

# Capstone Project -2 (DevOps)

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You are hired as a DevOps engineer for Analytics Pvt Ltd. This company is a product based organization which uses Docker for their containerization needs within the company. The final product received a lot of traction in the first few weeks of launch. Now with the increasing demand, the organization needs to have a platform for automating deployment, scaling, and operations of application containers across clusters of hosts. As a DevOps engineer, you need to implement a DevOps life cycle, such that all the requirements are implemented without any change in the Docker containers in the testing environment. Up until now, this organization used to follow a monolithic architecture with just 2 developers.

The product is present on <https://github.com/hshar/website.git>

Following are the specifications of life-cycle:

1. Git workflow should be implemented. Since the company follows monolithic architecture of Development you need to take care of version control.
2. Code build should be triggered once the commits are made in the master Branch.
3. The code should be containerized with the help of the Docker file, The Dockerfile should be built every time if there is a push to Git-Hub. Create a custom Docker image using a Dockerfile.
4. As per the requirement in the production server, you need to use the Kubernetes cluster and the containerized code from Docker hub should be deployed with 2 replicas. Create a NodePort service and configure the same for port 30008.
5. Create a Jenkins pipeline script to accomplish the above task.
6. For configuration management of the infrastructure, you need to deploy the configuration on the servers to install necessary software and configurations.
7. Using Terraform accomplish the task of infrastructure creation in the AWS cloud provider.

## Solution:

### Steps:

The screenshot shows the AWS CloudShell interface. In the top navigation bar, there are tabs for 'Start Course | Intellipaat', 'Launch an instance | EC2 | us-east-1', and 'EC2 Instance Connect | us-east-1'. The main content area is titled 'Launch an instance' under the 'EC2 > Instances' section. A 'Name and tags' section has 'Machin1' entered in the 'Name' field. Below it, the 'Application and OS Images (Amazon Machine Image)' section shows a search bar with 'Search our full catalog including 1000s of application and OS images'. A tooltip for the 'Free tier' is visible, stating: 'In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which it's available)'. At the bottom right of the main window are 'Cancel', 'Launch instance', and 'Review commands' buttons. The status bar at the bottom indicates '© 2023, Amazon Web Services, Inc. or its affiliates.' and the date '12/16/2023'.

The screenshot shows the AWS CloudShell interface. The terminal window displays the output of an 'apt update' and 'sudo apt install terraform' command. The output includes package metadata for 'jammy-backports' and 'jammy-security' packages, followed by the successful installation of 'terraform'. The status bar at the bottom indicates '© 2023, Amazon Web Services, Inc. or its affiliates.' and the date '12/16/2023'.

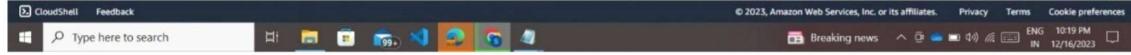
```
i-0fe1891c258df75cd (Machin1)
PublicIPs: 44.203.3.0 PrivateIPs: 172.31.80.251

2
```

```
aws provider "aws" {
    region = "us-east-2"
    secret_key = "$AWS_ACCESS_KEY_ID"
    access_key = "$AWS_SECRET_ACCESS_KEY"
}

resource "aws_instance" "K8-M" {
    ami = "ami-07b36ea9852e96ad"
    instance_type = "t2.medium"
    key_name = "ohio-key"
    tags = [
        { Name = "M-3" }
    ]
}
resource "aws_instance" "K8-S1" {
    ami = "ami-07b36ea9852e96ad"
    instance_type = "t2.micro"
    key_name = "ohio-key"
    tags = [
        { Name = "M-2" }
    ]
}
resource "aws_instance" "K8-S2" {
```

i-0fe1891c258df75cd (Machine)  
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```
Unpacking terraform (1.6.6-1) ...
Setting up terraform (1.6.6-1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

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-172-31-80-251:~$ terraform --version
Terraform v1.6.6
on linux_amd64
ubuntu@ip-172-31-80-251:~$ sudo nano main.tf
ubuntu@ip-172-31-80-251:~$ terraform init

Initializing the backend...

Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v5.31.0...
```

i-0fe1891c258df75cd (Machine)  
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```
Terraform has been successfully initialized!
You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.

ubuntu@ip-172-31-80-251:~$ terraform plan

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

  + aws_instance.K8-M will be created
  + resource "aws_instance" "K8-M" {
      + ami                               = "ami-07b36ea9852e986ad"
      + ami_id                           = (known after apply)
      + arn                             = (known after apply)
      + associate_public_ip_address     = (known after apply)
      + availability_zone                = (known after apply)
      + cpu_core_count                  = (known after apply)
      + cpu_threads_per_core            = (known after apply)
      + disable_api_stop                = (known after apply)

i-0fe1891c258df75cd (Machin1)
PublicIPs: 44.203.3.0 PrivateIPs: 172.31.80.251
```

```
CloudShell Feedback
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Windows 24°C Haze ENG 10:21 PM IN 12/16/2023

Instance details | EC2 | us-east-1 | Start Course | Intellipaat | EC2 Instance Connect | us-east-1 | Install | Terraform | HashiCorp D... | + | - | X
https://us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-0fe1891c258df75cd&osUser=ubuntu&region=us-east-1&sshPort=22#/
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aws Services Search [Alt+S]
Terraform has been successfully initialized!
You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.

ubuntu@ip-172-31-80-251:~$ terraform plan

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

  + user_data_base64          = (known after apply)
  + user_data_replace_on_change = false
  + vpc_security_group_ids     = (known after apply)
}

Plan: 3 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?
Terraform will perform the actions described above.
Only 'yes' will be accepted to approve.

Enter a value: yes

aws_instance.K8-S2: Creating...
aws_instance.K8-S1: Creating...
aws_instance.K8-M: Creating...
aws_instance.K8-S1: Still creating... [10s elapsed]
aws_instance.K8-S2: Still creating... [10s elapsed]
aws_instance.K8-M: Still creating... [10s elapsed]
aws_instance.K8-S2: Still creating... [20s elapsed]
aws_instance.K8-S1: Still creating... [20s elapsed]
aws_instance.K8-M: Still creating... [20s elapsed]
aws_instance.K8-S2: Still creating... [30s elapsed]
aws_instance.K8-S1: Still creating... [30s elapsed]
aws_instance.K8-M: Still creating... [30s elapsed]

i-0fe1891c258df75cd (Machin1)
PublicIPs: 44.203.3.0 PrivateIPs: 172.31.80.251
```



Instance details | EC2 | us-east-1 | Start Course | Intellipaat | EC2 Instance Connect | us-east-1 | Install | Terraform | HashiCorp | +

<https://us-east-1.console.aws.amazon.com/ec2-instance-connect/shell?connType=standard&instanceId=i-0fe1891c258df75cd&osUser=ubuntu&region=us-east-1&sshPort=22#/>

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aws Services Search [Alt+S]

Do you want to perform these actions?  
Terraform will perform the actions described above.  
Only 'yes' will be accepted to approve.

