MINIKUBE DEPLOYMENT

1. Granting `jenkins` User Passwordless `sudo` Access

bash

```
jenkins ALL=(ALL) NOPASSWD: ALL
```

- This line is likely added to the `/etc/sudoers` file using `visudo`.
- It allows the `jenkins` user to run **any command** as `root` **without entering a password**.
- This is useful for **CI/CD automation** where Jenkins needs to restart services or run privileged commands.

---

2. Restarting SSH Service

bash

```
sudo systemctl restart ssh.service
sudo systemctl restart sshd.service
```

- These commands **restart the SSH server** to apply changes.
- If `ssh.service` is not found, `sshd.service` might be used instead.
- On some systems (like Ubuntu), SSH service is managed under **`ssh`**, not **`sshd`**.

---

3. Updating Package Lists & Installing OpenSSH

bash

```
sudo apt update
sudo apt install openssh-server
```

- `sudo apt update`: Updates the package list to ensure you install the latest versions.
- `sudo apt install openssh-server`: Installs the SSH server, allowing **remote access** to the system.

---

4. Checking SSH Service Status

bash

```
sudo systemctl restart ssh
sudo systemctl status ssh
```

- `restart ssh`: Restarts the SSH service.
- `status ssh`: Displays whether SSH is running (`active`), stopped (`inactive`), or failed.

---

5. Retrieving Minikube Certificate

bash

```
cat /home/david/.minikube/ca.crt | base64 -w 0; echo
```

- `cat /home/david/.minikube/ca.crt`: Reads the **Minikube CA certificate**.
- `base64 -w 0`: Converts the certificate to a **Base64-encoded string** for use in Kubernetes configurations.
- `echo`: Ensures the output is correctly formatted.

Use Case:
This command is often used when setting up **Kubernetes clusters** to configure secure access between **kubectl and Minikube**.

📌 Summary of Command Purpose

Command	Purpose
`jenkins ALL=(ALL) NOPASSWD: ALL`	Allows Jenkins to run sudo commands without a password.
`sudo systemctl restart ssh.service`	Restarts SSH service (if available).
`sudo systemctl restart sshd.service`	Restarts SSH daemon (if service name is `sshd`).

`sudo apt update && sudo apt install openssh-server`	Updates package lists and installs SSH.
`sudo systemctl restart ssh`	Ensures SSH is restarted.
`sudo systemctl status ssh`	Checks if SSH is running.
`cat /home/david/.minikube/ca.crt	base64 -w 0; echo`

ananth@DESKTOP-LQBQG2D:

```
ananth@DESKTOP-LQBQG2D:~$ minikube start
😄  minikube v1.35.0 on Ubuntu 24.04 (amd64)
✨  Using the docker driver based on existing profile
👍  Starting "minikube" primary control-plane node in "minikube" cluster
🚜  Pulling base image v0.0.46 ...
🔄  Restarting existing docker container for "minikube" ...
🐳  Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
🔎  Verifying Kubernetes components...
    ▪ Using image gcr.io/k8s-minikube/storage-provisioner:v5
🌟  Enabled addons: default-storageclass, storage-provisioner
🏄  Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
ananth@DESKTOP-LQBQG2D:~$ kubectl get node
NAME       STATUS   ROLES           AGE   VERSION
minikube   Ready    control-plane   2d    v1.32.0
ananth@DESKTOP-LQBQG2D:~$
```

