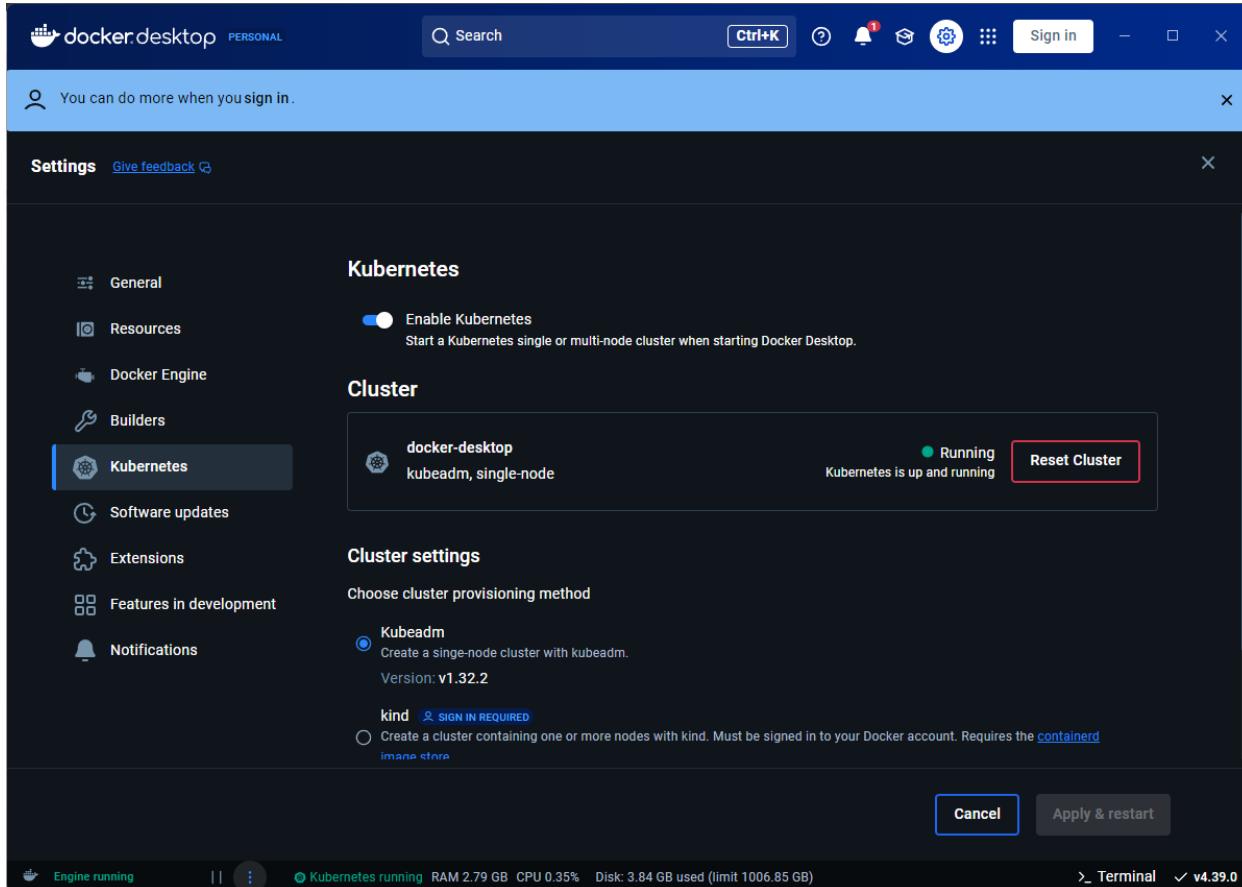
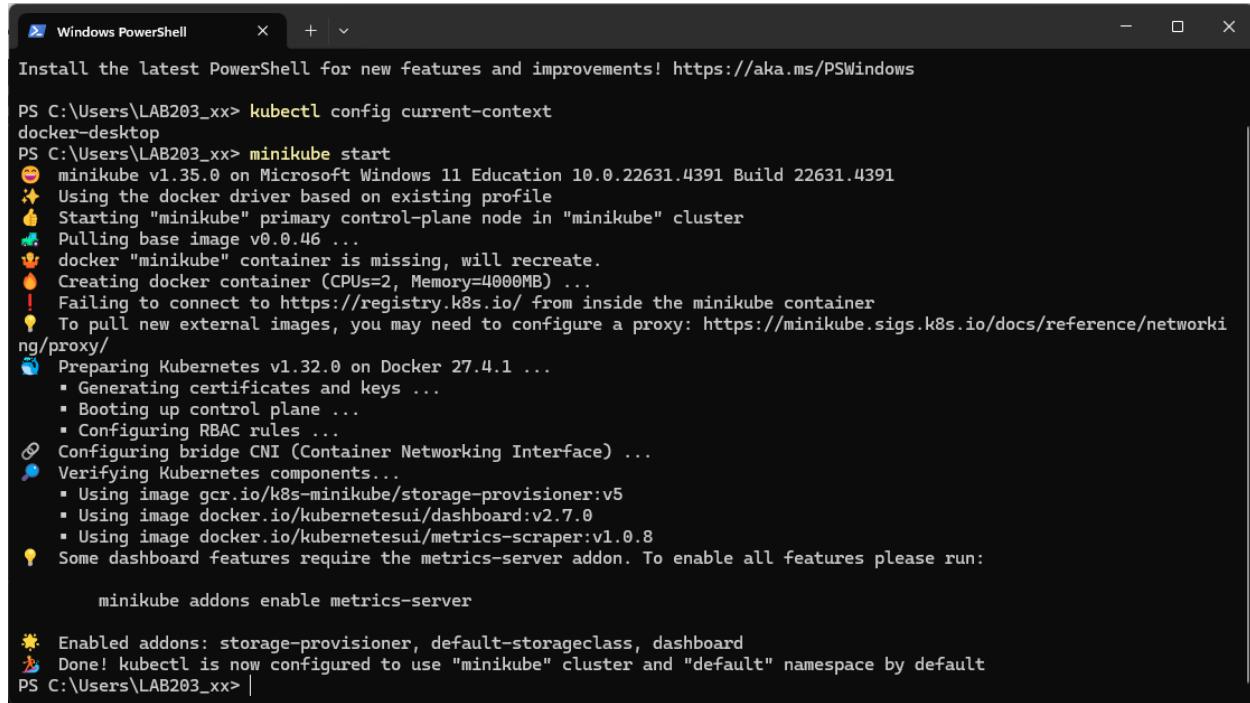


