**1.Dockerization**

#Dockerfile

# Use an official Python runtime as a parent image

FROM python:3.9-slim

# Set the working directory in the container

WORKDIR /app

# Copy the current directory contents into the container at /app

COPY . /app

# Install any needed packages specified in requirements.txt

RUN pip install --no-cache-dir -r requirements.txt

# Make port 80 available to the world outside this container

EXPOSE 80

# Define environment variable

ENV NAME Wisecow

# Run app.py when the container launches

CMD ["python", "app.py"]

**2.Kubernetes deployment**

# wisecow-deployment.yaml

apiVersion: apps/v1

kind: Deployment

metadata:

name: wisecow-deployment

spec:

replicas: 3

selector:

matchLabels:

app: wisecow

template:

metadata:

labels:

app: wisecow

spec:

containers:

- name: wisecow

image: <your-dockerhub-username>/wisecow:latest

ports:

- containerPort: 80

**3.CI/CD with github actions**

# .github/workflows/main.yml

name: CI/CD Pipeline

on:

push:

branches:

- main

jobs:

build:

runs-on: ubuntu-latest

steps:

- name: Checkout code

uses: actions/checkout@v2

- name: Set up Docker Buildx

uses: docker/setup-buildx-action@v1

- name: Login to DockerHub

uses: docker/login-action@v1

with:

username: ${{ secrets.DOCKER\_USERNAME }}

password: ${{ secrets.DOCKER\_PASSWORD }}

- name: Build and push Docker image

uses: docker/build-push-action@v2

with:

push: true

tags: ${{ secrets.DOCKER\_USERNAME }}/wisecow:latest

deploy:

runs-on: ubuntu-latest

needs: build

steps:

- name: Checkout code

uses: actions/checkout@v2

- name: Set up kubectl

uses: azure/setup-kubectl@v1

with:

version: 'latest'

- name: Configure kubectl

run: |

echo "${{ secrets.KUBECONFIG }}" | base64 --decode > ~/.kube/config

- name: Deploy to Kubernetes

run: |

kubectl apply -f k8s/wisecow-deployment.yaml

kubectl apply -f k8s/wisecow-service.yaml

**4.TLS Implementation**

kubectl create secret tls wisecow-tls --cert=path/to/tls.crt --key=path/to/tls.key

# wisecow-ingress.yaml

apiVersion: networking.k8s.io/v1

kind: Ingress

metadata:

name: wisecow-ingress

annotations:

nginx.ingress.kubernetes.io/rewrite-target: /

spec:

tls:

- hosts:

- wisecow.example.com

secretName: wisecow-tls

rules:

- host: wisecow.example.com

http:

paths:

- path: /

pathType: Prefix

backend:

service:

name: wisecow-service

port:

number: 80