ananth@DESKTOP-LQBQG2D: ~/.kube

```
ananth@DESKTOP-LQBQG2D:~$ cd ~/.kube
ananth@DESKTOP-LQBQG2D:~/.kube$ cat /home/david/.minikube/ca.crt | base64 -w 0; echo
cat: /home/david/.minikube/ca.crt: No such file or directory

ananth@DESKTOP-LQBQG2D:~/.kube$ ls
cache  config
ananth@DESKTOP-LQBQG2D:~/.kube$ cd cache
ananth@DESKTOP-LQBQG2D:~/.kube/cache$ ls
discovery  http
ananth@DESKTOP-LQBQG2D:~/.kube/cache$ cd ..
ananth@DESKTOP-LQBQG2D:~/.kube$ cat /home/ananth/.minikube/ca.crt | base64 -w 0; echo
LS0tLS1CRUdTIBDRVJUSUZJQ0FURS0tLS0tCk1JSURCakNDQWU2Z0F3SUJBZ0lCQVRBTkJna3Foa2lHOXcwQkFRc0ZBREFWTVJNd0VRWURWUVFERXdwdGFXNXAKYTNWaVpVTkJNQjRYRFRJMU1ETXhPREEyTWprd05sb1hEVE0x
TURNeE56QTJNamt3Tmxvd0ZURVRNQkVHQTFVRQpBeE1LYldsdWFXdDFZbVZEUVRDQ0FTSXdEUV1kS29aSWh2Y05BUUVCQlFBRGdnRVBBRENDQVFvQ2dnRUJBTXNqCmJVcWxKdnE0dTRoQktlOWpuamozWUVHSVJnanp1QVROWnZE
MnI4QkVqbVpHNUN1dUxaSENHOEE3RzV5ZmtZRnIKOUNqQUlBWEdkZi91N20wdWExL2pjckZ5MWlFMjNvQmdBV29UQ2RiNVpXTFNMRTBveDVRNEJuMnJvMFBXTlZpbApQU2NHbWJmVjFpWlZ6Tk9YQ243V2xFNVczblFuRVVuMjFP
t1VSblBINEFsakloMWYxZnoyVWxsWHV2Vm9Rclk1Cm9SQU5DZHZZVk9zQ0M4NE5wU1FMaHBmWmZGalQyTUdYSjRXQU1sLzdWNE5obUxXYTBtRFVpUjg1eE1IRExFMTYKNElLdllCZDl1S2hmTFExd2EwMkhVV0ZRamh2YmplbVhi
VkU4SWFWUUhnQ2c5N3V3SXpybit1Z3dTVC9HWTJVRQpuajYST1ljL1JxVmg5cWJqNVNrQ0F3RUFBYU5oTUY4d0RnWURWUjBQQVFIL0JBUURBZ0trTUIwR0ExVWRKUVFXCk1CUUdDQ3NHQVFVRkJ3TUNCZ2dyQmdFRkJRY0RBVEFQ
QmdOVkhSTUJBZjhFQlRBREFRSC9NQjBHQTFVZERnUVcKQkJUemhXbEduVis0bGprVEVPRkdydjJ3SWZGQ2dUQU5CZ2txaGtpRzl3MEJBUXNGQUFPQ0FRRUFmclp4NGV0agpYWkxtRjNKMi8xc2MvUHFKeE85V1pHK2NESEtTL2w2
WlYWi9rbDA1ZGFuNVZpNWYyNlJWZkZ0aUsxejLdHpGCitaYm5YUXUvK1ZlNzI2dkNaMUVKRWQyb21jcGNPZ3pnMHNCUGE3Zw93a1NzUjVBWEcvNVdvVDJlb2VCRHN5eWEKOHg2Zk52TEI1ODVaNCtkbHpzQ012ZXMzUGY1VGNO
m9JQXdmd3FxS2NHVURFQktnbFhxTE8ySTQvc3hsMDVRVwpUV091VkxpNFVGbmhtcjd4WHMwMjBReHlqZmFGeDR5SVRXRGh1Y2JXQ0ltMk5OTmZ1ZGdqRW1PWURCZzc1TGt5CnpTMXZzRkfZWDl5bElVYTIzTG01UCtaV3pRU1JR
jBXUU81OXQ5Y2tSN2hPR1NjY3VESEZtV0tQMFpaRXV0NjAKdDlzNFlwWDdRL3JWdlE9PQotLS0tLUVORCBDRVJUSUZJQ0FURS0tLS0tCg==
ananth@DESKTOP-LQBQG2D:~/.kube$ cat /home/ananth/.minikube/profiles/minikube/client.crt | base64 -w 0; echo
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URNeE9EQTJNamt3Tmxvd01URVhNQlVHQTFVRQpDaE1PYzNsemRHVnRPbTFoYzNSbGNuTXhGakFVQmdOVkJBTVREVzFwYm1scmRXSmxMWFZ6WlhJd2dnRWlNQTBHCkNTcUdTSWIzRFFFQkFRVUFBNElCRHdBd2dnRUtBb0lCQVFD
0tKUVdmb3UzMW1DR3N5MnlrSE41TUZPT3B6bFoKdnF1bEpxZWdWTmNXZHNBS2ZrWFZTRzhuT3ErMlRYTGVjdERPcXdITmNXTUxzSmpWUnpaeUFhWWQxSXZMeklrWApTQ3I1NnZXSFlYVFdNaUVtM1k1d0ZSbGSQNlZZM3p3cm94
3Fyd3BvNEtYbzV1NGNPYnR3ZE9QNVdwbi82KzdZCm5YeWl5Q0tPUXB5RXAxWEpNM0llRGFDeEdKZ0JNaDVzV3l5VjJ0ejZNcDFac3FFNnN2YThDTkZmeWtZSFJPbTQKbnBOaU1FVmc4UWI5Y0ZuK2FrcWpIR1JYbmh3ZkF3RGVk
VVkM2VVMTdvYXdySG9uUExZRG5XRk00MUpWb2FRYgo5NFJsRlBPWk1ycTNXZEFZVmVnSHdHRHU1TE43OCtzQmpYU0dGUlBxaDBoenNLak5SQjJyY1pWeEFnTUJBQUdqCllEQmVNQTRHQTFVZER3RUIvd1FFQXdJRm9EQWRCZ05w
FNVRUZqQVVCZ2dyQmdFRkJRY0RBUVlJS3dZQkJRVUgKQXdJd0RBWURWUjBUQVFIL0JBSXdBREFmQmdOVkhTTUVHREFXZ0JUemhXbEduVis0bGprVEVPRkdydjJ3SWZGQwpnVEFOQmdrcWhraUc5dzBCQVFzRkFBT0NBUUVBUzdN
UtPMTZSNXUzQXdqSlRxYjU2RjQvSlFic3hzKzIzWlhjClIza3VPTEgzQnlQYlgxVFdUeHJXMW9YNTdUZ3dmbWViRCtRa05FVi9WREVWSzlHWks4MGFwRHpIL2JPTlhHbWwKYTg1eGRmRnEyYThuMzVMd0M5UExCR1hCMEw4MU1v
TMyR25mbDhaZW90QThtYjRWNDBRSFd6V3hTaTV3aGQyQgpPNlNjM3Z4MVJFcW9KMVVyc1IyanVFbnRFcFRHT3JmUjVlWEZaQWtWWW9iaU9Rd0tQSGJZYUh1S0VUOVlQUlhnCngyLzdpVFlPUWIwNktQMUtrTVhhTmk4RU9UNmFh
kJvQ2dKR29ydC92clhMQkIvOEdJSWZOYlovRGcxMlMra1MKcllvV0Y4dUNCci9RS3V1SDFxdDhTeGluNmxKUU9hZVQxd1hHSVV2OEFlRytZZmZQQ2c9PQotLS0tLUVORCBDRVJUSUZJQ0FURS0tLS0tCg==
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2dHbUhkU0x5OHlKRjBncStlcjFoMkYwMWpJaEp0Mk8KY0JVWlp6K2xXTjg4SzZNYktxOEthT0NsNk9idUhEbTdjSFRqK1ZxWi8rdnUySjE4b3NnaWprS2NoS2RWeVROeQpIZzJnc1JpWUFUSWViRnNzbGRyYytqS2RXYktoT3JM
nZBalJYOHBHQjBUcHVKNlRZakJGWVBFRy9YQlovbXBLCm94eGtWNTRjSHdNQTNuV0ZIZDNsTmU2R3NLeDZKenkyQTUxaFRPT1NWYUdrRy9lRVpSVHptVEs2dDFuUUdGWG8KQjhCZzd1U3pll1ByQVkxMGhoVVQ2b2RJYzdDb3pV