Enter a value: yes

```
aws_instance.K8-S2: Creating...
aws_instance.K8-S1: Creating...
aws_instance.K8-M: Creating...
aws_instance.K8-S1: Still creating... [10s elapsed]
aws_instance.K8-S2: Still creating... [10s elapsed]
aws_instance.K8-M: Still creating... [10s elapsed]
aws_instance.K8-S2: Still creating... [20s elapsed]
aws_instance.K8-S1: Still creating... [20s elapsed]
aws_instance.K8-M: Still creating... [20s elapsed]
aws_instance.K8-S2: Still creating... [30s elapsed]
aws_instance.K8-S1: Still creating... [30s elapsed]
aws_instance.K8-M: Still creating... [30s elapsed]
aws_instance.K8-S2: Creation complete after 31s [id=i-07646dc6011a72e07]
aws_instance.K8-S2: Creation complete after 31s [id=i-0e4e9be8ee55e975d]
aws_instance.K8-S1: Creation complete after 31s [id=i-0240bf3dd55b055b4]
```

apply complete! Resources: 3 added, 0 changed, 0 destroyed.

i-0fe1891c258df75cd (Machine1)

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Instances | EC2 | us-east-2 | Start Course | Intellipaat | EC2 Instance Connect | us-east-2 | Install | Terraform | HashiCorp | +

<https://us-east-2.console.aws.amazon.com/ec2/home?region=us-east-2#instances>

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aws Services Search [Alt+S]

EC2 Dashboard EC2 Global View Events Instances Instances Instance Types Launch Templates Spot Requests Savings Plans Reserved Instances Dedicated Hosts Capacity Reservations New Images AMIs AMI Catalog Elastic Block Store Volumes Snapshots Lifecycle Manager

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Instances (3) Info

Find Instance by attribute or tag (case-sensitive)

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
M-2	i-0240bf3dd55b055b4	Running	t2.micro	Initializing	No alarms	us-east-2a	ec2-3-149-
M-4	i-0e4e9be8ee55e975d	Running	t2.micro	Initializing	No alarms	us-east-2a	ec2-18-22-
M-3	i-07646dc6011a72e07	Running	t2.medium	Initializing	No alarms	us-east-2b	ec2-3-15-1

Select an instance

i-Ofef1891c258df75cd (M-1)  
PublicIPs: 44.203.3.0 PrivateIPs: 172.31.80.251

i-Ofef1891c258df75cd (M-1)  
PublicIPs: 44.203.3.0 PrivateIPs: 172.31.80.251

6

```
Instances | EC2 | us-east-1 | EC2 Instance Connect | us- | Start Course | Intellipaat | + | - | □ | ×
← → C https://us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-0fe1891c258df75cd&osUser=ubuntu&sshPort=22#/
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aws Services Search [Alt+S]
GNU nano 6.2
hosts *
## ec2-123-123-123-123.compute-1.amazonaws.com
## 10.25.1.56
## 10.25.1.57

# Ex4: Multiple hosts arranged into groups such as 'Debian' and 'openSUSE':
## [Debian]
## alpha.example.org
## beta.example.org

## [openSUSE]
## green.example.com
## blue.example.com

[master]
172.31.92.146

[slave]
172.31.23.58
172.31.20.189

^C Help ^C Write Out ^K Where Is ^C Cut ^T Execute ^C Location M-C Undo M-A Set Mark M-B To Bracket M-C Previous
^X Exit ^F Read File ^V Replace ^U Paste ^J Justify ^G Go To Line M-B Redo M-C Copy M-C Where Was M-W Next
x
```

i-0fe1891c258df75cd (M-1)  
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```
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← → C https://us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-0fe1891c258df75cd&osUser=ubuntu&sshPort=22#/
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aws Services Search [Alt+S]
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/(fingerprint))? yes
172.31.92.146 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
yes
172.31.20.189 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
ubuntu@ip-172-31-80-251:/etc/ansible$
```

i-0fe1891c258df75cd (M-1)  
PublicIPs: 44.203.3.0 PrivateIPs: 172.31.80.251

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Instances | EC2 | us-east-1 | EC2 Instance Connect | us- | Start Course | Intellipaat | + | - | □ | ×
← → C https://us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-0fe1891c258df75cd&osUser=ubuntu&sshPort=22#/
Gmail YouTube Maps News Prime Video Login Online SQLite Comp... Perfect eLearning ... The Adventures of... Web Development... Frontend Mentor ... Practice Geeksfor... All Bookmarks N. Virginia Harshal Gite
aws Services Search [Alt+S]
ls
```

```
sudo apt update
sudo apt install fontconfig openjdk-17-jre
sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \
  https://pkgs.jenkins.io/debian/jenkins.io-2023.key
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
  https://pkgs.jenkins.io/debian binary/ | sudo tee \
  /etc/apt/sources.list.d/jenkins.list > /dev/null
sudo apt-get update
sudo apt-get install jenkins -y
```

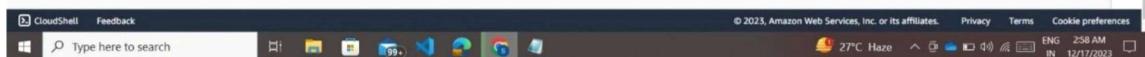
```
sudo apt-get update
sudo apt install fontconfig openjdk-17-jre
sudo apt-get install docker.io -y
sudo apt update
sudo apt upgrade -y
sudo apt install curl apt-transport-https ca-certificates software-properties-common
curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add -
sudo add-apt-repository "deb http://apt.kubernetes.io/ kubernetes-xenial main"
sudo swapoff -a
sudo apt update
sudo apt install -y kubelet kubeadm kubectl
```

```
sudo apt-get update
sudo apt-get install docker.io -y
sudo apt update
sudo apt upgrade -y
sudo apt install -y curl apt-transport-https ca-certificates software-properties-common
curl -s https://packages.cloud.google.com/apt/doc/apt-key.gpg | sudo apt-key add -
sudo add-apt-repository "deb http://apt.kubernetes.io/ kubernetes-xenial main"
sudo swapoff -
sudo apt update
sudo apt install -y kubelet kubeadm kubectl
```

i-Ofc1c258df75cd (M-1)  
PublicIPs: 44.203.3.0 PrivateIPs: 172.31.80.251

```
---
- name: installing jenkins and java
  hosts: localhost
  become: true
  tasks:
    - name: executing script w1.sh
      script: w1.sh
- name: installing java, docker and k8s
  hosts: master
  become: true
  tasks:
    - name: executing w3.sh
      script: w3.sh
- name: installing k8s and docker in k8s slaves
  hosts: slave
  become: true
  tasks:
    - name: executing script w24.sh
      script: w24.sh
```

