

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-56655bfd88-l7d58          1/1     Running   0           42s
calc-app-56655bfd88-tq452          1/1     Running   0           27s
cart-service-5888d8c78-l8rwz        1/1     Running   2 (25h ago) 40h
```

```
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     2d14h
cart-service    ClusterIP   10.99.82.126  <none>       3003/TCP   41h
```

```
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>                2d14h
mongo-pvc       Bound     pvc-82adb282-55a2-441c-b083-cfacelc0e3bb  1Gi        RWO            standard       <unset>                2d19h
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      2d14h
ecommerce-alb-ingress  alb     *                                                                     192.168.49.2  80      40h
microservices-ingress  nginx   service1.local.com,service2.local.com,service3.local.com           192.168.49.2  80      2d23h
travel-ingress  nginx   memories.local.com                                                    192.168.49.2  80      2d19h
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
```

```
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask_Calculator$ curl -X POST http://calc.local.com/calculate \
-H "Content-Type: application/json" \
-d '{"a":12,"b":4,"op":"/"}'
{"a":12.0,"b":4.0,"id":"be49ad99-3b13-4efa-a0f2-f0b923cf5f33","op":"/","result":3.0}
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask_Calculator$ curl http://calc.local.com/history
[]
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask_Calculator$ curl -X DELETE http://calc.local.com/history
{"message":"history cleared"}
ubuntu@ip-172-31-15-140:~/Container-Orchestration-Practice-Tasks/Flask_Calculator$
```