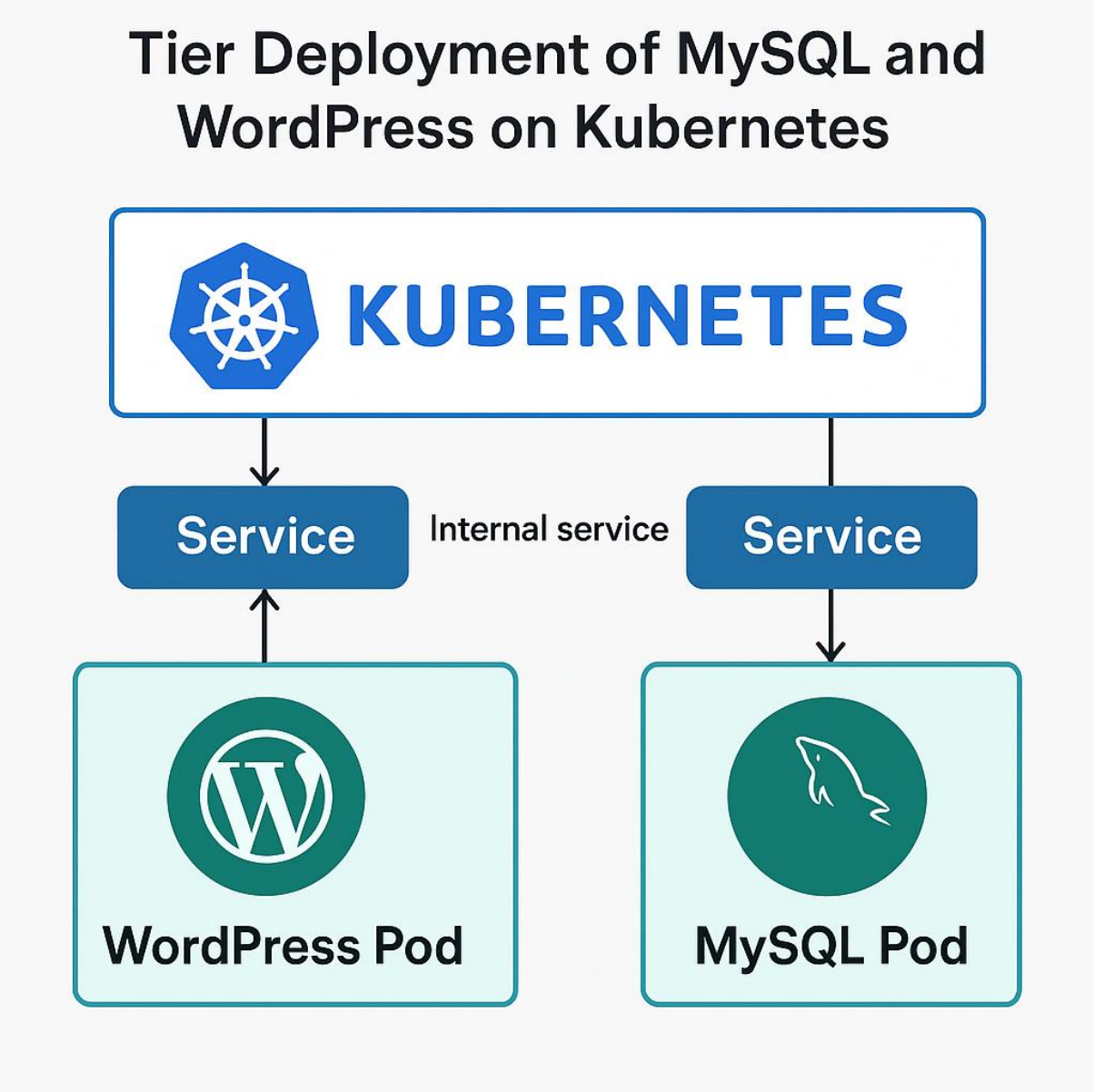
Deployment of MySQL and WordPress on Kubernetes

Objective

To deploy a 2-tier application on Kubernetes where:

- **Tier 1: MySQL acts as the database backend**
- **Tier 2: WordPress acts as the frontend PHP application**
- **Services are exposed using ClusterIP and NodePort**



1️⃣ MySQL Deployment (Database Tier)

✅ Step 1: Generate Deployment YAML

kubectl create deployment dbserver --image=mysql:latest --dry-run=client -o yaml > dbserver.yaml

```
controlplane:~$  kubectl create deployment dbserver --image mysql:latest --dry-run=client -o yaml > dbserver.yaml
controlplane:~$ ls
dbserver.yaml  filesystem
```

📝 Edit the YAML (dbserver.yaml)

```
env:
  - name: MYSQL_ROOT_PASSWORD
    value: mypass@123
  - name: MYSQL_DATABASE
    value: unnati
  - name: MYSQL_USER
    value: satyajit
  - name: MYSQL_PASSWORD
    value: mypass@12345
```

Apply the Deployment

kubectl apply -f dbserver.yaml

kubectl get deployments

kubectl get pods

```
controlplane:~$ kubectl get deployment
NAME       READY   UP-TO-DATE   AVAILABLE   AGE
dbserver   1/1     1            1           62s
controlplane:~$ kubectl get pods
NAME                        READY   STATUS    RESTARTS   AGE
dbserver-7fb7c7566f-dtqz8   1/1     Running   0          88s
controlplane:~$
```

For the confirmation you go to container and login in mysql database and using show databases you can check your database is created or not.

```
controlplane:~$ kubectl exec -it dbserver-7c87459794-n7lp9 -- bash
bash-5.1# mysql -usatyajit -pmypass@12345
```

```
mysql> show databses;
ERROR 1064 (42000): You have a
hat corresponds to your MySQL
r 'databses' at line 1
mysql> show databases;
+--------------------+
| Database           |
+--------------------+
| information_schema |
| performance_schema |
| unnati             |
+--------------------+
3 rows in set (0.005 sec)

mysql>
```

🌐 **Expose MySQL as a Service**

kubectl expose deployment dbserver --port=3306
kubectl get svc

```
controlplane:~$ kubectl expose deployment dbserver --port 3306
service/dbserver exposed
controlplane:~$ kubectl get svc
NAME         TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)    AGE
dbserver     ClusterIP   10.99.136.70   <none>        3306/TCP   3s
kubernetes   ClusterIP   10.96.0.1      <none>        443/TCP    18d
controlplane:~$
```

2️⃣ WordPress Deployment (Application Tier)

✅ Step 2: Generate Deployment YAML

kubectl create deployment mywordpress --image=wordpress:latest --dry-run=client -o yaml > wp.yaml

```
controlplane:~$ kubectl create deployment mywordpress --image wordpress:late
st --dry-run=client -o yaml > wp.yaml
```

📝 Edit the YAML (wp.yaml) add this in yaml file

```
env:
  - name: WORDPRESS_DB_HOST
    value: dbserver
  - name: WORDPRESS_DB_USER
    value: satyajit
  - name: WORDPRESS_DB_PASSWORD
    value: mypass@12345
  - name: WORDPRESS_DB_NAME
    value: unnati
resources: {}
```

📦 Apply the Deployment

kubectl apply -f wp.yaml

kubectl get deployments

kubectl get pods

```
controlplane:~$ kubectl apply -f wp.yaml
deployment.apps/mywordpress created
controlplane:~$ vim wp.yaml
```

```
controlplane:~$ kubectl get deployments
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
dbserver      1/1     1            1           18m
mywordpress   1/1     1            1           3m30s
controlplane:~$ kubectl get pods
NAME                           READY   STATUS    RESTARTS   AGE
dbserver-7c87459794-n7lp9      1/1     Running   0          13m
mywordpress-64698b7578-rdm5h   1/1     Running   0          3m42s
controlplane:~$
```