WRxM0dWY1FJREFRQUJBb0lCQUZIc0ZWd0c1OUdaVCthSgpUZ3VdFg1THd0YzFPQk0rcWtzeW3M1Y0V3d0SWdGY1NUck85eVhCeFcrSXQwcW5kRG1FSXAxeWdXRkVyZFYvCng2YkVwaG0zMUxZc0pHaFJ6VEdUM3phRzU2UXR3
HpOL1VQVXBudjlTMTlaQ3pid3JMTEpETGtQZmFPd2tFb2EKSnRuQ3BlRTRmZVBNajZIQWYxaXV4OUxPvzlDN1VESU1XZm9XV0ErTjI4Z25mWDVkSUtGeFJmWHAwdHdvMVRITgpRUmVHUXIrQkZ0NGc4Q0lFQlFGNzJqSk9IWmRz
kUzWmVxWEttbGVzbDQxZzJqSDVndWVFVUZibysxczc1cWUzCjVtSDRRaXJhYjRMZ1FFSXBhS0hhRk5qMHdKcTExSUt6bkNpVCtRUnZlVnVEMHBLd1cya3Mzb1FyelFZaFczYzEKVk1xR2RPRUNnWUVBeTgwYWNIcmdZM3BIcXlz
jZSNmU0d3NvK1orQlJhLzZnNHZJZzFDcHRNQnNjT1kvUUE5eQoxTEVXYXphbkEvWlVHNGVuT1FRRG5XdUNZemZkRXk3RVV4Sk1FS09zRXFjdExNY1p2SDRWnG1VNU5ySEZuMDE1Ck8xaG5KQ2VkUklSQXorZDZtVElJRmh1ZStH
lBZSWh5Q3dPL1UwbkVqTTl6SHR4MjVEaHpLNlVDZ1lFQTJFQzQKQnZ4blk1Mmo3Z3o3U2V6bU5iQXRWa3o4WFZmMlF3K2NxQ1Y4clg1YUhuMUdPeW1TWlZubVlyV1MyNUJILzh3aQpxaUY1ckRtWGdFZGVwOGxmS2SPcDdyOVUz
vRXdGVqZjI4NkpBdjZMc3hUMllFeHp1T2lyVTFXwVZxSUhLVU5zCmpDK2E5UktiaC9SK3NwTyt5SGoxVFN1elRwaWxlMnc5UGVwOHlOMENnWUF1VG9VaVo1a1NvVmNsZW1TS0pJMy8Ka3FxVnhYdFBCVVJMblhoSzlnb0phdXQ0
```

```
ananth@DESKTOP-LQBQG2D: ~/.kube
pm9JQXdmd3FxS2NHVURFQktnbFhxTE8ySTQvc3hsMDVRVwpUV091VkxpNFVGbmhtcjd4WHMwMjBReHlqZmFGeDR5SVRXRGh1Y2JXQ0ltMk5OTmZ1ZGdqRW1PWURCZzc1TGt5CnpTMXZzRkFZWDl5bElVYTIzTG01UCtaV3pRU1JR
/jBXUU81OXQ5Y2tSN2hPR1NjY3VESEZtV0tQMFpaRXV0NjAKdDlzNFlwWDdRL3JWdlE9PQotLS0tLUVORCBDRVJUSUZJQ0FURS0tLS0tCg==
ananth@DESKTOP-LQBQG2D:~/.kube$ cat /home/ananth/.minikube/profiles/minikube/client.crt | base64 -w 0; echo
LS0tLS1CRUdJTiBDRVJUSUZJQ0FURS0tLS0tCk1JSURJVENDQWdtZ0F3SUJBZ0lCQWpBTkJna3Foa2lHOXcwQkFRc0ZBREFwTVJNd0VRWURWUVFERXdwdGFXNXAKYTNWaVpVTkJNQjRYRFRJMU1ETXhPREEyTWprd05sb1hEVEk0
TURNeE9EQTJNamt3Tmxvd01URVhNQlVHQTFVRQpDaE1PYzNsemRHVnRPbTFoYzNSbGNuTXhGakFVQmdOVkJBTVREVzFwYm1scmRXSmxMWFZ6Wlhj2d2dnRWlNQTBHCkNTcUdTSWIzRFFFQkFRVUFBNElCRHdBd2dnRUtBb0lCQVFD
t0tKUVdmb3UzMW1DR3N5MmlrSE41TUZPT3B6bFoKdnF1bEpxZWdWTmNXZHNBS2ZrWFZTRzhuT3ErMlRYTGVjdERPcXdITmNXTUxzSmpWUnpaeUFhWWQxSXZMeklrWApTQ3I1NnZXSFlYVFdNaUVtM1k1d0ZSbGSQNlZZM3p3cm94
3Fyd3BvNEtYbzV1NGNPYnR3ZE9QNVdwbi82KzdZCm5YeWl5Q0tPUXB5RXAxWEpNM0llRGFDeEdkZ0JNaDVz3l5VjJ0ejZNcDFac3FFNnN2YThDTkZmeWtZSFJPbTQKbnBOaU1FVmc4UWI5Y0ZuK2FrcWpIR1JYbmh3ZkF3RGVk
NVVkM2VVMTdvYXdySG9uUExzZRG5XRk00MUpWb2FRYgo5NFJsRlBPWk1ycTNXZEFZVmVnSHdHRHU1TE43OCtzQmpYU0dGUlBxaDBoenNLak5SQjJyY1pWeEFnTUJBQUdqCllEQmVNQTRHQTFVZER3RUIvd1FFQXdJRm9EQWRCZ05w
SFNVRUZqQVVCZ2dyQmdFRkJRY0RBUVlJS3dZQkJRVUgKQXdJd0RBWURWUjBUQVFIL0JBSXdBREFmQmdOVkhTTUVHREFXZ0JUemhXbEduVis0bGprVEVPRkdydjI3SWZGQwpnVEFOQmdrcWhraUc5dzBCQVFzRkFBT0NBUUVBUzdN
sUtPMTZSNXUzQXdqSlRxYjU2RjQvSlFic3hzKzIzWlhjClIza3VPTEgzQnlQYlgxVFdUeHJXMW9YNTdUZ3dmbWViRCtRa05FVi9WREVWSzlHWks4MGFwRHpIL2JPTlhHbWwKYTg1eGRmRnEyYThuMzVMd0M5UExCR1hCMEw4MU1v
bTMyR25mbDhaZW90QThtYjRWNDBRSFd6V3hTaTV3aGQyQgpPNlNjM3Z4MVJFcW9KMVVyc1IyanVFbnRFcFRHT3JmUjVlWEZaQWtWWW9iaU9Rd0tQSGJZYUh1S0VUOVlQUlhnCngyLzdpVFlPUWIwNktQMUtrTVhhTmk4RU9UNmFh
kJvQ2dKR29ydC92clhMQkIvOEdJSWZOYlovRGcxMlMra1MKcllvV0Y4dUNCci9RS3V1SDFxdDhTeGluNmxKUU9hZVQxd1hHSVV2OEFlRytZZmZQQ2c9PQotLS0tLUVORCBDRVJUSUZJQ0FURS0tLS0tCg==
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LS0tLS1CRUdJTiBSU0EgUFJJVkFURSBLRVktLS0tLQpNSUlFb2dJQkFBS0NBUUVBckNpVUZuNkx0OVpnaHJNdHNwQnplVEJUanFjNVdiNnJwU2Fub0ZUWEZuYkFDbjVGCjFVaHZKenF2dGsxeTNuTFF6cXNCelhGakM3Q1kxVWMy
V2dHbUhkU0x5OHlKRjBncStlcjFoMkYwMWpJaEp0Mk8KY0JVWlp6K2xXTjg4SzZNYktxOEthT0NsNk9idUhEbTdjSFRqK1ZxWi8rdnUySjE4b3NnaWprS2NoS2RWeVROeQpIZzJnc1JpWUFUSWViRnNzbGRyYytqS2RXYktoT3JM
MnZBalJYOHBHQjBUcHVKNlRZakJGWVBFRy9YQlovbXBLCm94eGtWNTRjSHdNQTNuV0ZIZDNsTmU2R3NLeDZKenkyQTUxaFRPTlNwYUdrRy9lRVpSVHptVEs2dDFuUUdGWG8KQjhCZzd1U3pll1ByQVkxMGhoVVQ2b2RJYzdDb3pV
UWRxM0dWY1FJREFRQUJBb0lCQUZIc0ZWd0c1OUdaVCthSgpUZ3VVdFg1THd0YzFPQk0rcWtzeWM3M1Y0V3d0SWdGY1NUck85eVhCeFcrSXQwcW5kRG1FSXAxeWdXRkVyZFYvCng2YkVwaG0zMUxZc0pHaF6VEdUM3phRzU2UXR3
