

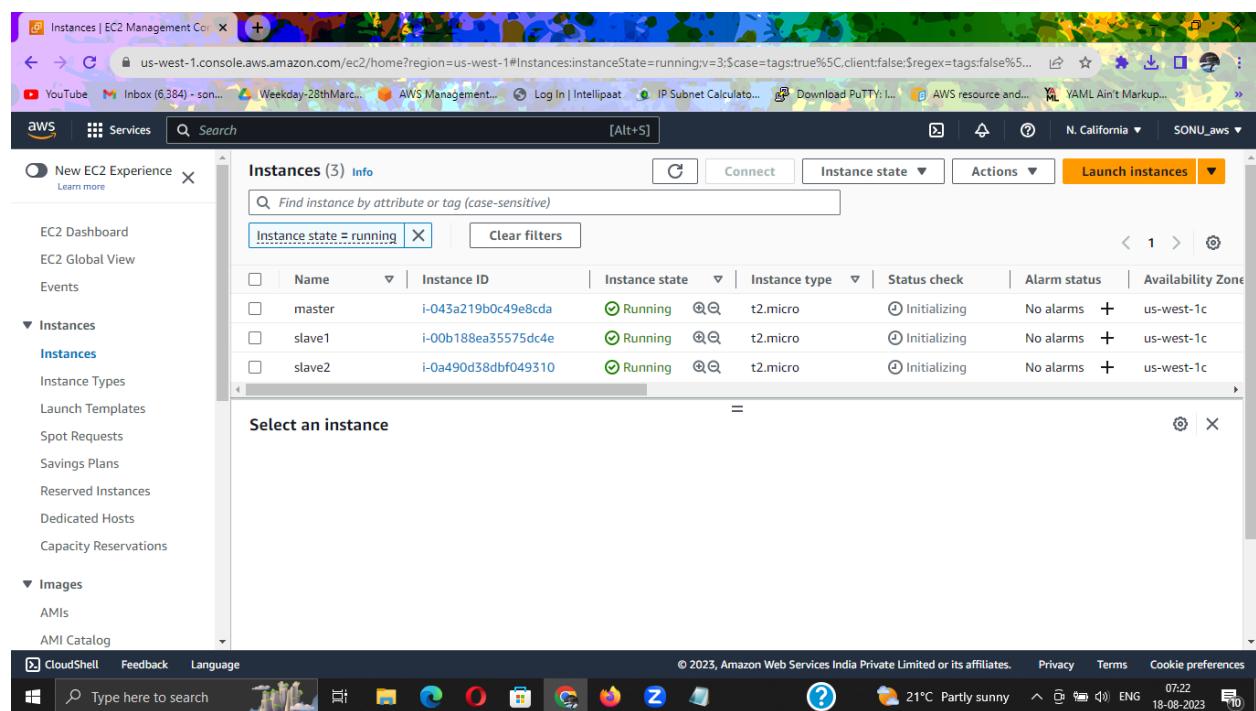
Course: Online Session DevOps Weekday BC = 231107 B2

Project 1

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1 we launch 3 instances in which 1 is our master and other 2 are slaves



The screenshot shows the AWS EC2 Management Console interface. The left sidebar is collapsed, and the main area displays the 'Instances' section. The table lists three instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
master	i-043a219b0c49e8cda	Running	t2.micro	Initializing	No alarms	us-west-1c
slave1	i-00b188ea35575dc4e	Running	t2.micro	Initializing	No alarms	us-west-1c
slave2	i-0a490d38dbf049310	Running	t2.micro	Initializing	No alarms	us-west-1c

A modal window titled 'Select an instance' is open at the bottom of the table.

2.we install ansible using the following commands

The screenshot shows a web browser window with the URL docs.ansible.com/ansible/latest/installation_guide/installation_distros.html. The page is titled "Installing Ansible on specific distros". On the left, there's a sidebar with links like "Ansible Reference: Module Utilities", "Special Variables", and "ROADMAPS". The main content area has a heading "Ubuntu builds are available in a PPA here." and instructions to configure the PPA and run commands:

```
$ sudo apt update
$ sudo apt install software-properties-common
$ sudo add-apt-repository --yes --update ppa:ansible/ansible
$ sudo apt install ansible
```

A note below explains the difference between "software-properties-common" and "apt-get update".

Installing Ansible on Debian

Debian users can use the same source as the Ubuntu PPA (using the following table).

Debian		Ubuntu
Debian 11 (Bullseye)	->	Ubuntu 20.04 (Focal)
Debian 10 (Buster)	->	Ubuntu 18.04 (Bionic)

At the bottom, there's a search bar and system status information: 21°C Partly sunny, ENG, 07:25, 18-08-2023.

3.we generate the keys

The screenshot shows a terminal session on an AWS Lambda instance. The user is generating an RSA key pair:

```
No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-13-18:~$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:s49UHVr7TgTtRmfjsJRKZVlfCG8ugNVlY ubuntu@ip-172-31-13-18
The key's randomart image is:
+---[RSA 3072]---+
| +=%o=+=+|
| + **B+oo=|
| * .+=o.= |
| o +=+.o |
| S.o+o+. |
| + .o+ |
| o+ |
| .o+ |
+---[SHA256]---+
ubuntu@ip-172-31-13-18:~$
```

The user then switches to a CloudShell tab and lists their public IP addresses:

```
i-043a219b0c49e8cda (master)
PublicIPs: 54.183.89.108 PrivateIPs: 172.31.13.18
```

At the bottom, there's a CloudShell tab, a search bar, and system status information: 22°C Partly sunny, ENG, 07:30, 18-08-2023.

4.

The screenshot shows the AWS Management Console with the EC2 Instances page open. The left sidebar is collapsed, showing options like EC2 Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, and Images. The main content area displays a table of running instances:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
project-M	i-0388152f5563c0f8f	Running	t2.micro	Initializing	No alarms	us-west-1c
project-S1	i-086397ebc539ad10a	Running	t2.micro	Initializing	No alarms	us-west-1c
project-S2	i-047b4083816d96e8d	Running	t2.micro	Initializing	No alarms	us-west-1c

A modal window titled "Select an instance" is open at the bottom, listing the three instances: project-M, project-S1, and project-S2. The status bar at the bottom right shows the date as 20-08-2023 and the time as 07:10.

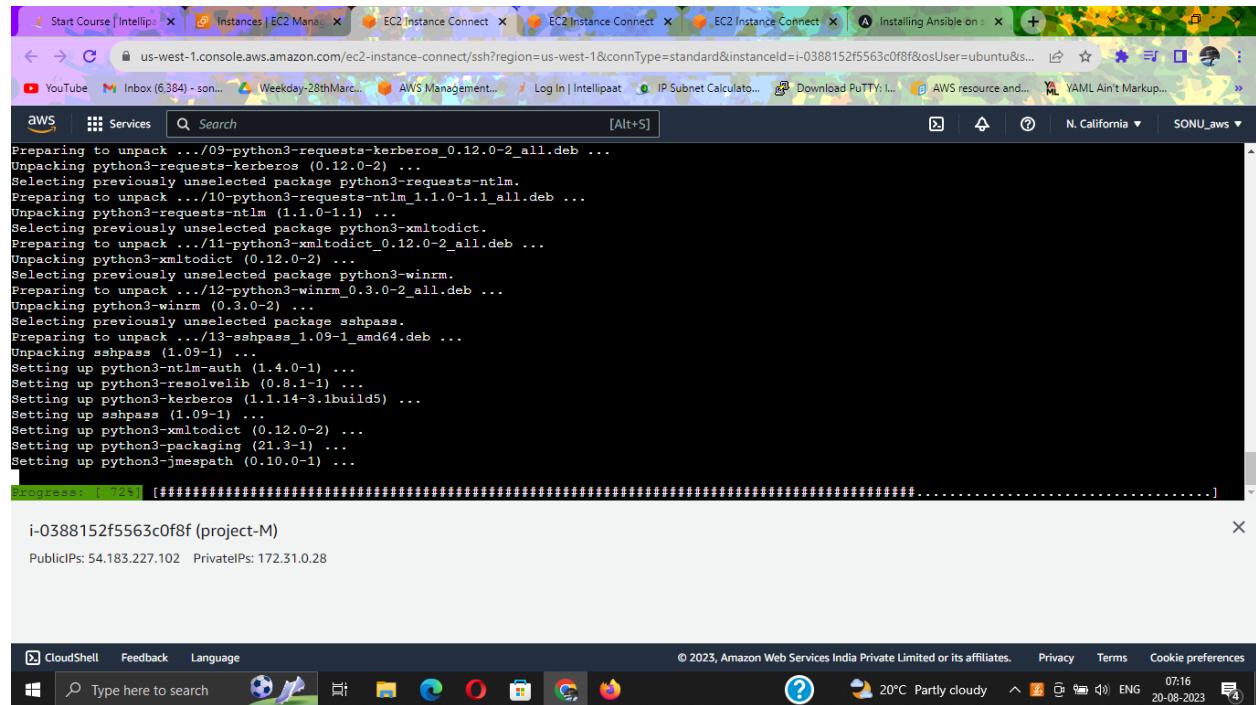
5.

The screenshot shows the Ansible documentation website. The left sidebar has sections for Documentation, Using Ansible, Contributing to Ansible, and Ansible Porting Guides. The main content area is titled "Installing Ansible on Ubuntu". It says "Ubuntu builds are available in a PPA here." and provides commands to configure the PPA and install Ansible:

```
$ sudo apt update  
$ sudo apt install software-properties-common  
$ sudo add-apt-repository --yes --update ppa:ansible/ansible  
$ sudo apt install ansible
```

A note section explains that on older Ubuntu distributions, "software-properties-common" is called "python-software-properties". It suggests using `apt-get update` instead of `apt update`. The status bar at the bottom right shows the date as 20-08-2023 and the time as 07:14.

6.

