

Capstone Projects

You have been Hired Sr. DevOps Engineer in Abode Software. They want to implement DevOpsLifecycle in their company. You have been asked to implement this lifecycle as fast as possible. Abode Software is a product-based company, their product is available on this GitHub link.

<https://github.com/hshar/website.git>

Following are the specifications of the lifecycle:

1. Install the necessary software on the machines using a configuration management tool.
2. Git Workflow has to be implemented
- 3.Code Build should automatically be triggered once commit is made to master branch or develop branch.

If commit is made to master branch, test and push to prod

If commit is made to develop branch, just test the product, do not push to prod

- 4.The Code should be containerized with the help of a Dockerfile. The Dockerfile should be built every time there is a push to Git-Hub. Use the following pre-built container for your application:

hshar/webapp

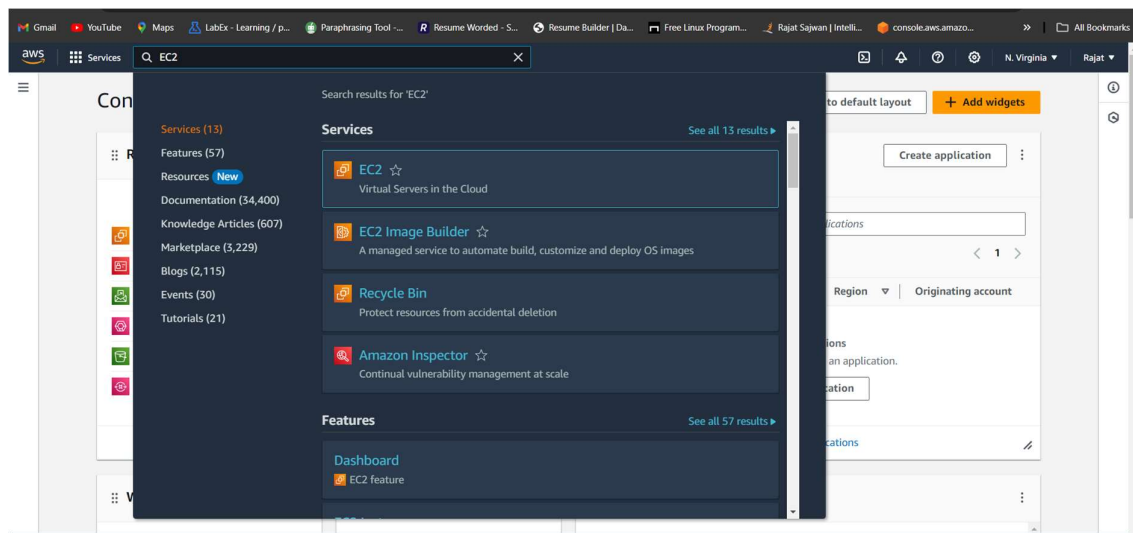
The code should reside in '/var/www/html'

- 5.The above tasks should be defined in a Jenkins Pipeline, with the following jobs:

Job1 : build

Job2: test

Job3 : prod



aws Services Search [Alt+S]

EC2 Dashboard
EC2 Global View
Events
Console-to-Code
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store

Instances (3) info

Find Instance by attribute or tag (case-sensitive)

Instance state = running X Clear filters

Any state

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
<input type="checkbox"/>	project	i-00793b5fe388078eb	Running	t2.micro	Initializing	View alarms +	us-east-1a	ec2-18-2
<input type="checkbox"/>	project	i-06d9762742751171a	Running	t2.micro	Initializing	View alarms +	us-east-1a	ec2-34-2
<input type="checkbox"/>	project	i-062ee658e722cb0b8	Running	t2.micro	Initializing	View alarms +	us-east-1a	ec2-54-2