i-Ofc1c258df75cd (M-1)  
PublicIPs: 44.203.3.0 PrivateIPs: 172.31.80.251



```
Instances | EC2 | us-east-1 | EC2 Instance Connect | EC2 Instance Connect | EC2 Instance Connect | EC2 Instance Connect | Start Course | IntelliJ | Linux | + | - | □ | ×
← → C https://us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-0fe1891c258df75cd&osUser=ubuntu&sshPort=22#/
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AWS Services Search [Alt+S]
Privilege Escalation Options:
control how and which user you become as on target hosts
--become-method BECOME_METHOD
    privilege escalation method to use (default=sudo), use 'ansible-doc -t become -l' to list valid choices.
--become-user BECOME_USER
    run operations as this user (default=root)
-b, --become
    run operations with become (does not imply password prompting)
ubuntu@ip-172-31-80-251:~$ ansible-playbook play.yaml --syntax-check

playbook: play.yaml
ubuntu@ip-172-31-80-251:~$ ansible-playbook play.yaml --check

PLAY [installing jenkins and java] ****
TASK [Gathering Facts] ****
ok: [localhost]
TASK [executing script w1.sh] ****
skipping: [localhost]
PLAY [installing java, docker and k8s] ****
TASK [Gathering Facts] ****
ok: [localhost]

PLAY [installing java, docker and k8s] ****
ok: [localhost]
TASK [Gathering Facts] ****
ok: [localhost]
TASK [executing w1.sh] ****
skipping: [localhost]
PLAY [installing k8s and docker in k8s slaves] ****
TASK [Gathering Facts] ****
ok: [172.31.23.59]
ok: [172.31.20.189]
TASK [executing script w3.sh] ****
Mapping: [172.31.23.59]
Mapping: [172.31.20.189]
PLAY RECAP ****
172.31.20.189 : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
172.31.23.59 : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
172.31.20.189 : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
localhost      : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0

ubuntu@ip-172-31-80-251:~$ ansible-playbook play.yaml

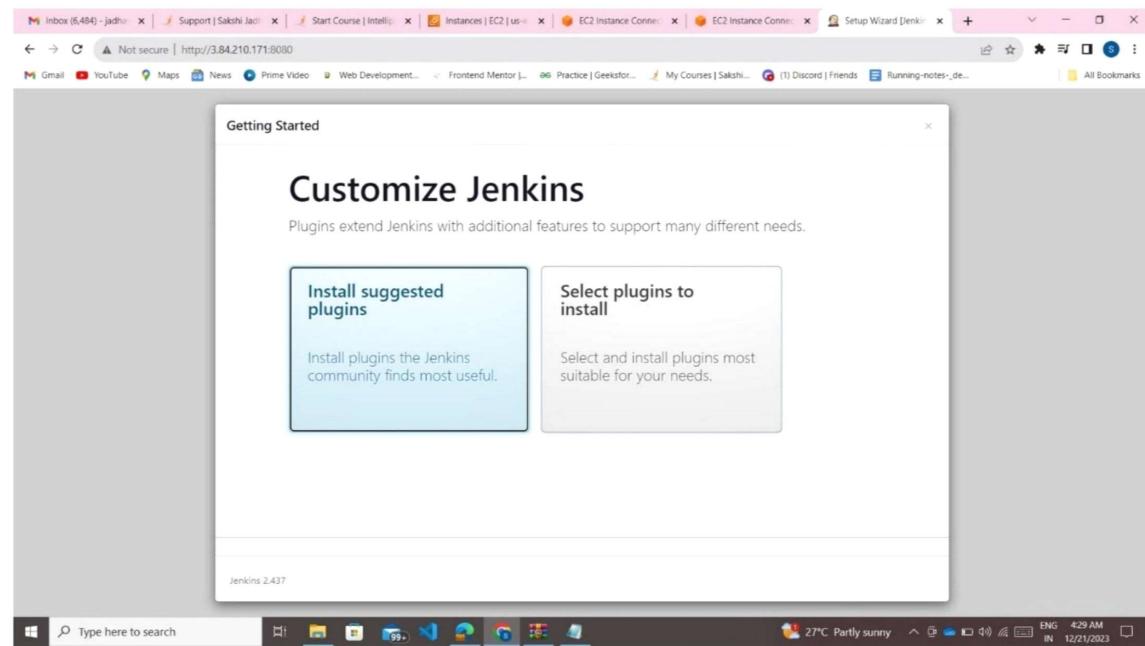
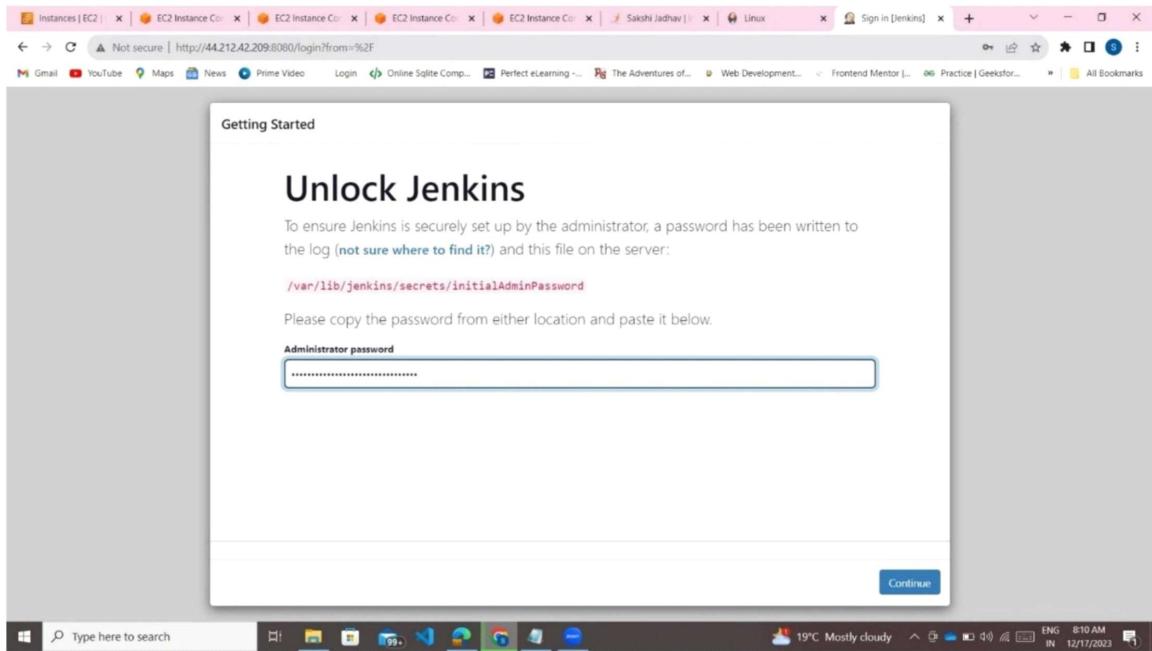
i-0fe1891c258df75cd (M-1)
Public IPs: 44.203.3.0 Private IPs: 172.31.80.251
```

