#KubernetesIn30Days challenge :-

#Day23 :-

"Kubernetes Operators"

Kubernetes Operators :-

→ A K8s Operator is a method of Packaging, deploying and managing a K8s application using native K8s tools.

→ It extends the K8s API, enabling automated application management by capturing operational knowledge in software.

Key concepts :-

① Custom Resource Definition :- CRD

Operators use CRDs to extend the K8s API, defining custom resources that represents the application's state

② Controllers :-

→ Operators include controllers to manage the lifecycle of custom resources.

→ Controllers watch for the changes in the cluster and reconcile the desired state

with actual state

③ Custom Resources (CRs):-

→ Instances of CRDs representing specific instances of application.

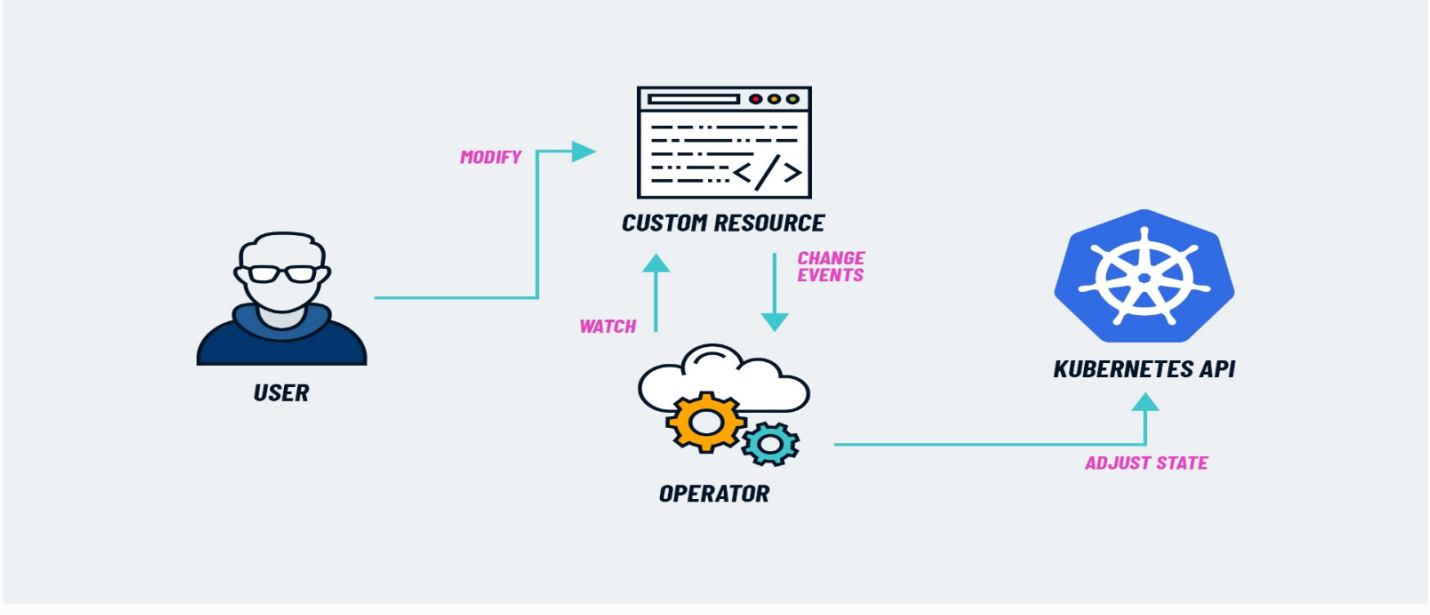
→ CRs specifies how an application should run, its configuration and other parameters.

④ Reconcillation loop:-

→ Reconcillation loop ensure that the state of the application matches the desired state in the CRs.

⑤ Operator SDK:-

→ Operator SDK facilitates the develop-ment of operators by providing tools and APIs to build, test and package operators.



Benefits :-

1. Automation
2. Consistency
3. scalability
4. self-healing

Use cases :-

1. Database Management
2. Application Deployment
3. configuration Management.

Demo on ArgoCD :-

ArgoCD - Powerful GitOps CD tool for K8s.

1. Minikube / any K8s cluster

   #minikube start (have kubectl installed)

2. Installing ArgoCD

   #kubectl create ns argocd

   # kubectl apply -n argocd -f <URL for ArgoCD Manifest>

③ Expose ArgoCD service

#kubectl port-forward svc/argocd-server -n argocd 8080:443

④ Access the ArgoCD UI

ArgoCD UI → localhost:8080

password can be decoded from below cmd:

#kubectl -n argocd get secret argocd-intial-admin-secret -o jsonpath="{.data.password}" | base64 --decode

⑤ Deploying an Application using ArgoCD:

→ Login to ArgoCD

→ Add minikube as cluster

settings → Repositories → connect Repo using HTTPS.

→ set repo URL to your minikube cluster mostly it is

https://minikube-ip:minikube-port

→ create an applications and Add the all details & mention git repo where K8s manifest are being placed.

→ sync the application to deploy resources

→ wait for few minutes, you will se sync status and Application status.

Thats All! . delete your minikube cluster after the work.

Good Day! Bye!!!