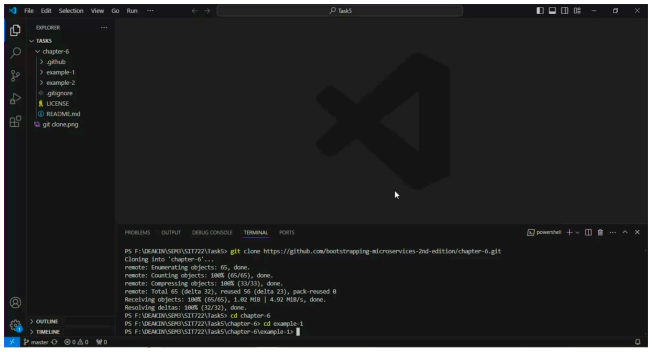
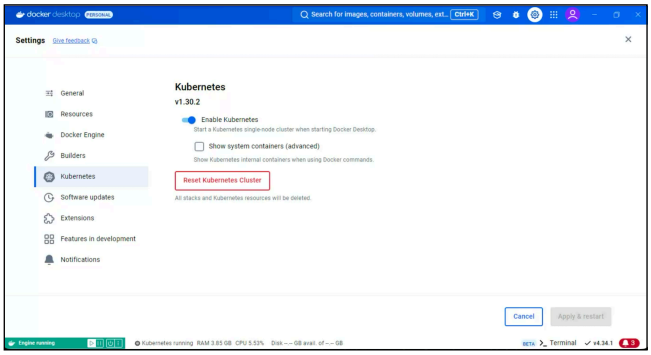
SIT722: TASK 5.1: DEPLOYING A MICRO-SERVICE TO KUBERNETES CLUSTER

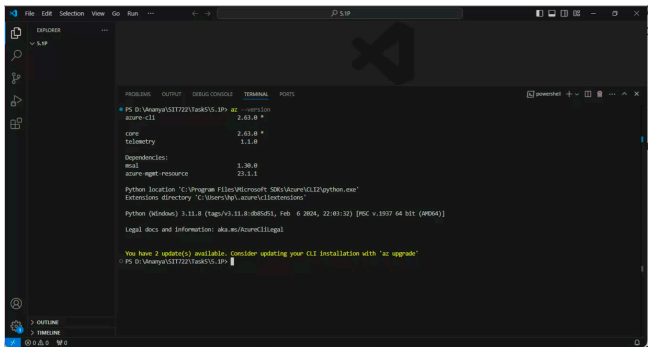
Step 1: Git clone the repository for chapter-6.

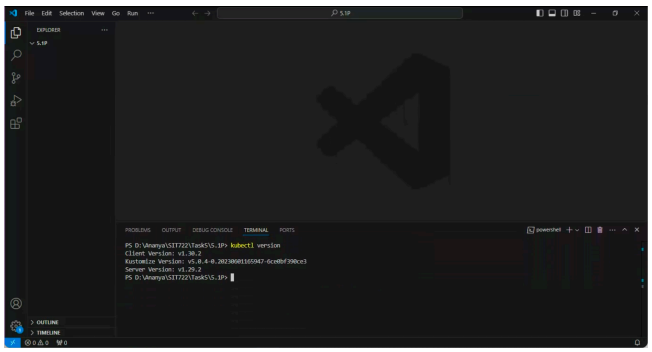


Step 2: Kubernetes engine is enabled on docker desktop.



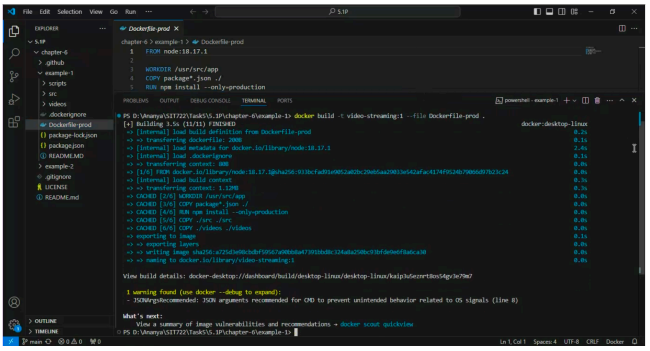
Step 3: Terminal results for commands az --version and kubectl version.



