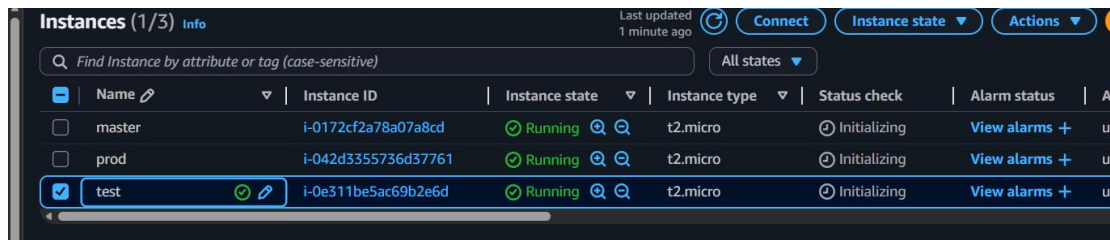You have been hired as a Sr. DevOps Engineer in Abode Software. They want to implement DevOps Lifecycle in their company. You have been asked to implement this lifecycle as fast as possible. Abode Software is a product-based company and their product is available on this GitHub link.

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. CodeBuild should automatically be triggered once a commit is made to master branch or develop branch.
   a. If a commit is made to master branch, test and push to prod
   b. If a 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 GitHub. 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:
   a. Job1 : build
   b. Job2 : test
   c. Job3 : prod