cHpOL1VQVXBudjlTMTlaQ3pid3JMTEpETGtQZmFPd2tFb2EKSnRuQ3BlRTRmZVBNajZIQWYxaXV4OUxPvlDN1VESU1XZm9XV0ErTjI4Z25mWDVkSUtGeFJmWHAwdHdvMVRITgpRUmVHUXIrQkZ0NGc4Q0lFQlFGNzJqSk9IWmRz
fkUzWmVxWEttbGVzbDQxZzJqSDVndWVFVUZibysxczc1cWUzCjVtSDRRaXJhYjRMZ1FFSXBhS0hhRk5qMHdKcTExSUt6bkNpVCtRUnZlVnVEMHBLd1cya3Mzb1FyelFZaFczYzEKVk1xR2RPRUNnWUVBeTgwYWNIcmdZM3BIcXlz
ejZSNmU0d3NvK1orQlJhLzZnNHZJZzFDcHRNQnNjT1kvUUE5eQoxTEVXYXphbkEvWlVHNGVuT1FRRG5XdUNZemZkRXk3RVV4Sk1FS09zRXFjdExNY1p2SDRWWG1VNU5ySEZuMDE1Ck8xaG5KQ2VkUklSQXorZDZtVElJRmh1ZStH
rlBZSWh5Q3dPL1UwbkVqTTl6SHR4MjVEaHpLNlVDZ1lFQTJFQzQKQnZ4blk1Mmo3Z3o3U2V6bU5iQXRWa3o4WFZmMlF3K2NxQ1Y4clg1YUhuMUdPeW1TWlZubVlyV1MyNUJILzh3aQpxaUY1ckRtWGdFZGVwOGxmS25PcDdyOVUz
eVRXdGVqZjI4NkpBdjZMc3hUMllFeHp1T2lyVTFXWVZxSUhLVU5zCmpDK2E5UktiaC9SK3NwTyt5SGoxVFN1elRwaWxlMnc5UGVwOHlOMENnWUF1VG9VaVo1a1NvVmNsZW1TS0pJMy8Ka3FxVnhYdFBCVVJMblhoSzlnb0phdXQ0
MzZnaGV5RWhXTGQ2VnVtdUNjdGtrZmNhQ21KejQxaTJDSnh2M21GMwphcUhqNmZ5UUpISXNTWFQ4a2oxeXZGYzZxVHY1RFZadGVKRys4azFXb3lKQzJ4ck5Na1FLR2U2T0N6WkkvZGZECnp1OHJFb2paWWMyTGhwWnhGcTU4alFL
QmdEMGxsNk9LRFNYeXRoNmlsdzloSi9yNFZPbDVIVWE3ajR1SXg1QVkKQVhnQktUUkQwZTc2bzBWN05SU21LTjlpbmFrcnJJV1VyNVhPTnhOem1xNlI1eEhXNEs3OGRPQWZ4NEpxVlpvTwpmVmxXWm1QOXdtaWFlWUpzYjcxQmo3
QzNZZlQ5OXB4dy9ZemNkUlB0UTBIMVd0WE90ZlhiTEhsRjJremEzem81CnFvMFZBb0dBRFBlSnRvN3pSaWxOajNHeUd4d21SaU9DTEE3cDA1cUwrckg1Uys3bGpXT2xjQzRQM1FlUGdMQmYKSDgxbWRlZFEwSitBbjYyY1ZoeTVi
VXZPWG5hQzVoODNqZjZQNGNiK2doQlRCVWxtdjRGMW5IUFp6SExOU0ZzcQpXQWhsRHVJakl1cXZ0VW9ZREdYYU5IQm5iaEJ3TDZEZzlKejVoM25VN2xhM0tENWkxVVE9Ci0tLS0tRU5EIFJTQSBQUklWQVRFIEtFWS0tLS0tCg==
ananth@DESKTOP-LQBQG2D:~/.kube$ cat /home/ananth/.minikube/profiles/minikube/client.key | base64 -w 0; echo
LS0tLS1CRUdJTiBSU0EgUFJJVkFURSBLRVktLS0tLQpNSUlFb2dJQkFBS0NBUUVBckNpVUZuNkx0OVpnaHJNdHNwQnplVEJUanFjNVdiNnJwU2Fub0ZUWEZuYkFDbjVGCjFVaHZKenF2dGsxeTNuTFF6cXNCelhGakM3Q1kxVWMy
V2dHbUhkU0x5OHlKRjBncStlcjFoMkYwMWpJaEp0Mk8KY0JVWlp6K2xXTjg4SzZNYktxOEthT0NsNk9idUhEbTdjSFRqK1ZxWi8rdnUySjE4b3NnaWprS2NoS2RWeVROeQpIZzJnc1JpWUFUSWViRnNzbGRyYytqS2RXYktoT3JM
MnZBalJYOHBHQjBUcHVKNlRZakJGWVBFRy9YQlovbXBLCm94eGtWNTRjSHdNQTNuV0ZIZDNsTmU2R3NLeDZKenkyQTUxaFRPTlNwYUdrRy9lRVpSVHptVEs2dDFuUUdGWG8KQjhCZzd1U3pll1ByQVkxMGhoVVQ2b2RJYzdDb3pV
UWRxM0dWY1FJREFRQUJBb0lCQUZIc0ZWd0c1OUdaVCthSgpUZ3VVdFg1THd0YzFPQk0rcWtzeWM3M1Y0V3d0SWdGY1NUck85eVhCeFcrSXQwcW5kRG1FSXAxeWdXRkVyZFYvCng2YkVwaG0zMUxZc0pHaF6VEdUM3phRzU2UXR3
cHpOL1VQVXBudjlTMTlaQ3pid3JMTEpETGtQZmFPd2tFb2EKSnRuQ3BlRTRmZVBNajZIQWYxaXV4OUxPvlDN1VESU1XZm9XV0ErTjI4Z25mWDVkSUtGeFJmWHAwdHdvMVRITgpRUmVHUXIrQkZ0NGc4Q0lFQlFGNzJqSk9IWmRz
fkUzWmVxWEttbGVzbDQxZzJqSDVndWVFVUZibysxczc1cWUzCjVtSDRRaXJhYjRMZ1FFSXBhS0hhRk5qMHdKcTExSUt6bkNpVCtRUnZlVnVEMHBLd1cya3Mzb1FyelFZaFczYzEKVk1xR2RPRUNnWUVBeTgwYWNIcmdZM3BIcXlz
ejZSNmU0d3NvK1orQlJhLzZnNHZJZzFDcHRNQnNjT1kvUUE5eQoxTEVXYXphbkEvWlVHNGVuT1FRRG5XdUNZemZkRXk3RVV4Sk1FS09zRXFjdExNY1p2SDRWWG1VNU5ySEZuMDE1Ck8xaG5KQ2VkUklSQXorZDZtVElJRmh1ZStH
rlBZSWh5Q3dPL1UwbkVqTTl6SHR4MjVEaHpLNlVDZ1lFQTJFQzQKQnZ4blk1Mmo3Z3o3U2V6bU5iQXRWa3o4WFZmMlF3K2NxQ1Y4clg1YUhuMUdPeW1TWlZubVlyV1MyNUJILzh3aQpxaUY1ckRtWGdFZGVwOGxmS25PcDdyOVUz
eVRXdGVqZjI4NkpBdjZMc3hUMllFeHp1T2lyVTFXWVZxSUhLVU5zCmpDK2E5UktiaC9SK3NwTyt5SGoxVFN1elRwaWxlMnc5UGVwOHlOMENnWUF1VG9VaVo1a1NvVmNsZW1TS0pJMy8Ka3FxVnhYdFBCVVJMblhoSzlnb0phdXQ0
MzZnaGV5RWhXTGQ2VnVtdUNjdGtrZmNhQ21KejQxaTJDSnh2M21GMwphcUhqNmZ5UUpISXNTWFQ4a2oxeXZGYzZxVHY1RFZadGVKRys4azFXb3lKQzJ4ck5Na1FLR2U2T0N6WkkvZGZECnp1OHJFb2paWWMyTGhwWnhGcTU4alFL
QmdEMGxsNk9LRFNYeXRoNmlsdzloSi9yNFZPbDVIVWE3ajR1SXg1QVkKQVhnQktUUkQwZTc2bzBWN05SU21LTjlpbmFrcnJJV1VyNVhPTnhOem1xNlI1eEhXNEs3OGRPQWZ4NEpxVlpvTwpmVmxXWm1QOXdtaWFlWUpzYjcxQmo3
QzNZZlQ5OXB4dy9ZemNkUlB0UTBIMVd0WE90ZlhiTEhsRjJremEzem81CnFvMFZBb0dBRFBlSnRvN3pSaWxOajNHeUd4d21SaU9DTEE3cDA1cUwrckg1Uys3bGpXT2xjQzRQM1FlUGdMQmYKSDgxbWRlZFEwSitBbjYyY1ZoeTVi
VXZPWG5hQzVoODNqZjZQNGNiK2doQlRCVWxtdjRGMW5IUFp6SExOU0ZzcQpXQWhsRHVJakl1cXZ0VW9ZREdYYU5IQm5iaEJ3TDZEZzlKejVoM25VN2xhM0tENWkxVVE9Ci0tLS0tRU5EIFJTQSBQUklWQVRFIEtFWS0tLS0tCg==
```

