Aim -

1.   **Using Terraform** - Master node is created based on master node list .

2.   **Using Terraform - Multiple Worker** nodes are ceated as dependent on master node .

3.   **Using Terraform - null resource** is creatd to start script execution.

Using Script -

1.   Set up master node for ssh .

2.   Download Ansible on Master

3.   Loop through Worker node.

4.   Set up worker node for ssh .

5.   update /etc/hosts of Master & Worker

6.   update ansible /etc/ansible/hosts of Master & Worker

7.   Execute Ansible playbook.

===

Teraform script -

To create Master and Worker nodes

Invoke shell scripts .

Install configuatio in Master and Worker nodes.

===

```
The key's randomart image is:
+---[RSA 3072]----+
|    o .o. o+o  . |
|     +...o .o o  |
|      +.+o...+ o.|
|      + .ooo.+ o *|
|       ...S. o . +.|
|      . o.    . .o|
|    E o. .  . . oo|
|    ...o= .    . o .|
|      =*+=      .  |
+----[SHA256]-----+
ubuntu@EXP1:~/myscripts$ cd ~
ubuntu@EXP1:~$ cd .ssh
ubuntu@EXP1:~/.ssh$ cat id_rsa.pub
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDAIbR9witsoZNtQ/jm0lZc7GeoMrv+JnfOvc0MQD
/7gbN1GPpc9VGS91/0zCN1Fjj8ou3nn4SLJNrgmf6BY4RF1t7aK4lMK5dL9iQnyflp72tXF7fXI+pG
dynrjCbeCEV0UUXalIJDjtqhhtfFsFSU7tPdVRlvgSCFs+7pHqQnwpEzkRfsDp/anCVBSr37swLGDQ
3+9B8xPHF0byOzTx0TgB7e72IcN7aYNBDjK7mjRF9GrfUmM= ubuntu@EXP1          <---
ubuntu@EXP1:~/.ssh$ vi authorized_keys
ubuntu@EXP1:~/.ssh$ cat authorized_keys
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABAQCVBhuw/Ni/pq5M3ix/YiO4bCpJpKT50D79xeoe+G
8hIRFPrRBSZPabocGDPW3AEPrfWQk2wt3BQnb7GVxGRmzYEpsvGmqs54CtNlj8jJ73GsXD3bbUJLQ8
PukhLtW7eXmZFGM8COCJZrUAfO6xNmi85hktuvfqvH8F 18juliy
ssh-rsa AAAAB3NzaC1yc2EAAAADAQABAAABgQDAIbR9witsoZNtQ/jm0lZc7GeoMrv+JnfOvc0MQD
/7gbN1GPpc9VGS91/0zCN1Fjj8ou3nn4SLJNrgmf6BY4RF1t7aK4lMK5dL9iQnyflp72tXF7fXI+pG
dynrjCbeCEV0UUXalIJDjtqhhtfFsFSU7tPdVRlvgSCFs+7pHqQnwpEzkRfsDp/anCVBSr37swLGDQ
3+9B8xPHF0byOzTx0TgB7e72IcN7aYNBDjK7mjRF9GrfUmM= ubuntu@EXP1          <---

ubuntu@EXP1:~/.ssh$ _
```

```
ubuntu@EXP1:~/mytf$
ubuntu@EXP1:~/mytf$
ubuntu@EXP1:~/mytf$ terraform destroy
```

```
ubuntu@EXP1:~/mytf$
ubuntu@EXP1:~/mytf$ terraform apply
_
```

```
# null_resource.health_check will be created        1 Master
+ resource "null_resource" "health_check" {
    + id = (known after apply)                       2 Worker - 0
  }

# time_sleep.wait_10_seconds will be created         3 Worker -1
+ resource "time_sleep" "wait_10_seconds" {
    + create_duration = "10s"                         4 null_resource
    + id              = (known after apply)
  }
```

```
185
186   ####=====================Master Start=====================
187
188
189   resource "aws_instance" "ansibleM" {
190   count = 1
191     ami = lookup(var.ec2_ami,var.region)
192     instance_type = "t2.micro"
193
194     #key_name = var.key_name
195     key_name = aws_key_pair.my_blog_keyM.key_name
196
197     security_groups =["instance_sg"]
198     tags = { Name = "Ansible-Master-${count.index}" }
199     #associate_public_ip_address = true
200
201
```

```
provisioner "local-exec" {
      command = <<EOF
        echo "Inside master node......."


        rm ~/myscripts/masternode
        rm    ~/myscripts/iplist

        touch      ~/myscripts/masternode
        chmod 0777 ~/myscripts/masternode

        touch      ~/myscripts/iplist
        chmod 0777 ~/myscripts/iplist

        echo "========================"
        echo " Master - public_ip : ${self.public_ip} "

        echo "========================"

        echo "${self.public_ip}"   | sudo -S tee -a ~/myscripts/masternode

         echo "========================"
        echo "After masternode"
        cat ~/myscripts/masternode

         echo " Done master node......."
"
```

```
260
261   ####=======================Worker Start===========================
262
263   resource "aws_instance" "ansibleW" {
264   count = 2
265    ami = lookup(var.ec2_ami,var.region)
266    instance_type = "t2.micro"
267    #key_name = var.key_name
268    key_name = aws_key_pair.my_blog_keyM.key_name
269    #key_name = aws_key_pair.kpW.key_name
270    security_groups =["instance_sgW"]
271    associate_public_ip_address = true
272    tags = { Name = "Ansible-Worker-${count.index}" }
273
274    depends_on = [aws_instance.ansibleM]
275
276    connection {
```

```
provisioner "local-exec" {

    command = <<EOF
        echo "Inside worker node......."
        sleep 10

        echo "======================="
        echo "Before - iplist"
        cat ~/myscripts/iplist

        echo "======================="
        echo " Worker - public_ip : ${self.public_ip} "

        echo "======================="

        echo "${self.public_ip}"    | sudo -S tee -a ~/myscripts/iplist

        echo "After - iplist"
        cat ~/myscripts/iplist

         echo " Done worker node......."

    EOF
```