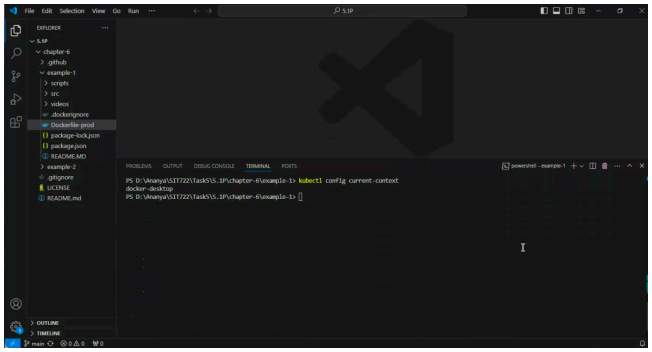


Step 4: The outputs for following commands is exhibited-

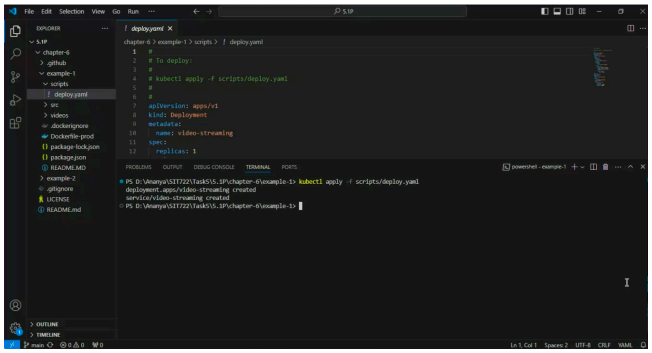
1. docker build,



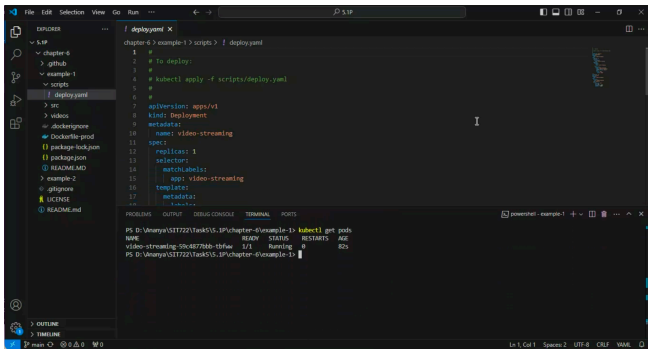
2. kubectl config current-context,



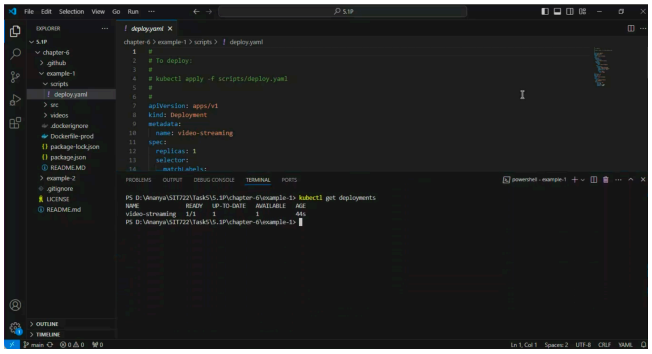
3. kubectl apply,



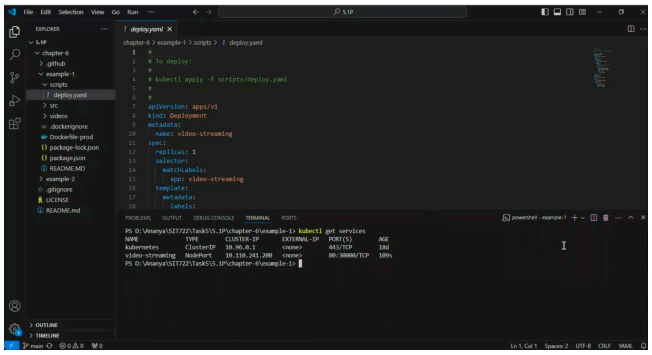
4. kubectl get pods,



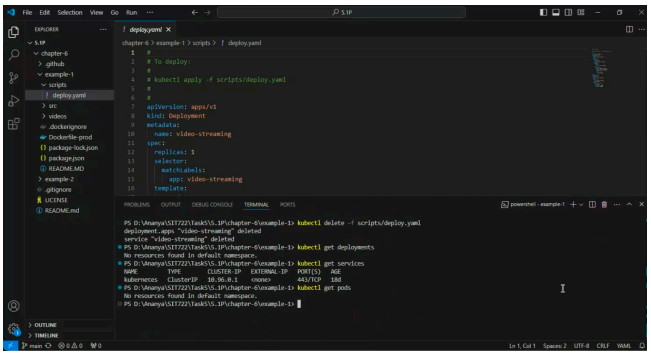
5. kubectl get deployments,



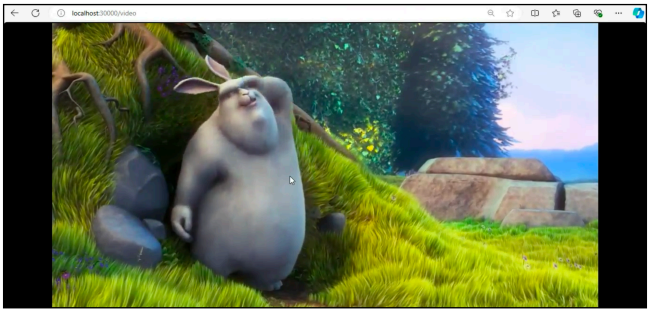
6. kubectl get services and



7. kubectl delete



Step 5: Browser result of streamed video, represents successful running of application.



Short Answers-

1. The 'deploy.yaml' file for example-1 of chapter-6 clearly indicates that it has 2 sections- deployment and service section. The table, will elaborate on meaning of each line of this file-

Deployment Section-

- apiVersion: apps/v1==>> This defines the version of the Kubernetes API being used. Apps/v1 is commonly used for managing deployments
- kind: Deployment ==>> Specifies that this is a Kubernetes deployment. A deployment is responsible for managing and ensuring that the desired number of application replicas are running.
- metadata: name: video-streaming ==>> metadata defines metadata for the deployment such as the name. In this case the deployment is named video-streaming.
- spec: replicas:1 ==>> spec defines the desired state of the deployment. Here, replicas:1 means Kubernetes will maintain one replica or instance of the video-streaming application.
- selector: matchLabels: app:video-streaming ==>> The selector specifies how Kubernetes identifies the pods managed by this deployment. It matches with any pods with the label app:video-streaming, ensuring only those pods are controlled by this deployment.
- template: metadata: labels: app:video-streaming ==>> templates defines the template used to create Pods for the deployment.The labels within the template assign the app:video-streaming label to these pod, allowing them to be selected by the deployment