🌎 Expose WordPress with NodePort

kubectl expose deployment mywordpress --port=80 --type=NodePort

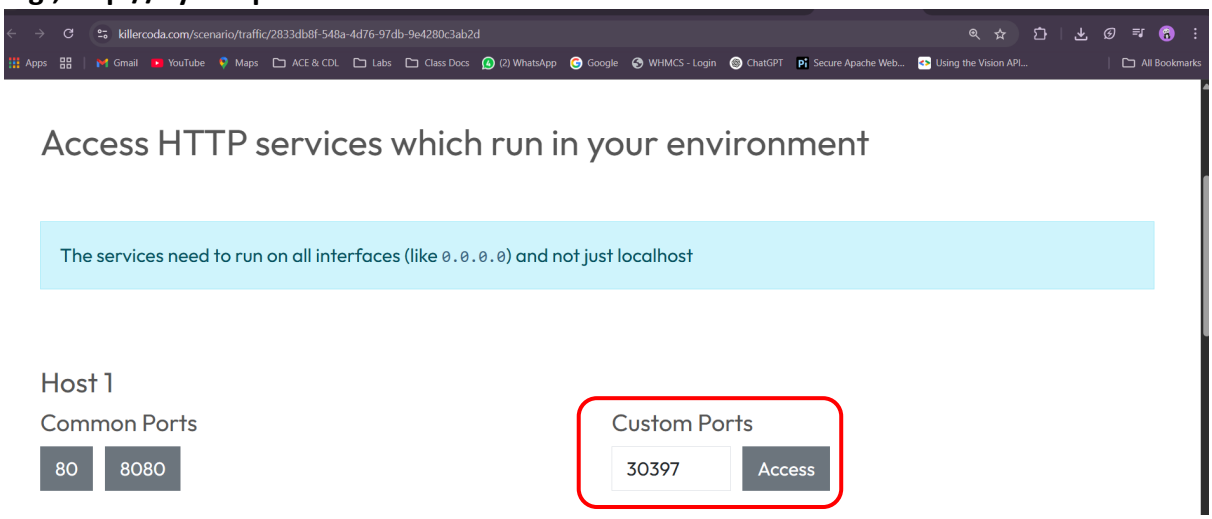
kubectl get svc

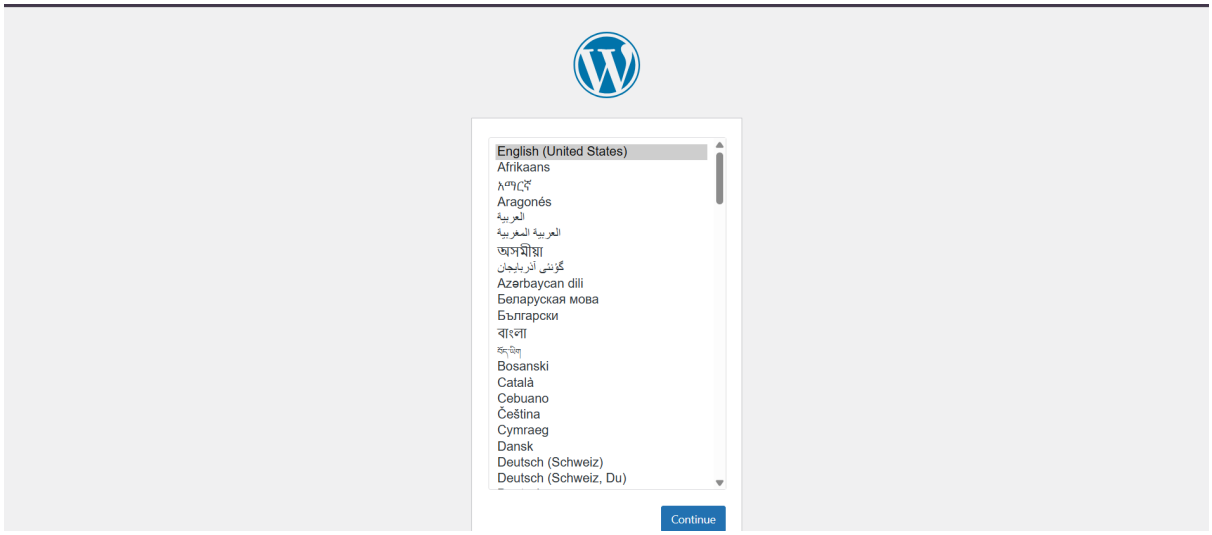
```
controlplane:~$ kubectl get svc
NAME          TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
dbserver      ClusterIP   10.99.136.70    <none>        3306/TCP       12m
kubernetes    ClusterIP   10.96.0.1       <none>        443/TCP        18d
mywordpress   NodePort    10.98.227.119   <none>        80:30397/TCP   9s
controlplane:~$ kubectl get nodes -o wide
NAME           STATUS   ROLES           AGE   VERSION   INTERNAL-IP   EXTERNAL-IP   OS-IMAGE             KERNEL-VERSION     CONTAINER
-RUNTIME
controlplane   Ready    control-plane   18d   v1.32.1   172.30.1.2    <none>        Ubuntu 24.04.1 LTS   6.8.0-51-generic   container
d://1.7.24
node01         Ready    <none>          18d   v1.32.1   172.30.2.2    <none>        Ubuntu 24.04.1 LTS   6.8.0-51-generic   container
d://1.7.24
controlplane:~$
```