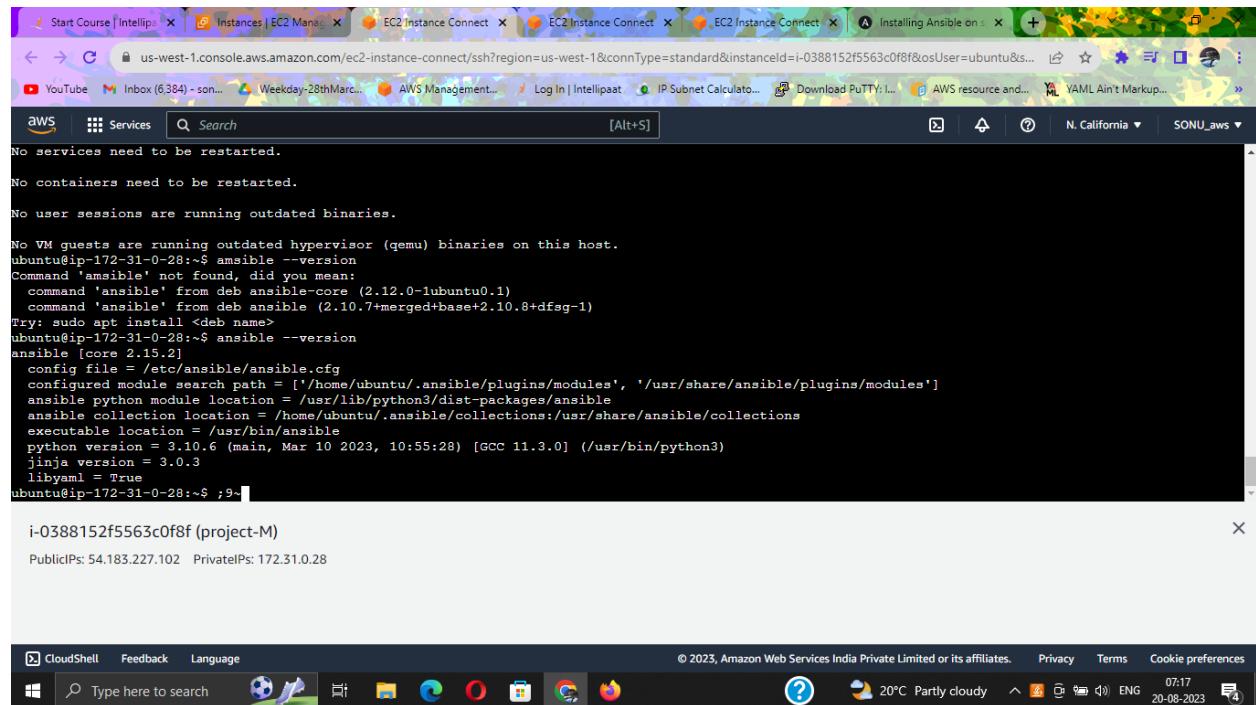


```
Preparing to unpack .../09-python3-requests-kerberos_0.12.0-2_all.deb ...
Unpacking python3-requests-kerberos (0.12.0-2) ...
Selecting previously unselected package python3-requests-ntlm.
Preparing to unpack .../10-python3-requests-ntlm_1.1.0-1.1_all.deb ...
Unpacking python3-requests-ntlm (1.1.0-1.1) ...
Selecting previously unselected package python3-xmltodict.
Preparing to unpack .../11-python3-xmltodict_0.12.0-2_all.deb ...
Unpacking python3-xmltodict (0.12.0-2) ...
Selecting previously unselected package python3-winrm.
Preparing to unpack .../12-python3-winrm_0.3.0-2_all.deb ...
Unpacking python3-winrm (0.3.0-2) ...
Selecting previously unselected package sshpass.
Preparing to unpack .../13-sshpass_1.09-1_amd64.deb ...
Unpacking sshpass (1.09-1) ...
Setting up python3-ntlm-auth (1.4.0-1) ...
Setting up python3-resolvealib (0.8.1-1) ...
Setting up python3-kerberos (1.1.14-3.1build5) ...
Setting up sshpass (1.09-1) ...
Setting up python3-xmltodict (0.12.0-2) ...
Setting up python3-packaging (21.3-1) ...
Setting up python3-mespath (0.10.0-1) ...

[Progress: [====] 72%]
```

i-0388152f5563c0f8f (project-M)
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28

7.

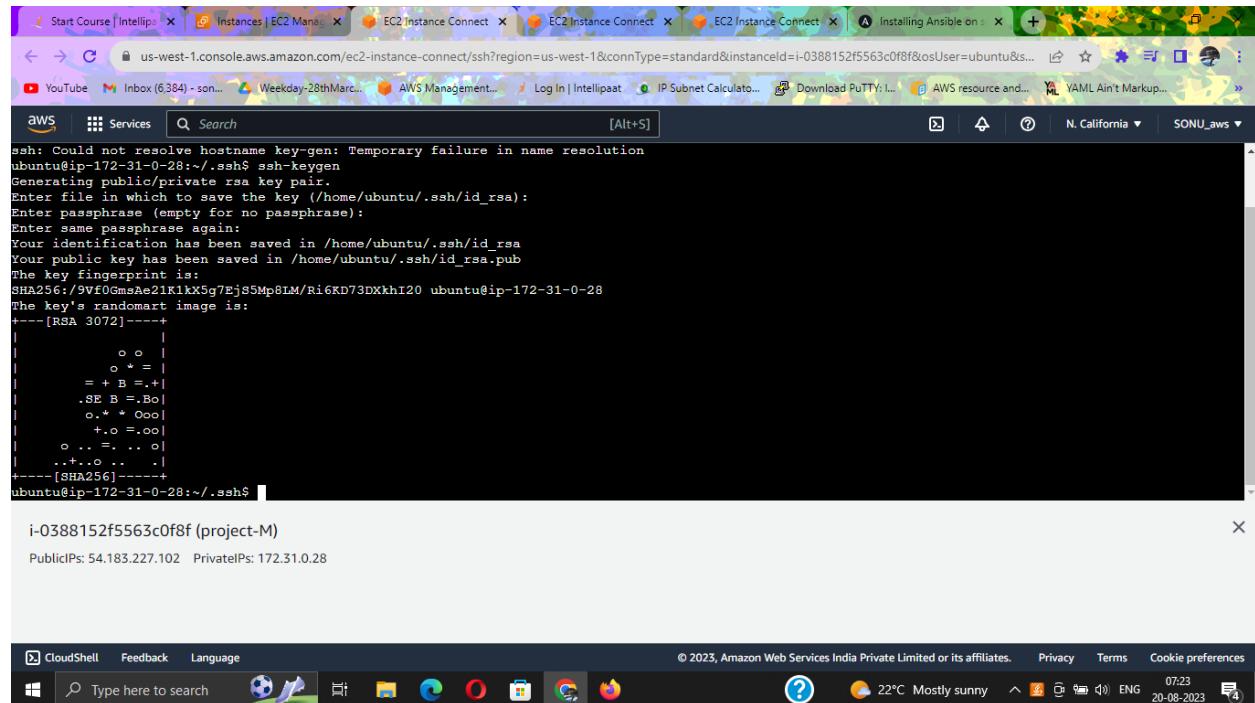


```
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-0-28:~$ ansible --version
Command 'ansible' not found, did you mean:
  command 'ansible' from deb ansible-core (2.12.0-1ubuntu0.1)
  command 'ansible' from deb ansible (2.10.7+merged+base+2.10.8+dfsg-1)
Try: sudo apt install <deb name>
ubuntu@ip-172-31-0-28:~$ ansible --version
ansible [core 2.15.2]
  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 = 3.10.6 (main, Mar 10 2023, 10:55:28) [GCC 11.3.0] (/usr/bin/python3)
  jinja version = 3.0.3
  libyaml = True
ubuntu@ip-172-31-0-28:~$ ;9~
```

i-0388152f5563c0f8f (project-M)
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28

8.



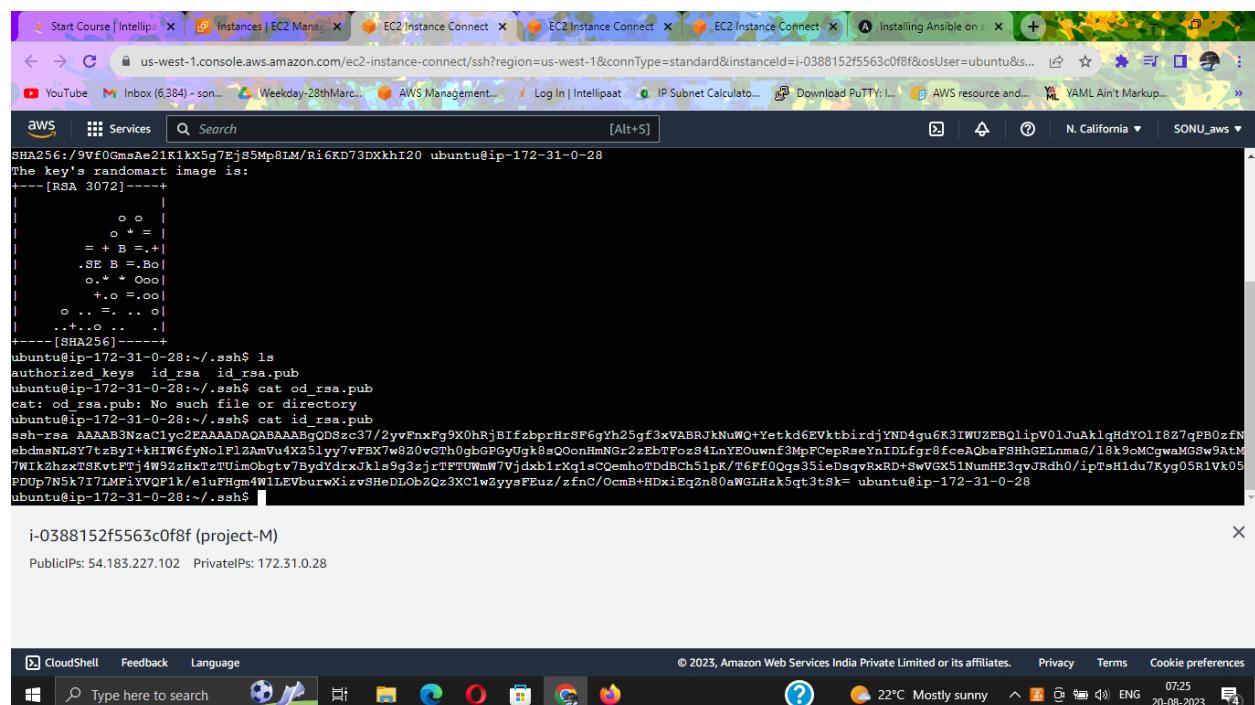
```
ssh: Could not resolve hostname key-gen: Temporary failure in name resolution
ubuntu@ip-172-31-0-28:~/.ssh$ ssh-keygen
Generating public/private rsa key pair.
Enter file in which to save the key (/home/ubuntu/.ssh/id_rsa):
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/ubuntu/.ssh/id_rsa
Your public key has been saved in /home/ubuntu/.ssh/id_rsa.pub
The key fingerprint is:
SHA256:/9Vf0GmsAe21K1kX5g7Ej85Mp8LM/Ri6KD73DXkhI20 ubuntu@ip-172-31-0-28
The key's randomart image is:
+---[RSA 3072]---+
|          |
|          |
|          |
|          |
|          |
|          |
|          |
|          |
|          |
+---[SHA256]---+
ubuntu@ip-172-31-0-28:~/.ssh$
```

i-0388152f5563c0f8f (project-M)

PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28

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9. we cat the public key



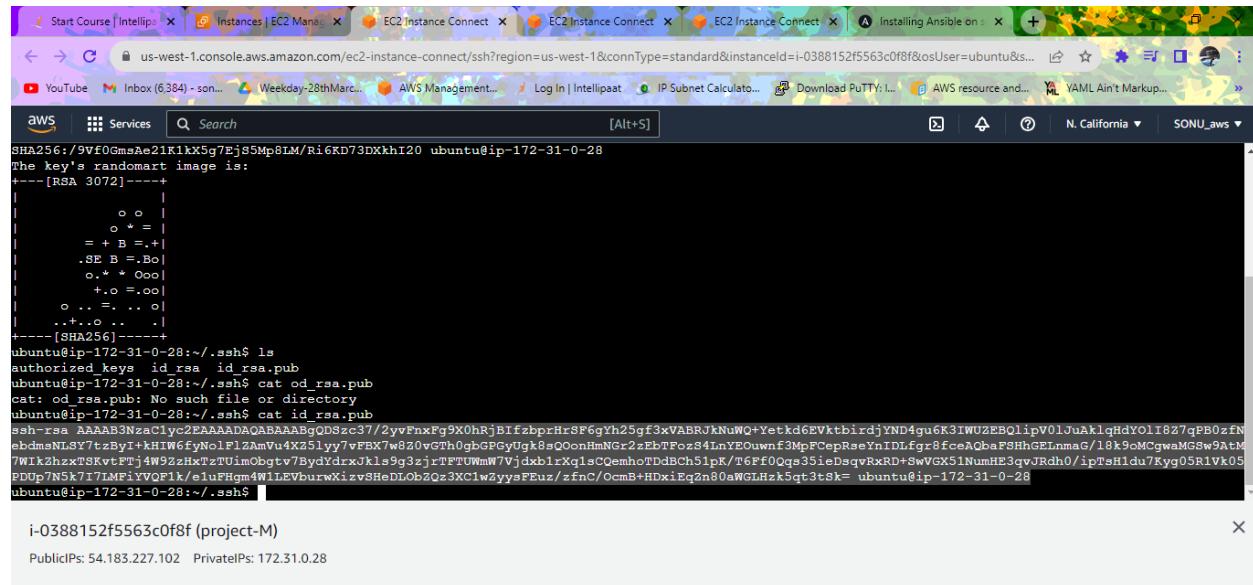
```
SHA256:/9Vf0GmsAe21K1kX5g7Ej85Mp8LM/Ri6KD73DXkhI20 ubuntu@ip-172-31-0-28
The key's randomart image is:
+---[RSA 3072]---+
|          |
|          |
|          |
|          |
|          |
|          |
|          |
|          |
|          |
+---[SHA256]---+
ubuntu@ip-172-31-0-28:~/.ssh$ ls
authorized_keys  id_rsa  id_rsa.pub
ubuntu@ip-172-31-0-28:~/.ssh$ cat od_rsa.pub
cat: od_rsa.pub: No such file or directory
ubuntu@ip-172-31-0-28:~/.ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAQABgQDSzc37/2yvFnxFg9X0hRjBYfzbprHrSF6gYh25gf3xVABRjkNuW0tYetkdGEVktbirdjYND4guK3IWU2EBolipV01JuAklqHdY01I8Z7qPB0zfn
ebdmaNLsV7tzByI+kHtW6fyNolFlZamVu4Xz5lyy7FBX7w830vcTh0gbGGyUgk8eoOonfmNgC2zEbTPozS4InYEouwnF3MpfCepRseYnIDLfgr8fceAqbaFSHhGELnmaG/18k9oMCgwMaMG9w9atM
7WIkhzxTSKvtFTj4W9ZzhTzTuimObgtv7BydYdrxJkl9g3zjrTFTUwmW7VjdxblrxQqlsCQemhoTddBCh51pk/T6Pf0Qgs35ieDsqvRxRd+SvVGx51NumHE3qvJRdh0/ipTsHidu7kyg05R1Vk05
PDOp7N5k7iTlMfiyVGQlk/eiuFhgm4WlEVburwXizvSHeDlobZQz3Xc1w2yyzFuuz/zfnC/OcmB+HDxiEqZn80aWgLhzk5qt3tsk= ubuntu@ip-172-31-0-28:~/.ssh$
```

i-0388152f5563c0f8f (project-M)

PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28

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10. we copy all to paste in all ours slaves



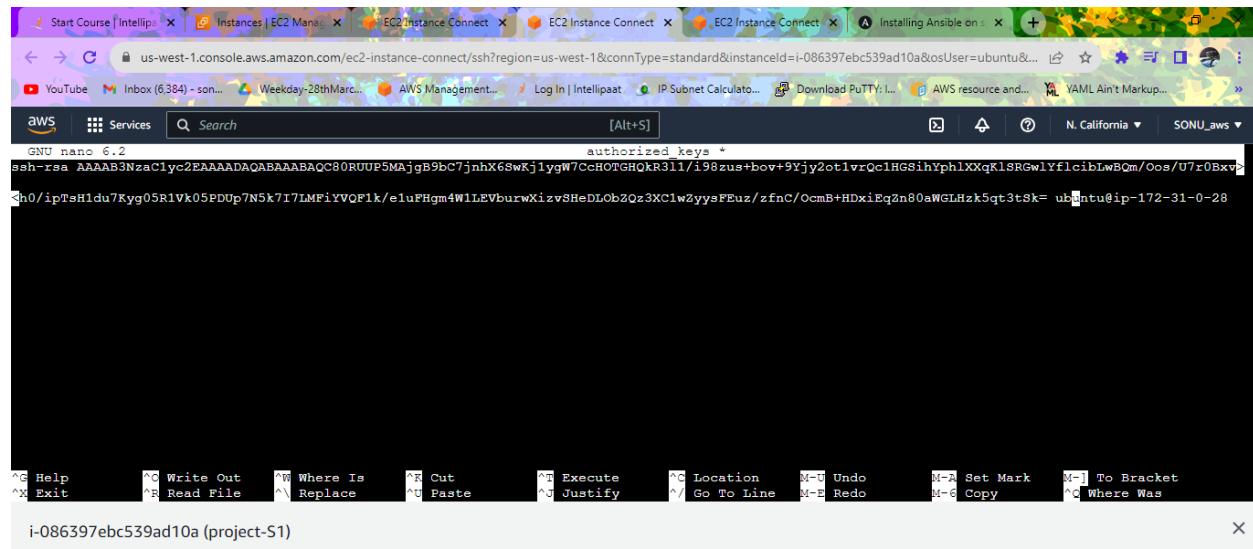
```
SHA256:/9Vf0GmsAe21K1kX5g7EjSSMp8LM/Ri6KD73DXkhI20 ubuntu@ip-172-31-0-28
The key's randomart image is:
+---[RSA 3072]---+
|          |
|          |
|          |
|          |
|          |
|          |
|          |
|          |
|          |
+---[SHA256]---+
ubuntu@ip-172-31-0-28:~/.ssh$ ls
authorized_keys  id_rsa  id_rsa.pub
ubuntu@ip-172-31-0-28:~/.ssh$ cat od_rsa.pub
cat: od_rsa.pub: No such file or directory
ubuntu@ip-172-31-0-28:~/.ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQ8C80RUUP5MAjgb9bc7jnhX6Swkj1ygW7CnHOTGHQkR311/i98zus+b0v+9yjy2ct1vrQc1HGSihYphlXXqk1SRGw1YflcibLwBQm/Oos/U7r0Bxv
ebdmnLSY7tzByI+kHtW6fyNolF1ZamJu4Xz5lyy7cFBX7w820vGTh0gbGPgyUjk8sQQonHmNGr2zEbTfozS4LnIEOuwnf3MpfCeprseYnIDLfgf8fceAQbaPSHhGELmaG/18k9oMcGwaMGSw9ltM
7W1kzhzxT8KvtF7j4W92zHxTzTUimobgtvBydydrxJkl9g3zjTFTQwmW7jdxblrxqisCQemhoTDbDBCh51pk/T6Ff0Qqs35iebsqvRxRD+SvVGX51nuHE3qvJrdh0/iptsH1du7kyg05R1v05
PDUp7N5k7iT7IMFiyVQF1k/e1uPHgm4W1LEVburwXizvSHeDLoBZQz3XC1w2yyssPEuz/zfnC/OcmB+HDxiEq2n80aWGLhzk5qt3tsk= ubuntu@ip-172-31-0-28
ubuntu@ip-172-31-0-28:~/.ssh$
```

i-0388152f5563c0f8f (project-M)

PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28



11.



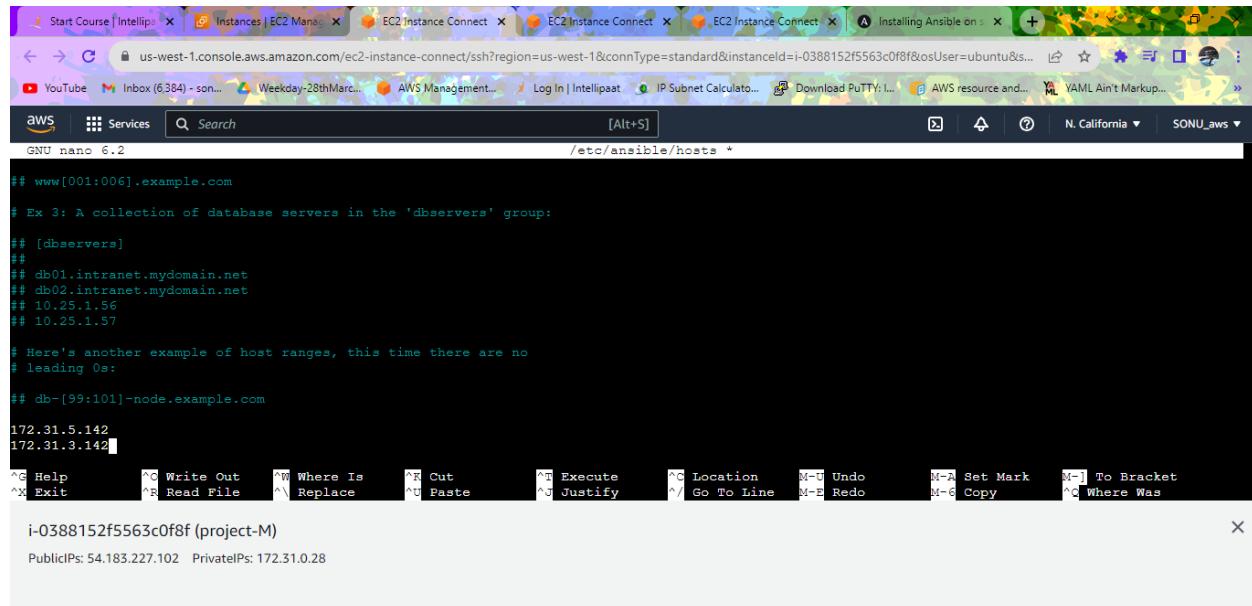
```
GNU nano 6.2
authorized_keys +
ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQ8C80RUUP5MAjgb9bc7jnhX6Swkj1ygW7CnHOTGHQkR311/i98zus+b0v+9yjy2ct1vrQc1HGSihYphlXXqk1SRGw1YflcibLwBQm/Oos/U7r0Bxv
ebdmnLSY7tzByI+kHtW6fyNolF1ZamJu4Xz5lyy7cFBX7w820vGTh0gbGPgyUjk8sQQonHmNGr2zEbTfozS4LnIEOuwnf3MpfCeprseYnIDLfgf8fceAQbaPSHhGELmaG/18k9oMcGwaMGSw9ltM
7W1kzhzxT8KvtF7j4W92zHxTzTUimobgtvBydydrxJkl9g3zjTFTQwmW7jdxblrxqisCQemhoTDbDBCh51pk/T6Ff0Qqs35iebsqvRxRD+SvVGX51nuHE3qvJrdh0/iptsH1du7kyg05R1v05
PDUp7N5k7iT7IMFiyVQF1k/e1uPHgm4W1LEVburwXizvSHeDLoBZQz3XC1w2yyssPEuz/zfnC/OcmB+HDxiEq2n80aWGLhzk5qt3tsk= ubuntu@ip-172-31-0-28
ubuntu@ip-172-31-0-28:~/.ssh$
```

i-086397ebc539ad10a (project-S1)