- spec: containers: name: video-streaming ==>> This spec block defines the specifications for the containers inside each pod. Here, the single container is video-streaming.
- image: video-streaming:1 ==>> The image specifies the container image that Kubernetes will pull to run the application. In this case, it is an image named video-streaming, with version 1.
- imagePullPolicy: Never ==>> It tells Kubernetes to use the local copy of the container image and not to try pulling the image from a registry.
- env: name:PORT value: 4000 ==>> env defines the environment variables passed to the container. Here, a variable need 'PORT' is set to 4000. This is likely used to configure the application to run on the port 4000 within the container.

Service Section-

- apiVersion: v1==>> This defines the version of the Kubernetes API for the service resource. V1 is used for the most basic Kubernetes objects like services.
- kind: Service ==>> Specifies that this is a Kubernetes Service resource. A service provides a stable network endpoint to access one or more pods.
- metadata: name: video-streaming ==>> It defines metadata for the service, such as the name. Here, service is named video-streaming.
- spec: selector: app:video-streaming==>> spec defines the service's configuration. The selector specifies that the service should route traffic to pods with the label app:video-streaming (Matching the deployment's pods).
- type: NodePort ==>> It exposes the service on a static port on each Node in the Kubernetes cluster. This allows external access to the service via the node's IP address and the node port.
- ports: protocol:TCP port:80 targetPort:4000 nodePort:30000 ==>> protocol:TCP specifies that the service uses the TCP protocol. Port:80 is the port that the service will expose externally (on the node). targetPort:4000 is the internal port on the container where traffic will be directed (matching the port environment variable). nodePort:30000 is the static port on the node where external traffic can access the service. In this case the service will be accessible at http://<node-ip>:30000.

2. The latest Kubernetes version used in example 1 is v1.29.2.