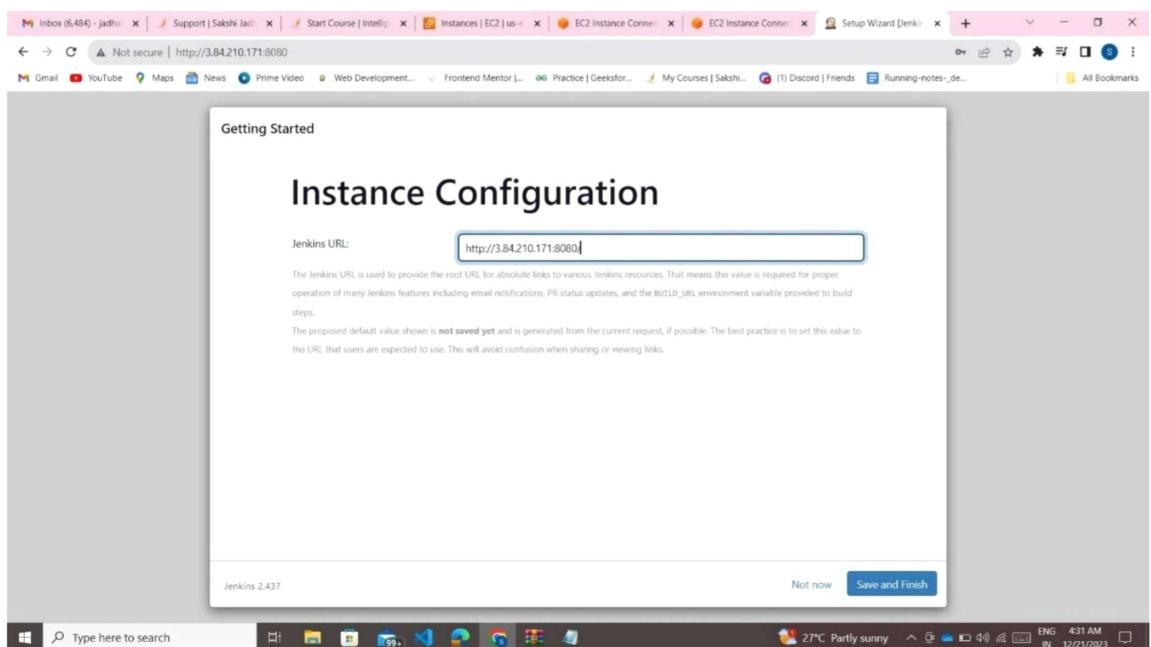
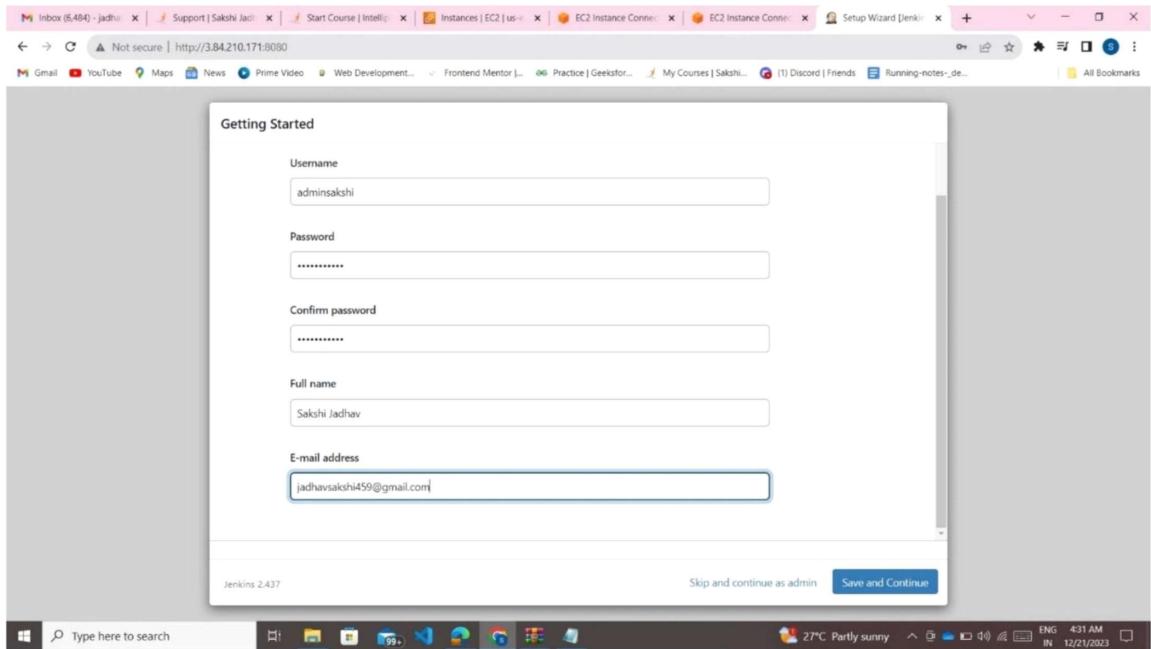
```
Instances | EC2 | us-east-1 | EC2 Instance Connect | EC2 Instance Connect | EC2 Instance Connect | EC2 Instance Connect | Start Course | IntelliJ | Linux | + | - | □ | ×
← → C https://us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-0fe1891c258df75cd&osUser=ubuntu&sshPort=22#/
Gmail YouTube Maps News Prime Video Login Online SQLite Comp... Perfect eLearning ... The Adventures of... Web Development... Frontend Mentor ... Practice | Geekfor... All Bookmarks
AWS Services Search [Alt+S]
PLAY [installing java, docker and k8s] ****
ok: [172.31.92.146]
TASK [Gathering Facts] ****
ok: [172.31.92.146]
TASK [executing w3.sh] ****
skipping: [172.31.92.146]
PLAY [installing k8s and docker in k8s slaves] ****
TASK [Gathering Facts] ****
ok: [172.31.23.59]
ok: [172.31.20.189]
TASK [executing script w24.sh] ****
Mapping: [172.31.23.59]
Mapping: [172.31.20.189]
PLAY RECAP ****
172.31.20.189 : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
172.31.23.59 : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
172.31.92.146 : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
localhost      : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0

ubuntu@ip-172-31-80-251:~$ ansible-playbook play.yaml

i-0fe1891c258df75cd (M-1)
Public IPs: 44.203.3.0 Private IPs: 172.31.80.251
```

```
Instances | EC2 | us-east-1 | EC2 Instance Connect | EC2 Instance Connect | EC2 Instance Connect | EC2 Instance Connect | Start Course | IntelliJ | Linux | + | - | □ | ×
← → C https://us-east-1.console.aws.amazon.com/ec2-instance-connect/ssh?region=us-east-1&connType=standard&instanceId=i-0fe1891c258df75cd&osUser=ubuntu&sshPort=22#/
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AWS Services Search [Alt+S]
```





Dashboard > Manage Jenkins > Nodes >

## Nodes

	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
	Built-In Node	Linux (amd64)	In sync	3.80 GiB	0 B	3.80 GiB	0ms
	Data obtained		19 min	19 min	19 min	19 min	19 min

Build Queue  
No builds in the queue.

Build Executor Status  
1 Idle  
2 Idle

3.84.210.171:8080/manage/computer/new REST API Jenkins 2.437

Dashboard > Manage Jenkins > Nodes > New node

### New node

Node name: KM

Type: Permanent Agent

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.