Select an instance

```
ubuntu@ip-172-31-28-58:/etc/ansible$ history
1 sudo apt update && clear
2 sudo apt-get install software-properties-common
3 sudo apt-add-repository --yes --update ppa:ansible/ansible && sudo apt-get install ansible
4 clear
5 ssh-keygen
6 cd .ssh/
7 ls
8 cat id_rsa.pub
9 clear
10 cd /etc/ansible/
11 ls
12 sudo nano host
13 ls
14 sudo nano hosts
15 clear
16 cd /etc/ansible
17 ls
18 sudo nano hosts
19 ansible -m ping all
20 history
ubuntu@ip-172-31-28-58:/etc/ansible$
```

i-00793b5fe388078eb (project-M)
PublicIPs: 18.208.190.46 PrivateIPs: 172.31.28.58

```

ubuntu@ip-172-31-28-58:~$ cd /etc/ansible
ubuntu@ip-172-31-28-58:/etc/ansible$ ls
ansible.cfg  hosts  roles
ubuntu@ip-172-31-28-58:/etc/ansible$ sudo nano hosts
ubuntu@ip-172-31-28-58:/etc/ansible$ ansible -m ping all
The authenticity of host '172.31.23.248 (172.31.23.248)' can't be established.
ECDSA key fingerprint is SHA256:wxaaAxNYa7mKkF18EZvExXYKC3OWu9aMEYKgrLTaySw.
The authenticity of host '172.31.25.16 (172.31.25.16)' can't be established.
ECDSA key fingerprint is SHA256:mXIctSKvWSngy8heZvtD82RTTYfkOEePeY+hQ0VB0yo.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
172.31.23.248 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
172.31.25.16 | UNREACHABLE! => {
  "changed": false,
  "msg": "Failed to connect to the host via ssh: Host key verification failed.",
  "unreachable": true
}
ubuntu@ip-172-31-28-58:/etc/ansible$ ansible -m ping all
The authenticity of host '172.31.25.16 (172.31.25.16)' can't be established.
ECDSA key fingerprint is SHA256:mXIctSKvWSngy8heZvtD82RTTYfkOEePeY+hQ0VB0yo.
Are you sure you want to continue connecting (yes/no/[fingerprint])? 172.31.23.248 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
yes
172.31.25.16 | SUCCESS => {
  "ansible_facts": {
    "discovered_interpreter_python": "/usr/bin/python3"
  },
  "changed": false,
  "ping": "pong"
}
ubuntu@ip-172-31-28-58:/etc/ansible$

```

```
ubuntu@ip-172-31-28-58:~$ ls
master.sh  slave.sh
ubuntu@ip-172-31-28-58:~$ sudo nano play.yaml
ubuntu@ip-172-31-28-58:~$ ls
master.sh  play.yaml  slave.sh
ubuntu@ip-172-31-28-58:~$ ansible-playbook play.yaml --syntax-check
```

```
playbook: play.yaml
ubuntu@ip-172-31-28-58:~$ ansible-playbook play.yaml --check
```

```
PLAY [executing tasks on master] *****

TASK [Gathering Facts] *****
ok: [localhost]

TASK [executing master.sh] *****
skipping: [localhost]

PLAY [executing tasks on slave] *****

TASK [Gathering Facts] *****
ok: [172.31.25.16]
ok: [172.31.23.248]

TASK [executing slave.sh script] *****
```

i-00793b5fe388078eb (project-M)

PublicIPs: 18.208.190.46 PrivateIPs: 172.31.28.58

aws Services Search [Alt+S]

```
PLAY [executing tasks on master] *****

TASK [Gathering Facts] *****
ok: [localhost]

TASK [executing master.sh] *****
skipping: [localhost]

PLAY [executing tasks on slave] *****

TASK [Gathering Facts] *****
ok: [172.31.25.16]
ok: [172.31.23.248]

TASK [executing slave.sh script] *****
skipping: [172.31.23.248]
skipping: [172.31.25.16]

PLAY RECAP *****
172.31.23.248      : ok=1    changed=0    unreachable=0    failed=0    skipped=1    rescued=0    ignored=0
172.31.25.16      : 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-172-31-28-58:~$
```

i-00793b5fe388078eb (project-M)

PublicIPs: 18.208.190.46 PrivateIPs: 172.31.28.58

```
ubuntu@ip-172-31-28-58:~$ ls
master.sh  play.yaml  slave.sh
ubuntu@ip-172-31-28-58:~$ sudo cat master.sh
sudo apt update
sudo apt install openjdk-11-jdk -y
sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \
  https://pkg.jenkins.io/debian/jenkins.io-2023.key
echo deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc] \
  https://pkg.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
ubuntu@ip-172-31-28-58:~$
```

i-00793b5fe388078eb (project-M)

