www.seniorsteps.net contact us: 0224153419 - 01090873748 عمارة 4 ـ شارع محمد توفيق دياب ـ عباس العقاد ـ مدينة نصر ـ الدورال 1

# (Senior Academy - IT training center)

## The Place You Can Be A Senior



www.seniorsteps.net https://www.facebook.com/seniorsteps.it

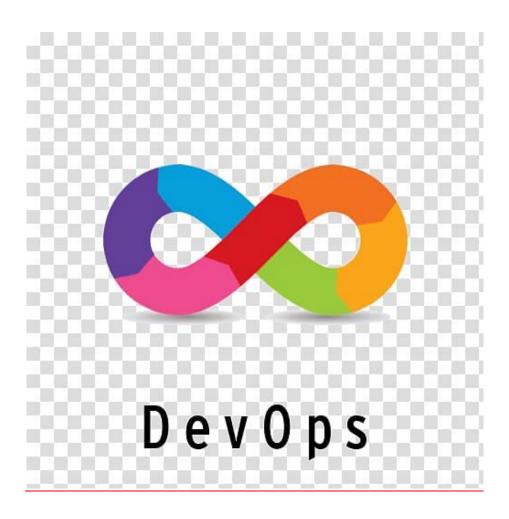
contact us: 0224153419 - 01090873748

فرع مدينة نصر 1: عمارة 4 - شارع محمد توفيق دياب - عباس العقاد - مدينة نصر - الدورال 1

www.seniorsteps.net contact us: 0224153419 - 01090873748

عمارة 4 - شارع محمد توفيق دياب - عباس العقاد - مدينة نصر - الدورال 1

# **DevOps Engineer Diploma**



www.seniorsteps.net

contact us: 0224153419 - 01090873748

عمارة 4 - شارع محمد توفيق دياب - عباس العقاد - مدينة نصر - الدورال 1

# **DevOps Engineer Diploma**



<u>Kubernetes Labs</u> <u>Lab 05</u>

# MySQL Deployment with ConfigMap, Secrets & PV/PVC

# ### Lab Objectives

- Working with ConfigMaps and Secrets
- Deploying Databases Using Persistent Storage (PV/PVC)
- Applying Taints and Tolerations for Node Isolation
- Managing Deployments and Services for Database Access
- Verifying Resource Binding and Scheduling in Kubernetes
- Practicing Secure Configuration and Environment Management

## www.seniorsteps.net

#### contact us: 0224153419 - 01090873748

عمارة 4 - شارع محمد توفيق دياب - عباس العقاد - مدينة نصر - الدورال 1

#### Lab Overview:

Deploy a MySQL database on a dedicated worker node using Kubernetes best practices.

You must use:

- ConfigMap and Secret from .txt files
- Persistent Volume (PV) and Persistent Volume Claim (PVC) for storage
- **Taint/Toleration** to isolate the database node
- **Deployment** and **Service** for database management and access

#### **Step 1 - Node Preparation**

- Apply a **Taint** on node01 so that only pods with the correct toleration can run there.
  - Key: dbValue: only
  - o **Effect:** NoSchedule

#### Step 2 - Configuration Files

Create two .txt files:

- **config.txt**  $\rightarrow$  for MySQL configuration values
  - o Example: port, bind address, etc.
- **secret.txt** → for MySQL credentials
  - o Example: root password, user, password, database name

#### **Step 3 - Kubernetes Resources**

Create the following resources using YAML files or kubectl commands:

- ConfigMap from config.txt
- **Secret** from secret.txt
- PersistentVolume (PV) of size 2Gi using hostPath /mnt/data/mysql
- PersistentVolumeClaim (PVC) requesting 1Gi storage
- **Deployment** named **mysql-deployment**:
  - o Image: mysql:8.0
  - Environment variables loaded from ConfigMap and Secret
  - o Mount the PVC to /var/lib/mysql
  - Add a **Toleration** matching the taint applied to node01

### www.seniorsteps.net

#### contact us: 0224153419 - 01090873748

عمارة 4 - شارع محمد توفيق دياب - عباس العقاد - مدينة نصر - الدورال 1

• Service named mysql-service:

Type: ClusterIP

o Port: **3306** 

o TargetPort: 3306

#### **Step 4 - Verification**

### Verify that:

- The MySQL Pod is scheduled on node01.
- The **ConfigMap** and **Secret** are correctly loaded.
- The **PVC** is bound to the **PV**.
- The **Service** is created successfully.

### **Submission Requirements**

- 1. Screenshot of all applied resources:
- 2. kubectl get all, pv, pvc -o wide
- 3. YAML files (if used).

You are Welcome