Jenkins

```
pipeline {
   agent any

   stages {
      stage('scm') {
         steps {
      git branch: "
         }
      }
      stage('builb-clean') {
         steps {
            sh "mvn clean"
}
}
      stage('build-validate') {
         steps {
            sh "mvn validate"
}
}
      stage('build-com') {
         steps {
            sh "mvn compile"
}
```

```
}

        stage('build-test') {
            steps {
                sh "mvn test"
}
}
        stage('build-install') {
            steps {
                sh "mvn package"
}
}
stage('build to images') {
            steps {
                script{
                    sh 'docker build -t  .'
                }
    }
}
stage('push to hub') {
            steps {
                script{
                  withDockerRegistry(credentialsId: 'Docker_cred', url: 'https://index.docker.io/v1/') {
                    sh 'docker push '
                }
            }
            }
}
        stage('Deploy App') {
            steps {
                withKubeConfig(caCertificate: '', clusterName: 'minikube', contextName: 'minikube',
credentialsId: 'mukubeconfig_011', namespace: '', restrictKubeConfigAccess: false, serverUrl:
'https://192.168.49.2:8443') {
                sh 'kubectl apply -f deployment.yml --validate=false'
            }
        }
        }
    stage('Test') {
      steps {
          withKubeConfig(caCertificate: '', clusterName: 'minikube', contextName: 'minikube',
credentialsId: 'mukubeconfig_011', namespace: '', restrictKubeConfigAccess: false, serverUrl:
'https://192.168.49.2:8443') {

        sh 'minikube service my-service --url | xargs curl'
```

```
  }
}
}
}
}
```