PublicIPs: 18.208.190.46 PrivateIPs: 172.31.28.58

```
sudo apt-get update
sudo apt-get install jenkins -y
ubuntu@ip-172-31-28-58:~$ sudo cat slave.sh
sudo apt update
sudo apt install openjdk-11-jdk -y
sudo apt install docker.io -y
ubuntu@ip-172-31-28-58:~$
```

i-00793b5fe388078eb (project-M)

PublicIPs: 18.208.190.46 PrivateIPs: 172.31.28.58

```
ubuntu@ip-172-31-28-58:~$ sudo cat play.yaml
---
- name: executing tasks on master
  hosts: localhost
  become: true
  tasks:
    - name: executing master.sh
      script: master.sh

- name: executing tasks on slave
  hosts: all
  become: true
  tasks:
    - name: executing slave.sh script
      script: slave.sh
ubuntu@ip-172-31-28-58:~$
```

i-00793b5fe388078eb (project-M)

Getting Started

Unlock Jenkins

To ensure Jenkins is securely set up by the administrator, a password has been written to the log ([not sure where to find it?](#)) and this file on the server:

```
/var/lib/jenkins/secrets/initialAdminPassword
```

Please copy the password from either location and paste it below.

Administrator password

Continue

```
us-east-1:console.aws.amazon.com/ec2-instance-connect:ssh:region=us-east-1&connType=standard&instanceId=i-00793b5fe388078eb
Gmail YouTube Maps LabEx - Learning / p... Paraphrasing Tool -... Resume Worded - S... Resume Builder | Da...
aws Services Search [Alt+S]
ubuntu@ip-172-31-28-58:~$ sudo cat /var/lib/jenkins/secrets/initialAdminPassword
b9292441d3a447039d2e75d00b6d38f0
ubuntu@ip-172-31-28-58:~$
```

i-00793b5fe388078eb (project-M)

PublicIPs: 18.208.190.46 PrivateIPs: 172.31.28.58


```
aws
Services
Search [Alt+S]

PLAY [executing the task on master] *****
TASK [Gathering Facts] *****
ok: [localhost]

TASK [executing the master.sh] *****
changed: [localhost]

PLAY [executing the task on slave] *****
TASK [Gathering Facts] *****
ok: [172.31.83.176]
ok: [172.31.87.2]

TASK [executing the slave.sh] *****
changed: [172.31.83.176]
changed: [172.31.87.2]

PLAY RECAP *****
172.31.83.176      : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
172.31.87.2      : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
localhost        : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0

ubuntu@ip-172-31-81-190:~$
```

i-0013ed4103d28279c (project-M)
PublicIPs: 54.152.96.79 PrivateIPs: 172.31.81.190

← → ↻ ⚠ Not secure 18.208.190.46:8080

Gmail

YouTube

Maps

LabEx - Learning / p...

Paraphrasing Tool ...

Resume Worded - S...

Resume Builder | Da...

Free Linux Program...

Rajat Sajwan | Intelli...

console.aws.amato...

» All Bookmarks

Jenkins

Search (CTRL+K)

admin log out

Dashboard >

+ New Item

People

Build History

Manage Jenkins

My Views

Build Queue

▼

No builds in the queue.

