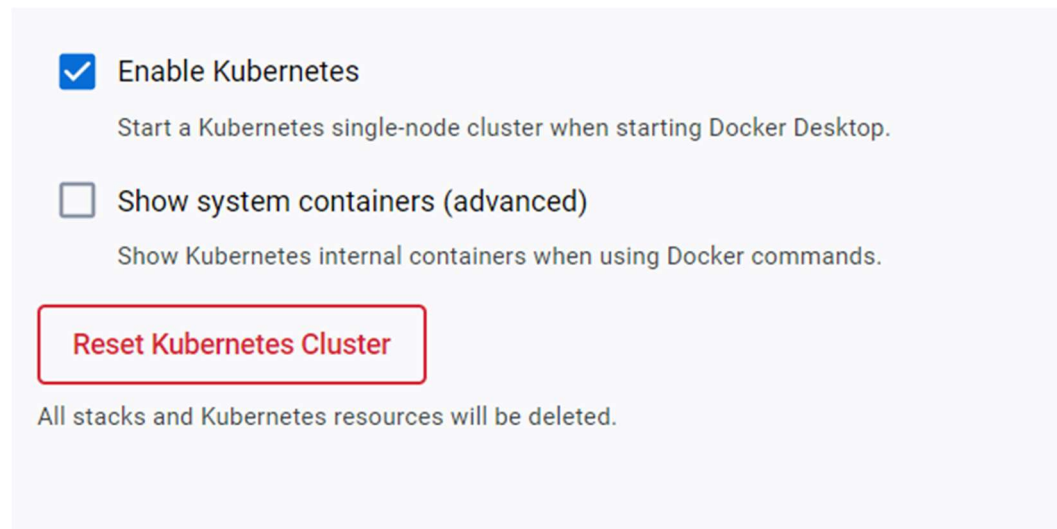


## Lab Exercise 7– Creating Pods in Kubernetes

Below is a lab exercise that will help you understand and practice creating pods in Kubernetes:

### Task 1: Start Kubernetes in Docker-Desktop

- Start Kubernetes service in Docker-Desktop



### Task 2: Creating a Simple Pod

- Create a simple YAML manifest file named pod.yaml to define a basic Pod in Kubernetes. An example of the file content is as follows:

```
exp7 > ! pod.yaml
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    name: example-pod
5  spec:
6    containers:
7      - name: my-container
8        image: nginx:latest # Replace 'nginx:latest' with your desired image and tag
```

Apply the Pod configuration using the following command:

```
kubectl apply -f pod.yaml
```

```
"image"
PS C:\Users\manya\OneDrive\Desktop\ACO\exp7> kubectl apply -f pod.yaml
pod/example-pod created
PS C:\Users\manya\OneDrive\Desktop\ACO\exp7> █
```

Check the status of the Pod using the following command:

```
kubectl get pods
```

```
pod/example-pod created
PS C:\Users\manya\OneDrive\Desktop\ACO\exp7> kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
example-pod    1/1     Running   0           61s
PS C:\Users\manya\OneDrive\Desktop\ACO\exp7> █
```

### Task 3: Accessing the Pod

Access the Pod by using port forwarding to the container. Run the following command:

```
kubectl port-forward my-nginx-pod 8080:80
```

```
PS C:\Users\manya\OneDrive\Desktop\ACO\exp7> kubectl port-forward example-pod 8080:80
Forwarding from 127.0.0.1:8080 -> 80
Forwarding from [::1]:8080 -> 80
█
```

Access the Nginx server running in the Pod by opening a web browser and navigating to <http://localhost:8080>.

### Task 4: Exploring Pod Details

Retrieve detailed information about the Pod using the following command:

```
kubectl describe pod my-nginx-pod
```

```

PS C:\Users\manya\OneDrive\Desktop\ACO\exp7> kubectl describe pod example-pod
Name:          example-pod
Namespace:     default
Priority:       0
Service Account: default
Node:          docker-desktop/192.168.65.3
Start Time:    Sun, 03 Dec 2023 14:58:32 +0530
Labels:        <none>
Annotations:    <none>
Status:        Running
IP:            10.1.0.6
IPs:
  IP: 10.1.0.6
Containers:
  my-container:
    Container ID:  docker://95aff9082fbd65a4a28dc5c58302687c470d422e0126cf14bfa2e304b3db88d3
    Image:         nginx:latest
    Image ID:      docker-pullable://nginx@sha256:10d1f5b58f74683ad34eb29287e07dab1e90f10af243f151bb50aa5dbb4d62ee
    Port:         <none>

```

Check the logs of the Pod to understand its behavior using the following command:

```
kubectl logs my-nginx-pod
```

```

PS C:\Users\manya\OneDrive\Desktop\ACO\exp7> kubectl describe pod example-pod
Name:          example-pod
Namespace:     default
Priority:       0
Service Account: default
Node:          docker-desktop/192.168.65.3
Start Time:    Sun, 03 Dec 2023 14:58:32 +0530
Labels:        <none>
Annotations:    <none>
Status:        Running
IP:            10.1.0.6
IPs:
  IP: 10.1.0.6
Containers:
  my-container:
    Container ID:  docker://95aff9082fbd65a4a28dc5c58302687c470d422e0126cf14bfa2e304b3db88d3
    Image:         nginx:latest
    Image ID:      docker-pullable://nginx@sha256:10d1f5b58f74683ad34eb29287e07dab1e90f10af243f151bb50aa5dbb4d62ee

```

## Task 5: Deleting the Pod

Delete the Pod using the following command:

```
kubectl delete pod my-nginx-pod
```

```

2023/12/03 09:29:13 [notice] 1#1: start worker process 36
PS C:\Users\manya\OneDrive\Desktop\ACO\exp7> kubectl delete pod example-pod
pod "example-pod" deleted
PS C:\Users\manya\OneDrive\Desktop\ACO\exp7>

```

Verify that the Pod has been deleted by running the kubectl get pods command.

```

PS C:\Users\manya\OneDrive\Desktop\ACO\exp7> kubectl get pods
No resources found in default namespace.
PS C:\Users\manya\OneDrive\Desktop\ACO\exp7>

```

## **Task 6: Advanced Pod Configuration**

- Experiment with advanced Pod configuration options such as environment variables, volume mounts, resource limits, and labels.
- Update the Pod manifest file and apply the changes to the Kubernetes cluster.

## **Task 7: Cleanup**

Delete any remaining Pods, services, and deployments created during the exercise using the appropriate `kubectl` delete commands.

## **Task 8: Documentation and Best Practices**

Document your findings and the best practices for creating and managing Pods in Kubernetes.

Through this exercise, you'll gain a better understanding of how to create, manage, and interact with Pods in Kubernetes. Adjust the exercise based on your specific use case and requirements.