Pipeline Breakdown:

Agent Definition:
groovy

```
agent any
```

1.
    - This tells Jenkins to run the pipeline on any available agent.

Stages Breakdown:

SCM (Source Code Management) Stage:
groovy

```
stage('scm') {
    steps {
        git branch: ''
    }
}
```

1.
    - Pulls the source code from a Git repository.
    - ⚠️ **Error:** The `branch` parameter is empty. It should specify the branch name, e.g., `branch: 'main'`.

Build - Clean:
groovy

```
stage('builb-clean') {
    steps {
        sh "mvn clean"
    }
```

```
}
```

2.
    - Runs `mvn clean` to remove any previous build artifacts.
    - ⚠️ **Typo:** The stage name should be `build-clean` instead of `builb-clean`.

Build - Validate:
groovy

```
stage('build-validate') {
    steps {
        sh "mvn validate"
    }
}
```

3.
    - Runs `mvn validate` to check the project structure and configurations.

Build - Compile:
groovy

```
stage('build-com') {
    steps {
        sh "mvn compile"
    }
}
```

4.
    - Runs `mvn compile` to compile the source code.
    - ⚠️ **Typo:** The stage name should be `build-compile` instead of `build-com`.

Build - Test:
groovy

```
stage('build-test') {
    steps {
        sh "mvn test"
    }
}
```

5.
    - Runs `mvn test` to execute unit tests.

Build - Package (Install the app):
groovy

```
stage('build-install') {
    steps {
        sh "mvn package"
    }
}
```

6.
    - Runs `mvn package` to generate the final application package (JAR/WAR).

Build Docker Image:
groovy

```
stage('build to images') {
    steps {
        script {
            sh 'docker build -t  .'
        }
    }
}
```

7.
    - Builds a Docker image for the application.

⚠️ **Error:** The `docker build` command is missing an image name. It should be:
sh

```
docker build -t my-app:latest .
```

    -

Push Docker Image to Docker Hub:
groovy

```
stage('push to hub') {
```

```
    steps {
        script {
            withDockerRegistry(credentialsId: 'Docker_cred', url:
'https://index.docker.io/v1/') {
                sh 'docker push '
            }
        }
    }
}
```

8.
    - Pushes the Docker image to **Docker Hub** using credentials stored in `Docker_cred`.

