job > Configuration

Configure

- General
- Source Code Management
- Build Triggers
- Build Environment
- Build Steps
- Post-build Actions

☒ Restrict where this project can be run

Label Expression

slave-1

Label slave-1 matches 1 node. Permissions or other restrictions provided by plugins may further reduce that list.

Advanced

Source Code Management

☐ None

☒ Git

Repositories

Repository URL

https://github.com/Vishnavi-Gohar/Assignment-1-Jenkins.git

Please enter Git repository.

Credentials

none

Save Apply

Dashboard > Assignment1-Job > Configuration

Configure

- General
- Source Code Management
- Build Triggers
- Build Environment
- Build Steps
- Post-build Actions

Branches to build

Branch Specifier (blank for 'any')

*/develop

Add Branch

Repository browser

(Auto)

Additional Behaviours

Add

Build Triggers

☐ Trigger builds remotely (e.g. from scripts)

☐ Build after other projects are built

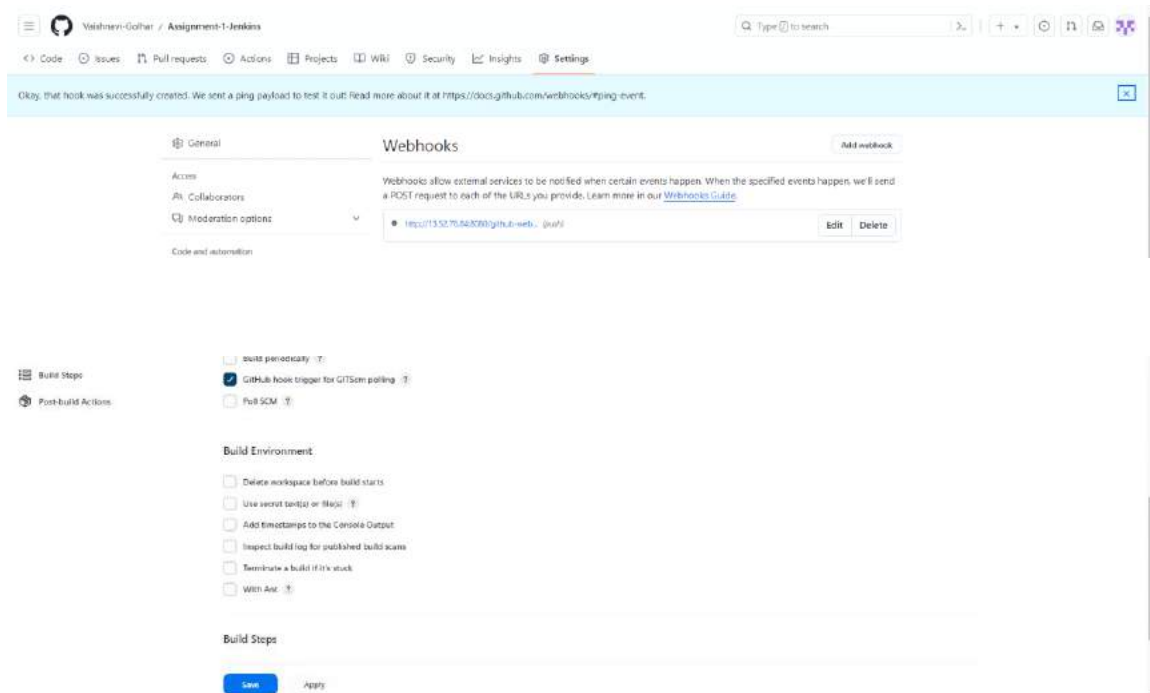
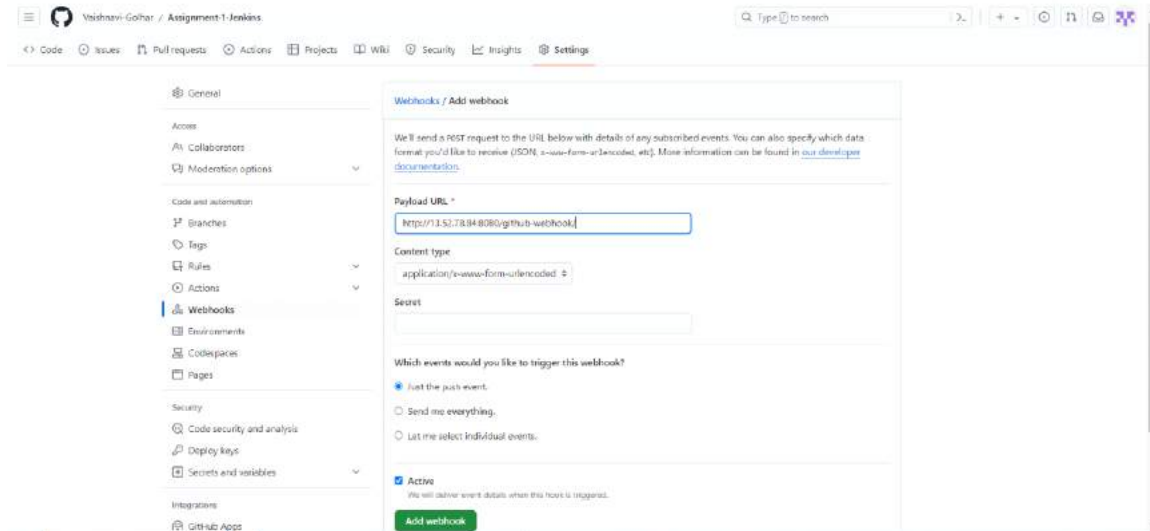
☐ Build periodically