==

```
26
27   resource "null_resource" "health_check" {
28
29       #######################################
30       depends_on = [aws_instance.ansibleM , aws_instance.ansibleW]
31       #######################################
32
33       provisioner "local-exec" {
34
35
36           command = <<EOF
37         cat id_rsa
38          sleep 10
39          echo   "============================Null resource  Begin ==================="
40
```

```
rm  ~/myscripts/ansiconf
touch  ~/myscripts/ansiconf

 echo "============="
echo "[web]" >>  ~/myscripts/ansiconf
cat  ~/myscripts/masternode >>  ~/myscripts/ansiconf

echo "[app]" >>  ~/myscripts/ansiconf
cat ~/myscripts/iplist >>  ~/myscripts/ansiconf

 echo "============="
cat ~/myscripts/ansiconf
 echo "============="


 cp ~/mytf/my_tf_keyW.pem  ~/myscripts/
 cp ~/mytf/my_tf_keyP.pem  ~/myscripts/

echo "====Execution start of shell script ========="

/bin/bash    ssh_ubuntu_t.sh  ~/myscripts/id_rsa     masternode

echo   "============================Null resource  End ==================="
```

```
echo       "============ 12 End of .tf file ============"

cat    ~/myscripts/masternode
cat    ~/myscripts/iplist
cmd1=''
 cmd1='/bin/bash ~/myscripts/ssh_ubuntu_m.sh '
 cmd1+=$pemfile
 cmd1+='  ~/myscripts/iplist'

  echo      $cmd1
  echo       $mnip

  /bin/bash doexec.sh $mnip $pemfile   "$cmd1"
 echo      "============ 12 End of .tf file ============"


  cat    ~/myscripts/iplist
```

```
)\t\t   echo \ Done master node.......\ \n\t\t
): Inside master node.......
): =======================
):  Master - public_ip : 3.84.79.13
): =======================
): 3.84.79.13
): =======================
): After masternode
): 3.84.79.13
):  Done master node.......
complete after 42s [id=i-0e56932e68a86f010]
.
```

```
ec): Inside worker node.......
eating... [50s elapsed]
ec): ========================
ec): Before - iplist
ec): 54.161.200.117
ec): ========================
ec):  Worker - public_ip : 54.210.178.80
ec): ========================
ec): 54.210.178.80
ec): After - iplist
ec): 54.161.200.117
ec): 54.210.178.80
ec):  Done worker node.......
 complete after 52s [id=i-0b682eaa8633cc7cb]
ng
```

```
: ubuntu@ip-172-31-82-221:~/myscripts$ exit
:
: logout
: Connection to 3.84.79.13 closed.
: 7.2
: =============7.2 Master : do sshkeygen . update authorized_keys . ==========
: 3.84.79.13
: pemfilename=  /home/ubuntu/myscripts/id_rsa
: dosshMaster.sh: line 24: warning: here-document at line 9 delimited by end-of
ing... [40s elapsed]
```

```
): ubuntu@ip-172-31-82-221:~/.ssh$
):
):
): ubuntu@ip-172-31-82-221:~/.ssh$ ssh-keygen -q -t rsa -N '' -f ~/.ssh/id_rsa <<<y >/dev/null 2>&1
):
ting... [50s elapsed]
```

```
xec): =================15 Install Ansible============
xec): Master ip of this node is  3.84.79.13 3.84.79.13
reating... [1m40s elapsed]
xec): Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
xec): Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [114 kB]
xec): Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease [99.8 kB]
xec): Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [110 kB]
reating    [1m50s elapsed]
```

```
doexec.sh: line 18: warning: here document at line 8 de
================= Master Node start  ==============
Node list
Masternode
3.84.79.13
Workernode
54.161.200.117
54.210.178.80
=================14 Read self ip ==============
  % Total    % Received % Xferd  Average Speed   Time
                                  Dload  Upload   Total
   0     0    0     0     0     0      0       0 --:--:-- 
Master ip of this node is  3.84.79.13
 100    10  100    10     0     0    124       0 --:--:-- 
ansiconf
copypublickey.sh
doexec.sh
doscp.sh
doscp_pathssh.sh
dossh.sh
dosshMaster.sh
ex4.yaml
iplist
masternode
ssh_ubuntu_m.sh
tmp
/home/ubuntu/myscripts
```

```
: -----END OPENSSH PRIVATE KEY-----
ing... [10s elapsed]
: ============================Null resource  Begin ====================
: ==============
: 3.84.79.13
: ==============
: 54.161.200.117
: 54.210.178.80
: ==============
: -----BEGIN OPENSSH PRIVATE KEY-----
: b3BlbnNzaC1rZXktdjEAAAAABG5vbmUAAAAEbm9uZQAAAAAAAAABAAABlwAAAdzc2gtcn
: NhAAAAAwEAAQAAAYEA7oL1e9P3wHQ/VQEh6pc/tB9/ZAMfMSTeQS9mz0WAeHae/a23KEq7
: rPuMOu9M1tkKuLpYqLK+epv+58sqUf/E+Di9Ey7G9nSah7SLu2xqks3jeyfZM5b7YV8Vjm
: il+pr4tFCsLsj+C9qL0aoC1zitD3Qlp+LGxTwE6ok0ivVX65JvLqh3bugrMrjYC6LoQujH
```



```
==============
==============
[web]
3.84.79.13
[app]
54.161.200.117
54.210.178.80
==============
```



```
=============7.1 Master :Make backup of authorized_keys ================
7.1
sudo scp -o StrictHostKeyChecking=no  -i /home/ubuntu/myscripts/id_rsa  /home/ubuntu/.ssh/authorized_keys  ubuntu@3.84.79.13:~

Warning: Permanently added '3.84.79.13' (ECDSA) to the list of known hosts.
3.84.79.13
```

```
ubuntu@ip-172-31-82-221:~$ mkdir -p  ~/myscripts

ubuntu@ip-172-31-82-221:~$ chmod 777 ~/myscripts

ubuntu@ip-172-31-82-221:~$

ubuntu@ip-172-31-82-221:~$ cd ~/myscripts

ubuntu@ip-172-31-82-221:~/myscripts$ mkdir -p   tmp

ubuntu@ip-172-31-82-221:~/myscripts$ chmod 777 tmp

ubuntu@ip-172-31-82-221:~/myscripts$

ubuntu@ip-172-31-82-221:~/myscripts$ exit

logout
Connection to 3.84.79.13 closed.
7.2
```

```
cat  ~/.ssh/id_rsa.pub | sudo -S tee -a ~/.ssh/authorized_keys
cat ~/.ssh/authorized_keys
cd ~/myscripts
exit
Welcome to Ubuntu 22.04 LTS (GNU/Linux 5.15.0-1011-aws x86_64)

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