**Create**

3.84.210.171:8080/manage/computer/new REST API Jenkins 2.437

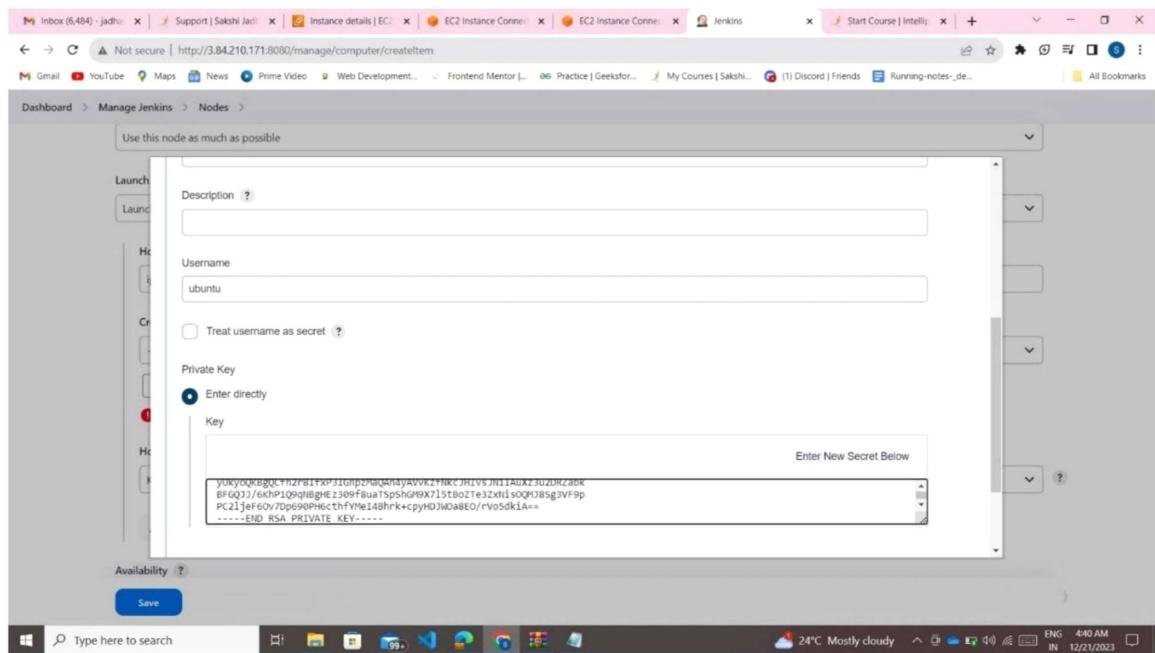
The screenshot shows the Jenkins 'Create Item' page for creating a new node. The page has a header with tabs like 'Dashboard', 'Manage Jenkins', and 'Nodes'. Below the header, there's a large text input area for 'Node name' which is currently empty. Underneath it, there are several configuration fields:

- Number of executors**: Set to 1.
- Remote root directory**: Set to '/home/ubuntu/jenkins/'.
- Labels**: An empty text input field.
- Usage**: A dropdown menu set to 'Use this node as much as possible'.
- Launch method**: A dropdown menu set to 'Launch agents via SSH'.

At the bottom right of the configuration area is a blue 'Save' button. The background shows a Windows taskbar with various icons and system status indicators.

The screenshot shows the 'Create Item' page with the 'Global credentials (unrestricted)' dialog open. This dialog is used to define the credentials for launching agents. The 'Kind' is set to 'Username with password'. The 'Scope' is set to 'Global (Jenkins, nodes, items, all child items, etc.)'. The 'Username' field contains 'ubuntu'. There is a checked checkbox 'Treat username as secret'. The 'Password' and 'ID' fields are empty. At the bottom of the dialog is a blue 'Save' button. The background shows a Windows taskbar with various icons and system status indicators.

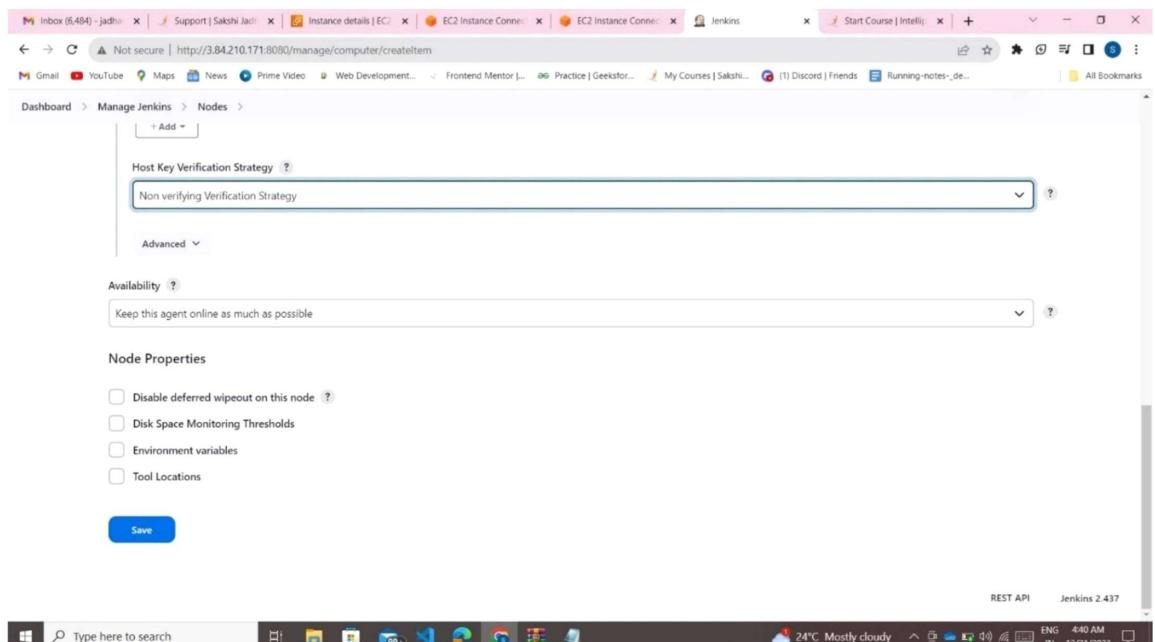


The screenshot shows the 'Nodes' configuration page in Jenkins. The 'General' tab is selected. A large text area contains the following configuration:

```
Use this node as much as possible

Description: [empty]
Username: ubuntu
Treat username as secret: [unchecked]
Private Key: Enter directly
Key: [A long string of characters representing an RSA private key, starting with '-----BEGIN RSA PRIVATE KEY-----' and ending with '-----END RSA PRIVATE KEY-----']
```

Below the configuration is a 'Save' button.