⚠️ **Error:** The `docker push` command is incomplete. It should specify the image name:
sh

```
docker push my-app:latest
```

    -

Deploy Application to Minikube (Kubernetes):
groovy

```
stage('Deploy App') {
    steps {
        withKubeConfig(caCertificate: '', clusterName: 'minikube',
contextName: 'minikube', credentialsId: 'mukubeconfig_011', namespace:
'', restrictKubeConfigAccess: false, serverUrl:
'https://192.168.49.2:8443') {
            sh 'kubectl apply -f deployment.yml --validate=false'
        }
    }
}
```

9.
    - Deploys the application to **Minikube** using `kubectl apply -f deployment.yml`.

---

10. **Test Deployed Application:**

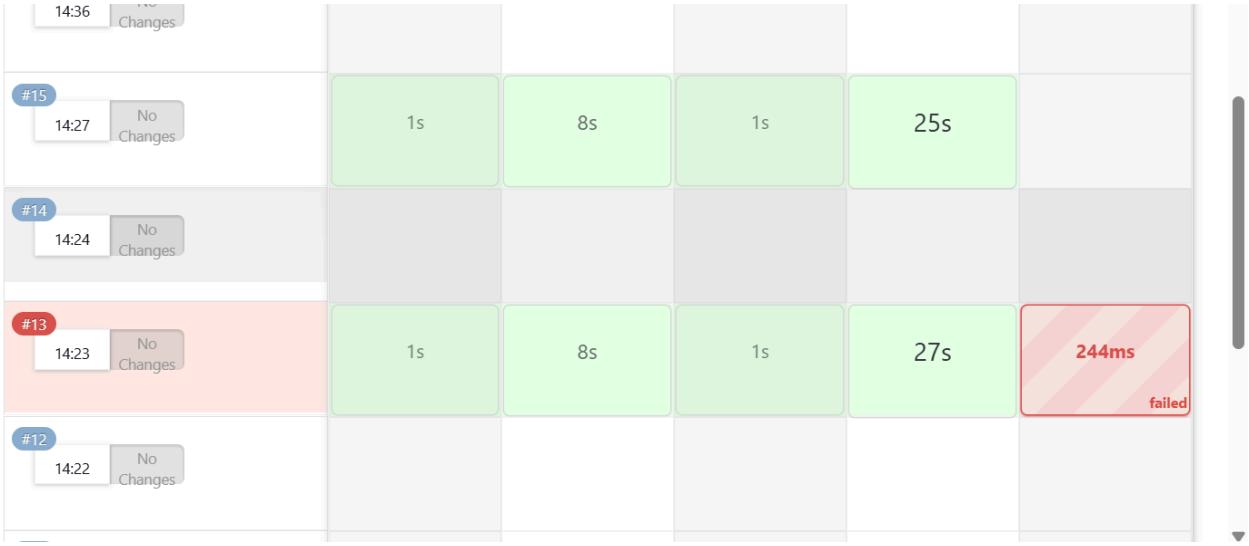
groovy

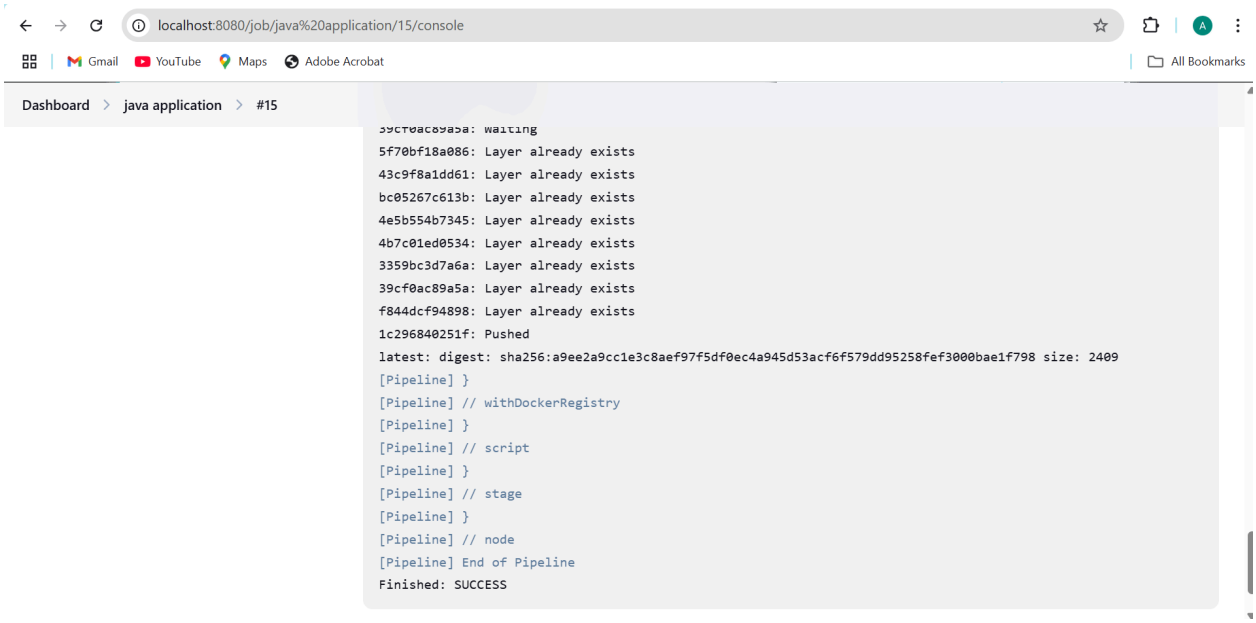
```
stage('Test') {
    steps {
        withKubeConfig(caCertificate: '', clusterName: 'minikube',
contextName: 'minikube', credentialsId: 'mukubeconfig_011', namespace:
'', restrictKubeConfigAccess: false, serverUrl:
'https://192.168.49.2:8443') {
            sh 'minikube service my-service --url | xargs curl'
        }
    }
}
```