## Exercise: การใช้งาน Kubernetes เป็นต้น

ภาพหน้าจอที่แสดงว่า Kubernetes กำลังทำงานอยู่



## ภาพหน้าจอที่แสดงผลการรันคำสั่ง “minikube start”



```
Windows PowerShell

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\LAB203_xx> kubectl config current-context
docker-desktop
PS C:\Users\LAB203_xx> minikube start
🌟 minikube v1.35.0 on Microsoft Windows 11 Education 10.0.22631.4391 Build 22631.4391
💡 Using the docker driver based on existing profile
👉 Starting "minikube" primary control-plane node in "minikube" cluster
🌐 Pulling base image v0.0.46 ...
⚠️ docker "minikube" container is missing, will recreate.
🔥 Creating docker container (CPUs=2, Memory=4000MB) ...
❗️ Failing to connect to https://registry.k8s.io/ from inside the minikube container
💡 To pull new external images, you may need to configure a proxy: https://minikube.sigs.k8s.io/docs/reference/networking/proxy/
🌐 Preparing Kubernetes v1.32.0 on Docker 27.4.1 ...
    • Generating certificates and keys ...
    • Booting up control plane ...
    • Configuring RBAC rules ...
🌐 Configuring bridge CNI (Container Networking Interface) ...
🌐 Verifying Kubernetes components...
    • Using image gcr.io/k8s-minikube/storage-provisioner:v5
    • Using image docker.io/kubernetesui/dashboard:v2.7.0
    • Using image docker.io/kubernetesui/metrics-scraper:v1.0.8
💡 Some dashboard features require the metrics-server addon. To enable all features please run:
    minikube addons enable metrics-server
🌟 Enabled addons: storage-provisioner, default-storageclass, dashboard
🎉 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
PS C:\Users\LAB203_xx> |
```