☒ GitHub hook trigger for GITSCM polling

☐ Poll SCM

c) We have chosen this option because when we will do the change in the “develop” branch in the “Github repo”, the changes will be automatically triggered by webhooks.

Go to the “Settings” section in the “Assignment1-Jenkins” Repository in “Git”.



d) Job (Assignment 1-Job) has been successfully created.

Jenkins

Search (CTRL+K)

Valishravi Gollur

log out

Dashboard

Manage Jenkins

Nodes

slave-1

Status

Delete Agent

Configure

Build History

Load Statistics

Script Console

Log

System Information

Disconnect

Build Executor Status

Agent slave-1

Bring this node back online

Update offline reason

Get description

/home/ubuntu/slave

Jan 11, 2024, 3:26:29 PM

Disconnected by watchdog

Monitoring Data

Projects tied to slave-1

S	W	Name	Last Success	Last Failure	Last Duration	
		Assignment1-Job	N/A	N/A	N/A	

Icon: S M L

Jenkins

Search (CTRL+K)

Valishravi Gollur

log out

Dashboard

Manage Jenkins

Nodes

slave-1

Status

Delete Agent

Configure

Build History

Load Statistics

Script Console

Log

System Information

Disconnect

Build Executor Status

1 idle

2 idle

Agent slave-1

Mark this node temporarily offline

Get description

/home/ubuntu/slave

Monitoring Data

Projects tied to slave-1

S	W	Name	Last Success	Last Failure	Last Duration	
		Assignment1-Job	N/A	N/A	N/A	

Icon: S M L

Jenkins

Search (CTRL+K)