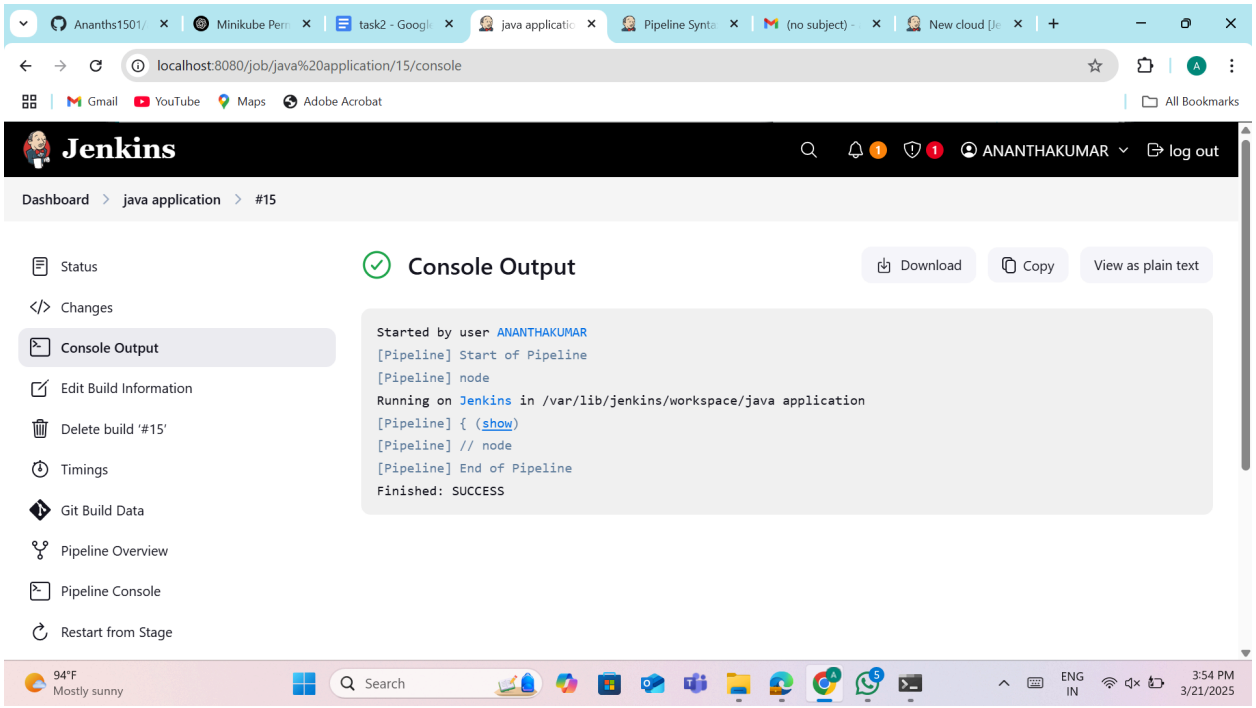
- **Retrieves the service URL** from Minikube and **sends a test request using `curl`**.
- This checks if the application is accessible after deployment.

Summary of Pipeline Execution:

1. **Clone the repository** (Git).
2. **Run Maven build steps** (`clean`, `validate`, `compile`, `test`, `package`).
3. **Build a Docker image** for the application.
4. **Push the Docker image** to Docker Hub.
5. **Deploy the application** to Kubernetes (Minikube).
6. **Test the deployed application** using `curl`.


14:36
Changes
#15
14:27
No Changes
1s
8s
1s
25s
#14
14:24
No Changes
#13
14:23
No Changes
1s
8s
1s
27s
244ms
failed
#12
14:22
No Changes


localhost:8080/job/java%20application/15/console
Gmail
YouTube
Maps
Adobe Acrobat
All Bookmarks
Dashboard > java application > #15
39cf0ac89a5a: Waiting
5f70bf18a086: Layer already exists
43c9f8a1dd61: Layer already exists
bc05267c613b: Layer already exists
4e5b554b7345: Layer already exists
4b7c01ed0534: Layer already exists
3359bc3d7a6a: Layer already exists
39cf0ac89a5a: Layer already exists
f844dcf94898: Layer already exists
1c296840251f: Pushed
latest: digest: sha256:a9ee2a9cc1e3c8aef97f5df0ec4a945d53acf6f579dd95258fef3000bae1f798 size: 2409
[Pipeline] }
[Pipeline] // withDockerRegistry
[Pipeline] }
[Pipeline] // script
[Pipeline] }
[Pipeline] // stage
[Pipeline] }
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS


localhost:8080/job/java%20application/15/console
Jenkins
ANANTHAKUMAR
log out
Dashboard > java application > #15
Status
Changes
Console Output
Edit Build Information
Delete build '#15'
Timings
Git Build Data
Pipeline Overview
Pipeline Console
Restart from Stage
Console Output
Download
Copy
View as plain text
Started by user ANANTHAKUMAR
[Pipeline] Start of Pipeline
[Pipeline] node
Running on Jenkins in /var/lib/jenkins/workspace/java application
[Pipeline] { (show)
[Pipeline] // node
[Pipeline] End of Pipeline
Finished: SUCCESS