PublicIPs: 54.183.12.101 PrivateIPs: 172.31.5.142



12. we also paste all slaves private ip

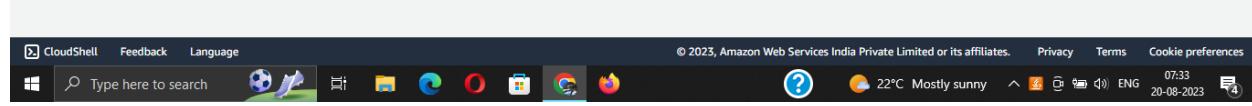


```
## www[001:006].example.com
# Ex 3: A collection of database servers in the 'dbservers' group:
## [dbservers]
## db01.intranet.mydomain.net
## db02.intranet.mydomain.net
## 10.25.1.56
## 10.25.1.57

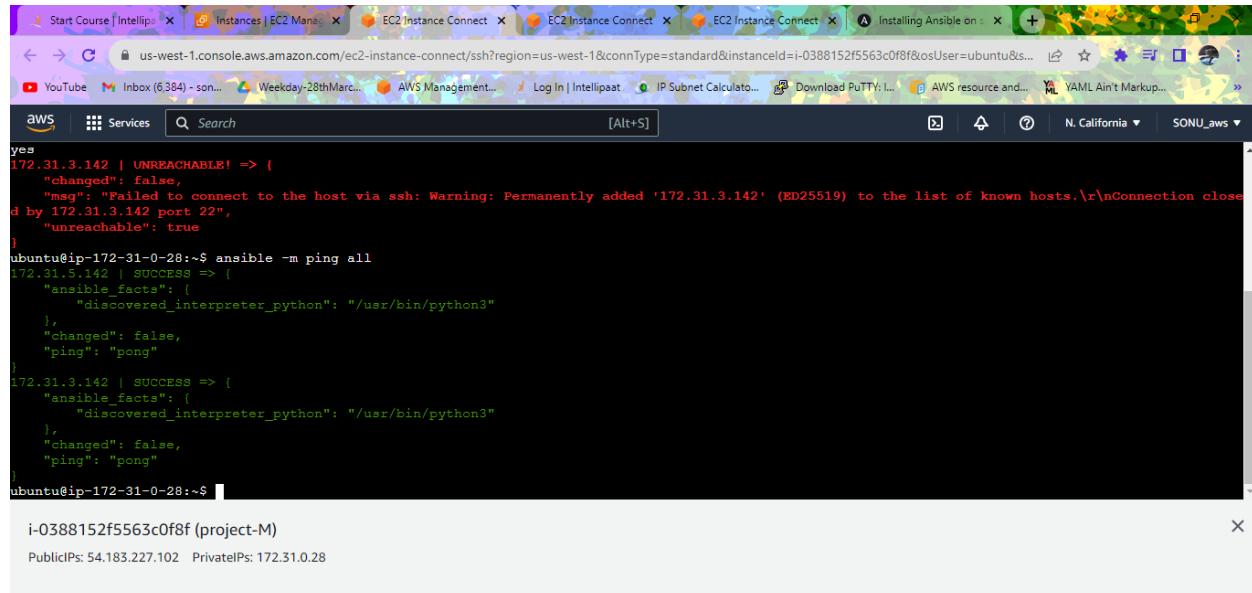
# Here's another example of host ranges, this time there are no
# leading 0s:
## db-[99:101]-node.example.com
172.31.5.142
172.31.3.142

^G Help      ^C Write Out    ^W Where Is      ^R Cut          ^T Execute      ^C Location     M-U Undo      M-A Set Mark    M-] To Bracket
^X Exit      ^F Read File   ^V Replace       ^U Paste        ^I Justify      ^Y Go To Line   M-E Redo      M-G Copy       ^Q Where Was
```

i-0388152f5563c0f8f (project-M)
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28



13 we ping to our slaves and all are responding



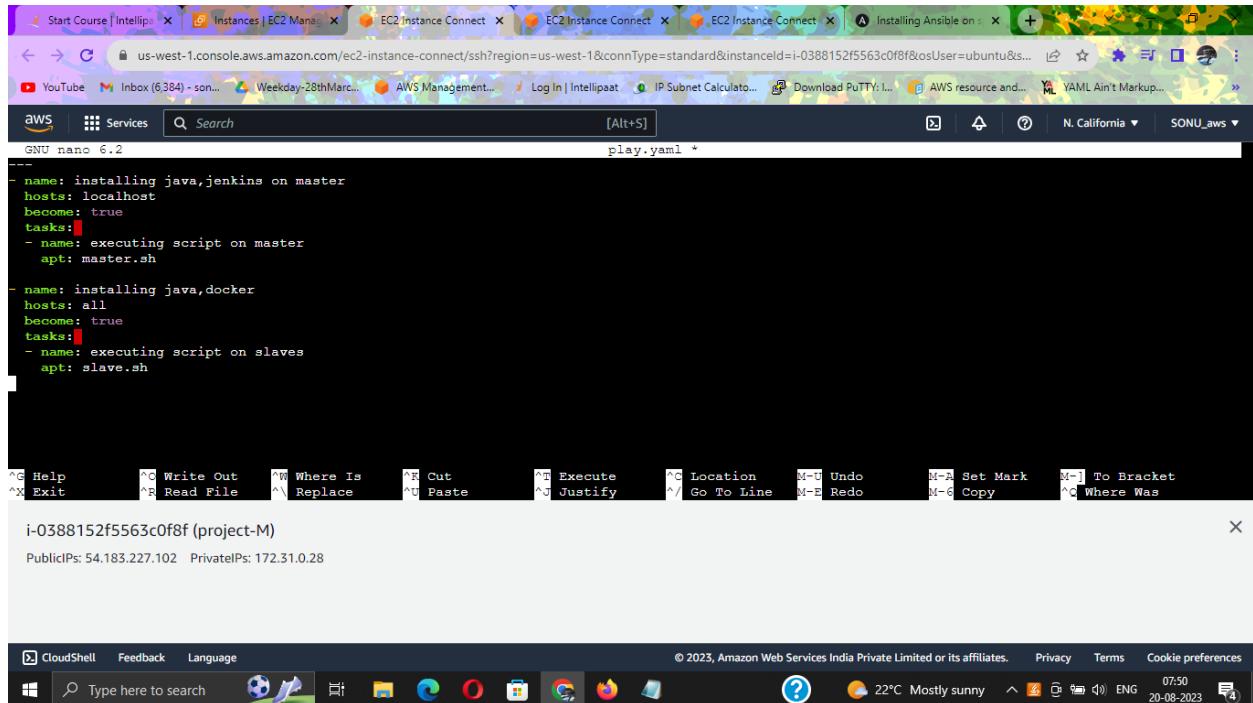
```
yes
172.31.3.142 | UNREACHABLE! => {
    "changed": false,
    "msg": "Failed to connect to the host via ssh: Warning: Permanently added '172.31.3.142' (ED25519) to the list of known hosts.\r\nConnection closed by 172.31.3.142 port 22",
    "unreachable": true
}
ubuntu@ip-172-31-0-28:~$ ansible -m ping all
172.31.5.142 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}
172.31.3.142 | SUCCESS => {
    "ansible_facts": {
        "discovered_interpreter_python": "/usr/bin/python3"
    },
    "changed": false,
    "ping": "pong"
}

ubuntu@ip-172-31-0-28:~$
```

i-0388152f5563c0f8f (project-M)
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28

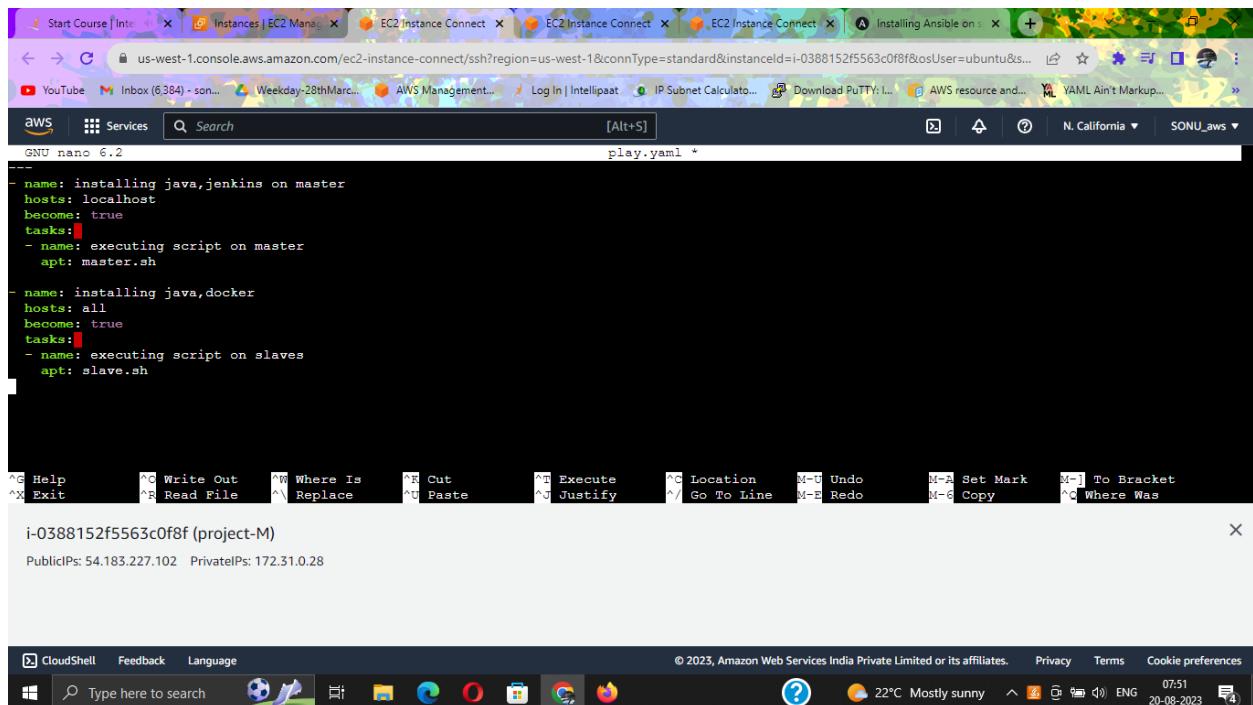


14 we create playbook code for installing packages on our slaves and our master machine