Build Executor Status

▼

1 Idle

2 Idle

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

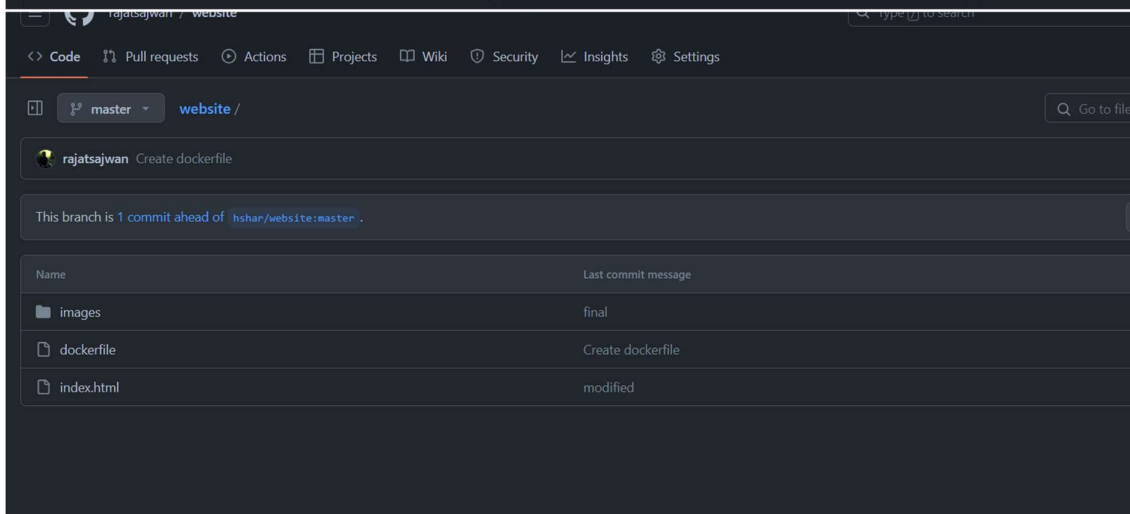