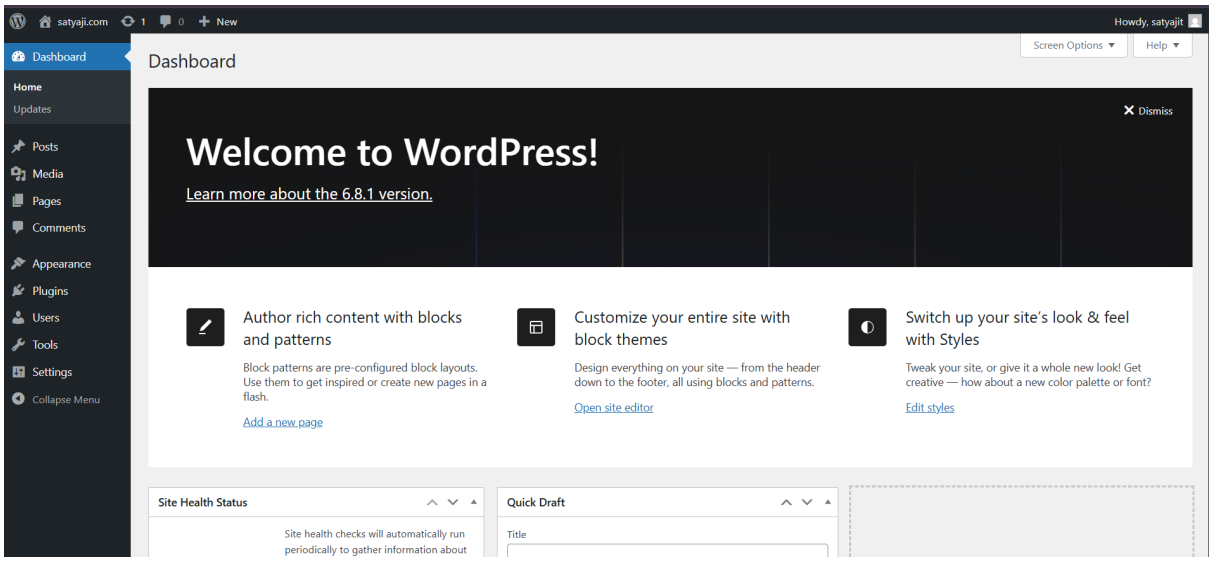
🌐 Accessing the WordPress Site

kubectl get nodes -o wide

Access via:
http://<Node-IP>:<NodePort>
e.g., http://<your ip >:31046



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New
Howdy, satyajit
Dashboard
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Posts
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Settings
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Author rich content with blocks and patterns
Block patterns are pre-configured block layouts. Use them to get inspired or create new pages in a flash.
Add a new page
Customize your entire site with block themes
Design everything on your site — from the header down to the footer, all using blocks and patterns.
Open site editor
Switch up your site's look & feel with Styles
Tweak your site, or give it a whole new look! Get creative — how about a new color palette or font?
Edit styles
Site Health Status
Site health checks will automatically run periodically to gather information about
Quick Draft
Title

THANK YOU!