Valishravi Gollur

log out

Dashboard

Assignment1-Job

Status

Changes

Workspace

Build Now

Configure

Delete Project

GitHub Hook Log

GitHub

Rebuild

Build History

Assignment1-Job

This is for Jenkins Assignment 4

Get description

Disable Project

Permalinks

Build History

No builds

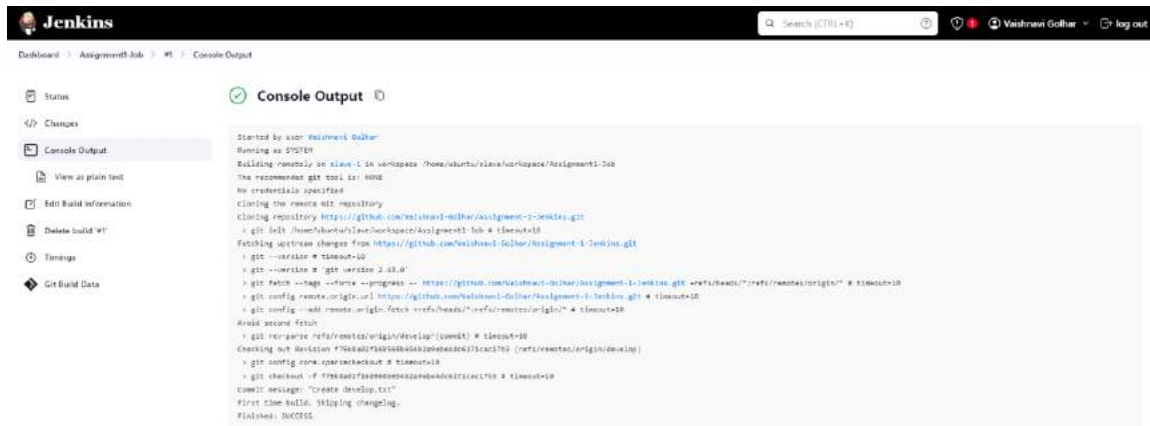
View build for all

View build for Jenkins

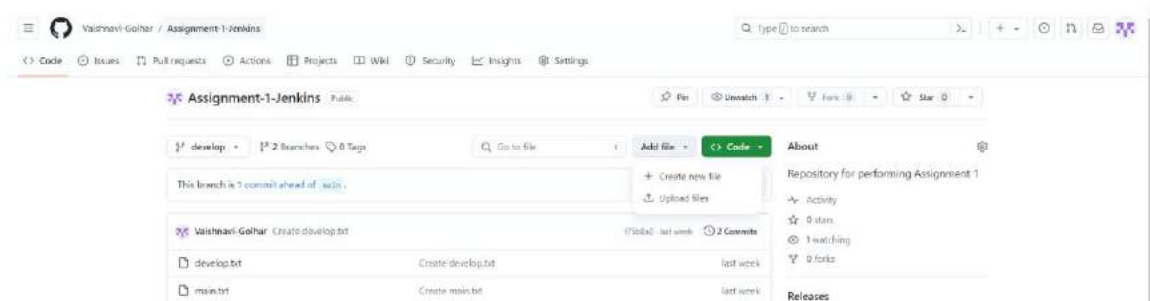
18:17 AM

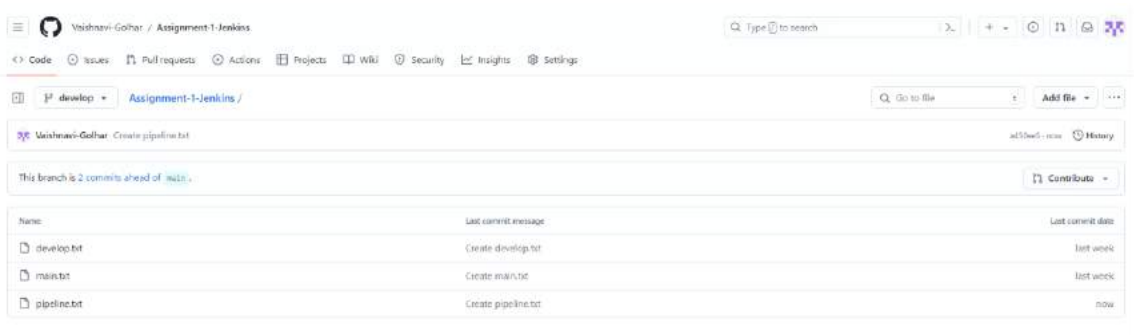
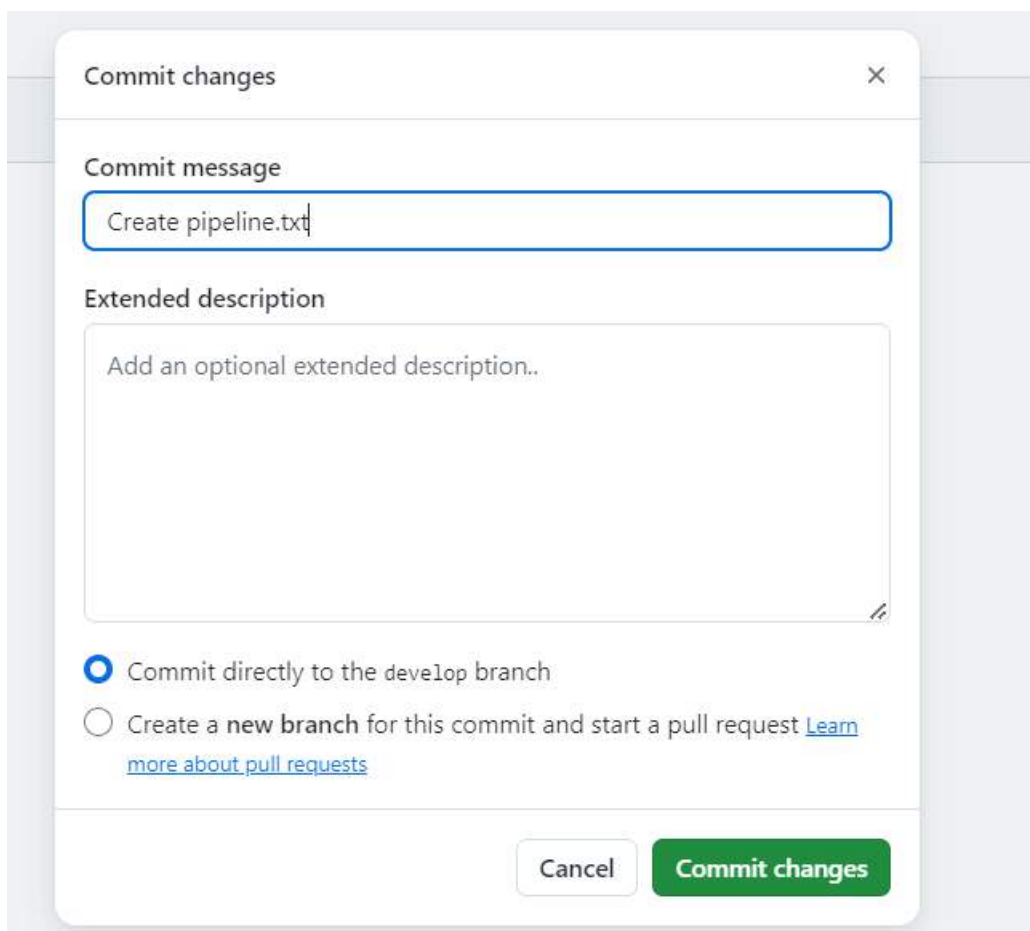
Jenkins 2.452.1