The screenshot shows the 'Nodes' configuration page in Jenkins. The 'Advanced' tab is selected. A large text area contains the following configuration:

```
+ Add ▾

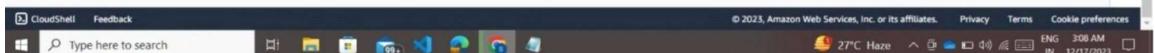
Host Key Verification Strategy: Non verifying Verification Strategy
Advanced ▾

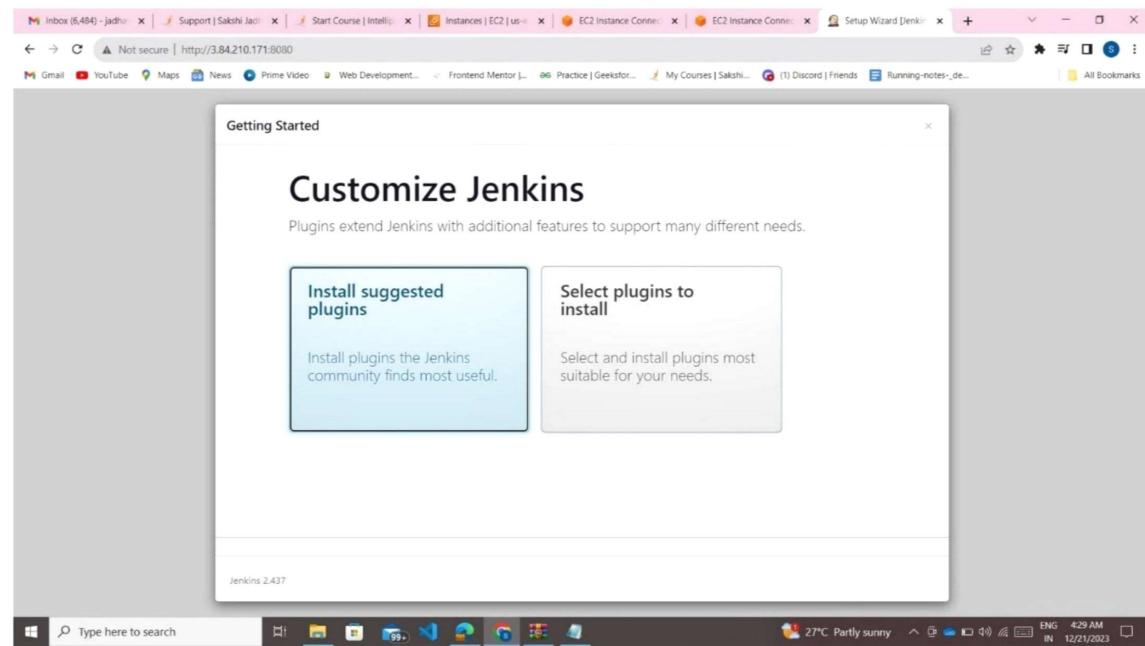
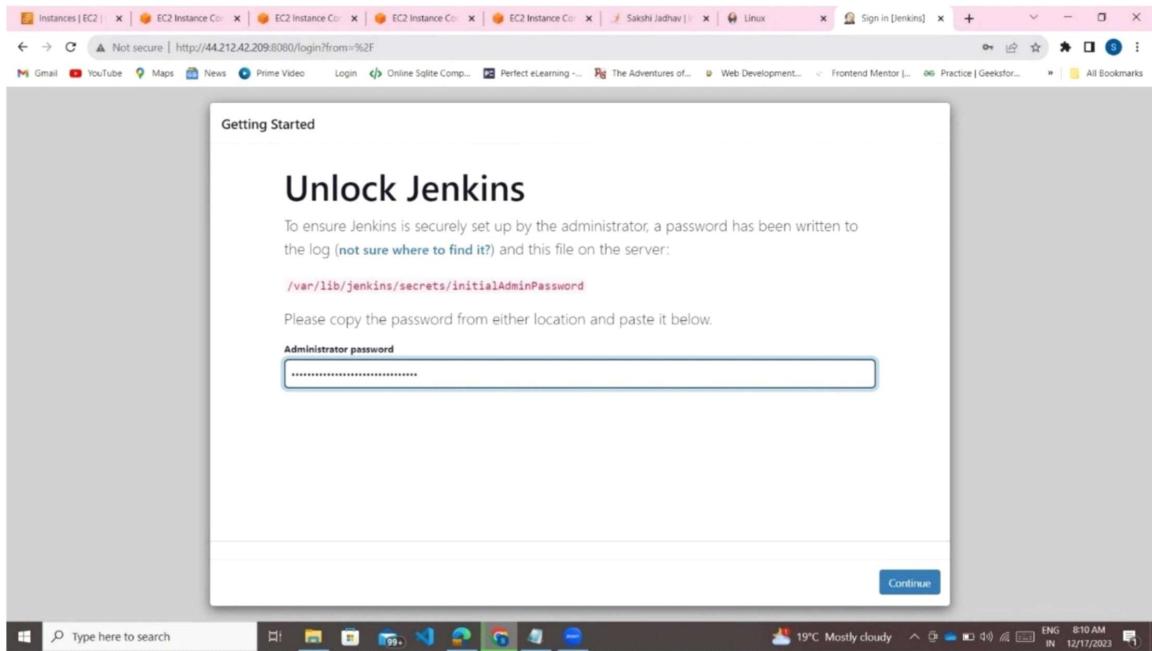
Availability: Keep this agent online as much as possible
```

