Flask Calculator
Create a calculator application

Build & Deploy
Start minikube and enable ingress:
minikube start
minikube addons enable ingress

Build image inside Minikube
use minikube docker daemon
eval $(minikube docker-env)
docker build -t calc-app:latest .

```
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ minikube addons enable ingress
💡 ingress is an addon maintained by Kubernetes. For any concerns contact minikube on GitHub.
You can view the list of minikube maintainers at: https://github.com/kubernetes/minikube/blob/master/OWNERS
    ▪ Using image registry.k8s.io/ingress-nginx/controller:v1.13.2
    ▪ Using image registry.k8s.io/ingress-nginx/kube-webhook-certgen:v1.6.2
    ▪ Using image registry.k8s.io/ingress-nginx/kube-webhook-certgen:v1.6.2
🔎 Verifying ingress addon...
🌟 The 'ingress' addon is enabled
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ eval $(minikube docker-env)
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ docker build -t calc-app:latest .
DEPRECATED: The legacy builder is deprecated and will be removed in a future release.
            Install the buildx component to build images with BuildKit:
            https://docs.docker.com/go/buildx/

Sending build context to Docker daemon  16.38kB
Step 1/10 : FROM python:3.11-slim
3.11-slim: Pulling from library/python
0e4bc2bd6656: Pulling fs layer
22b63e76fde1: Pulling fs layer
b3dd773c3296: Pulling fs layer
1771569cc129: Pulling fs layer
1771569cc129: Waiting
22b63e76fde1: Verifying Checksum
22b63e76fde1: Download complete
b3dd773c3296: Verifying Checksum
```

Apply k8s manifests (from the k8s/ folder)

kubectl apply -f k8s/calc-configmap.yaml
kubectl apply -f k8s/calc-pvc.yaml
kubectl apply -f k8s/calc-deployment.yaml
kubectl apply -f k8s/calc-service.yaml
kubectl apply -f k8s/calc-ingress.yaml

```
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ ls
Dockerfile  app.py  calc-configmap.yaml  calc-deployment.yaml  calc-ingress.yaml  calc-pvc.yaml  calc-service.yaml  requirements.txt
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ kubectl apply -f calc-configmap.yaml
configmap/calc-config created
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ kubectl apply -f calc-pvc.yaml
persistentvolumeclaim/calc-data-pvc created
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ kubectl apply -f calc-deployment.yaml
deployment.apps/calc-app created
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ kubectl apply -f calc-service.yaml
service/calc-service created
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ kubectl apply -f calc-ingress.yaml
ingress.networking.k8s.io/calc-ingress created
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$
```
Check resources

```
kubectl get pods
kubectl get svc
kubectl get pvc
kubectl get ingress
```

```
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ kubectl get pods
NAME                          READY   STATUS            RESTARTS       AGE
calc-app-6f46f48fdf-nnv24     0/1     ImagePullBackOff  0              95s
calc-app-6f46f48fdf-xdq65     0/1     ImagePullBackOff  0              95s
microservice-1-d944466577-cnrhc   1/1   Running         3 (42m ago)    8h
microservice-2-f859c57bf-gp95r    1/1   Running         3 (42m ago)    8h
microservice-3-64465dc89c-69lx8   1/1   Running         3 (42m ago)    8h
mongo-796f87b8fc-xwnd8        1/1     Running           2 (42m ago)    4h36m
travel-app-6d65c4ccb4-hmtn4   0/1     ImagePullBackOff  0              4h36m
travel-app-6d65c4ccb4-mfnf6   0/1     ImagePullBackOff  0              4h36m
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ kubectl get svc
NAME                 TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)     AGE
calc-service         ClusterIP   10.98.99.76     <none>        80/TCP      91s
kubernetes           ClusterIP   10.96.0.1       <none>        443/TCP     24h
microservice-1       ClusterIP   10.103.237.229  <none>        80/TCP      8h
microservice-2       ClusterIP   10.106.103.92   <none>        80/TCP      8h
microservice-3       ClusterIP   10.99.253.152   <none>        80/TCP      8h
mongo                ClusterIP   10.107.30.69    <none>        27017/TCP   4h36m
travel-app-service   ClusterIP   10.106.31.26    <none>        80/TCP      4h36m
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ kubectl get pvc
NAME          STATUS   VOLUME                                     CAPACITY   ACCESS MODES   STORAGECLASS   VOLUMEATTRIBUTESCLASS   AGE
calc-data-pvc Bound    pvc-a8958e00-8502-4c7b-ad69-e978b5d0385c   500Mi      RWO            standard       <unset>                 2m10s
mongo-pvc     Bound    pvc-82adb282-55a2-441c-b083-cface1c0e3bb   1Gi        RWO            standard       <unset>                 4h36m
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ kubectl get ingress
NAME                    CLASS   HOSTS                                               ADDRESS        PORTS   AGE
calc-ingress            nginx   calc.local.com                                      192.168.49.2   80      94s
microservices-ingress   nginx   service1.local.com,service2.local.com,service3.local.com   192.168.49.2   80      8h
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$
```

```
# Get Minikube IP
MINIKUBE_IP=$(minikube ip)

# Add to /etc/hosts
echo "$MINIKUBE_IP calc.local.com" | sudo tee -a /etc/hosts
```

```
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ MINIKUBE_IP=$(minikube ip)
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask Calculator$ echo "$MINIKUBE_IP calc.local.com" | sudo tee -a /etc/hosts
192.168.49.2 calc.local.com
```

Testing

```
curl -X POST http://calc.local.com/calculate \
  -H "Content-Type: application/json" \
  -d '{"a":12,"b":4,"op":"/"}'
```

- Get history:

```
curl http://calc.local.com/history
```

- Clear history:

```
curl -X DELETE http://calc.local.com/history
```