

DEVOPS

DAY 5-TASK

JAVA APPLICATION DEPLOYMENT IN MINIKUBE:

1. Grant Jenkins User Sudo Access

```
echo "jenkins ALL=(ALL) NOPASSWD: ALL" | sudo tee /etc/sudoers.d/jenkins
```

2. Restart SSH Services

```
sudo systemctl restart ssh.service
```

```
sudo systemctl restart sshd.service
```

3. Update and Install OpenSSH Server

```
sudo apt update
```

```
sudo apt install openssh-server -y
```

4. Restart and Check SSH Status

```
sudo systemctl restart ssh
```

```
sudo systemctl status ssh
```

5. Check SSH Service File Location

```
ls /etc/systemd/system/sshd.service
```

```
ls /usr/lib/systemd/system/sshd.service
```

6. Reload System Daemon

```
sudo systemctl daemon-reload
```

7. Restart SSH Service Again

```
sudo systemctl restart ssh.service
```

8. Check Minikube Certificate

```
cat /home/david/.minikube/ca.crt | base64 -w 0; echo
```

9. Fix Docker Socket Permission Issue

```
sudo chmod 666 /var/run/docker.sock
```

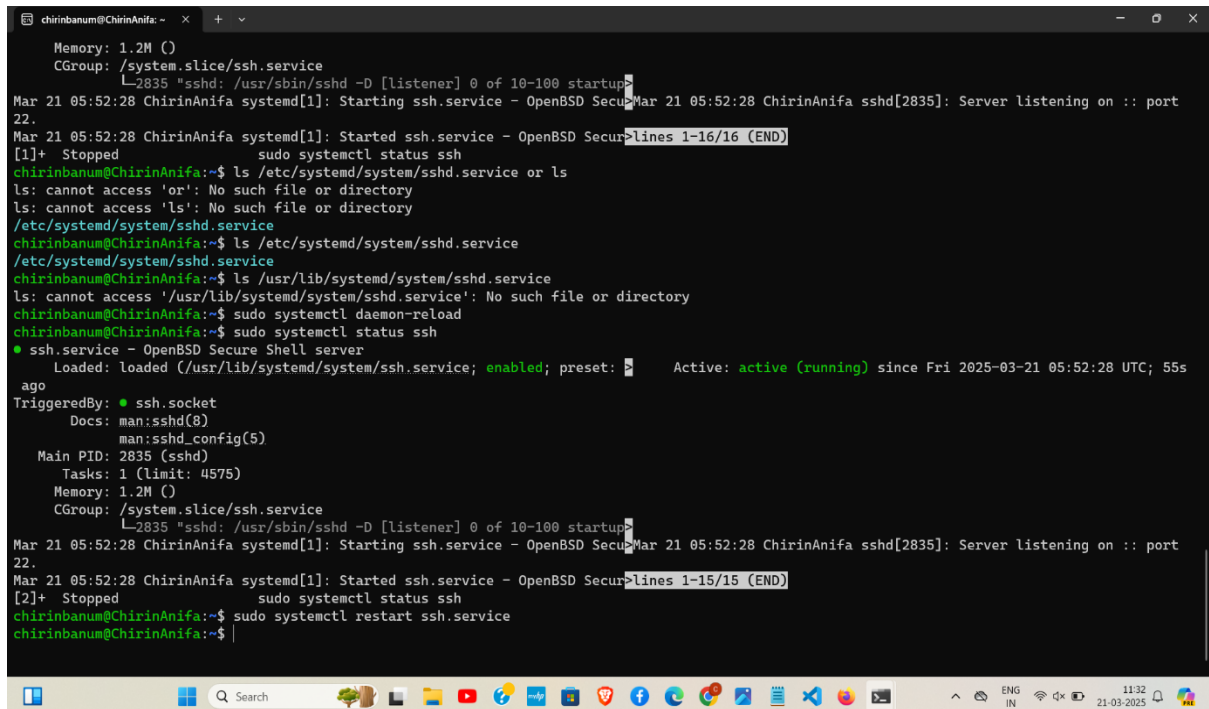
MINIKUBE SETUP:

1. Start Minikube




```
minikube start
```

2. Check Minikube Status

```
minikube status
```



```
chirinbanum@ChirinAnifa: ~  
Memory: 1.2M ()  
CGroup: /system.slice/ssh.service  
└─2835 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startup>  
Mar 21 05:52:28 ChirinAnifa systemd[1]: Starting ssh.service - OpenBSD Secure Shell server: Active: active (running) since Fri 2025-03-21 05:52:28 UTC; 55s ago  
Mar 21 05:52:28 ChirinAnifa systemd[1]: Started ssh.service - OpenBSD Secure Shell server: Active: active (running) since Fri 2025-03-21 05:52:28 UTC; 55s ago  
[1]+ Stopped  
chirinbanum@ChirinAnifa:~$ sudo systemctl status ssh  
sshd.service - OpenBSD Secure Shell server  
Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: Active: active (running) since Fri 2025-03-21 05:52:28 UTC; 55s ago  
TriggeredBy: ● ssh.socket  
Docs: man:sshd(8)  
man:sshd_config(5)  
Main PID: 2835 (sshd)  
Tasks: 1 (limit: 4575)  
Memory: 1.2M ()  
CGroup: /system.slice/ssh.service  
└─2835 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startup>  
Mar 21 05:52:28 ChirinAnifa systemd[1]: Starting ssh.service - OpenBSD Secure Shell server: Active: active (running) since Fri 2025-03-21 05:52:28 UTC; 55s ago  
Mar 21 05:52:28 ChirinAnifa systemd[1]: Started ssh.service - OpenBSD Secure Shell server: Active: active (running) since Fri 2025-03-21 05:52:28 UTC; 55s ago  
[2]+ Stopped  
chirinbanum@ChirinAnifa:~$ sudo systemctl status ssh  
sshd.service - OpenBSD Secure Shell server  
Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset: Active: active (running) since Fri 2025-03-21 05:52:28 UTC; 55s ago  
TriggeredBy: ● ssh.socket  
Docs: man:sshd(8)  
man:sshd_config(5)  
Main PID: 2835 (sshd)  
Tasks: 1 (limit: 4575)  
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Mar 21 05:52:28 ChirinAnifa systemd[1]: Started ssh.service - OpenBSD Secure Shell server: Active: active (running) since Fri 2025-03-21 05:52:28 UTC; 55s ago  
[2]+ Stopped  
chirinbanum@ChirinAnifa:~$ sudo systemctl restart ssh.service  
chirinbanum@ChirinAnifa:~$
```

```
chirinbanum@ChirinAnifa: ~  
28 packages can be upgraded. Run 'apt list --upgradable' to see them.  
chirinbanum@ChirinAnifa:~$ sudo apt install openssh-server  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
openssh-server is already the newest version (1:9.6p1-3ubuntu13.8).  
0 upgraded, 0 newly installed, 0 to remove and 28 not upgraded.  
chirinbanum@ChirinAnifa:~$ sudo systemctl restart ssh  
chirinbanum@ChirinAnifa:~$ sudo systemctl status ssh  
● ssh.service - OpenBSD Secure Shell server  
   Loaded: loaded (/usr/lib/systemd/system/ssh.service; enabled; preset:  Active: active (running) since Fri 2025-03-21 05:52:28 UTC; 5s  
ago  
TriggeredBy: ● ssh.socket  
   Docs: man:sshd(8)  
        man:sshd_config(5)  
  Process: 2834 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS Main PID: 2835 (sshd)  