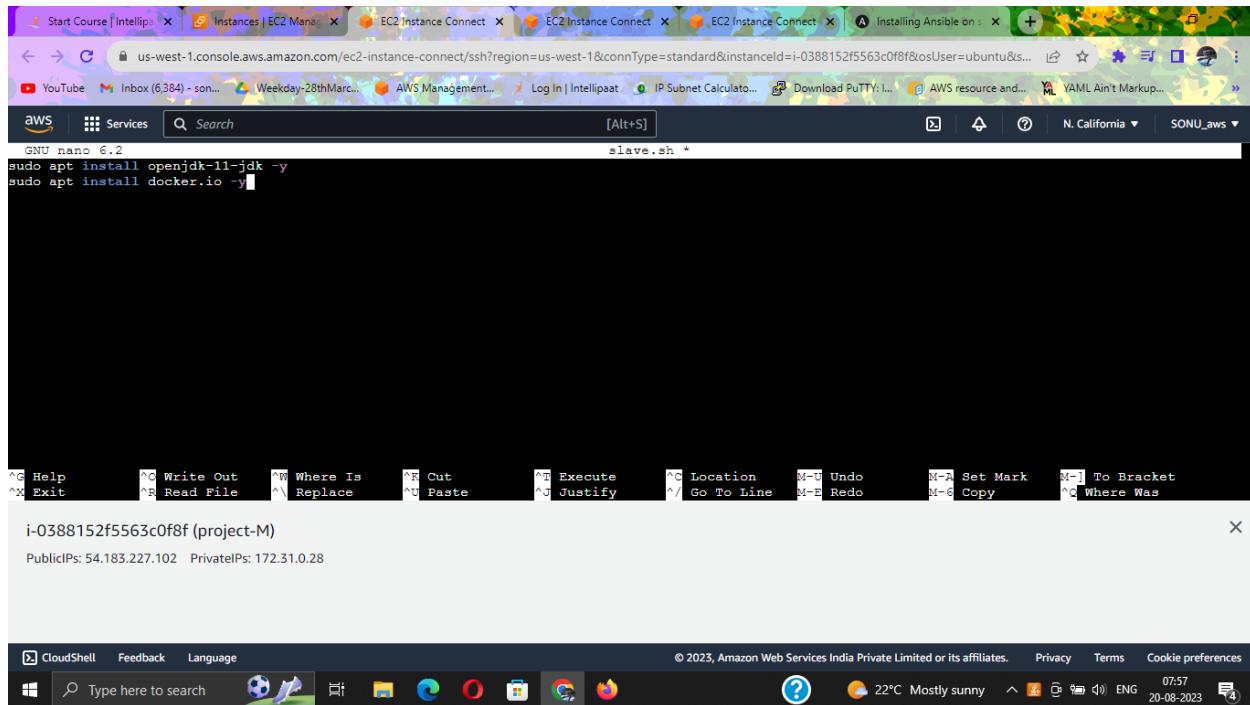
```
Start Course | IntelliJ IDEA Instances | EC2 Manager EC2 Instance Connect EC2 Instance Connect EC2 Instance Connect A Installing Ansible on AWS Services Search [Alt+S] play.yaml *  
GNU nano 6.2  
---  
- name: installing java,jenkins on master  
  hosts: localhost  
  become: true  
  tasks:  
    - name: executing script on master  
      apt: master.sh  
  
- name: installing java,docker  
  hosts: all  
  become: true  
  tasks:  
    - name: executing script on slaves  
      apt: slave.sh  
  
i-0388152f5563c0f8f (project-M)  
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28  
  
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```

15



```
Start Course | IntelliJ IDEA Instances | EC2 Manager EC2 Instance Connect EC2 Instance Connect EC2 Instance Connect A Installing Ansible on AWS Services Search [Alt+S] play.yaml *  
GNU nano 6.2  
---  
- name: installing java,jenkins on master  
  hosts: localhost  
  become: true  
  tasks:  
    - name: executing script on master  
      apt: master.sh  
  
- name: installing java,docker  
  hosts: all  
  become: true  
  tasks:  
    - name: executing script on slaves  
      apt: slave.sh  
  
i-0388152f5563c0f8f (project-M)  
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28  
  
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```

16 now we write our scripts files

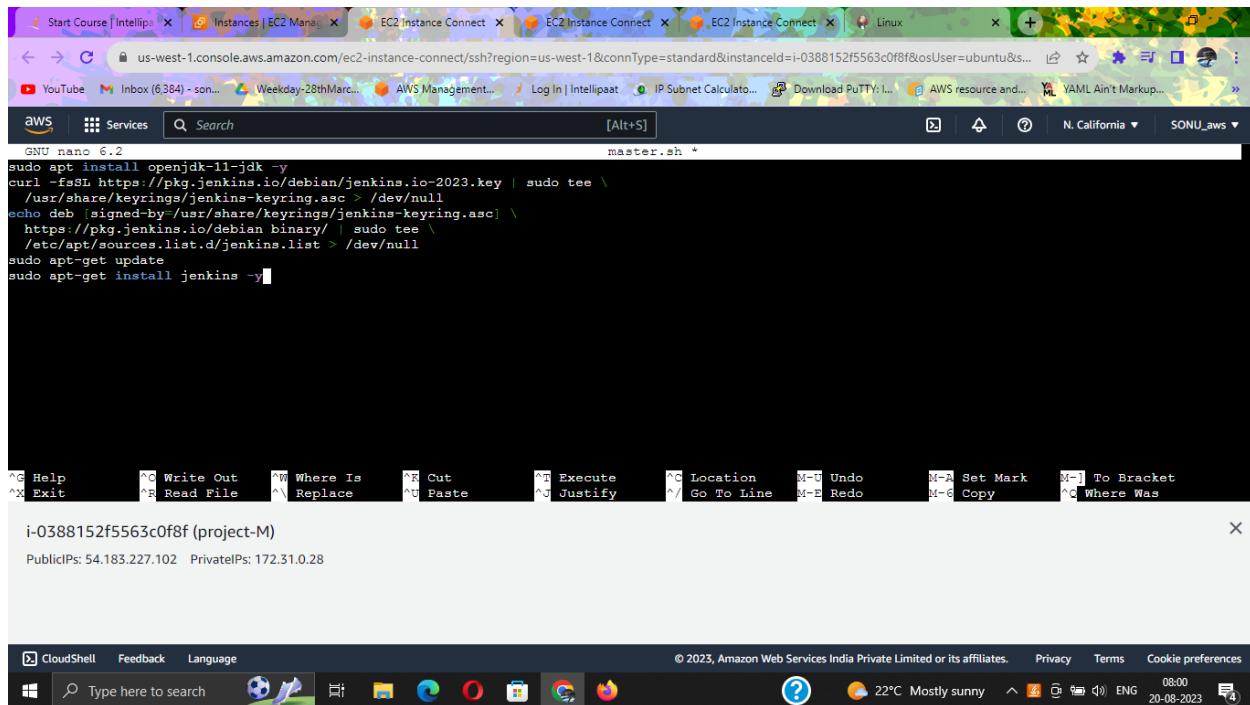


```
GNU nano 6.2 slave.sh *
sudo apt install openjdk-11-jdk -y
sudo apt install docker.io -y

^G Help      ^Q Write Out    ^W Where Is      ^R Cut          ^T Execute      ^C Location     M-U Undo      M-A Set Mark    M-[ To Bracket
^X Exit      ^F Read File   ^V Replace       ^U Paste        ^I Justify      ^Y Go To Line   M-E Redo      M-G Copy       ^C Where Was
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28
```

The screenshot shows a terminal window titled 'slave.sh *'. It contains two commands: 'sudo apt install openjdk-11-jdk -y' and 'sudo apt install docker.io -y'. The terminal is running on an AWS instance with PublicIPs: 54.183.227.102 and PrivateIPs: 172.31.0.28. The bottom status bar shows the AWS CloudShell interface.

17 this is for script 2



```
GNU nano 6.2 master.sh *
sudo apt install openjdk-11-jdk -y
curl -fsSL https://pkg.jenkins.io/debian/jenkins.io-2023.key | sudo tee \
/usr/share/keyrings/jenkins-keyring.asc > /dev/null
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

^G Help      ^Q Write Out    ^W Where Is      ^R Cut          ^T Execute      ^C Location     M-U Undo      M-A Set Mark    M-[ To Bracket
^X Exit      ^F Read File   ^V Replace       ^U Paste        ^I Justify      ^Y Go To Line   M-E Redo      M-G Copy       ^C Where Was
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28
```

The screenshot shows a terminal window titled 'master.sh *'. It contains a series of commands to install Jenkins. The commands include curling the Jenkins GPG key, updating the sources list, and installing Jenkins. The terminal is running on an AWS instance with PublicIPs: 54.183.227.102 and PrivateIPs: 172.31.0.28. The bottom status bar shows the AWS CloudShell interface.

18

```
Connection Options:
control as whom and how to connect to hosts

--private-key PRIVATE_KEY_FILE, --key-file PRIVATE_KEY_FILE
    use this file to authenticate the connection
--scp-extra-args SCP_EXTRA_ARGS
    specify extra arguments to pass to scp only (e.g. -l)
--sftp-extra-args SFTP_EXTRA_ARGS
    specify extra arguments to pass to sftp only (e.g. -f, -l)
--ssh-common-args SSH_COMMON_ARGS
    specify common arguments to pass to sftp/scp/ssh (e.g. ProxyCommand)
--ssh-extra-args SSH_EXTRA_ARGS
    specify extra arguments to pass to ssh only (e.g. -R)
-T TIMEOUT, --timeout TIMEOUT
    override the connection timeout in seconds (default=10)
-c CONNECTION, --connection CONNECTION
    connection type to use (default=smart)
-u REMOTE_USER, --user REMOTE_USER
    connect as this user (default=None)

Some actions do not make sense in Ad-Hoc (include, meta, etc)
```

i-0388152f5563c0f8f (project-M)
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28

