DevOps Practical Assessment

Objective:

Create a MySQL cluster in Kubernetes and deploy a simple API that records client IPs to the database.

Provided Environment:

- Single EC2 machine (2vCPU, 4GB Memory, 30GB Root Volume)
- Publicly accessible

Task Requirements:

1. Setup a kubernetes node on the EC2 machine
    a. Choose a suitable k8s distribution for a single VM deployment
2. Deploy a MYSQL Cluster
    a. 1 primary, 2 secondary configuration
    b. Ensure the data survives pod restarts
    c. Namespace: `db`
3. Write and Deploy a REST API application
    a. Choose any language/framework you are comfortable with
    b. Application must
        i. Expose an api path: `POST /log-ip`
        ii. Upon calling `/log-ip` it should take the source ip of the caller and insert it into a table in the MYSQL Cluster
    c. Namespace: `web`

The Database Cluster and REST API must be publicly accessible by using the EC2 Public IP

Deliverables:

- Connection to Database and REST API functionality must be testable
- A **single public GitHub repository** containing:
    - Cluster configuration used to deploy the cluster
    - Kubernetes manifests (YAML files)
    - API source code
    - Dockerfile for the REST API
    - Any setup scripts or helper files
    - A `README.md` explaining:
        - Prerequisites
        - Setup instructions
        - How to test the API
        - Validation of MySQL replication
        - Any limitations or considerations

Deadline:

The assignment must be completed within **2 Hours** upon receiving the document.