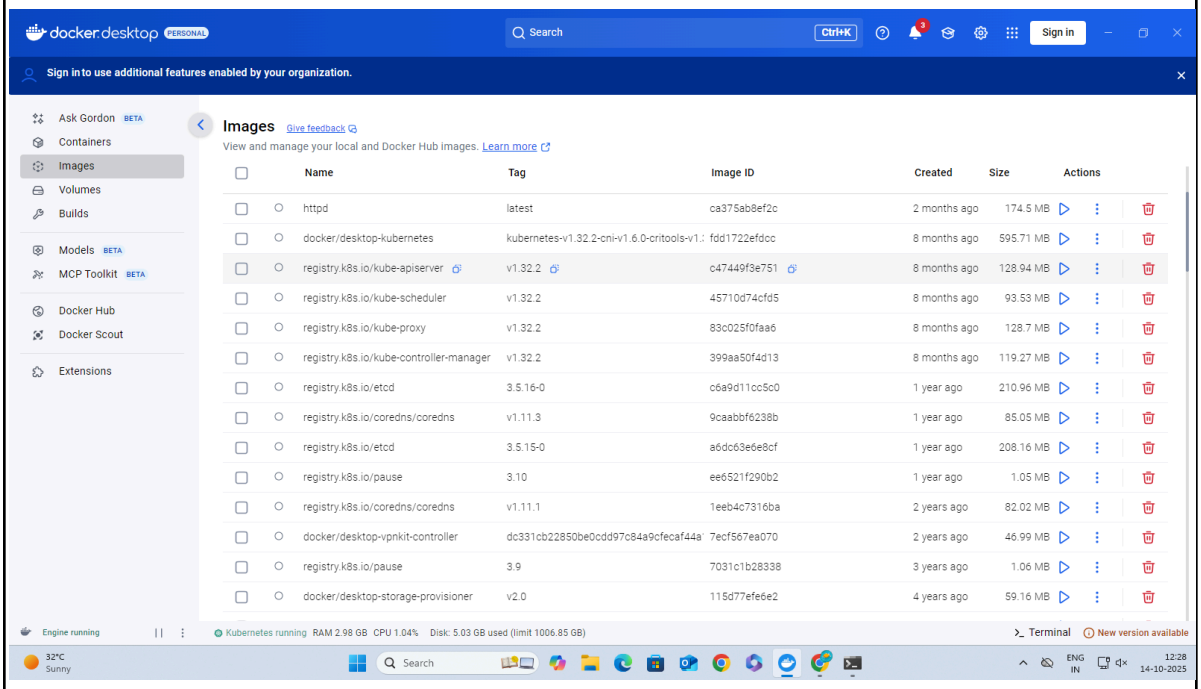
St. Francis Institute of Technology
Borivali (West), Mumbai-400103
Department of Information Technology
ADL Practical Exam

Name:Kashmira Ghag	Date:14/10/2025
Class:TEIT-A3	Exam seat no:
PID: 231041	Time:
Roll No:38	No. of Pages:
Duration: One Hour	

Sr No	**Problem Statement (Type here):** **To install kubectl and execute kubectl commands to manage clusters and deploy your first kubernetes application(Nginx)**
1.	Step 1: Check images in docker Screenshot 1: 