    Tasks: 1 (limit: 4575)  
  Memory: 1.2M (-)  
   CGroup: /system.slice/ssh.service  
           └─2835 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"  
Mar 21 05:52:28 ChirinAnifa systemd[1]: Starting ssh.service - OpenBSD Secure Shell server:  lines 1-16/16 (END)  
Mar 21 05:52:28 ChirinAnifa systemd[1]: Started ssh.service - OpenBSD Secure Shell server:   
[1]+  Stopped                  sudo systemctl status ssh  
chirinbanum@ChirinAnifa:~$ ls /etc/systemd/system/sshd.service or ls  
ls: cannot access 'or': No such file or directory  
ls: cannot access 'ls': No such file or directory  
/etc/systemd/system/sshd.service  
chirinbanum@ChirinAnifa:~$ ls /etc/systemd/system/sshd.service  
/etc/systemd/system/sshd.service  
chirinbanum@ChirinAnifa:~$ ls /usr/lib/systemd/system/sshd.service  
ls: cannot access '/usr/lib/systemd/system/sshd.service': No such file or directory  
chirinbanum@ChirinAnifa:~$ sudo systemctl daemon-reload  
chirinbanum@ChirinAnifa:~$ sudo systemctl status ssh  
● ssh.service - OpenBSD Secure Shell server
```

```
chirinbanum@ChirinAnifa: ~  
chirinbanum@ChirinAnifa:~$ sudo apt update  
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease  
Hit:2 https://pkg.jenkins.io/debian-stable binary/ Release  
Get:3 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]  
Hit:4 http://archive.ubuntu.com/ubuntu noble InRelease  
Get:6 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]  
Get:7 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [671 kB]  
Get:8 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]  
Get:9 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [130 kB]  
Get:10 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [8960 B]  
Get:11 http://security.ubuntu.com/ubuntu noble-security/main amd64 c-n-f Metadata [6936 B]  
Get:12 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [820 kB]  
Get:13 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Packages [922 kB]  
Get:14 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [177 kB]  
Get:15 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Components [51.9 kB]  
Get:16 http://security.ubuntu.com/ubuntu noble-security/universe amd64 c-n-f Metadata [17.0 kB]  
Get:17 http://security.ubuntu.com/ubuntu noble-security/restricted amd64 Components [208 B]  
Get:18 http://security.ubuntu.com/ubuntu noble-security/multiverse amd64 Components [208 B]  
Get:19 http://archive.ubuntu.com/ubuntu noble-updates/main Translation-en [209 kB]  
Get:20 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 Components [151 kB]  
Get:21 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 c-n-f Metadata [13.5 kB]  
Get:22 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Packages [1041 kB]  
Get:23 http://archive.ubuntu.com/ubuntu noble-updates/universe Translation-en [262 kB]  
Get:24 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 Components [364 kB]  