19 we verify our code

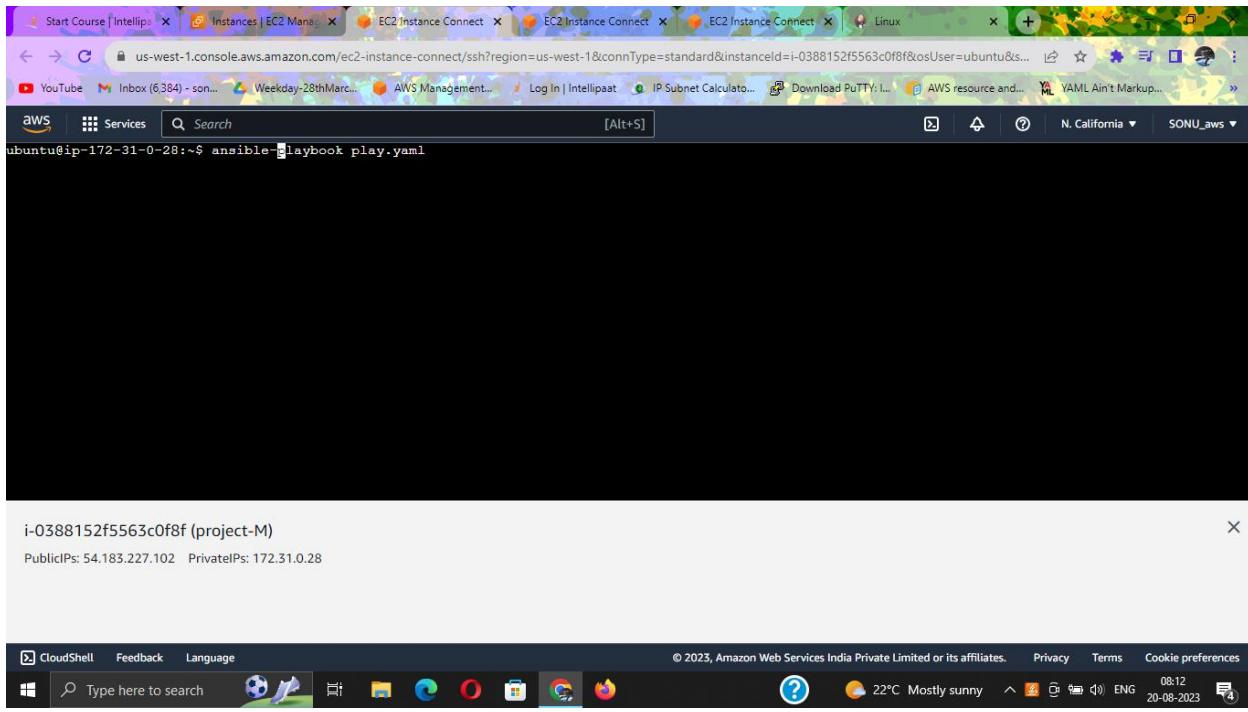
```
GNU nano 6.2
play.yaml *
```

```
---
- name: installing java,jenkins on master
  hosts: localhost
  become: true
  tasks:
    - name: executing script on master
      script: master.sh

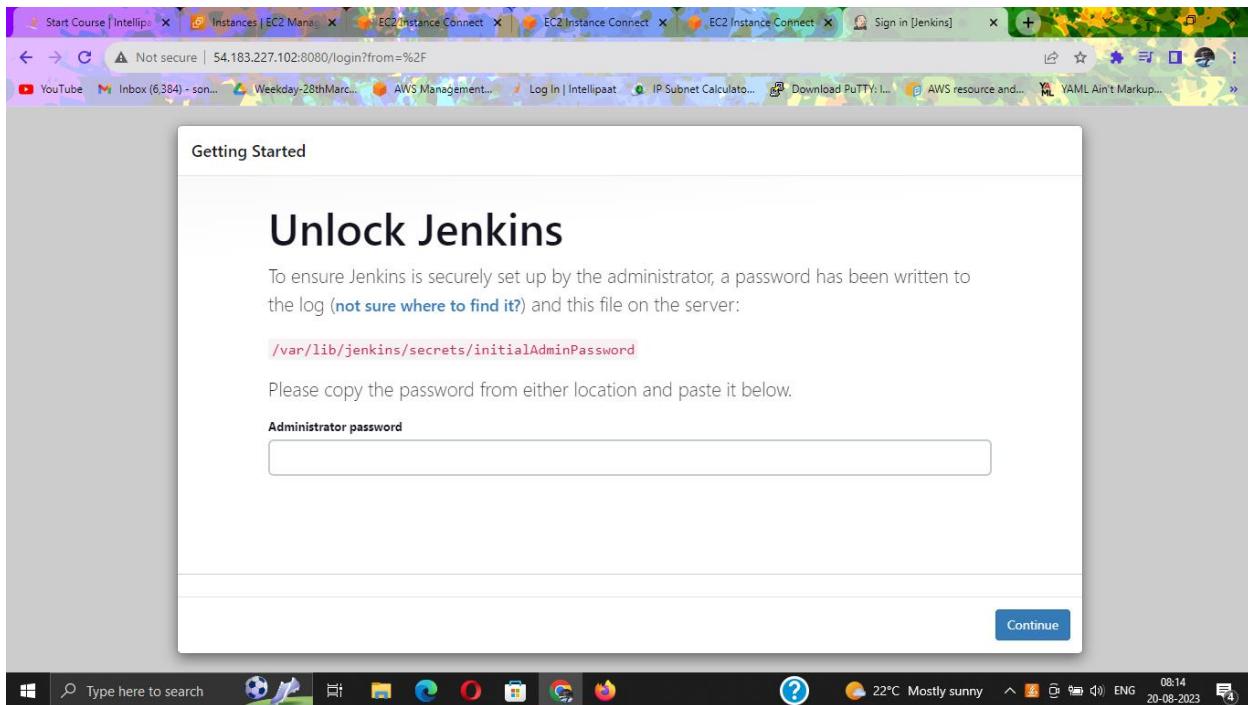
- name: installing java,docker
  hosts: all
  become: true
  tasks:
    - name: executing script on slaves
      script: slave.sh
```

i-0388152f5563c0f8f (project-M)
PublicIPs: 54.183.227.102 PrivateIPs: 172.31.0.28

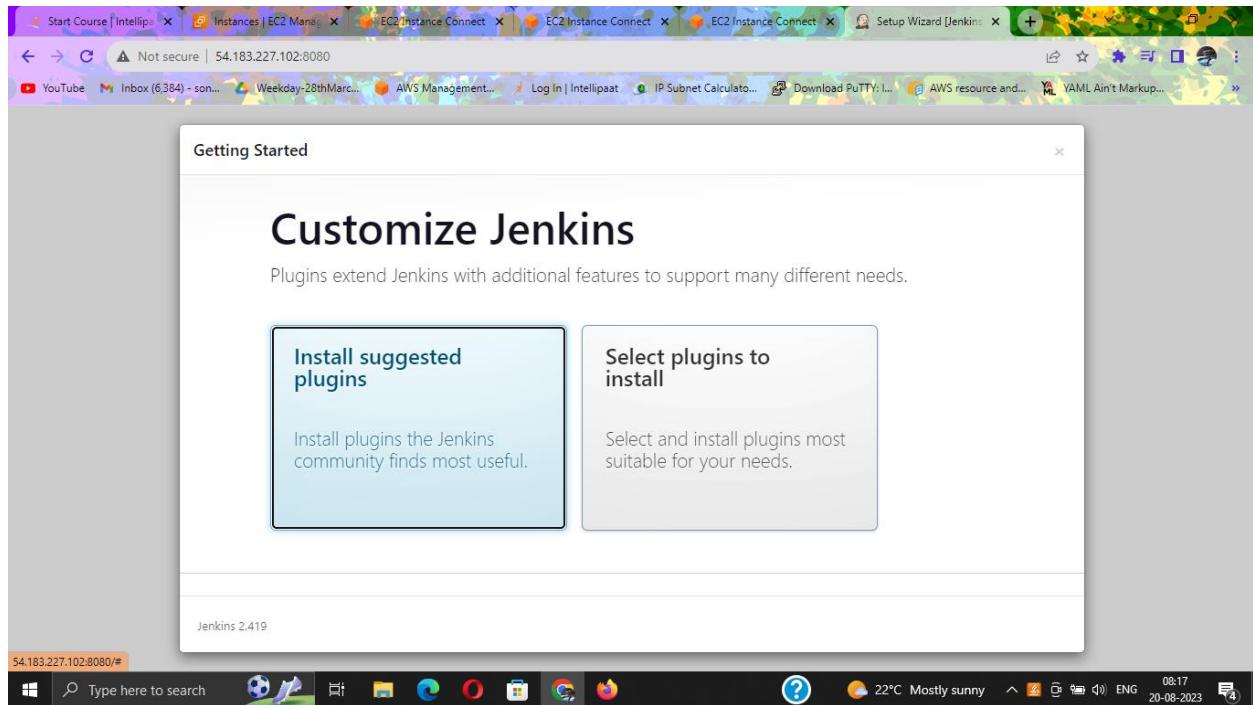
20 we execute our code



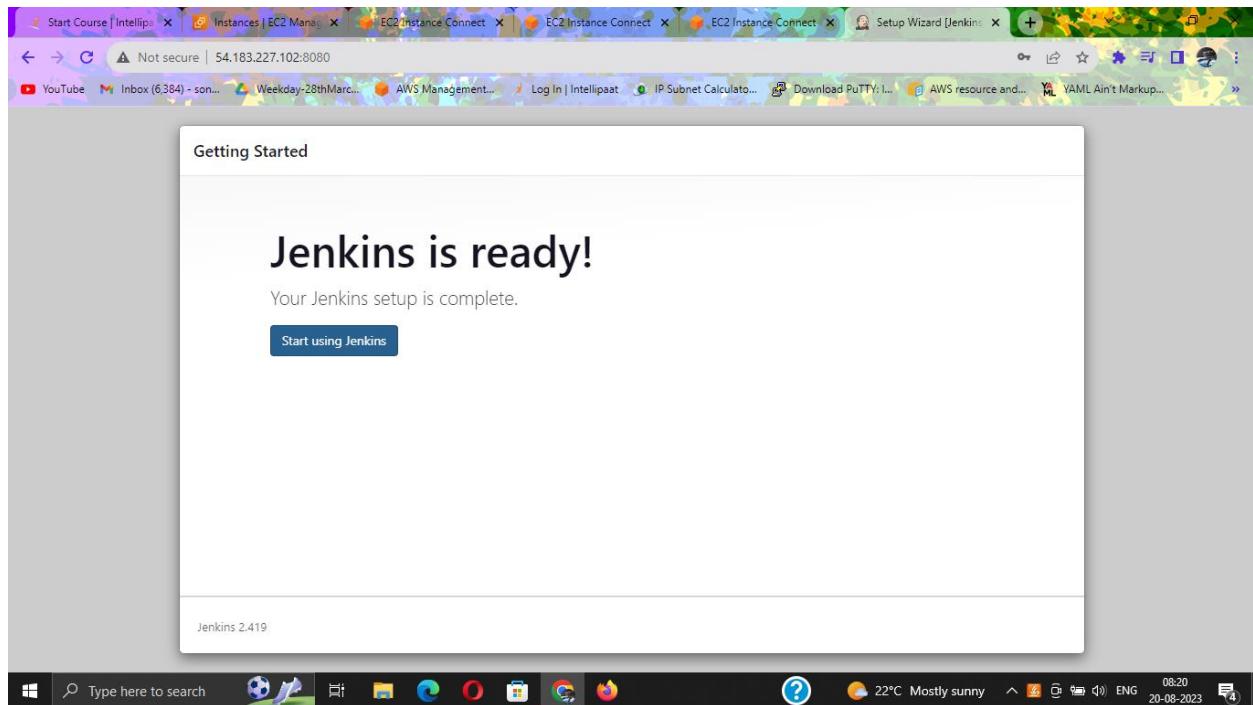
21 our Jenkins is installed in our master



