

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      *          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$
```