Get:25 http://archive.ubuntu.com/ubuntu noble-updates/universe amd64 c-n-f Metadata [25.9 kB]  
Get:26 http://archive.ubuntu.com/ubuntu noble-updates/restricted amd64 Components [212 B]  
Get:27 http://archive.ubuntu.com/ubuntu noble-updates/multiverse amd64 Components [940 B]  
Get:28 http://archive.ubuntu.com/ubuntu noble-backports/main Translation-en [2588 B]  
Get:29 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 Components [208 B]  
Get:30 http://archive.ubuntu.com/ubuntu noble-backports/main amd64 c-n-f Metadata [112 B]  
Get:31 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Packages [14.6 kB]  
Get:32 http://archive.ubuntu.com/ubuntu noble-backports/universe Translation-en [14.6 kB]  
Get:33 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 Components [20.0 kB]  
Get:34 http://archive.ubuntu.com/ubuntu noble-backports/universe amd64 c-n-f Metadata [1256 B]  
Get:35 http://archive.ubuntu.com/ubuntu noble-backports/restricted amd64 Com...
```

```
chirinbanum@ChirinAnifa: ~$ sudo visudo
[sudo] password for chirinbanum:
Sorry, try again.
[sudo] password for chirinbanum:
chirinbanum@ChirinAnifa:~$ cd ~/.kube/
chirinbanum@ChirinAnifa:~/.kube$ cat /home/chirinbanum/.minikube/ca.crt | base64 -w 9; echo
LS9t
LS1CRUdJTi1lbnRvJUSUZ3Q0FURS0tLS0tClJSURCakNDQWU2Z0F3SUJBZ0tLCQVRB8Tks3Foa2lHOXcwOjFrc0ZBREFFVTVJnd0VRMURWUWFERXJXNkZGFXNkYTNWVpVtJhJ3QjYRFRJMU1ETXhpREeYtRR
ME1sb1hEVE0tTURNeE56Q0JORFEwTWxvd0ZURVRN0kVHQTFFVR0p8eE1LYldsdmFkdDFZbVZEUVRD0FTSXdEUYlKS29asWh2Y85BUUVCQlFBRGdnRVB8RENDQVFvQ2drRUJ3BTkxvCk5tL1IraXEvdeHMQjNp
WXLvNXR3Nk0aR3FkaDIYME5MRHV3L3R1bC9sbGpaVERJMU5naW5xW9HNWpMTlhsUUIKSUxz8g3TXlZVtG3UmFTZHF8L8Lzbn9xd3ZnNkZ1W1daWEZQYmp4Q0FrcR3LpVFNHQU4raWdGb3pIdU9VLZ3BGTQpm
d3NBaExFMWE4eGNIaWpYeGtsdW4xTDN4SVE3enNkQkFEcnJCWHh8VTNsL1h0RjRlTGJ2RW91ZURiUUM2VG9oCmp6Nm1aMU9xbVRVCmJvdGxhaVNLrjhwMEVQTTRJOEVseE8Zjd5Z3JNUThMb0JUMHcwa080
NXpsSHVqSDZGaLoKtFh0cjlUa0xLk2tRcGFkMUpicTJvTFlkR0pYZmVGdTY3dFNhL2JMY1JuZ3hpK2k4QjBHY1k4VXhtL11TYktYUgo3TkR5T2xIQXxxZ0p2OXRXZ2NnQ8F3RUF8YU50TUY4d0RnMURWUjBQ
QVFIL0JBURRB70tTUIwR0ExVWRKUVFkck1CUUdDQ3NHQVFRkzJ3TUNCZ2dyQmdFRkzY0R8BVEFQ0mdOVkhSTUJ3ZjhfQ0LRBREFRSC9NQjB0H0TFVZERnUVCkQkZTVzJvR1p3dFEvOTdWV2Z2dkJzdF30KzIre
eDF6OU5CZ22taGtRzL3MEJBUXNGOUFPO0FRUdFMcUNrZ1REUwp0W09xZUR4VTFYZlLrY0dtCHRZk1iM2VMchd6T1pkRkRlMVVrY2t0ZGV0R0VrNy9meLJLREHFSjVtVW0R1BScK9MvVXWlKzVGV0x00hj
aUI6bi9yU1h1MWhVW5s5V3BXSm5ZVWdnTEpQL3ByeFuyMDJRWUpDNE1QVDN1cDB0OHgKQ3VDS1h0b1RtNHLSU29HR3NGcmJGdExTWZUYNBLeKJZMmtTRLJWcW1BtjArRzcVRFZPa1FuQUZNZddQ3Y5cAp0
UnVycXxJMVpnZ2pjckNIR3FiaEw5eExQMG14Y1RneHZ3S3ZMcDVGtGdGykL3ZCtRM2ReATvMDREWUFUZVJnCcVROU1zUEE8aGNVWlJHJzNzbXpkemZMT3VRNxcwV0pNV65HWVZlc0NFQlZycFh4ZER6aWp5
YnhudWtVcLk0Mm4KTedqdU5meTRNN2kxZ2c9PQotLS0tLUVORC8DRVJUSUZ3Q0FURS0tLS0tCg==
chirinbanum@ChirinAnifa:~/.kube$ |

chirinbanum@ChirinAnifa:~$ nano /home/chirinbanum/.kube/config
GNU nano 2.7.2
apiVersion: v1
clusters:
- cluster:
  certificate-authority: /home/chirinbanum/.minikube/ca.crt
  extensions:
  - extension:
    last-update: Thu, 20 Mar 2025 04:36:24 UTC
    provider: minikube.sigs.k8s.io
    version: v1.35.0
    name: cluster_info
    server: https://127.0.0.1:32769
  name: minikube
contexts:
- context:
  cluster: minikube
  extensions:
  - extension:
    last-update: Thu, 20 Mar 2025 04:36:24 UTC
    provider: minikube.sigs.k8s.io
    version: v1.35.0
    name: context_info
    namespace: default
    user: minikube
  name: minikube
current-context: minikube
kind: Config
preferences: {}
users:
- name: minikube
  user:
    client-certificate: /home/chirinbanum/.minikube/profiles/minikube/client.crt
    client-key: /home/chirinbanum/.minikube/profiles/minikube/client.key
```

```
chirinbanum@ChirinAnifa: ~/kube
chirinbanum@ChirinAnifa:~/kube$ nano -f kube/config
chirinbanum@ChirinAnifa:~/kube$ sudo vi config
[sudo] password for chirinbanum:
chirinbanum@ChirinAnifa:~/kube$ kubectrl get node
error: error loading config file "/home/chirinbanum/.kube/config": yaml: line 33: could not find expected '}'
chirinbanum@ChirinAnifa:~/kube$ sudo vi config
[sudo] password for chirinbanum:
sudo: a password is required
chirinbanum@ChirinAnifa:~/kube$ sudo vi config
[sudo] password for chirinbanum:
chirinbanum@ChirinAnifa:~/kube$ minikube start
* minikube v1.35.0 on Ubuntu 24.04 (amd64)
* Using the docker driver based on existing profile
* Starting "minikube" primary control-plane node in "minikube" cluster
* Pulling base image v0.46 ...
* Restarting existing docker container for "minikube" ...
```

```
chirinbanum@ChirinAnifa: ~/kube
chirinbanum@ChirinAnifa:~$ nano ~/.kube/config
chirinbanum@ChirinAnifa:~$ cd ~/.kube
chirinbanum@ChirinAnifa:~/.kube$ sudo vi config
[sudo] password for chirinbanum:
chirinbanum@ChirinAnifa:~/.kube$ kubectl get node
error: error loading config file "/home/chirinbanum/.kube/config": yaml: line 33: could not find expected ':'
chirinbanum@ChirinAnifa:~/.kube$ sudo vi config
[sudo] password for chirinbanum:
sudo: a password is required
chirinbanum@ChirinAnifa:~/.kube$ sudo vi config
[sudo] password for chirinbanum:
chirinbanum@ChirinAnifa:~/.kube$ minikube start
👉 minikube v1.35.0 on Ubuntu 24.04 (amd64)
🔧 Using the docker driver based on existing profile
🏠 Starting "minikube" primary control-plane node in "minikube" cluster
🔧 Pulling base image v0.0.46 ...
🔧 Restarting existing docker container for "minikube" ...
🔧 Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
🔧 Verifying Kubernetes components...
  * Using image gcr.io/k8s-minikube/storage-provisioner:v5
  * Enabled addons: storage-provisioner, default-storageclass
👉 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
chirinbanum@ChirinAnifa:~/.kube$ kubectl get node
NAME          STATUS    ROLES    AGE   VERSION
minikube      Ready    control-plane   2d    v1.32.0
chirinbanum@ChirinAnifa:~/.kube$
```