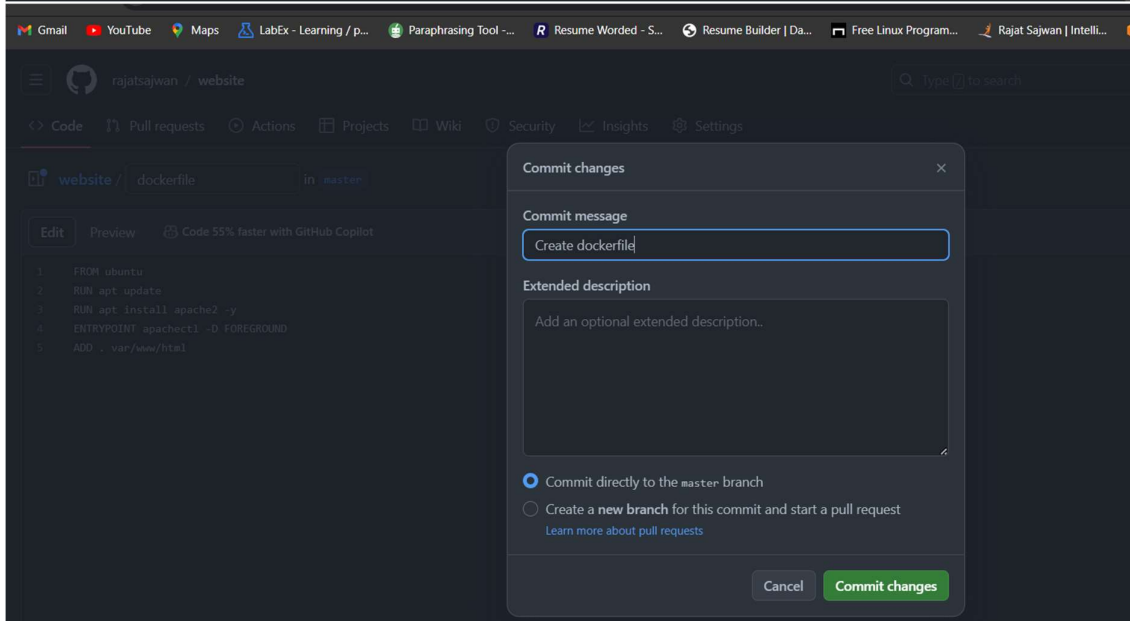
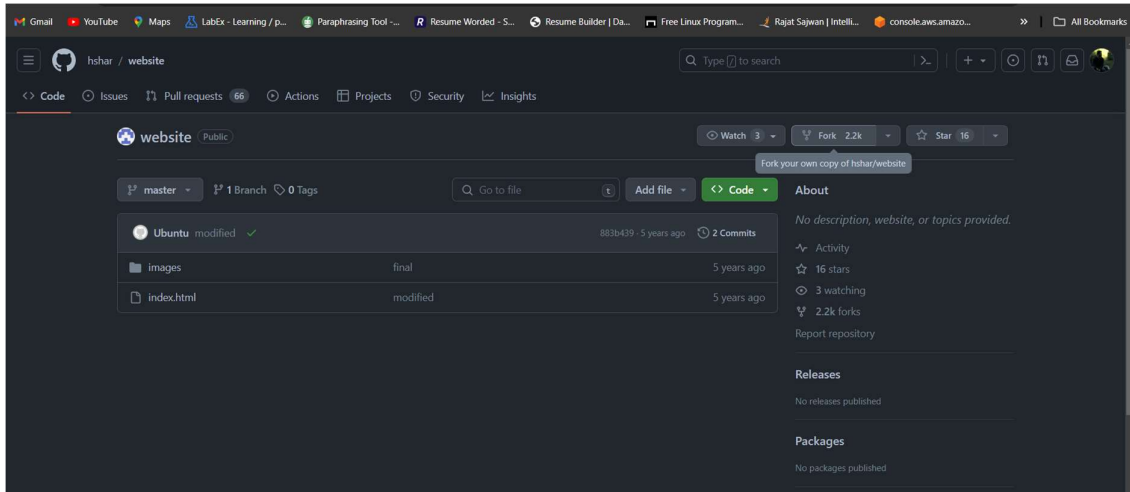
Set up an agent