## ภาพหน้าจอที่แสดง Minikube Dashboard

The screenshot shows a browser window displaying the Kubernetes Dashboard at <http://127.0.0.1:57705/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard/proxy/#/namespace=default>. The dashboard lists several namespaces: kubernetes-dashboard, default, kube-node-lease, kube-public, and kube-system. Below the dashboard, a Windows PowerShell window is open, showing the command `minikube addons enable metrics-server` being run, followed by output indicating the configuration of the minikube cluster and the enabling of the metrics-server addon.

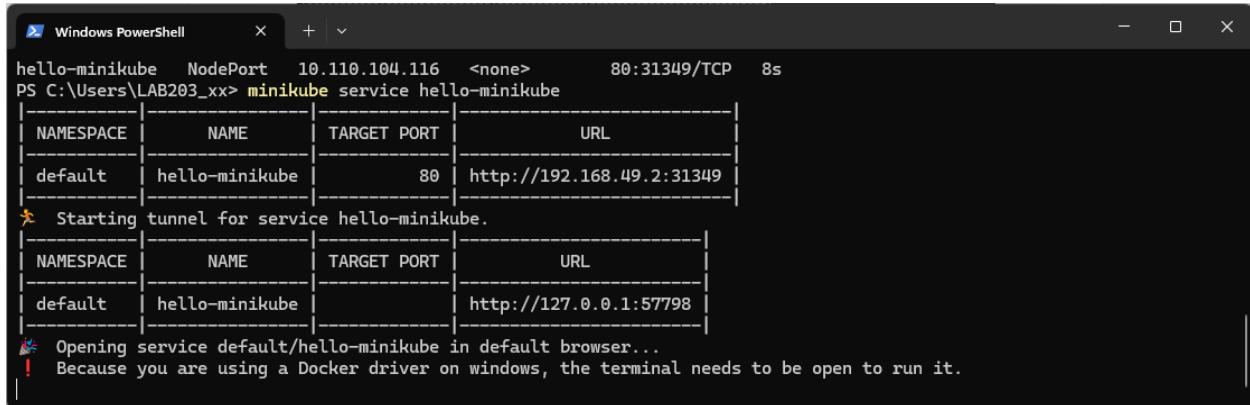
Name	Labels	Phase	Created
kubernetes-dashboard	addonmanager.kubernetes.io/mode: Reconcile kubernetes.io/metadata.name: kubernetes-dashboard kubernetes.io/minikube-addons: dashboard	Active	14 minutes ago
default	kubernetes.io/metadata.name: default	Active	14 minutes ago
kube-node-lease	kubernetes.io/metadata.name: kube-node-lease	Active	14 minutes ago
kube-public	kubernetes.io/metadata.name: kube-public	Active	14 minutes ago
kube-system	kubernetes.io/metadata.name: kube-system	Active	14 minutes ago

```

minikube addons enable metrics-server
* Enabled addons: storage-provisioner, default-storageclass, dashboard
Done! Minikube is now configured to use "minikube" cluster and "default" namespace by default
PS C:\Users\LAB203.xx> kubectl get nodes
NAME           STATUS    ROLES   AGE     VERSION
minikube       Ready    control-plane   13m   v1.32.0
PS C:\Users\LAB203.xx> kubectl get pods
No resources found in default namespace.
PS C:\Users\LAB203.xx> minikube dashboard
💡 Verifying dashboard health ...
💡 Launching proxy ...
💡 Verifying proxy health ...
💡 Opening http://127.0.0.1:57705/api/v1/namespaces/kubernetes-dashboard/services/http:kubernetes-dashboard/proxy/ in your default browser...

