Kubernetes Zero to Hero in Roman Urdu (Slang Edition)

Chalo bhai shuru karte hain! Ye guide tumhe bilkul zero se lekar Kubernetes ke hero banne tak le jayegi. Har concept simple aur example ke sath samjha gaya hai.

Lesson 1: Kubernetes kya hota hai?

Socho tumhare paas 10-15 apps hain (frontend, backend, DB). Har app Docker container me chalti hai. In sabko manually start karna, restart karna aur scale karna mushkil ho jaata hai. Yahan aata hai Kubernetes — ek boss jo sab manage karta hai.

Lesson 2: Container kya hota hai?

Container basically ek box hota hai jisme tumhari app + dependencies sab hoti hain. Docker use karke container banate hain.

```
# Dockerfile example
FROM python:3.9
COPY app.py /app.py
CMD ["python", "/app.py"]
# Build and run
docker build -t myapp:1.0 .
docker run myapp:1.0
```

Lesson 3: Pod kya hota hai?

Pod Kubernetes ki sabse chhoti unit hai. Ye ek ya zyada containers ka group hota hai.

```
apiVersion: v1
kind: Pod
metadata:
  name: my-first-pod
spec:
  containers:
    - name: nginx-container
      image: nginx
      ports:
        - containerPort: 80
```

Lesson 4: Deployment kya karta hai?

Deployment pods ka manager hai. Agar koi pod crash ho jaaye to naya pod automatically bana deta hai.

```
apiVersion: apps/v1
```

```
kind: Deployment
metadata:
  name: web-deployment
spec:
  replicas: 3
  selector:
    matchLabels:
      app: web
  template:
    metadata:
      labels:
        app: web
    spec:
      containers:
        - name: nginx
          image: nginx
          ports:
            - containerPort: 80
```

Lesson 5: Service kya hoti hai?

Service ek stable IP aur port deti hai taake pods ke beech communication ho sake. 3 types hoti hain: ClusterIP (internal), NodePort (testing), LoadBalancer (public).

```
apiVersion: v1
kind: Service
metadata:
  name: web-service
spec:
  selector:
    app: web
  ports:
    - port: 80
      targetPort: 80
  type: NodePort
```

Lesson 6: Namespace kya hoti hai?

Namespace ek logical area hota hai cluster ke andar. Frontend aur backend ke liye alag namespaces bana ke organization easy ho jaati hai.

```
apiVersion: v1
kind: Namespace
metadata:
  name: backend-ns
```

Lesson 7: Ingress kya karta hai?

Ingress ek traffic manager hai jo domain aur path ke hisab se request ko right service tak bhejta hai.

```
apiVersion: networking.k8s.io/v1
kind: Ingress
metadata:
  name: app-ingress
spec:
  rules:
    - host: myapp.local
      http:
        paths:
          - path: /
            pathType: Prefix
            backend:
              service:
                name: frontend-service
                port:
                  number: 80
          - path: /api
            pathType: Prefix
            backend:
              service:
                name: backend-service
                port:
                  number: 5000
```

Lesson 8: Volume kya hota hai?

Container delete hone ke baad data bhi chala jaata hai. Volume is problem ko solve karta hai. emptyDir ek simple example hai.

```
apiVersion: v1
kind: Pod
metadata:
  name: volume-pod
spec:
  containers:
    - name: busybox
      image: busybox
      command: ["sh", "-c", "echo hello > /data/hi.txt && sleep 3600"]
      volumeMounts:
        - name: data-vol
          mountPath: /data
  volumes:
    - name: data-vol
      emptyDir: {}
```

Lesson 9: Job kya karta hai?

Job ek one-time task hota hai jaise backup ya migration. Pod complete hone ke baad repeat nahi hota.

```
apiVersion: batch/v1
kind: Job
metadata:
  name: db-job
spec:
  template:
    spec:
      containers:
        - name: migrate
          image: python:3.9
          command: ["python", "-c", "print('Migration Done!')"]
      restartPolicy: Never
```

Lesson 10: ConfigMap aur Secret kya hain?

ConfigMap non-sensitive data store karta hai (jaise ENV vars). Secret me passwords ya tokens rakhe jaate hain.

```
# ConfigMap
apiVersion: v1
kind: ConfigMap
metadata:
  name: app-config
data:
  APP_MODE: production
  DEBUG: "false"

# Secret
apiVersion: v1
kind: Secret
metadata:
  name: db-secret
type: Opaque
data:
  DB_USER: YWRtaW4=
  DB_PASS: cGFzc3dvcmQ=
```