```
Connection to 44.204.68.64 closed.
========================21.6====================================
---
- hosts: web
  become: true
  tasks:
  - name: Install Package
    apt: name=apache2 state=present
  - name: Start apache2 service
    service: name=apache2 state=started
ansible-playbook ~/myscripts/ex3.yaml

PLAY [web] *****************************************************************

TASK [Gathering Facts] ****************************************************
ok: [44.204.68.64]

TASK [Install Package] ****************************************************
changed: [44.204.68.64]

TASK [Start apache2 service] *********************************************
ok: [44.204.68.64]

PLAY RECAP ****************************************************************
44.204.68.64               : ok=3    changed=1    unreachable=0    failed=0    skipped=0

  hosts: web
```

```
- hosts: web
  become: true
  tasks:
  - name: Create a file
    file: path=/var/www/html/index.html state=touch
  - name: Append file
    lineinfile:
     path: /var/www/html/index.html
     line: 'Hello World'
     owner: ubuntu
     group: ubuntu
     mode: '0777'
ansible-playbook ~/myscripts/ex4.yaml

PLAY [web] **********************************************************************

TASK [Gathering Facts] *********************************************************
ok: [44.204.68.64]

TASK [Create a file] ***********************************************************
changed: [44.204.68.64]

TASK [Append file] *************************************************************
changed: [44.204.68.64]

PLAY RECAP *********************************************************************
44.204.68.64                   : ok=3    changed=2    unreachable=0    failed=0    skippe

=================22  End of iplist file =============
Connection to 44.204.68.64 closed.
============ 12 End of .tf file =============
3.86.35.41
44.205.244.129
ubuntu@EXP1:~/myscripts$
```