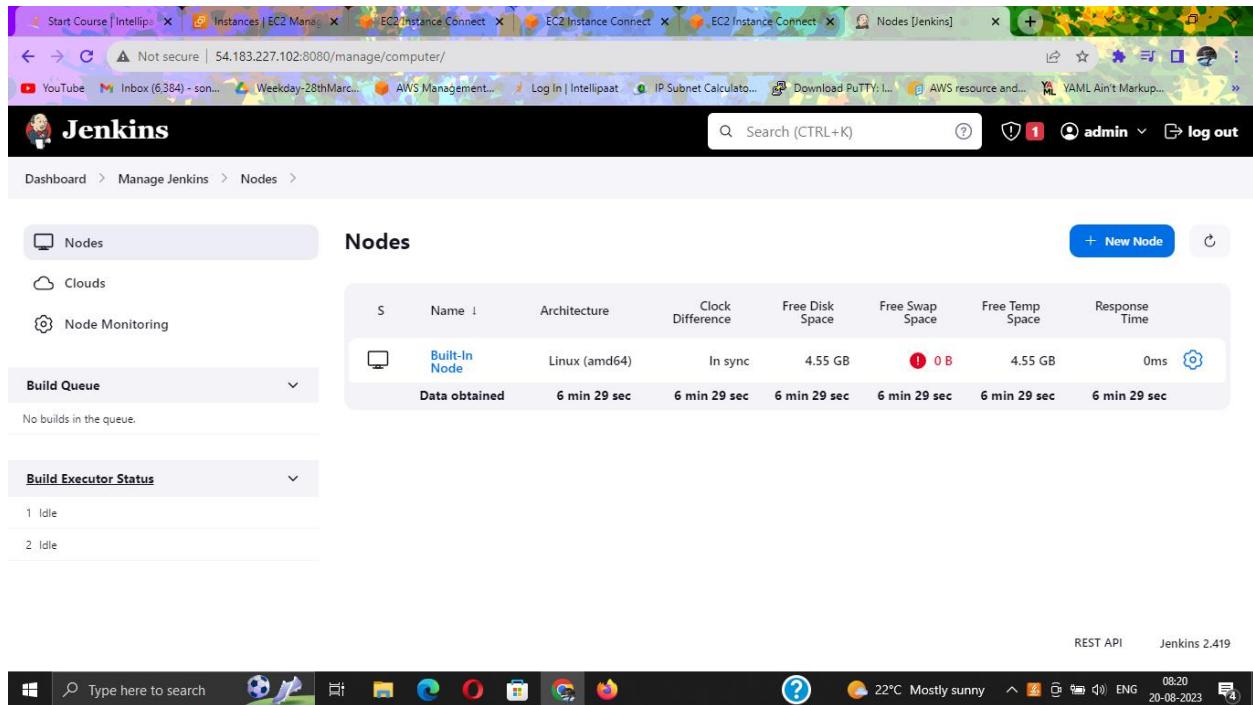
22



23



24 we make 2 slave nodes



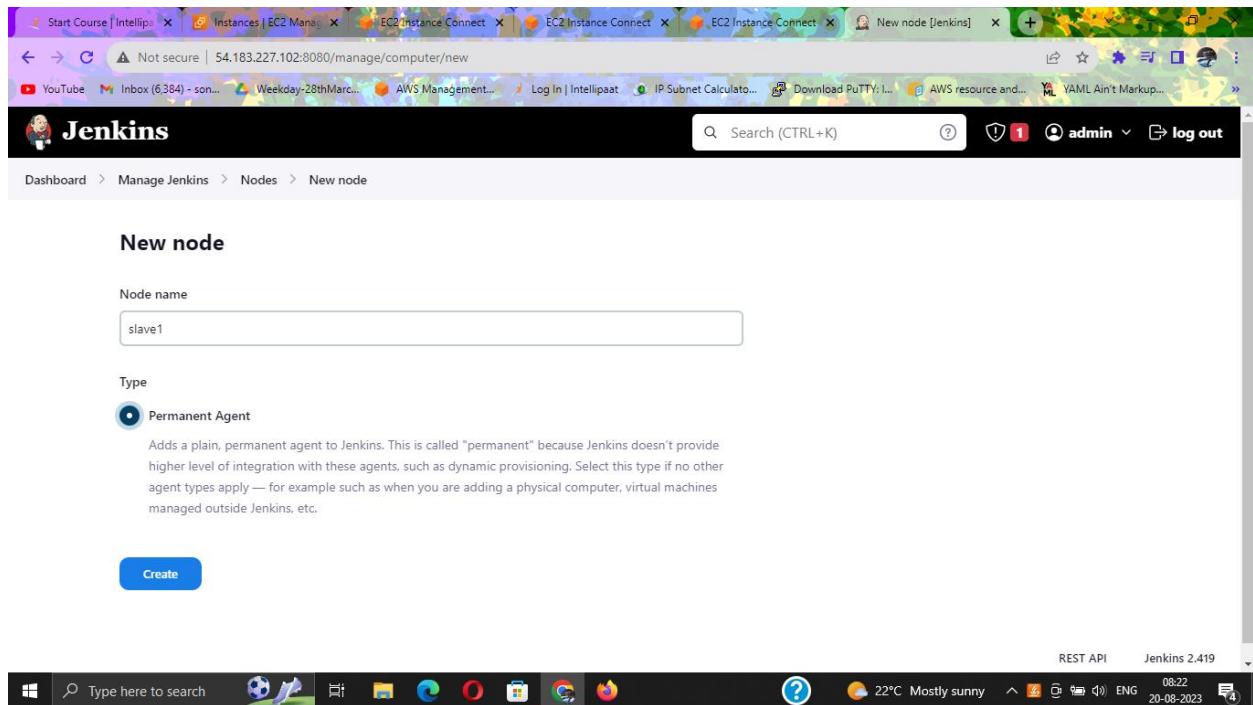
The screenshot shows the Jenkins interface for managing nodes. On the left, there's a sidebar with 'Nodes' selected. The main area is titled 'Nodes' and displays a table with one row:

S	Name ↓	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
1	Built-In Node	Linux (amd64)	In sync	4.55 GB	0 B	4.55 GB	0ms

Below the table, it says 'Data obtained' and shows various metrics: 6 min 29 sec, and 6 min 29 sec.

At the bottom right, it says 'REST API Jenkins 2.419'.

25



The screenshot shows the Jenkins interface for creating a new node. The title is 'New node'. It has two main sections: 'Node name' and 'Type'.

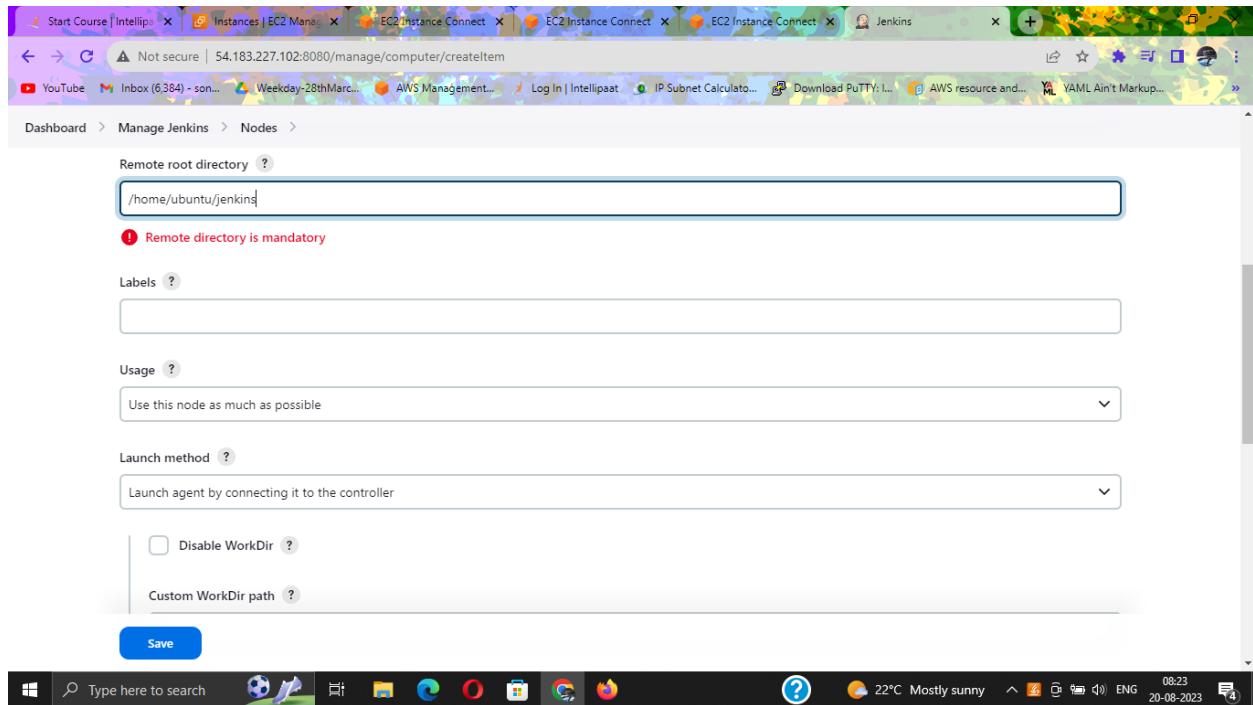
Node name: A text input field containing 'slave1'.

Type: A radio button labeled 'Permanent Agent' is selected. Below it, a description reads: '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.'

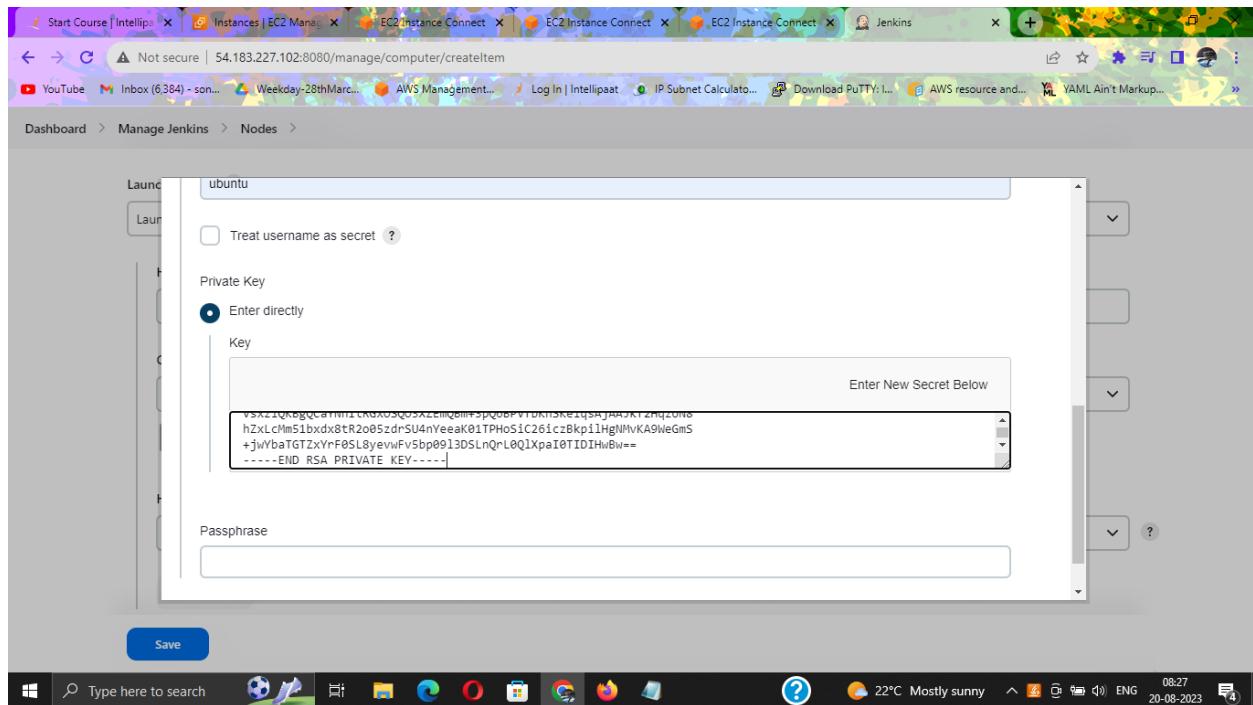
A blue 'Create' button is at the bottom.

At the bottom right, it says 'REST API Jenkins 2.419'.

