

CLOUD COMPUTING AND DEVOPS

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Assignment 8: Deploy Web app using Kubernetes

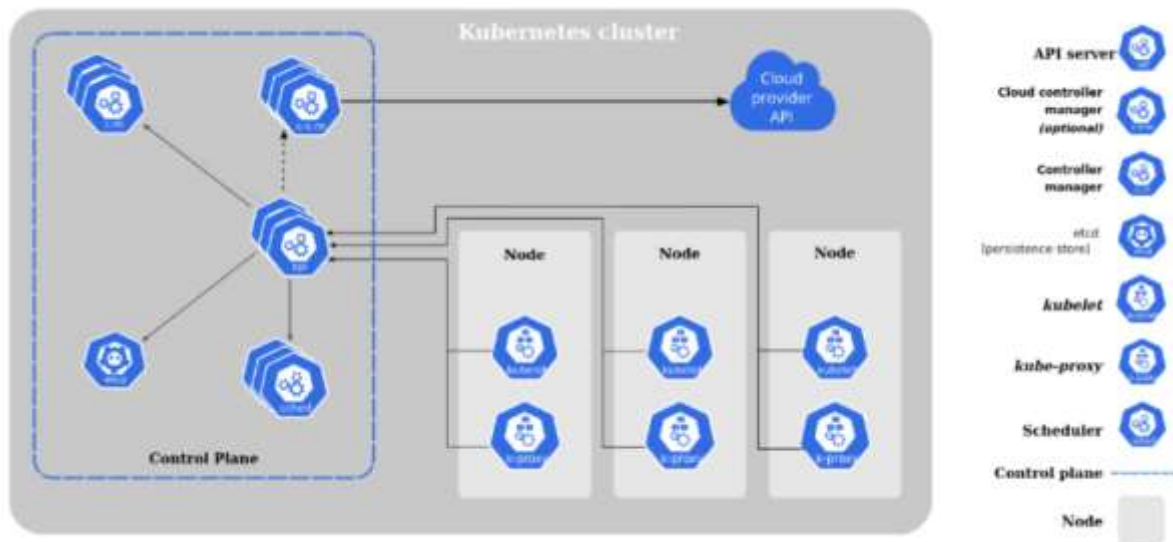
Theory:

Kubernetes is a portable, extensible, open-source platform for managing containerized workloads and services, that facilitates both declarative configuration and automation. It has a large, rapidly growing ecosystem. Kubernetes services, support, and tools are widely available. The name Kubernetes originates from Greek, meaning helmsman or pilot. Google open-sourced the Kubernetes project in 2014. Kubernetes combines over 15 years of Google's experience running production workloads at scale with best-of-breed ideas and practices from the community.

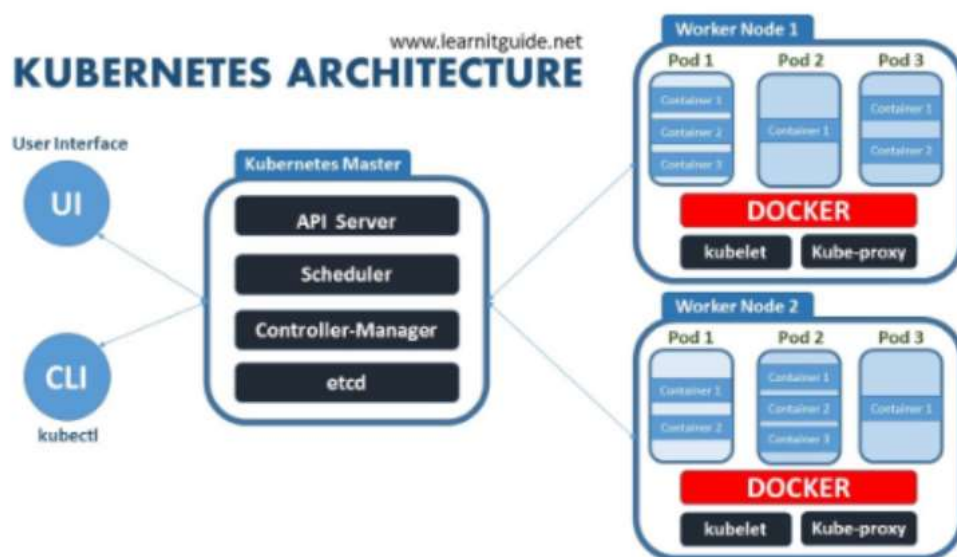
Containers are a good way to bundle and run your applications. In a production environment, you need to manage the containers that run the applications and ensure that there is no downtime. For example, if a container goes down, another container needs to start. Wouldn't it be easier if this behaviour was handled by a system?