	Name		Instance ID	Instance state	Instance type	Status check	Alarm status	A
☐	master		i-0172cf2a78a07a8cd	⊘ Running ⊕ ⊖	t2.micro	⊕ Initializing	View alarms +	us
☐	prod		i-042d3355736d37761	⊘ Running ⊕ ⊖	t2.micro	⊕ Initializing	View alarms +	us
☑	test	⊘ ✎	i-0e311be5ac69b2e6d	⊘ Running ⊕ ⊖	t2.micro	⊕ Initializing	View alarms +	us

```
ubuntu@ip-172-31-22-59:~$ ansible --version
ansible [core 2.17.14]
  config file = /etc/ansible/ansible.cfg
  configured module search path = ['/home/ubuntu/.ansible/plugins/modules', '/usr/share/ansible/plugins/modules']
  ansible python module location = /usr/lib/python3/dist-packages/ansible
  ansible collection location = /home/ubuntu/.ansible/collections:/usr/share/ansible/collections
  executable location = /usr/bin/ansible
  python version = 3.10.12 (main, Aug 15 2025, 14:32:43) [GCC 11.4.0] (/usr/bin/python3)
  jinja version = 3.0.3
  libyaml = True
ubuntu@ip-172-31-22-59:~$
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ubuntu@ip-172-31-22-59:~$ ssh 172.31.25.54
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1040-aws x86_64)

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

 System information as of Sat Nov 29 14:30:30 UTC 2025

  System load:  0.0               Processes:              105
  Usage of /:   25.9% of 7.57GB   Users logged in:        1
  Memory usage: 22%               IPv4 address for eth0:  172.31.25.54
  Swap usage:   0%


Expanded Security Maintenance for Applications is not enabled.

33 updates can be applied immediately.
27 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

New release '24.04.3 LTS' available.
Run 'do-release-upgrade' to upgrade to it.


Last login: Sat Nov 29 14:29:02 2025 from 172.31.22.59
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ubuntu@ip-172-31-22-59:~$ ssh 172.31.16.114
The authenticity of host '172.31.16.114 (172.31.16.114)' can't be established.
ED25519 key fingerprint is SHA256:3YErZCFDYl/v8pkCeE3d5t9KFCUbAtW5SRaQKmQkPUU.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '172.31.16.114' (ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1040-aws x86_64)

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

 System information as of Sat Nov 29 14:31:24 UTC 2025

  System load:  0.0               Processes:             106
  Usage of /:   25.9% of 7.57GB   Users logged in:       1
  Memory usage: 22%               IPv4 address for eth0: 172.31.16.114
  Swap usage:   0%


Expanded Security Maintenance for Applications is not enabled.

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27 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ubuntu@ip-172-31-22-59:/etc/ansible$ ansible -m ping all
[WARNING]: Platform linux on host 172.31.25.54 is using the discovered Python interpreter at /usr/bin/pyt
could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendice
172.31.25.54 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.10"
    },
    "changed": false,
    "ping": "pong"
}
[WARNING]: Platform linux on host 172.31.16.114 is using the discovered Python interpreter at /usr/bin/py
interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/referen
172.31.16.114 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3.10"
    },
    "changed": false,
    "ping": "pong"
}
ubuntu@ip-172-31-22-59:/etc/ansible$
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ubuntu@ip-172-31-22-59:/etc/ansible$ cat play.yaml
- name: task for master
  hosts: localhost
  become: true
  tasks:
    - name: executing script master
      script: master.sh

- name: task for slaves
  hosts: Slaves
  become: true
  tasks:
    - name: executing script slaves
      script: slave.sh

ubuntu@ip-172-31-22-59:/etc/ansible$
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ubuntu@ip-172-31-22-59:/etc/ansible$ cat master.sh
sudo apt update
sudo apt install openjdk-17-jre -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-172-31-22-59:/etc/ansible$
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ubuntu@ip-172-31-22-59:/etc/ansible$ cat slave.sh
sudo apt update
sudo apt install openjdk-17-jre -y
sudo apt install docker.io -y
ubuntu@ip-172-31-22-59:/etc/ansible$
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ubuntu@ip-172-31-22-59:/etc/ansible$ ls
ansible.cfg  hosts  master.sh  play.yaml  roles  slave.sh
ubuntu@ip-172-31-22-59:/etc/ansible$
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ansible.cfg  hosts  master.sh  play.yaml  roles  slave.sh
ubuntu@ip-172-31-22-59:/etc/ansible$ ansible-playbook play.yaml

PLAY [task for master] *********************************************************

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

TASK [executing script master] ***********************************************
```

```
PLAY [task for master] **********************************************************************************************

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

TASK [executing script master] ************************************************************************************
changed: [localhost]

PLAY [task for slaves] **********************************************************************************************

TASK [Gathering Facts] *********************************************************************************************
[WARNING]: Platform linux on host 172.31.25.54 is using the discovered Python interpreter at /usr/bin/python3.10, but future in
could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpreter_discover
ok: [172.31.25.54]
[WARNING]: Platform linux on host 172.31.16.114 is using the discovered Python interpreter at /usr/bin/python3.10, but future i
interpreter could change the meaning of that path. See https://docs.ansible.com/ansible-core/2.17/reference_appendices/interpre
ok: [172.31.16.114]

TASK [executing script slaves] ************************************************************************************
changed: [172.31.25.54]
changed: [172.31.16.114]

PLAY RECAP *********************************************************************************************************
172.31.16.114              : ok=2    changed=1    unreachable=0    failed=0    skipped=0    rescued=0    ignored=0
172.31.25.54               : 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-172-31-22-59:/etc/ansible$
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ubuntu@ip-172-31-22-59:/etc/ansible$ java --version
openjdk 17.0.17 2025-10-21
OpenJDK Runtime Environment (build 17.0.17+10-Ubuntu-122.04)
OpenJDK 64-Bit Server VM (build 17.0.17+10-Ubuntu-122.04, mixed mode, sharing)
ubuntu@ip-172-31-22-59:/etc/ansible$ jenkins --version
2.539
ubuntu@ip-172-31-22-59:/etc/ansible$ █
```

i-0172cf2a78a07a8cd (master)

PublicIPs: 107.21.85.77   PrivateIPs: 172.31.22.59

```
ubuntu@ip-172-31-25-54:~$ java -version
openjdk version "17.0.17" 2025-10-21
OpenJDK Runtime Environment (build 17.0.17+10-Ubuntu-122.04)
OpenJDK 64-Bit Server VM (build 17.0.17+10-Ubuntu-122.04, mixed mode, sharing)
ubuntu@ip-172-31-25-54:~$ docker -version
unknown shorthand flag: 'e' in -ersion

Usage:  docker [OPTIONS] COMMAND [ARG...]

Run 'docker --help' for more information
ubuntu@ip-172-31-25-54:~$ docker --version
Docker version 28.2.2, build 28.2.2-0ubuntu1~22.04.1
ubuntu@ip-172-31-25-54:~$ █
```

i-042d3355736d37761 (prod)