26



27



28

Host Key Verification Strategy ?
Non verifying Verification Strategy

Availability ?
Keep this agent online as much as possible

Node Properties

Disable deferred wipeout on this node ?
 Environment variables
 Tool Locations

Save

29 node 1 is done similarly we do node 2

Nodes

Clouds

Node Monitoring

Build Queue

Build Executor Status

Built-In Node

slave1

S	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
1	Built-in Node	Linux (amd64)	In sync	4.38 GB	0 B	4.38 GB	0ms
2	slave1	Linux (amd64)	In sync	5.06 GB	0 B	5.06 GB	31ms

Data obtained 0.42 sec 0.42 sec 0.42 sec 0.42 sec 0.41 sec

54.183.227.102:8080/manage/computer/new

30

The screenshot shows the Jenkins interface with the 'Nodes' page selected. There are two main sections: 'Build Queue' and 'Build Executor Status'. Under 'Build Queue', it says 'No builds in the queue.' Under 'Build Executor Status', there are two entries: 'slave1' and 'slave2', both listed as 'idle'. On the right, the 'Nodes' table lists the following data:

S	Name	Architecture	Clock Difference	Free Disk Space	Free Swap Space	Free Temp Space	Response Time
1	Built-In Node	Linux (amd64)	In sync	4.38 GB	0 B	4.38 GB	0ms
2	slave1	Linux (amd64)	In sync	5.06 GB	0 B	5.06 GB	3ms
3	slave2	Linux (amd64)	In sync	5.06 GB	0 B	5.06 GB	32ms
	Data obtained	0.25 sec	0.25 sec	0.25 sec	0.25 sec	0.25 sec	0.25 sec

31

The screenshot shows an AWS CloudShell session. The terminal output displays system information and security update details:

```
System information as of Sun Aug 20 03:05:10 UTC 2023
System load: 0.02392578125  Processes: 101
Usage of /: 33.0% of 7.57GB  Users logged in: 0
Memory usage: 37%  IPv4 address for docker0: 172.17.0.1
Swap usage: 0%  IPv4 address for eth0: 172.31.3.142

Expanded Security Maintenance for Applications is not enabled.
115 updates can be applied immediately.
64 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

Last login: Sun Aug 20 02:44:12 2023 from 172.31.0.28
ubuntu@ip-172-31-3-142:~$ ls
jenkins
ubuntu@ip-172-31-3-142:~$ 
```

At the bottom, it shows the user's name (i-047b4083816d96e8d), public and private IP addresses, and the AWS region (N. California).

32

```
Usage of /: 33.0% of 7.57GB  Users logged in: 0
Memory usage: 36%          IPv4 address for docker0: 172.17.0.1
Swap usage: 0%             IPv4 address for eth0: 172.31.5.142

* Ubuntu Pro delivers the most comprehensive open source security and
  compliance features.

  https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

114 updates can be applied immediately.
64 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

Last login: Sun Aug 20 02:44:12 2023 from 172.31.0.28
ubuntu@ip-172-31-5-142:~$ ls
jenkins
ubuntu@ip-172-31-5-142:~$ i-086397ebc539ad10a (project-S1)

PublicIPs: 54.183.12.101  PrivateIPs: 172.31.5.142
```

33 we fork the github link provided

The screenshot shows a GitHub repository page for 'sonu12349964/website'. The repository is public and was forked from 'hshar/website'. It has 1 branch and 0 tags. The 'master' branch is up-to-date with 'hshar/website:master'. The repository contains files: 'index.html' (modified) and 'images' (final). There is a 'Create new file' button and an 'Upload files' option. The 'About' section notes 'No description, website, or topics provided.' It shows 0 stars, 0 watching, and 1.8k forks. The 'Releases' section indicates 'No releases published' and 'Create a new release'. The 'Packages' section is empty.

34 we write our docker file

The screenshot shows a GitHub repository for a user named 'sonu12349964'. The repository is named 'website'. In the code editor, there is a file named 'dockerfile' with the following content:

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

The GitHub interface includes a sidebar with files like 'index.html' and 'images'. At the top, there are tabs for 'Code', 'Pull requests', 'Actions', 'Projects', 'Wiki', 'Security', 'Insights', and 'Settings'. On the right, there are buttons for 'Cancel changes' and 'Commit changes...'. The bottom of the screen shows a Windows taskbar with various icons and system status.

35 we create our freestyle job

The screenshot shows the Jenkins dashboard. A modal window is open for creating a new item, with the title 'Enter an item name'. The input field contains 'job1' and has a note '» Required field'. Below this, there are four project creation options:

- Freestyle project**: Described as the central feature of Jenkins, combining any SCM with any build system.
- Pipeline**: Described as orchestrating long-running activities across multiple build agents.
- Multi-configuration project**: Suitable for projects with many configurations, such as testing on multiple environments.
- Folder**: Creates a container for grouping nested items.

At the bottom of the modal, there is an 'OK' button. The background shows the Jenkins dashboard with other items like 'New Item [jenk]' and 'sonu12349964'.

36 we put on our slave1

The screenshot shows the Jenkins job configuration page for 'job1'. Under the 'General' tab, the 'Restrict where this project can be run' checkbox is checked, and the 'Label Expression' field contains 'slave1'. The 'Source Code Management' section is also visible.

37

The screenshot shows the Jenkins job configuration page for 'job1'. The 'Source Code Management' tab is selected, and the 'Git' radio button is chosen. In the 'Repositories' section, the 'Repository URL' field contains 'https://github.com/sonu1234996/website.git', and a red error message 'Please enter Git repository.' is displayed. The 'Credentials' dropdown is set to '- none -'. The 'Save' and 'Apply' buttons are at the bottom.

38

The screenshot shows the Jenkins configuration interface for a job named 'job1'. The 'Build Environment' tab is selected. Under 'Build Steps', there is a button labeled 'Add build step'. Under 'Post-build Actions', there is a button labeled 'Add post-build action'. At the bottom are 'Save' and 'Apply' buttons.

39

The screenshot shows a terminal session in the AWS CloudShell interface. The user is connected to an EC2 instance with IP i-086397ebc539ad10a. The terminal output shows:

```
ubuntu@ip-172-31-5-142:~$ ls
jenkins
ubuntu@ip-172-31-5-142:~$ cd jenkins/
ubuntu@ip-172-31-5-142:~/jenkins$ ls
remoting  remoting.jar
ubuntu@ip-172-31-5-142:~/jenkins$
```

Below the terminal, the instance details are listed:

i-086397ebc539ad10a (project-S1)
PublicIPs: 54.183.12.101 PrivateIPs: 172.31.5.142

The CloudShell interface includes tabs for CloudShell, Feedback, and Language, along with standard browser navigation and search bars at the bottom.

40

The screenshot shows the Jenkins job configuration interface. On the left, a sidebar lists categories: General, Source Code Management, Build Triggers, Build Environment, Build Steps (which is selected and highlighted in grey), and Post-build Actions. The main area is titled "Build Steps" and contains a single step named "Execute shell". The "Command" field contains the following Jenkinsfile code:

```
sudo docker build /home/ubuntu/jenkins/workspace/job1/ -t image1
sudo docker run -itd -p 84:80 --name=c1 image1
```

Below the command field are "Advanced" and "Add build step" buttons, followed by "Save" and "Apply" buttons. The browser's address bar shows the URL: `Not secure | 54.183.227.102:8080/job/job1/configure`.

41 we run our job

The screenshot shows the Jenkins job running status. The browser title bar says "Hello world!". The Jenkins logo, a black cat with a pink face, is displayed prominently. Below the logo, the word "GitHub" is written in its signature font. The browser's address bar shows the URL: `Not secure | 54.183.12.101:84`. The taskbar at the bottom includes icons for Start Course, Instances, EC2, EC2 Instance Config, job1 [Jenkins], Webhooks, Log In | Intellipaat, IP Subnet Calculator, Download PuTTY, AWS resource and..., and YAML Ain't Markup... along with the Windows Start button and search bar.

42 we now create our 2nd job

The screenshot shows the Jenkins dashboard with a new job creation dialog open. The job name 'job2' is entered in the 'Enter an item name' field. Below it, the 'Freestyle project' option is selected, indicated by a blue icon and a brief description: 'This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.' Other project types like 'Pipeline' and 'Multi-configuration project' are also listed with their descriptions.

43

The screenshot shows the configuration page for the 'job2' project. The 'General' tab is selected. Under 'Restrict where this project can be run', the 'Label Expression' field contains 'slave1'. A note below states: 'Label slave1 matches 1 node. Permissions or other restrictions provided by plugins may further reduce that list.' Other tabs visible include 'Source Code Management', 'Build Triggers', 'Build Environment', 'Build Steps', and 'Post-build Actions'. At the bottom, there are 'Save' and 'Apply' buttons.

44

The screenshot shows the Jenkins job configuration interface for a job named 'job2'. The 'Source Code Management' section is selected. It displays a 'Repository URL' field containing 'https://github.com/sonu1234996/website.git' and a note 'Please enter Git repository.'. Below it is a 'Credentials' dropdown set to '- none -' with an 'Add' button. A 'Save' and 'Apply' button are at the bottom.

45

The screenshot shows the Jenkins job configuration interface for a job named 'job2'. The 'Build Steps' section is selected. It contains a single step titled 'Execute shell' with a 'Command' field containing the following Docker commands:
sudo docker build /home/ubuntu/jenkins/workspace/job2/ -t image1
sudo docker run -itd -p 82:80 --name=c2 image2

46 our 2nd job runs sucessfully



GitHub



47 we create our last job

Start Course | Instances | EC2 Instance | EC2 Instance | EC2 Instance | New Item | sonu123499% | Intellipaat.job | +

Not secure | 54.183.227.102:8080/view/all/newJob

YouTube | Inbox (6,384) - sonu... | Weekday-28thMarch... | AWS Management... | Log In | Intellipaat | IP Subnet Calculato... | Download PuTTY; I... | AWS resource and... | YAML Ain't Markup... | »

Jenkins

Dashboard > All >

Enter an item name

job3

» Required field

Freestyle project

This is the central feature of Jenkins. Jenkins will build your project, combining any SCM with any build system, and this can be even used for something other than software build.

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

Projects that need a large number of different configurations, such as testing on multiple environments, platform-specific

Type here to search

24°C Mostly sunny 09:21 20-08-2023

48

Start Course | Instances | EC2 Instance | EC2 Instance | EC2 Instance | job3 Config | sonu123499% | Intellipaat.job | +

Not secure | 54.183.227.102:8080/job/job3/configure

YouTube | Inbox (6,384) - sonu... | Weekday-28thMarch... | AWS Management... | Log In | Intellipaat | IP Subnet Calculato... | Download PuTTY; I... | AWS resource and... | YAML Ain't Markup... | »

Dashboard > job3 > Configuration

Configure

Restrict where this project can be run ?

Label Expression ?

slave2

Label slave2 matches 1 node. Permissions or other restrictions provided by plugins may further reduce that list.

General

Source Code Management

Advanced

Build Triggers

Source Code Management

None

Git ?

Build Triggers

Trigger builds remotely (e.g., from scripts) ?

Save Apply

Type here to search

24°C Mostly sunny 09:22 20-08-2023

49

The screenshot shows the Jenkins job configuration interface for 'job3'. On the left, a sidebar lists 'General', 'Source Code Management', 'Build Triggers', 'Build Environment', 'Build Steps' (which is selected), and 'Post-build Actions'. The main area is titled 'Configure' and contains a 'Build Steps' section. Under 'Execute shell', the command is set to:

```
sudo docker build /home/ubuntu/jenkins/workspace/job3/ -t image3
sudo docker run -itd -p 80:80 --name=c3 image3
```

Below this is an 'Advanced' dropdown and a 'Post-build Actions' section. At the bottom, there are 'Save' and 'Apply' buttons.

50 our last job also runs sucessfully

The screenshot shows a browser window displaying the Jenkins job output for 'job3'. The URL is 54.183.12.101. The page content includes the message 'Hello world!' and a large GitHub logo featuring the GitHub cat character.