That's how Kubernetes comes to the rescue! Kubernetes provides you with a framework to run distributed systems resiliently. It takes care of scaling and failover for your application, provides deployment patterns, and more. For example, Kubernetes can easily manage a canary deployment for your system.

Kubernetes components



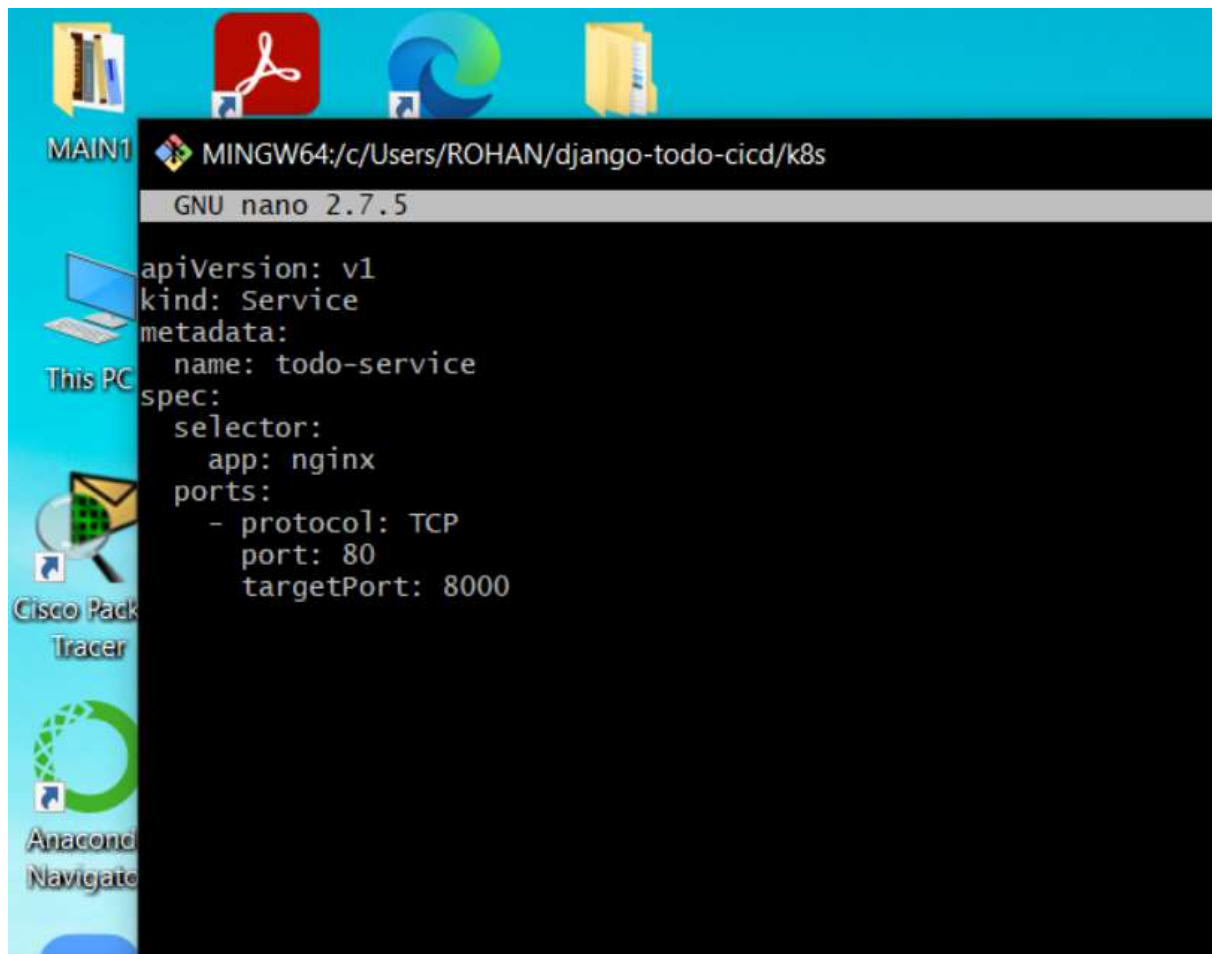
Kubernetes architecture



Assignment:

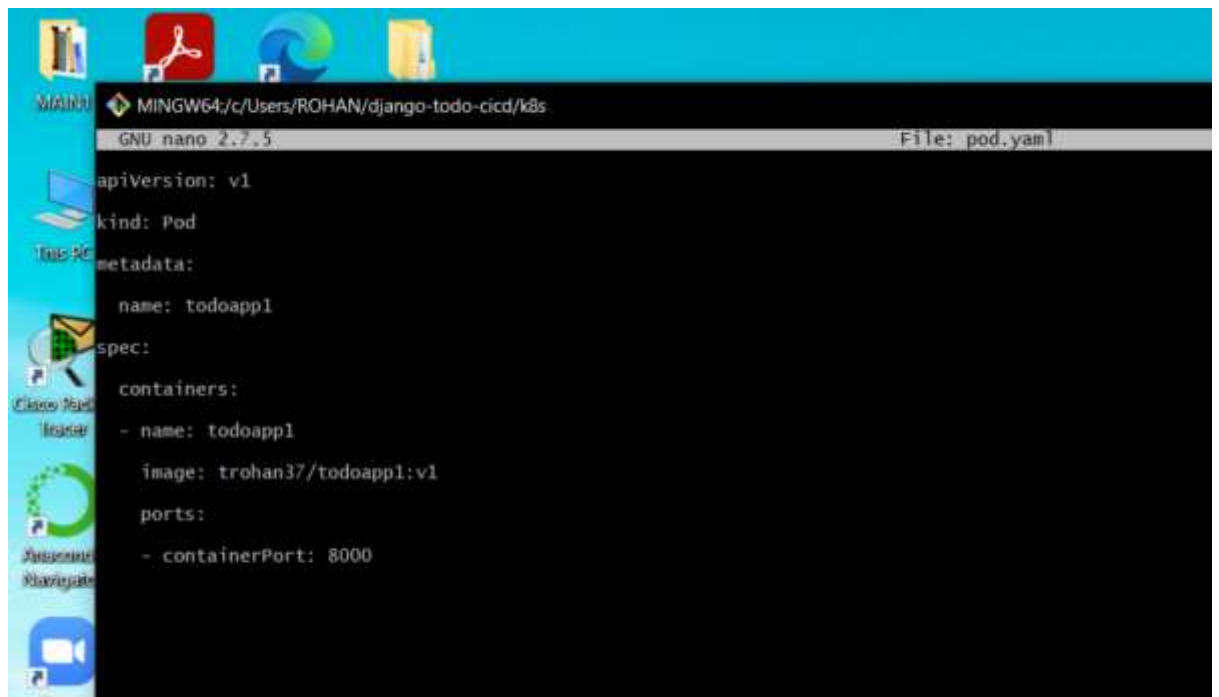
Setup and managed docker container for a Django app, Deployed pods on a Kubernetes cluster, Configured auto healing and autoscaling properties, Enabled Kubernetes services and load balancing.