6. Set Up Jenkins Pipeline

Create a Jenkinsfile with the following content:

```
pipeline {
    agent any

    stages {
        stage('SCM') {
            steps {
                git branch: 'main', url: 'https://github.com/chirinbanum/Jenkins.git'
            }
        }
        stage('Build') {
            steps {
                sh "mvn clean"
                sh "mvn install"
            }
        }
    }
}
```

```
stage('Build Docker Image') {
    steps {
        script {
            sh 'docker build -t chirinbanu2710/simplewebapp .'
        }
    }
}

stage('Push to Docker Hub') {
    steps {
        script {
            withDockerRegistry(credentialsId: 'Docker_cred', url: 'https://index.docker.io/v1/') {
                sh 'docker push chirinbanu2710/simplewebapp'
            }
        }
    }
}

stage('Deploy Web App') {
    steps {
        withKubeConfig(credentialsId: 'KUBE', contextName: 'minikube') {
            sh 'kubectl apply -f deployment.yaml'
        }
    }
}
}
```

localhost:8080/job/javaapplication/configure

Dashboard > javaapplication > Configuration

Configure

- General
- Triggers
- Pipeline**
- Advanced

Definition

Pipeline script

```
>
6 stage('SCM') {
7   steps {
8     git branch: 'main', url: 'https://github.com/chirinbanum/jenkins.git'
9   }
10 }
11 stage('Build') {
12   steps {
13     sh 'mvn clean'
14     sh 'mvn install'
15   }
16 }
17 stage('Build Docker Image') {
18   steps {
19     script {
20       sh 'docker build -t chirinbanu2710/suplewebapp .'
21     }
22   }
23 }
```

☒ Use Groovy Sandbox

[Pipeline Syntax](#)

Advanced

[Save](#) [Apply](#)

localhost:8080/job/javaapplication/configure

Dashboard > javaapplication > Configuration

Configure

- General**
- Triggers
- Pipeline
- Advanced

General

Enabled ☒

Description

[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

[Save](#) [Apply](#)

Welcome to: XInbox (2,561) XGit push reg... XJenkins/jenk... Xchirinbanum... XDocker Hub Xwebwhatsa... XNew creden... XDevOps_tas... X

localhost:8080/manage/credentials/store/system/domain/_/newCredentials

YouTubeMapsAdobe AcrobatAll Bookmarks

Jenkins

chirinbanum log out

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) >

New credentials

Kind

Secret file

Scope

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

File

Choose Fileconfig

ID

Description

Create

Dashboard > Manage Jenkins > Credentials > System > Global credentials (unrestricted) > config

UpdateDeleteMove

config

Usage

This credential has been recorded as used in the following places:
Note: usage tracking requires the cooperation of plugins and consequently may not track every use.
[java-application](#) 7 8

localhost:8080/job/java-application/REST APIJenkins 2.492.2

34°C Mostly sunny

Search

15:35 21-03-2025

Cloud Kubernetes Configuration

simple-web-app/ at main · akshithaav22/ · Personal access tokens | Docker | Introducing ChatGPT | OpenAI | Access Denied Minikube File

localhost:8080/manage/cloud/Kubernetes/configure

Dashboard > Manage Jenkins > Clouds > Kubernetes > Configure

Kubernetes Namespace

Agent Docker Registry

☐ Inject restricted PSS security context in agent container definition

Credentials

config

+ Add

Connected to Kubernetes v1.32.0

Test Connection

☐ WebSocket

☐ Direct Connection

⚠️ 'TCP port for inbound agents' is disabled in Global Security settings. Connecting Kubernetes agents will not work without this or WebSocket model