```

ภาพหน้าจอที่แสดงผลการรันคำสั่ง “minikube service hello-minikube”



```
Windows PowerShell
PS C:\Users\LAB203_xx> minikube service hello-minikube
hello-minikube   NodePort  10.110.104.116 <none>        80:31349/TCP  8s
PS C:\Users\LAB203_xx>
-----|-----|-----|-----|
| NAMESPACE | NAME | TARGET PORT | URL |
|-----|-----|-----|-----|
| default | hello-minikube | 80 | http://192.168.49.2:31349 |
|-----|-----|-----|-----|
✖ Starting tunnel for service hello-minikube.
-----|-----|-----|-----|
| NAMESPACE | NAME | TARGET PORT | URL |
|-----|-----|-----|-----|
| default | hello-minikube | | http://127.0.0.1:57798 |
|-----|-----|-----|-----|
❗ Opening service default/hello-minikube in default browser...
❗ Because you are using a Docker driver on windows, the terminal needs to be open to run it.
```

ภาพหน้าจอที่แสดงผลการรันคำสั่ง “kubectl get pods”

```
PS C:\Users\LAB203_xx> kubectl get pods
NAME                  READY   STATUS    RESTARTS   AGE
balanced-565f6795c7-5hxkg   1/1     Running   0          2m28s
hello-minikube-6f695484-bdpb8   1/1     Running   0          5m39s
PS C:\Users\LAB203_xx> |
```

ภาพหน้าจอที่แสดงผลการรันคำสั่ง “kubectl get nodes”

```
PS C:\Users\LAB203_xx> kubectl get nodes
NAME      STATUS    ROLES      AGE     VERSION
minikube  Ready     control-plane   22m    v1.32.0
PS C:\Users\LAB203_xx> |
```

ภาพหน้าจอที่แสดงผลการรันคำสั่ง “kubectl get namespaces”

```
PS C:\Users\LAB203_xx> kubectl get namespaces
NAME          STATUS  AGE
default        Active  24m
kube-node-lease  Active  24m
kube-public    Active  24m
kube-system    Active  24m
kubernetes-dashboard  Active  23m
PS C:\Users\LAB203_xx> |
```

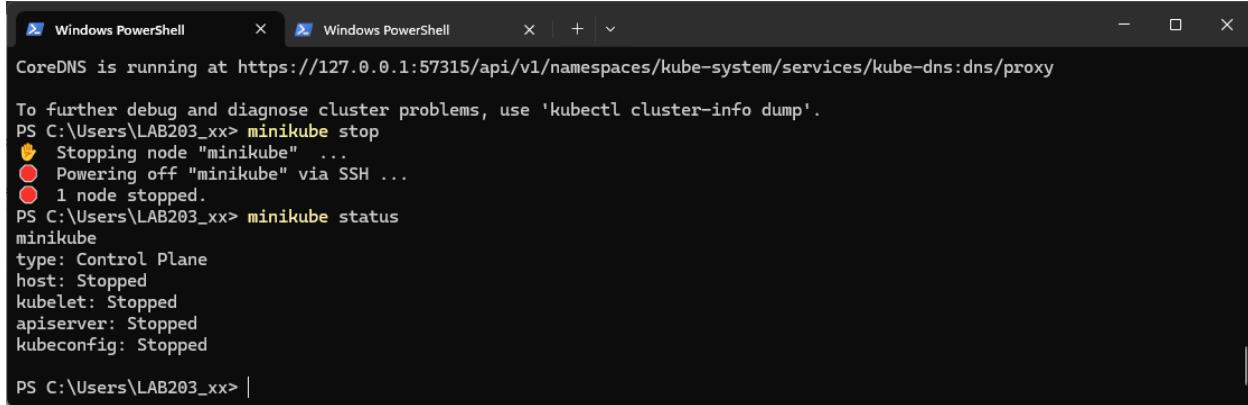
ภาพหน้าจอที่แสดงผลการรันคำสั่ง “kubectl get deployments”