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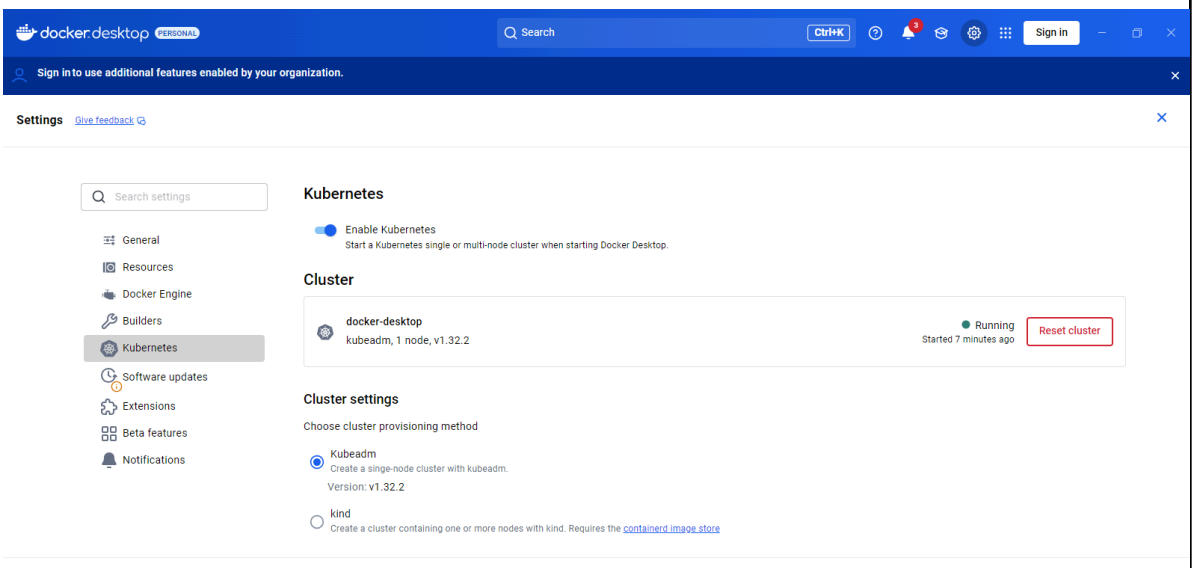
```
PS C:\Users\student> docker images
REPOSITORY                                TAG                                                                IMAGE ID       CREATED         SIZE
nginx                                     latest                                                             8adbdcb969e2   2 months ago    279MB
httpd                                     latest                                                             ca375ab8ef2c   2 months ago    175MB
docker/desktop-kubernetes                 kubernetes-v1.32.2-cni-v1.6.0-critools-v1.31.1-cri-dockerd-v0.3.16-1-debian   fdd1722efdcc   7 months ago    596MB
registry.k8s.io/kube-apiserver            v1.32.2                                                            c47449f3e751   8 months ago    129MB
registry.k8s.io/kube-controller-manager   v1.32.2                                                            399aa50f4d13   8 months ago    119MB
registry.k8s.io/kube-proxy                v1.32.2                                                            83c025f0faa6   8 months ago    129MB
registry.k8s.io/kube-scheduler            v1.32.2                                                            45710d74cfd5   8 months ago    93.5MB
registry.k8s.io/etcd                      3.5.16-0                                                           c6a9d11cc5c0   13 months ago   211MB
registry.k8s.io/coredns/coredns           v1.11.3                                                            9caabbf6238b   14 months ago   85.1MB
registry.k8s.io/etcd                      3.5.15-0                                                           a6dc63e6e8cf   14 months ago   208MB
registry.k8s.io/pause                     3.10                                                               ee6521f290b2   16 months ago   1.06MB
registry.k8s.io/coredns/coredns           v1.11.1                                                            1eeb4c7316ba   2 years ago     82MB
docker/desktop-vpnkit-controller          dc331cb22850be0cdd97c84a9cfecaf44a1afb6e                           7ecf567ea070   2 years ago     47MB
registry.k8s.io/pause                     3.9                                                                7031c1b28338   3 years ago     1.07MB
docker/desktop-storage-provisioner        v2.0                                                               115d77efe6e2   4 years ago     59.2MB
PS C:\Users\student> kubectl cluster-info
Kubernetes control plane is running at https://kubernetes.docker.internal:6443
CoreDNS is running at https://kubernetes.docker.internal:6443/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.
PS C:\Users\student> kubectl get nodes
NAME             STATUS   ROLES           AGE   VERSION
docker-desktop   Ready    control-plane   29d   v1.32.2
PS C:\Users\student> kubectl create deployment my-nginx --image=nginx
deployment.apps/my-nginx created
PS C:\Users\student> kubectl get deployments
NAME       READY   UP-TO-DATE   AVAILABLE   AGE
my-nginx   1/1     1            1           12s
PS C:\Users\student> kubectl get pods
NAME                        READY   STATUS    RESTARTS   AGE
my-nginx-5b584c864b-zxfch   1/1     Running   0          27s
PS C:\Users\student> kubectl expose deployment my-nginx --type=NodePort --port=80
service/my-nginx exposed
PS C:\Users\student> kubectl get svc
NAME         TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
kubernetes   ClusterIP   10.96.0.1       <none>        443/TCP        29d
my-nginx     NodePort    10.110.241.45   <none>        80:31548/TCP   14s
PS C:\Users\student>
```

2. Step 2 :enable kubernetes from docker.
Screenshot 2:



3. Step 3 :kubectl cluster-info
Description: Displays control plane and service endpoints.
Screenshot 3:

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PS C:\Users\student> kubectl cluster-info
Kubernetes control plane is running at https://kubernetes.docker.internal:6443
CoreDNS is running at https://kubernetes.docker.internal:6443/api/v1/namespaces/kube-system/services/kube-dns:dns/proxy