Jenkins URL

Save Apply

34°C Mostly sunny

Dashboard > java-application >

Full Stage View

Stages

Rename

Pipeline Syntax

Builds

Filter

Today

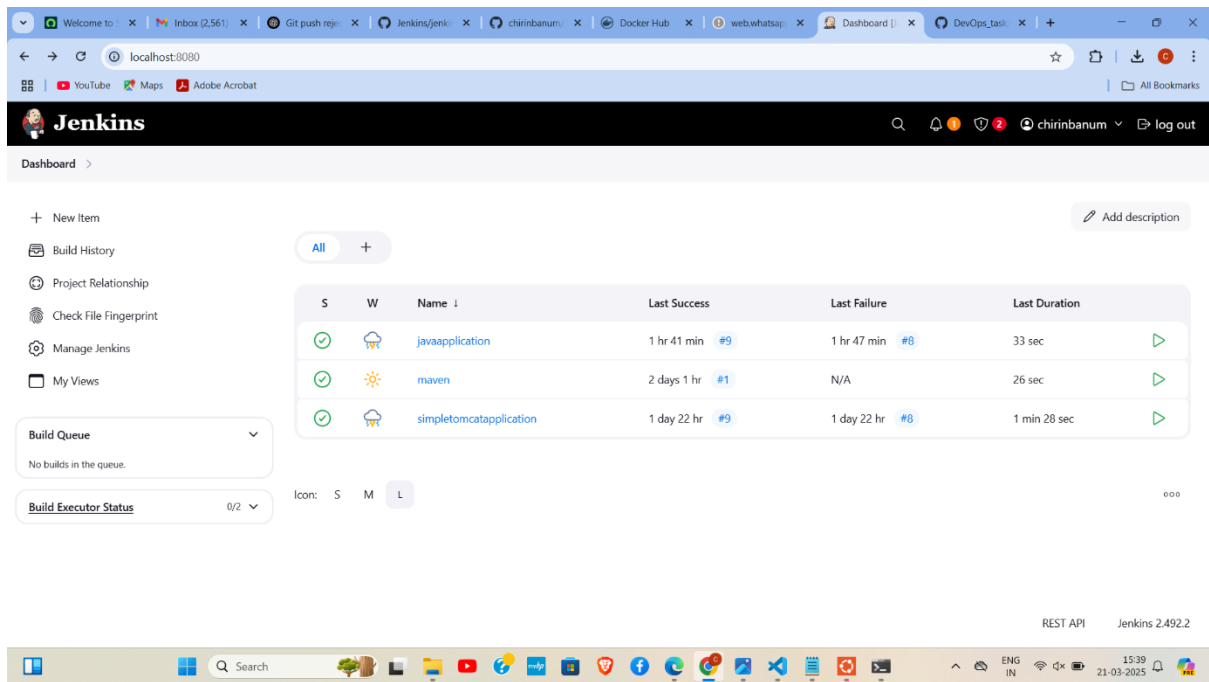
- #8 9:50 AM
- #7 9:48 AM
- #6 9:46 AM
- #5 8:09 AM
- #4 8:07 AM
- #3 8:06 AM
- #2 8:03 AM
- #1 8:00 AM

Average stage times: (full run time: ~19s)

	1s	2s	3/6ms	0s	330ms
15:20	1s	2s	367ms	14s	383ms
15:18	773ms	2s	360ms	16s	494ms failed
15:16	936ms	2s	391ms	15s	137ms failed
13:39	688ms	2s	353ms	15s	
13:37	676ms	2s	352ms	1s failed	
13:36	730ms	2s	362ms	1s failed	
13:33	757ms	2s	367ms	1s failed	
13:30	4s	2s	461ms failed	91ms failed	