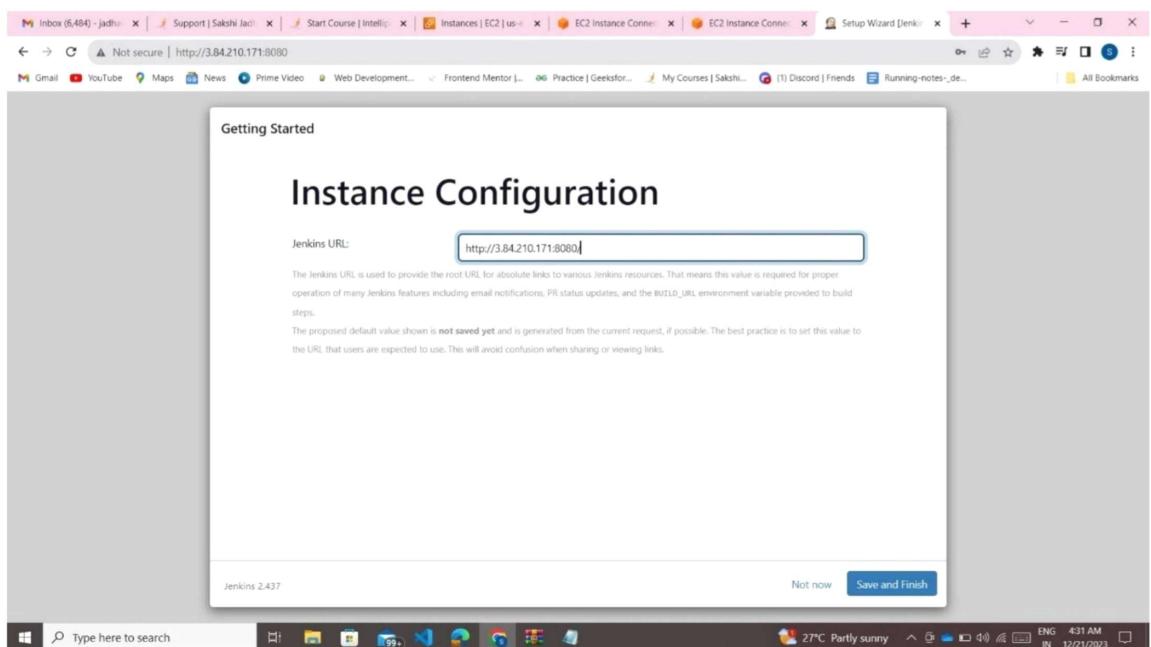
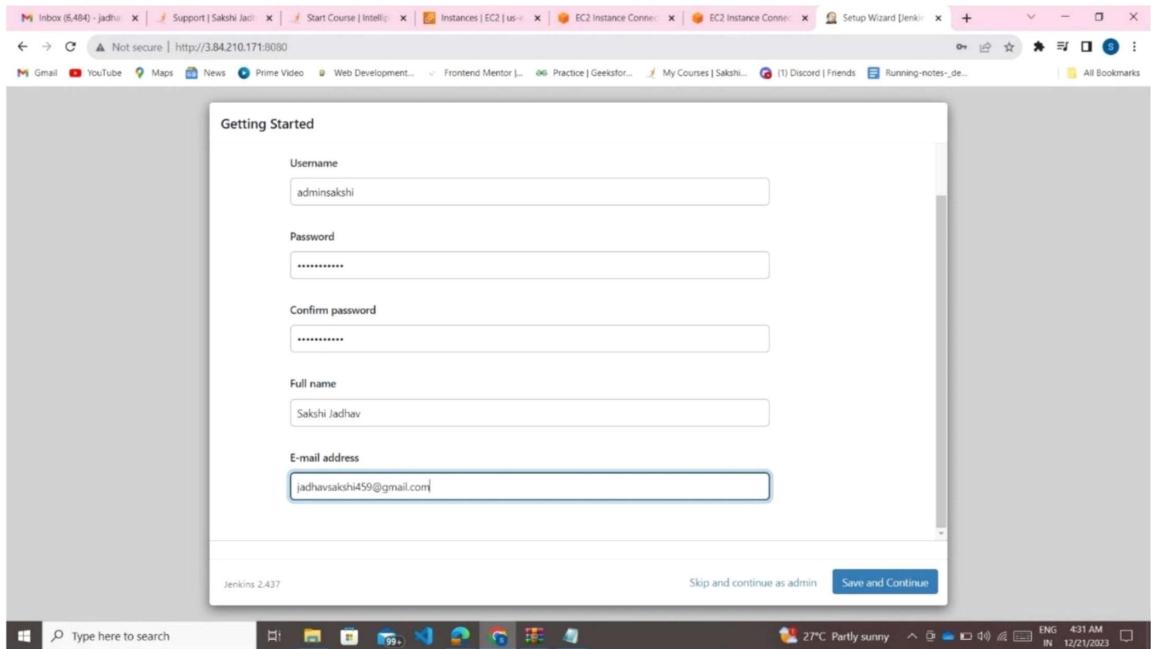
Below the configuration is a 'Save' button.

```
Privilege Escalation Options:  
control how and which user you become as on target hosts  
--become-method BECOME_METHOD  
    privilege escalation method to use (default=sudo), use 'ansible-doc -t become -l' to list valid choices.  
--become-user BECOME_USER  
-b, --become      run operations as this user (default=root)  
ubuntu@ip-172-31-80-251:~$ ansible-playbook play.yaml --syntax-check  
playbook: play.yaml  
ubuntu@ip-172-31-80-251:~$ ansible-playbook play.yaml --check  
PLAY [installing jenkins and java] *****  
TASK [Gathering Facts] *****  
ok: [localhost]  
TASK [executing script w1.sh] *****  
skipping: [localhost]  
PLAY [installing java, docker and k8s] *****  
TASK [Gathering Facts] *****  
i-0fe1891c258df75cd (M-1)  
Public IPs: 44.203.3.0 Private IPs: 172.31.80.251
```

```
PLAY [installing java, docker and k8s] *****  
TASK [Gathering Facts] *****  
ok: [172.31.92.146]  
TASK [executing w3.sh] *****  
skipping: [172.31.92.146]  
PLAY [installing k8s and docker in k8s slaves] ***  
TASK [Gathering Facts] *****  
ok: [172.31.23.59]  
ok: [172.31.20.189]  
TASK [executing script w24.sh] ***  
Mapping: [172.31.23.59]  
Mapping: [172.31.20.189]  
PLAY RECAP *****  
172.31.20.189 : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0  
172.31.23.59 : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0  
172.31.92.146 : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0  
localhost      : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0  
ubuntu@ip-172-31-80-251:~$ ansible-playbook play.yaml  
i-0fe1891c258df75cd (M-1)  
Public IPs: 44.203.3.0 Private IPs: 172.31.80.251
```







Dashboard > Manage Jenkins > Nodes >

## Nodes

	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
	Built-In Node	Linux (amd64)	In sync	3.80 GiB	0 B	3.80 GiB	0ms
	Data obtained		19 min	19 min	19 min	19 min	19 min

Build Queue  
No builds in the queue.

Build Executor Status  
1 Idle  
2 Idle

+ New Node Configure Monitors ⚙

3.84.210.171:8080/manage/computer/new REST API Jenkins 2.437

Windows Taskbar: Type here to search, File, Start, Control Panel, Mail, Photos, News, Edge, Google Chrome, File Explorer, Task View, Settings, Task Manager, Power, Network, System, Weather, Clock, ENG IN 4:31 AM IN 12/21/2023