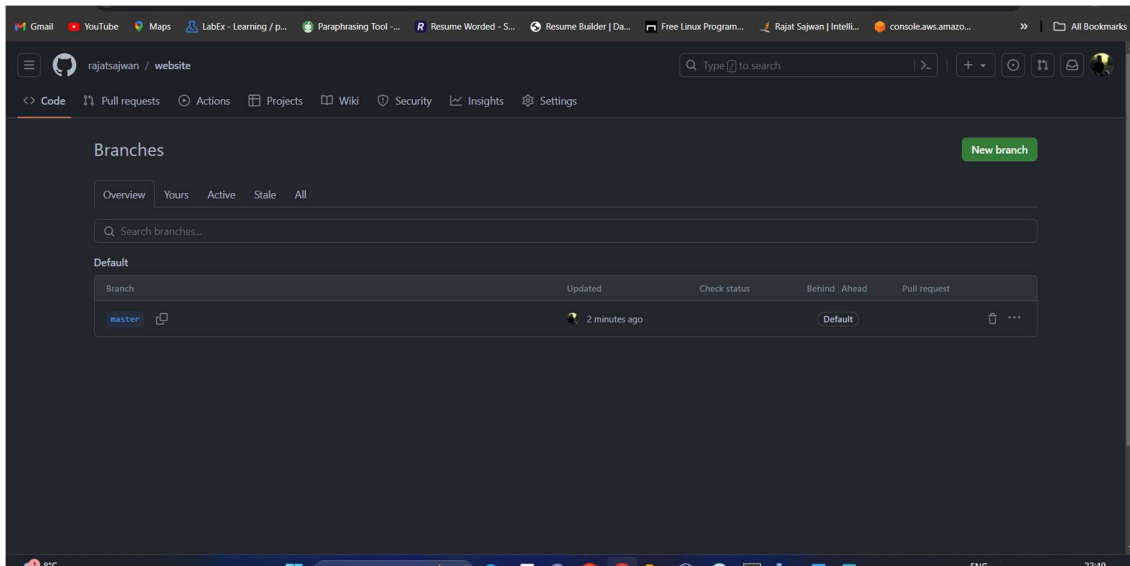
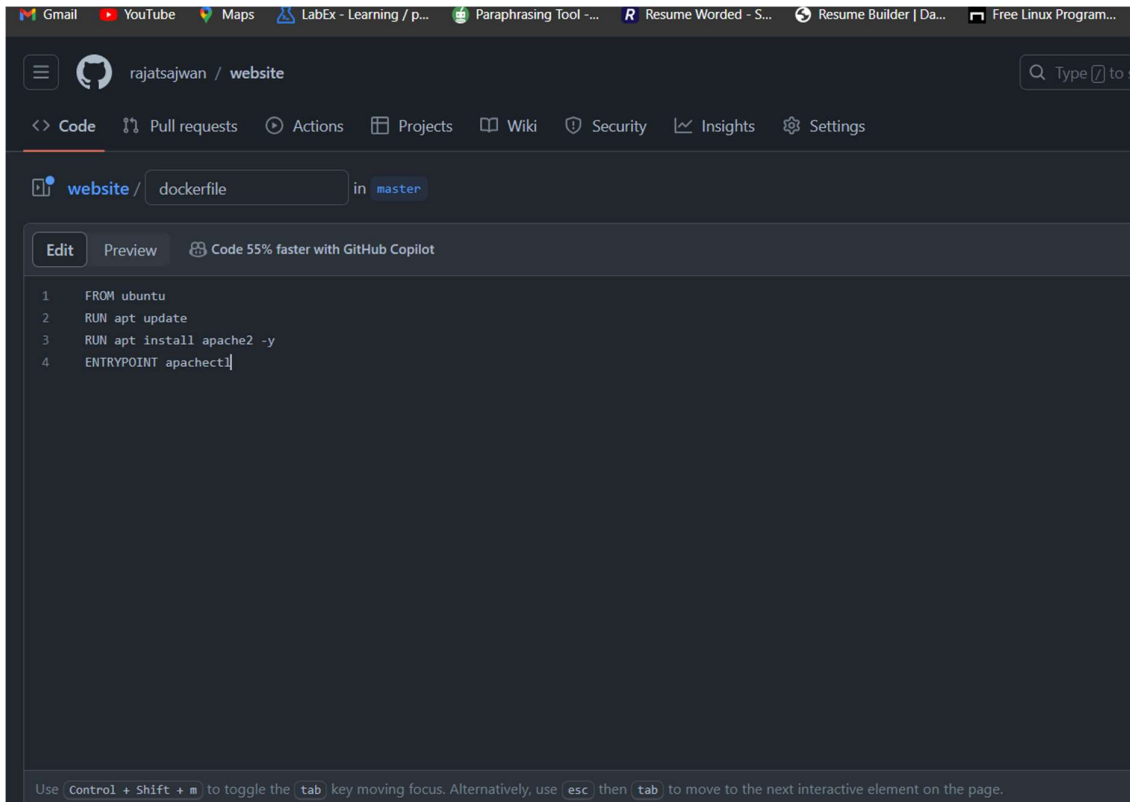
Configure a cloud