34°C Mostly sunny

15:33 21-03-2025



TERAFORM:

```
terraform {  
  required_providers {  
    aws = {  
      source = "hashicorp/aws"  
      version = "~> 5.0"  
    }  
  }  
}  
  
# Configure the AWS Provider  
provider "aws" {  
  region = "us-east-1"  
}  
  
# Create a VPC  
resource "aws_vpc" "example" {  
  cidr_block = "10.0.0.0/16"
```

```
enable_dns_support = true
enable_dns_hostnames = true
```

```
tags = {
  Name = "ExampleVPC"
}
}
```

```
# Create Subnet 1 (Public)
```

```
resource "aws_subnet" "subnet1" {
  vpc_id      = aws_vpc.example.id
  cidr_block   = "10.0.1.0/24"
  map_public_ip_on_launch = true
  availability_zone = "us-east-1a"
```

```
tags = {
  Name = "Subnet1-Public"
}
}
```

```
# Create Subnet 2 (Private)
```

```
resource "aws_subnet" "subnet2" {
  vpc_id      = aws_vpc.example.id
  cidr_block   = "10.0.2.0/24"
  availability_zone = "us-east-1b"
```

```
tags = {
  Name = "Subnet2-Private"
}
}
```

Create an Additional Public Subnet

```
resource "aws_subnet" "public" {  
  vpc_id      = aws_vpc.example.id  
  cidr_block  = "10.0.3.0/24"  
  map_public_ip_on_launch = true  
  availability_zone = "us-east-1c"
```

```
  tags = {  
    Name = "PublicSubnet"  
  }  
}
```

Create an Internet Gateway

```
resource "aws_internet_gateway" "igw" {  
  vpc_id = aws_vpc.example.id
```

```
  tags = {  
    Name = "InternetGateway"  
  }  
}
```

Create a Route Table for Public Subnets

```
resource "aws_route_table" "public_rt" {  
  vpc_id = aws_vpc.example.id
```

```
  route {  
    cidr_block = "0.0.0.0/0"  
    gateway_id = aws_internet_gateway.igw.id  
  }
```

```
  tags = {
```

```
    Name = "PublicRouteTable"
  }
}
```

Associate Route Table with Public Subnet 1

```
resource "aws_route_table_association" "subnet1_association" {
  subnet_id    = aws_subnet.subnet1.id
  route_table_id = aws_route_table.public_rt.id
}
```

Associate Route Table with Public Subnet (Additional)

```
resource "aws_route_table_association" "public_association" {
  subnet_id    = aws_subnet.public.id
  route_table_id = aws_route_table.public_rt.id
}
```

Create a Security Group for SSH Access

```
resource "aws_security_group" "allow_ssh" {
  vpc_id = aws_vpc.example.id
```

```
  ingress {
    description = "Allow SSH"
    from_port   = 22
    to_port     = 22
    protocol    = "tcp"
    cidr_blocks = ["0.0.0.0/0"]
  }
```

```
  egress {
    from_port = 0
    to_port   = 0
```

```

    protocol = "-1"
    cidr_blocks = ["0.0.0.0/0"]
}

tags = {
    Name = "AllowSSH"
}
}

# Create an EC2 Instance in Subnet 1 (Public)
resource "aws_instance" "example1" {
    ami          = "ami-0c55b159cbfafa1f0" # Change this to your preferred AMI
    instance_type = "t2.micro"
    subnet_id     = aws_subnet.subnet1.id
    security_groups = [aws_security_group.allow_ssh.name]
    associate_public_ip_address = true

    tags = {
        Name = "ExampleInstance1"
    }
}

# Create an EC2 Instance in Subnet 2 (Private)
resource "aws_instance" "example2" {
    ami          = "ami-0c55b159cbfafa1f0" # Change this to your preferred AMI
    instance_type = "t2.micro"
    subnet_id     = aws_subnet.subnet2.id
    security_groups = [aws_security_group.allow_ssh.name]

    tags = {
        Name = "ExampleInstance2"
    }
}

```

```
}  
}
```

Create an EC2 Instance in the Public Subnet

```
resource "aws_instance" "example3" {  
  ami           = "ami-0c55b159cbf0" # Change this to your preferred AMI  
  instance_type = "t2.micro"  
  subnet_id     = aws_subnet.public.id  
  security_groups = [aws_security_group.allow_ssh.name]  
  associate_public_ip_address = true  
  
  tags = {  
    Name = "ExampleInstance3"  
  }  
}
```