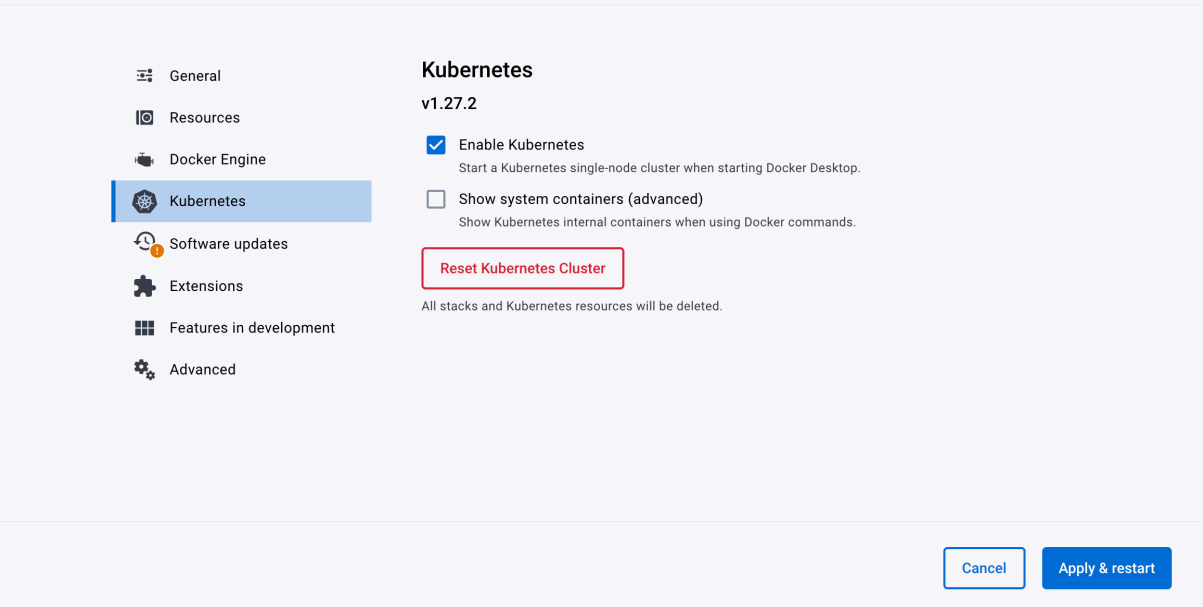
Lab Exercise 7– Creating Pods in Kubernetes

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:

Apply the Pod configuration using the following command:

```
(base) vanshika@VANSHIKAs-MacBook-Air Kubernetes-Lab % kubectl apply -f pod.yml
pod/my-gfg-np-pod-2 created
```

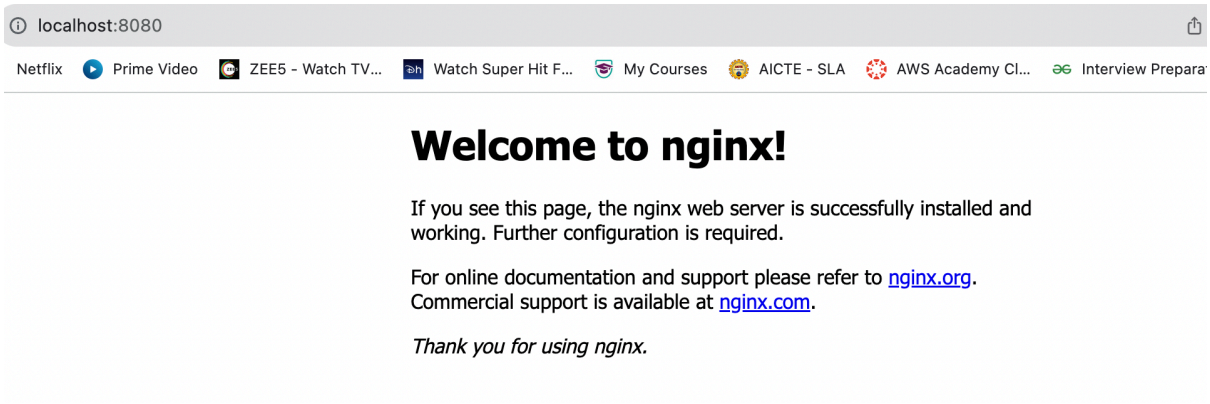
Check the status of the Pod using the following command:

```
(base) vanshika@VANSHIKAs-Air Kubernetes-Lab % kubectl get pods
NAME              READY   STATUS    RESTARTS   AGE
my-gfg-np-pod-2   1/1     Running   0          6m10s
my-nginx-pod      1/1     Running   0          3m48s
```

Task 3: Accessing the Pod

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

```
(base) vanshika@VANSHIKAs-Air Kubernetes-Lab % kubectl port-forward my-nginx-pod 8080:80
Forwarding from [::1]:8080 -> 80
Handling connection for 8080
Handling connection for 8080
```



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:

```
(base) vanshika@VANSHIKAs-Air Kubernetes-Lab % kubectl describe pod my-nginx-pod
Name:             my-nginx-pod
Namespace:        default
Priority:         0
Service Account:  default
Node:             docker-desktop/192.168.65.4
Start Time:       Fri, 20 Oct 2023 13:27:14 +0530
Labels:           app=lblnginx
Annotations:      <none>
Status:           Running
IP:               10.1.0.15
IPs:
  IP:  10.1.0.15
```

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

```
(base) vanshika@VANSHIKAs-Air Kubernetes-Lab % kubectl logs my-nginx-pod
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuratio
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
```

Task 5: Deleting the Pod

Delete the Pod using the following command:

```
(base) vanshika@VANSHIKAs-Air Kubernetes-Lab % kubectl delete pod my-gfg-np-pod-2
pod "my-gfg-np-pod-2" deleted
```

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

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.