Creating Kubernetes service



```
MAIN1 MINGW64:/c/Users/ROHAN/django-todo-cicd/k8s
GNU nano 2.7.5
apiVersion: v1
kind: Service
metadata:
  name: todo-service
spec:
  selector:
    app: nginx
  ports:
    - protocol: TCP
      port: 80
      targetPort: 8000
```

Kubernetes pod

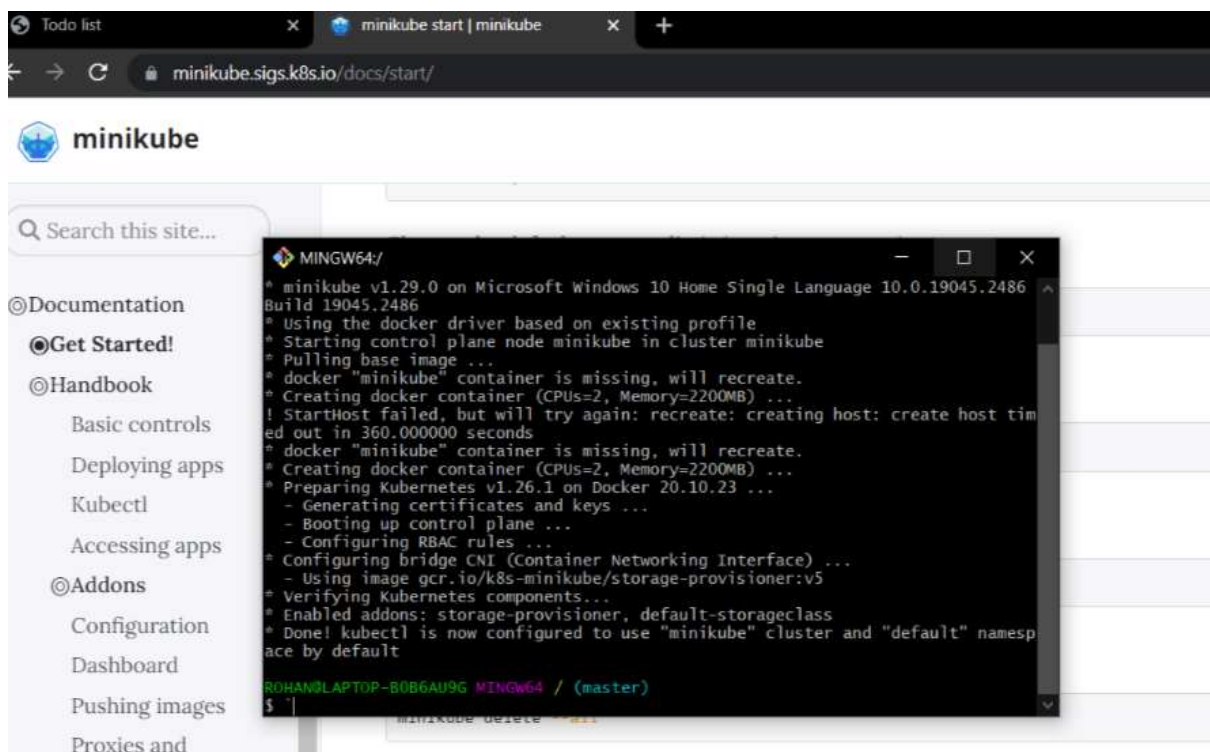


The screenshot shows a Windows desktop environment. A terminal window is open, displaying the contents of a file named `pod.yaml` using the `nano` text editor. The terminal's title bar indicates the path `MINGW64/c/Users/ROHAN/django-todo-cicd/k8s`. The configuration in the file is as follows:

```
apiVersion: v1
kind: Pod
metadata:
  name: todoapp1
spec:
  containers:
  - name: todoapp1
    image: trohan37/todoapp1:v1
    ports:
    - containerPort: 8000
```

The desktop background is blue, and several application icons are visible on the left side of the taskbar, including a folder, a PDF file, a web browser, and a file explorer.

Adding Kubernetes services



Creating and running docker container

[illegible]