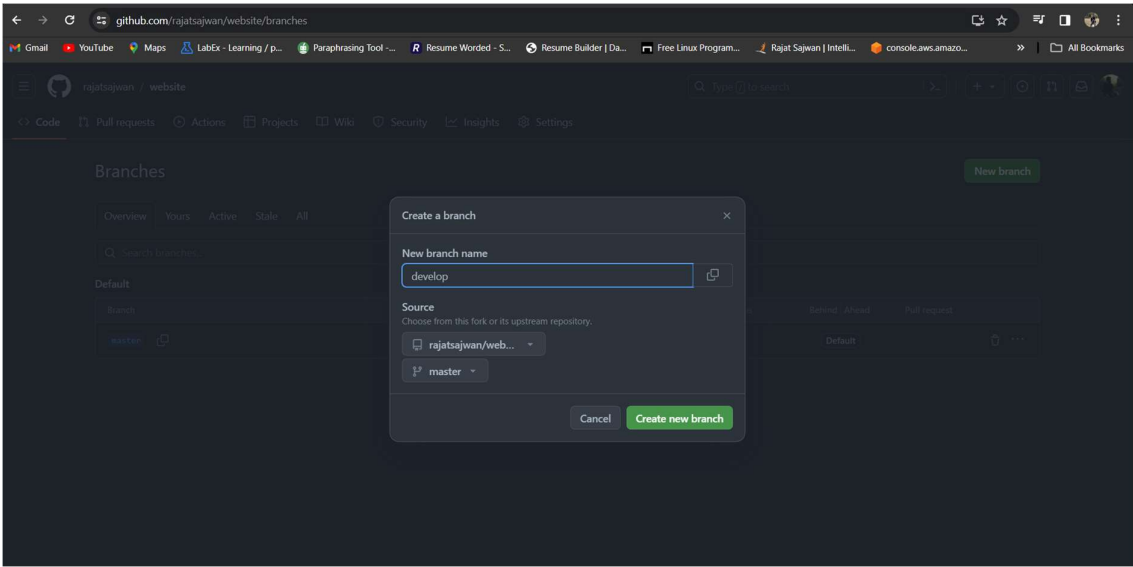
Learn more about distributed builds

Add description

BPST API Jenkins 2.441







Enter an item name

» Required field



Freestyle project

Classic, general-purpose job type that checks out from up to one SCM, executes build steps serially, followed by post-build steps like archiving artifacts and sending email notifications.



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

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



Multibranch Pipeline

Creates a set of Pipeline projects according to detected branches in one SCM repository.

OK

Organization Folder

Configure

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

Command

See [the list of available environment variables](#)

```
sudo docker build /home/ubuntu/jenkins/workspace/job1/ -t imageone
```

Advanced ▾

Add build step ▾

Post-build Actions

Add post-build action ▾

Save

Apply

Started 0.37 sec ago
Estimated remaining time: 15 sec
Dashboard >

Search (CTRL+K)

admin log out

+ New Item

People

Build History

Project Relationship

Check File Fingerprint

Manage Jenkins

My Views

All +

S	W	Name	Last Success	Last Failure	Last Duration
		job1	2 min 26 sec #2	7 min 7 sec #1	23 sec

Icon: S M L

Atom feed for all

Atom feed for failures

Atom feed for just latest builds

Add description

Build Queue

No builds in the queue.

Build Executor Status

Build-in Node

1 Idle

Gmail YouTube Maps LabEx - Learning / p... Paraphrasing Tool - ... Resume Worded - S... Resume Builder | Da... Free Lin

Dashboard > job1 > Configuration

Configure

General

Source Code Management

Build Triggers

Build Environment

Build Steps

Post-build Actions

☐ Add timestamps to the Console Output

☐ Inspect build log for published build scans

☐ Terminate a build if it's stuck

☐ With Ant ?

Build Steps

Execute shell ?

Command

See [the list of available environment variables](#)

```
sudo docker rm -f c1
sudo docker build /home/ubuntu/workspace/job1/ -t imageone
sudo docker run -itd -p 84:80 --name=c1 imageone
```

Advanced

Save

Apply

github.com/rajatsajwan/website/settings

Code Pull requests Actions Projects Wiki Security Insights Settings

General

Access

- Collaborators
- Moderation options

Code and automation

- Branches
- Tags
- Rules
- Actions
- Webhooks
- Environments
- Codespaces
- Pages

Security

- Code security and analysis
- Deploy keys
- Secrets and variables

Repository name

website Rename

☐ Template repository

Template repositories let users generate new repositories with the same directory structure and files. [Learn more](#)

☐ Require contributors to sign off on web-based commits

Enabling this setting will require contributors to sign off on commits made through GitHub's web interface. Signing contributors to affirm that their commit complies with the repository's terms, commonly the [Developer Certificate of Origin](#). [Learn more about signing off on commits](#)

Default branch

The default branch is considered the "base" branch in your repository, against which all pull requests automatically made, unless you specify a different branch.

master edit ↺

Social preview

Upload an image to customize your repository's social media preview.

Images should be at least 640×320px (1280×640px for best display).

https://github.com/rajatsajwan/website/settings/hooks

Code Pull requests Actions Projects Wiki Security Insights Settings

Webhooks / Manage webhook

Settings Recent Deliveries

We'll send a POST request to the URL below with details of any subscribed events. You can also specify the format you'd like to receive (JSON, x-www-form-urlencoded, etc). More information can be found in the [documentation](#).