PS C:\Users\LAB203_xx> kubectl get deployments				
NAME	READY	UP-TO-DATE	AVAILABLE	AGE
balanced	1/1	1	1	7m8s
hello-minikube	1/1	1	1	10m

ภาพหน้าจอที่แสดงผลการรันคำสั่ง “kubectl get services”

PS C:\Users\LAB203_xx> kubectl get services						
NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE	
balanced	LoadBalancer	10.108.73.127	127.0.0.1	80:32306/TCP	7m10s	
hello-minikube	NodePort	10.110.104.116	<none>	80:31349/TCP	10m	
kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	26m	

ภาพหน้าจอที่แสดงผลการรันคำสั่ง “minikube stop” และตามด้วยคำสั่ง “minikube status”



The screenshot shows two adjacent Windows PowerShell windows. The left window displays the output of the command `minikube stop`, which includes a progress bar indicating the stopping of a node named "minikube". The right window displays the output of the command `minikube status`, which shows the cluster status with "host" and "apiserver" both listed as "Stopped".

```
CoreDNS is running at https://127.0.0.1:57315/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\LAB203_xx> minikube stop
✋ Stopping node "minikube" ...
🔴 Powering off "minikube" via SSH ...
🔴 1 node stopped.
PS C:\Users\LAB203_xx> minikube status
minikube
type: Control Plane
host: Stopped
kubelet: Stopped
apiserver: Stopped
kubecfg: Stopped
PS C:\Users\LAB203_xx> |
```

ภาพหน้าจอที่แสดงผลการรันคำสั่ง “kubectl get events”

```
C:\Users\LAB203_xx> kubectl get events
LAST SEEN TYPE      REASON          OBJECT                                MESSAGE
12m   Normal    Scheduled      pod/balanced-565f6795c7-5hxkg
12m   Normal    Pulling       pod/balanced-565f6795c7-5hxkg
12m   Normal    Pulled       pod/balanced-565f6795c7-5hxkg
es.
12m   Normal    Created       pod/balanced-565f6795c7-5hxkg
12m   Normal    Started      pod/balanced-565f6795c7-5hxkg
12m   Normal    SuccessfulCreate  replicaset/balanced-565f6795c7
12m   Normal    ScalingReplicaSet deployment/balanced
15m   Normal    Scheduled      pod/hello-minikube-6f695484-bdpb8
15m   Normal    Pulling       pod/hello-minikube-6f695484-bdpb8
15m   Normal    Pulled       pod/hello-minikube-6f695484-bdpb8
.
15m   Normal    Created       pod/hello-minikube-6f695484-bdpb8
15m   Normal    Started      pod/hello-minikube-6f695484-bdpb8
15m   Normal    SuccessfulCreate  replicaset/hello-minikube-6f695484
15m   Normal    ScalingReplicaSet deployment/hello-minikube
31m   Warning   PossibleMemoryBackedVolumesOnDisk  node/minikube
o disk and should no longer be considered secure.
31m   Starting   Starting      node/minikube
31m   Warning   CgroupV1      node/minikube
31m   Normal    NodeAllocatableEnforced node/minikube
31m   Normal    NodeHasSufficientMemory node/minikube
31m   Normal    NodeHasNoDiskPressure node/minikube
31m   Normal    NodeHasSufficientPID node/minikube
31m   Normal    NodeHasNoNodeName node/minikube
31m   Normal    Starting      node/minikube
31m   Warning   PossibleMemoryBackedVolumesOnDisk  node/minikube
o disk and should no longer be considered secure.
8s    Normal    Starting      node/minikube
8s    Warning   CgroupV1      node/minikube
8s    Normal    NodeHasSufficientMemory node/minikube
8s    Normal    NodeHasNoDiskPressure node/minikube
8s    Normal    NodeHasSufficientPID node/minikube
8s    Normal    NodeAllocatableEnforced node/minikube
1s    Normal    RegisteredNode  node/minikube
8s    Normal    Starting      node/minikube
PS C:\Users\LAB203_xx>
```