Dashboard > Manage Jenkins > Nodes > New node

### New node

Node name: KM

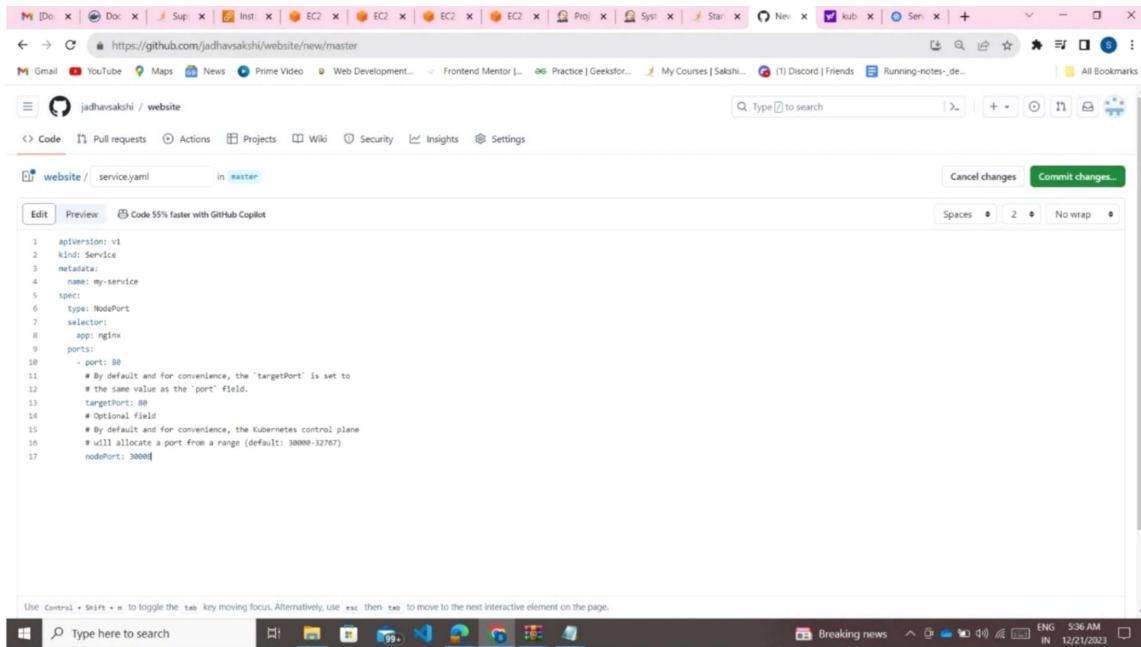
Type: Permanent Agent

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.

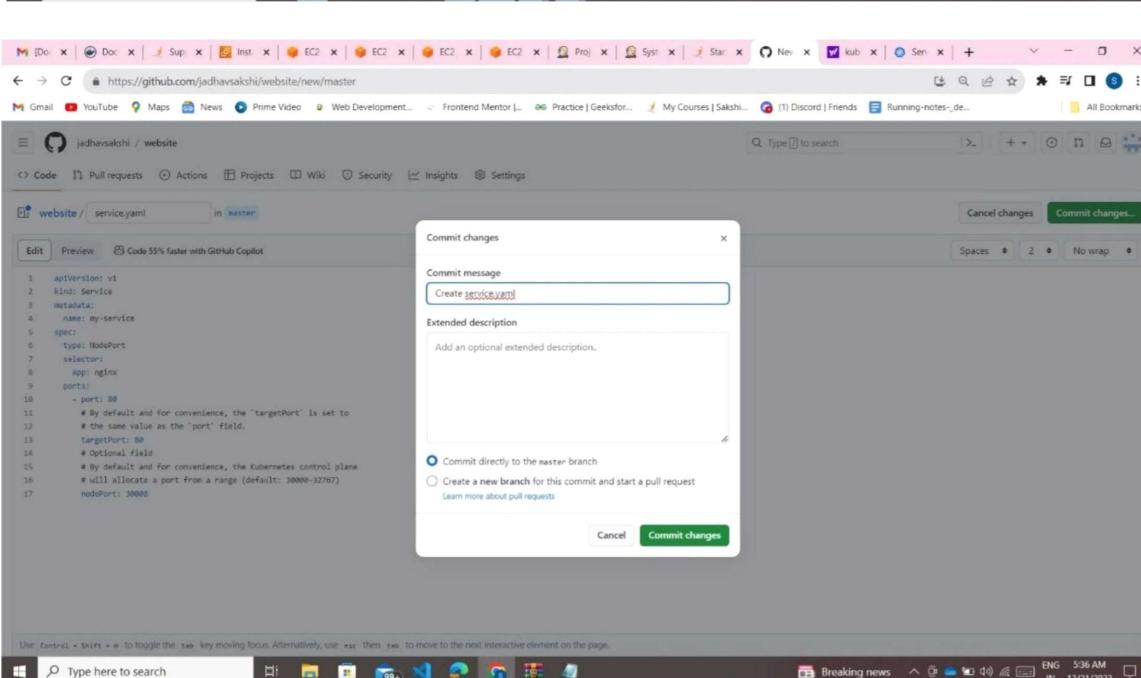
Create

REST API Jenkins 2.437

Windows Taskbar: Type here to search, File, Start, Control Panel, Mail, Photos, News, Edge, Google Chrome, File Explorer, Task View, Settings, Task Manager, Power, Network, System, Weather, Clock, ENG IN 4:31 AM IN 12/21/2023



```
apiVersion: v1
kind: Service
metadata:
  name: my-service
spec:
  type: NodePort
  selector:
    app: nginx
  ports:
    - port: 80
      # By default and for convenience, the 'targetPort' is set to
      # the same value as the 'port' field.
      targetPort: 80
      # optional field
    # By default and for convenience, the Kubernetes control plane
    # will allocate a port from a range (default: 30000-32767)
    nodePort: 30000
```



Name	Last commit message	Last commit date
images	final	4 years ago
Dockerfile	Update Dockerfile	2 days ago
deployment.yaml	Create deployment.yaml	6 minutes ago
index.html	Update index.html	last month
service.yaml	Create service.yaml	now

```

steps {
    sh 'sudo docker build /home/ubuntu/jenkins/workspace/Project2/ -t jadhavaskshi/pr2'
    sh 'sudo docker login -u ${DOCKERHUB_CREDENTIALS_USR} -p ${DOCKERHUB_CREDENTIALS_PSW}'
    sh 'sudo docker push jadhavaskshi/pr2'
}
stage('K8s') {
    agent {
        label 'K8s'
    }
    steps {
        sh 'kubectl apply -f /home/ubuntu/jenkins/workspace/Project2/deployment.yaml'
        sh 'kubectl apply -f /home/ubuntu/jenkins/workspace/Project2/service.yaml'
    }
}

```

Use Groovy Sandbox

**Save** **Apply**

The screenshot shows a Jenkins pipeline interface. At the top, there's a navigation bar with various links like 'Gmail', 'YouTube', 'Maps', 'News', 'Prime Video', 'Web Development...', 'Frontend Mentor...', 'Practice | Geeksfor...', 'My Courses | Sakshi...', '(1) Discord | Friends', 'Geeksfor...', 'Running notes - de...', and 'All Bookmarks'. Below the navigation bar, the main content area has a sidebar on the left with options: 'Changes', 'Build Now', 'Configure', 'Delete Pipeline', 'Full Stage View', 'Rename', 'Pipeline Syntax', and 'GitHub Hook Log'. The main panel is titled 'Stage View' and shows a 'Git' stage with an average stage time of 1s. It displays a single build step from 'Dec 21' at '05:41' with 'No Changes'. Below this, there's a 'Build History' section with a 'trend' dropdown, showing one successful build on 'Dec 21, 2023, 1:41 PM'. At the bottom of the sidebar, there are links for 'Atom feed for all' and 'Atom feed for failures'. On the right side of the main panel, there are buttons for 'Add description' and 'Disable Project'. The bottom right corner of the main panel shows 'REST API' and 'Jenkins 2.437'. The bottom of the screen shows a Windows taskbar with icons for File Explorer, Task View, Control Panel, Task Scheduler, Task Manager, File History, OneDrive, File Explorer, and File Explorer. The system tray shows the date and time as '12/21/2023', the weather as '22°C Mostly cloudy', and the location as 'ENG IN'.