Payload URL *

http://54.152.96.79:8080/github-webhook/

Content type

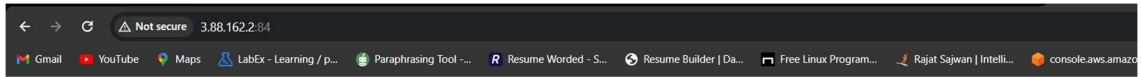
application/x-www-form-urlencoded

Secret

Which events would you like to trigger this webhook?

☒ Just the push event.

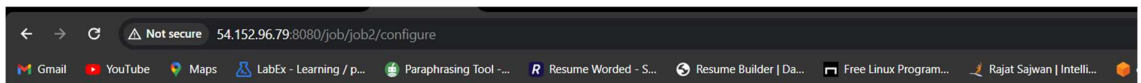
☐ Send me everything.



Hello world!!



GitHub



Dashboard > job2 > Configuration

Configure

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

- ☐ Terminate a build if it's stuck
- ☐ With Ant ?

Build Steps

Execute shell ?

Command

See [the list of available environment variables](#)

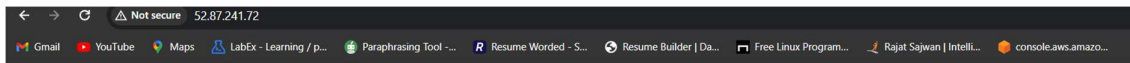
```
#sudo docker rm -f c2
sudo docker build /home/ubuntu/workspace/job2/ -t imagetwo
sudo docker run -itd -p 83:80 --name=c2 imagetwo
```

Advanced ▾

Add build step ▾

Save

Apply



Hello world!



GitHub

Dashboard > job3 > Configuration

Configure

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

☐ Add timestamps to the Console Output

☐ Inspect build log for published build scans

☐ Terminate a build if it's stuck

☐ With Ant ?

Build Steps

Execute shell ?

Command

See [the list of available environment variables](#)

```
sudo docker rm -f c3
sudo docker build /home/ubuntu/workspace/job3/ -t imagethree
sudo docker run -itd -p 80:80 --name=c3 imagethree
```

Advanced ▾

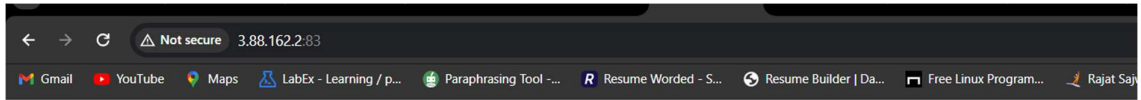
Save

Apply

History

```
aws Services Search [Alt+S]
7380ce39516341cabd73e1248412f3c3
ubuntu@ip-172-31-81-190:~$ history
 1 clear
 2 $ sudo apt update
 3 $ sudo apt install software-properties-common
 4 $ sudo add-apt-repository --yes --update ppa:ansible/ansible
 5 $ sudo apt update
 6 $ sudo apt install software-properties-common
 7 $ sudo add-apt-repository --yes --update ppa:ansible/ansible
 8 clear
 9 sudo apt update
10 sudo apt install software-properties-common
11 sudo add-apt-repository --yes --update ppa:ansible/ansible
12 sudo apt install ansible
13 clear
14 ssh-keygen
15 cd .ssh/
16 ls
17 cat id_rsa.pub
18 sudo cat id_rsa.pub
19 sudo cat id_rsa.pub
20 cd ..
21 cd /etc/ansible/
22 ls
23 cd hosts
24 sudo nano hosts
25 ansible -m ping all
26 cd
27 ls
28 pwd
29 sudo nano master.sh
30 sudo nano slave.sh
31 sudo nano play.yaml
32 ansible-playbook play.yaml --syntax-check
33 sudo nano play.yaml
34 ansible-playbook play.yaml --syntax-check
35 sudo nano play.yaml
36 ansible-playbook play.yaml --syntax-check
37 sudo nano play.yaml
38 ansible-playbook play.yaml --syntax-check
39 ansible-playbook play.yaml --check
40 ansible-playbook play.yaml
41 clear
42 ansible-playbook play.yaml
43 \

i-0013ed4103d28279c (project-M)
PublicIPs: 54.152.96.79 PrivateIPs: 172.31.81.190
```



Hello world!



Git+U..h