e) Click on “Build Now”. It will have started creating the job. Click on “#1”.



f) Test the Jenkins Pipeline (Check whether It is triggering or not after changing in Git automatically)





Search (CTRL+K)

Dashboard > Assignment1-Job

Status

Changes

Workspace

Build Now

Configure

Delete Project

GitHub Hook Log

GitHub

Rename

Assignment1-Job

This is for Jenkins Assignment 4

Sort Descrptions

Disable Project

Permalinks

- Last build (W2), 17 sec ago
- Last stable build (W2), 17 sec ago
- Last successful build (W2), 17 sec ago
- Last completed build (W2), 17 sec ago

Build History

Filter...

1

W2

Jun 11, 2024, 5:17 PM

2

W2

Jun 11, 2024, 5:17 PM

Open build for details

Open build for details

Search (CTRL+K)

Dashboard > Assignment1-Job > #2 > Console Output

Status

Changes

Console Output

View as plain text

Edit Build Information

Delete build #2

Rebuild Log

Timings

Git Build Data

Previous Build

Console Output

```

Started by github push by Vaishnavi-Golhar
Running as Vaishnavi-Golhar
Building remotely on slave-1 in workspace /home/ubuntu/jenkins/workspace/Assignment1-Job
The recommended git tool is: NONE
No credentials specified
> git rev-parse --resolve-git-dir /home/ubuntu/jenkins/workspace/Assignment1-Job/.git # timeout=10
Fetching changes from the remote Git repository
> git config remote.origin.url https://github.com/Vaishnavi-Golhar/Assignment1-Job.git # timeout=10
Fetching upstream changes from https://github.com/Vaishnavi-Golhar/Assignment1-Job.git
> git --version # timeout=10
> git --version # 'git version 2.45.0'
> git fetch --tags --force --progress -- https://github.com/Vaishnavi-Golhar/Assignment1-Job.git refs/heads/*:refs/remotes/origin/* # timeout=10
> git rebase refs/remotes/origin/develop:develop # timeout=10
Creating new branch 4506464959516148762a1b2c378f9d7 (refs/remotes/origin/develop)
> git config core.sparsecheckout # timeout=10
> git checkout -f 4506464959516148762a1b2c378f9d7 # timeout=10
Commit message: "Create pipeline.txt"
> git rev-list --no-walk 475d6a0f9203000492a94e4e6c275ac375d # timeout=10
Finished: SUCCESS

```