SETUP INGRESS & SSL

0. Deploy the application

1. Install Nginx Ingress Controller

First, you need to install the **Nginx Ingress Controller** to handle traffic into your cluster:

```
kubectl apply -f https://raw.githubusercontent.com/kubernetes/ingress-nginx/main/deploy/static/provider/cloud/deploy.yaml
```

Wait for the Nginx Ingress Controller pods to be up and running:

```
kubectl get pods -n ingress-nginx
```

2. Install Cert-Manager

Cert-Manager is required to manage Let's Encrypt certificates for automatic SSL.

2.1 Install Cert-Manager CRDs

```
kubectl apply -f https://github.com/jetstack/cert-manager/releases/download/v1.12.2/cert-manager.yaml
```

Verify that Cert-Manager is installed:

```
kubectl get pods -n cert-manager
```

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3. Create Let's Encrypt ClusterIssuer

We will configure **ClusterIssuer** to request certificates from Let's Encrypt's **Production environment**.

```
apiVersion: cert-manager.io/v1
kind: ClusterIssuer
metadata:
  name: letsencrypt-prod
spec:
  acme:
    server: https://acme-v02.api.letsencrypt.org/directory
    email: devopsbyaditya@gmail.com  # Replace with your email
    privateKeySecretRef:
      name: letsencrypt-prod
    solvers:
    - http01:
        ingress:
          class: nginx
```

Create the issuer:

```
kubectl apply -f letsencrypt-clusterissuer.yaml
```

4. Create the Ingress Resource

Create the Ingress resource for your application with the correct domain (www.shackverse.co) and TLS enabled. Save the following YAML in a file called ingress.yml:

```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: bankapp-ingress
  annotations:
    cert-manager.io/cluster-issuer: letsencrypt-prod
    nginx.ingress.kubernetes.io/force-ssl-redirect: "true"
    nginx.ingress.kubernetes.io/rewrite-target: /
    nginx.ingress.kubernetes.io/ssl-redirect: "true"
spec:
  ingressClassName: nginx
  rules:
  - host: www.shackverse.co
    http:
      paths:
      - path: /
        pathType: Prefix
        backend:
          service:
            name: bankapp-service
            port:
              number: 80
  tls:
  - hosts:
    - www.shackverse.co
    secretName: shackverse-co-tls
```

Apply the Ingress:

```
kubectl apply -f ingress.yml
```

Add the LB url from Ingress created for application in your domain DNS.

5. Verify the Setup

To verify the setup:

1. **Check Certificate Status:**

You can check if the certificate was issued correctly with the following command:

kubectl get certificates

You should see the Ready status as True for your certificate (shackverse-co-tls).

2. **Verify Ingress:**

Ensure the ingress is correctly configured by describing it:

kubectl describe ingress bankapp-ingress

The output should show the domain (www.shackverse.co), the TLS configuration, and the backend service.

3. **Test Access:**

Visit https://www.shackverse.co in your browser to verify that SSL is working and that the app is accessible over HTTPS.

Optional: Check the Cert-Manager Logs

If any issues arise, check the Cert-Manager logs:

kubectl logs -n cert-manager -l app=cert-manager