To further debug and diagnose cluster problems, use 'kubectl cluster-info dump'.
```

4. Step 4 :kubectl get nodes
Description: Lists all available nodes in the Kubernetes cluster.
Screenshot 4:

```
PS C:\Users\student> kubectl get nodes
NAME             STATUS   ROLES           AGE   VERSION
docker-desktop   Ready    control-plane   29d   v1.32.2
```

5. Step 5 :Deploy Nginx Application
kubectl create deployment my-nginx --image=nginx
Description: Creates a deployment running Nginx.
Screenshot 5:

```
PS C:\Users\student> kubectl create deployment my-nginx --image=nginx
deployment.apps/my-nginx created
```

kubectl get deployments
Description: Shows current deployments.

```
PS C:\Users\student> kubectl get deployments
NAME       READY   UP-TO-DATE   AVAILABLE   AGE
my-nginx   1/1     1            1           12s
```

kubectl expose deployment my-nginx --type=NodePort --port=80
Description: Exposes Nginx app via NodePort service.

```
PS C:\Users\student> kubectl expose deployment my-nginx --type=NodePort --port=80
service/my-nginx exposed
```

kubectl get svc
Description: Lists all services and shows the NodePort for access.

```
PS C:\Users\student> kubectl get svc
NAME         TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
kubernetes   ClusterIP   10.96.0.1       <none>        443/TCP        29d
my-nginx     NodePort    10.110.241.45   <none>        80:31548/TCP   14s
PS C:\Users\student>
```

Open a new tab in the browser and access the nginx page at http://localhost:/ 31548

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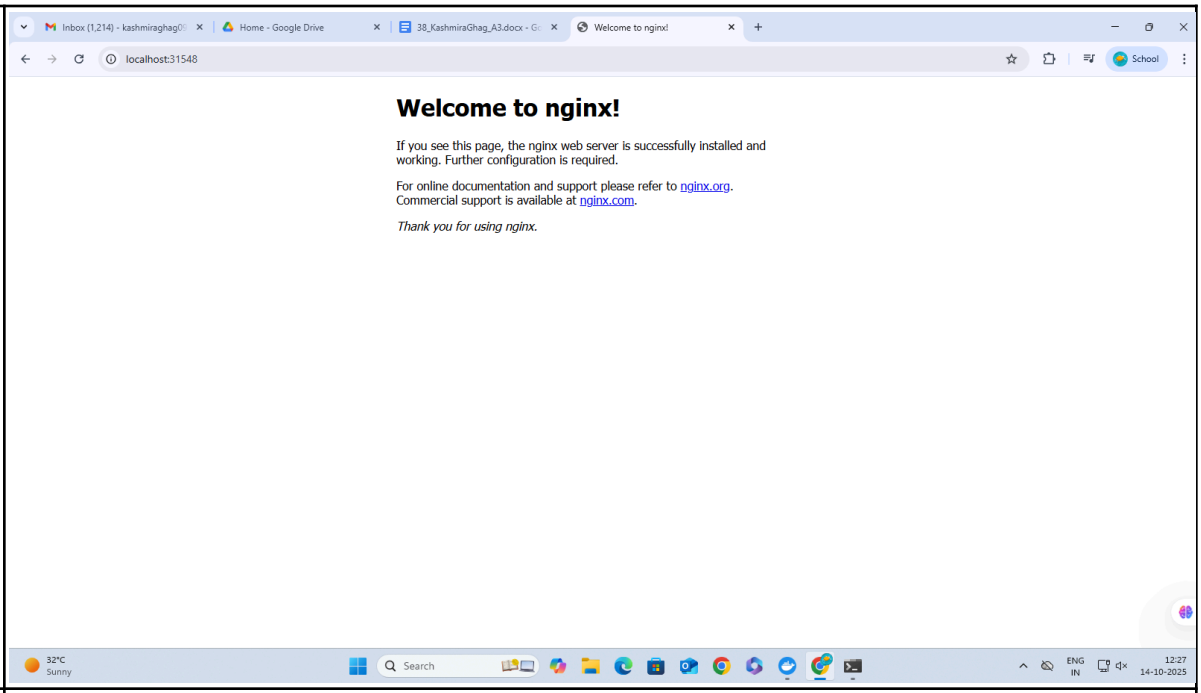

Note: Adjust SS to fit in the table row. SS should include username and timestamp. Add rows if needed

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