PublicIPs: 13.220.79.74   PrivateIPs: 172.31.25.54

```
ubuntu@ip-172-31-16-114:~$ java -version
openjdk version "17.0.17" 2025-10-21
OpenJDK Runtime Environment (build 17.0.17+10-Ubuntu-122.04)
OpenJDK 64-Bit Server VM (build 17.0.17+10-Ubuntu-122.04, mixed mode, sharing)
ubuntu@ip-172-31-16-114:~$ docker --version
Docker version 28.2.2, build 28.2.2-0ubuntu1~22.04.1
ubuntu@ip-172-31-16-114:~$
```

i-0e311be5ac69b2e6d (test)

PublicIPs: 100.27.216.105   PrivateIPs: 172.31.16.114

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

Instance Configuration

Jenkins URL:

http://107.21.85.77:8080/

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

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

Jenkins / Manage Jenkins ⌄ / Nodes

Nodes

[+ New Node] [Configure Monitors] [↻]

Add, remove, control and monitor the various nodes that Jenkins runs jobs on.

S	Name ↓	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time	
🖥	Built-In Node	Linux (amd64)	In sync	4.46 GiB	❗ 0 B	4.46 GiB	0ms	⚙
	Data obtained		**29 min**	**29 min**	**29 min**	**29 min**	**29 min**	**29 min**

Icon: S M L   Legend

Jenkins / Manage Jenkins ⌄ / Nodes

Nodes

[+ New Node] [Configure Monitors] [↻]

Add, remove, control and monitor the various nodes that Jenkins runs jobs on.

S	Name ↓	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time	
🖥	Built-In Node	Linux (amd64)	In sync	4.24 GiB	❗ 0 B	4.24 GiB	0ms	⚙
🖥	slave1	Linux (amd64)	In sync	4.88 GiB	❗ 0 B	4.88 GiB	52ms	⚙
	Data obtained		**3.1 sec**	**3.1 sec**	**3 sec**	**3 sec**	**3 sec**	**3 sec**

Icon: S M L   Legend

🔧 **website** `Public`

forked from hshar/website

[📌 Pin] [👁 Watch 0 ⌄]

🔀 master ⌄   ⑁ 1 Branch   ◇ 0 Tags   🔍 Go to file   t   [Add file ⌄]   [<> Code ⌄]   Abou

This branch is up to date with `hshar/website:master` .   [⑁ Contribute ⌄]   [↻ Sync fork ⌄]   No d

● **Ubuntu** modified   883b439 · 6 years ago   🕐 2 Commits

📁 images   final   6 years ago

📄 index.html   modified   6 years ago

📖 **README**

website / Dockerfile in master

Edit   Preview

```
1    FROM ubuntu
2    RUN apt update
3    RUN apt install apache2 -y
4    ADD . /var/www/html/
5    ENTRYPOINT apachectl -D FOREGROUND
```

Default

Branch	Updated	Check status	Behind	Ahead	Pull request
master	2 minutes ago		Default		

Your branches

Branch	Updated	Check status	Behind	Ahead	Pull request
develop	now		0	0	

Active branches

Jenkins / job1

- Status
- </> Changes
- Workspace
- ▷ Build Now
- ⚙ Configure
- 🗑 Delete Project
- GitHub Hook Log
- GitHub
- ✎ Rename

✓ job1

Permalinks

- Last build (#5), 7 sec ago
- Last stable build (#5), 7 sec ago
- Last successful build (#5), 7 sec ago
- Last failed build (#4), 2 min 8 sec ago
- Last unsuccessful build (#4), 2 min 8 sec ago
- Last completed build (#5), 7 sec ago

Builds >   ○○○

🔍 Filter   /

Today

✓ #6 4:06 PM   ⌄

```
ubuntu@ip-172-31-16-114:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-16-114:~$ cd jenkins
ubuntu@ip-172-31-16-114:~/jenkins$ ls
remoting   remoting.jar   workspace
ubuntu@ip-172-31-16-114:~/jenkins$ cd workspace/
ubuntu@ip-172-31-16-114:~/jenkins/workspace$ ls
job1   job1@tmp
ubuntu@ip-172-31-16-114:~/jenkins/workspace$
```

i-0e311be5ac69b2e6d (test)

PublicIPs: 100.27.216.105   PrivateIPs: 172.31.16.114

Build Steps

Automate your build process with ordered tasks like code compilation, testing, and deployment.

