Kubernetes Cluster Setup for Worker and Master node
(Redhat use yum & ubuntu use apt)

Step 1: Create 2 or more linux Instance and name it 1 is master and others worker using this cmd.

```
Sudo hostnamectl set-hostname Master
Sudo hostnamectl set-hostname Worker-1
```

Step 2: Install containerd on Both Nodes.

```
sudo yum install -y yum-utils device-mapper-persistent-data lvm2
sudo yum-config-manager --add-repo
https://download.docker.com/linux/centos/docker-ce.repo

sudo yum install -y containerd.io

# Generate default config
sudo mkdir -p /etc/containerd
containerd config default | sudo tee /etc/containerd/config.toml

# Enable Systemd Cgroup
sudo sed -i 's/SystemdCgroup = false/SystemdCgroup = true/'
/etc/containerd/config.toml

# Restart containerd
sudo systemctl restart containerd
sudo systemctl enable containerd
```

Step 3: Install Kubernetes Tools on Both Nodes.

```
cat <<EOF > /etc/yum.repos.d/kubernetes.repo
[kubernetes]
name=Kubernetes
baseurl=https://pkgs.k8s.io/core:/stable:/v1.29/rpm/
enabled=1
gpgcheck=1
gpgkey=https://pkgs.k8s.io/core:/stable:/v1.29/rpm/repodata/repomd.xml.key
```

```
EOF

yum install -y kubelet kubeadm kubectl
systemctl enable --now kubelet
```

Step 4: Disable Swap and Set Required Kernel Params on Both Nodes.

```
# Disable swap
sudo swapoff -a
sudo sed -i '/ swap / s/^/#/' /etc/fstab

# Kernel params
cat <<EOF | sudo tee /etc/modules-load.d/k8s.conf
overlay
br_netfilter
EOF

sudo modprobe overlay
sudo modprobe br_netfilter

cat <<EOF | sudo tee /etc/sysctl.d/k8s.conf
net.bridge.bridge-nf-call-ip6tables = 1
net.bridge.bridge-nf-call-iptables  = 1
net.ipv4.ip_forward                 = 1
EOF

sudo sysctl –system
```

Step 5: Initialize Kubernetes on Master Node Only.

```
sudo kubeadm init --pod-network-cidr=10.244.0.0/16

mkdir -p $HOME/.kube
sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
sudo chown $(id -u):$(id -g) $HOME/.kube/config
```

Step 6: Deploy Flannel CNI on Master Node.

kubectl apply -f https://raw.githubusercontent.com/coreos/flannel/master/Documentation/kube-flannel.yml

Step 7: Join Worker Node to the Cluster(Master Node). (Token valid 24 hours)

Check Existing Token > kubeadm token list

Get Hash value > /etc/kubernetes/pki/ca.crt

Hash It has **no expiry** or If missed create using below cmd

Get the CA Cert Hash > openssl x509 -pubkey -in /etc/kubernetes/pki/ca.crt \
| openssl rsa -pubin -outform der 2>/dev/null \
| openssl dgst -sha256 -hex \
| sed 's/^.* //'

Build the Join Command > kubeadm join <MASTER-IP>:6443 --token <TOKEN> --discovery-token-ca-cert-hash sha256:<HASH>

If the Token Is Expired

kubeadm token create

After repeting above steps