⸬ Execute shell ?

Command

See the list of available environment variables

```
sudo docker build /home/ubuntu/jenkins/workspace/Job1/ -t
imagejob1
sudo docker run -itd -p 85:80 -name c1 imagejob1
```

Advanced ⌄

Save   Apply

Jenkins / job1

🗒 Status	
</> Changes	
🗂 Workspace	
▷ Build Now	
⚙ Configure	
🗑 Delete Project	
📋 GitHub Hook Log	
○ GitHub	
✎ Rename	

✓ **job1**

Permalinks

- Last build (#13), 1 min 0 sec ago
- Last stable build (#13), 1 min 0 sec ago
- Last successful build (#13), 1 min 0 sec ago
- Last failed build (#12), 4 min 37 sec ago
- Last unsuccessful build (#12), 4 min 37 sec ago
- Last completed build (#13), 1 min 0 sec ago

Builds >   ○○○

🔍 Filter   /

Today

✓ #13 4:21 PM   ⌄

⚠ Not secure   100.27.216.105:85   Summarize ⊘ ☆ ⟨≣ 👤

Hello world!

GitHub

Jenkins / job2

✓ **job2**

Permalinks

- Last build (#2), 11 sec ago
- Last stable build (#2), 11 sec ago
- Last successful build (#2), 11 sec ago
- Last failed build (#1), 42 sec ago
- Last unsuccessful build (#1), 42 sec ago
- Last completed build (#2), 11 sec ago

Builds ⟩   ooo

🔍 Filter   /

Today

✓ #2 4:27 PM   ⌄

⸬ Execute shell ?

Command
See the list of available environment variables

```
sudo docker build -t imagejob2:latest /home/ubuntu/jenkins/workspace/job2/
sudo docker run -itd -p 86:80 --name c2 imagejob2
```

Jenkins / job2

- Status
- Changes
- Workspace
- Build Now
- Configure
- Delete Project
- GitHub Hook Log
- GitHub
- Rename

Builds ›   ∘∘∘

🔍 Filter   /

Today

✓ #6 4:32 PM   ⌄

✓ **job2**

Permalinks

- Last build (#6), 11 sec ago
- Last stable build (#6), 11 sec ago
- Last successful build (#6), 11 sec ago
- Last failed build (#5), 1 min 11 sec ago
- Last unsuccessful build (#5), 1 min 11 sec ago
- Last completed build (#6), 11 sec ago

⚠ Not secure   100.27.216.105:86   Summarize ⎘

Hello world!

- Status
- </> Changes
- Workspace
- ▷ Build Now
- Configure
- Delete Project
- GitHub Hook Log
- GitHub
- Rename

Builds >

Today

✓ #1 4:52 PM

job3

Permalinks

```
ubuntu@ip-172-31-16-114:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-16-114:~$ cd jenkins
ubuntu@ip-172-31-16-114:~/jenkins$ ls
remoting  remoting.jar  workspace
ubuntu@ip-172-31-16-114:~/jenkins$ cd workspace/
ubuntu@ip-172-31-16-114:~/jenkins/workspace$ ls
job1  job1@tmp  job2  job2@tmp  job3  job3@tmp
ubuntu@ip-172-31-16-114:~/jenkins/workspace$
```

i-0e311be5ac69b2e6d (test)

PublicIPs: 100.27.216.105   PrivateIPs: 172.31.16.114

⁞ Execute shell ?

Command

See the list of available environment variables

```
sudo docker build -t imagejob3:latest /home/ubuntu/jenkins/workspace/job3/
sudo docker run -itd -p 99:80 --name container4 imagejob3
```

Advanced ⌄

Status

</> Changes

Workspace

▷ Build Now

Configure

Delete Project

GitHub Hook Log

GitHub

Rename

Builds ›

🔍 Filter /

Today

#2 4:54 PM

✓ **job3**

Permalinks

- Last build (#1), 1 min 46 sec ago
- Last stable build (#1), 1 min 46 sec ago
- Last successful build (#1), 1 min 46 sec ago
- Last completed build (#1), 1 min 46 sec ago

⚠ Not secure 100.27.216.105:99 Summarize ⊕ ☆

Hello world!