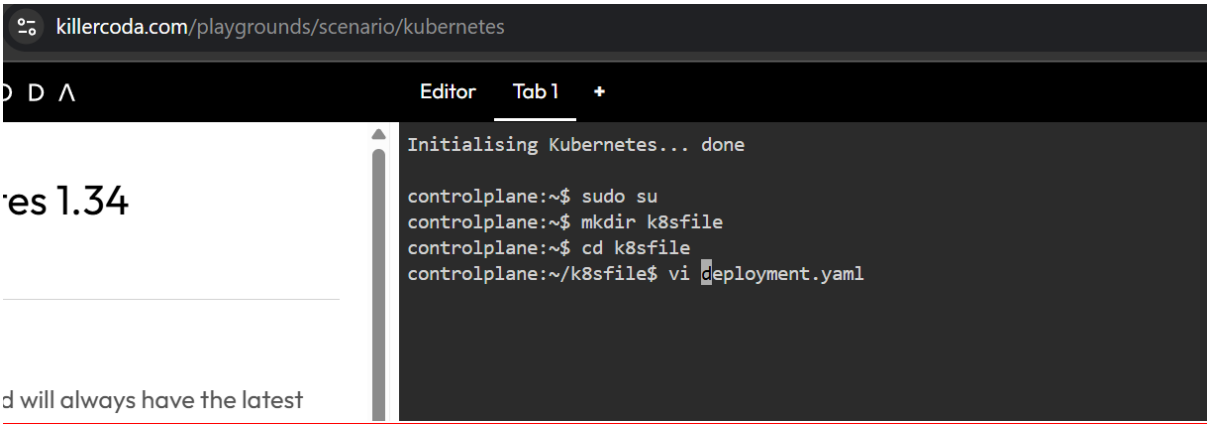
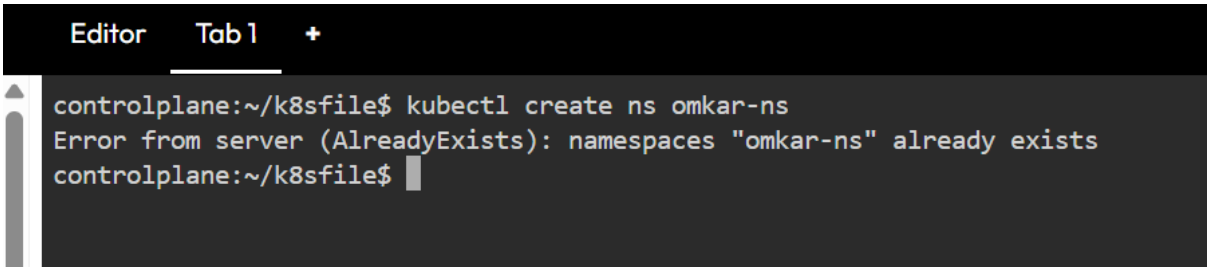
Kubernate Deployment Rollback and Rollout

- A Kubernetes Deployment manages ReplicaSets, and ReplicaSets manage Pods. Rollout creates new ReplicaSets and Pods, while rollback reactivates old ReplicaSets for fast recovery with zero downtime.
- Deployment → ReplicaSet → Pods
- Update Flow: Deployment update → New ReplicaSet → New Pods → Old Pods terminated
- Rollback Flow: Rollback command → Old ReplicaSet activated → Old Pods restored → New Pods removed

Step 1:- Creating folder and deployment file



Step 2: Here we create a namespace



Step 3: Deployment.yaml file in this file version 1 of fitness is created .

Editor Tab 1 +

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: fitness-deployment
  namespace: bhagwat-ns

spec:
  replicas: 5
  selector:
    matchLabels:
      app: fitness

  template:
    metadata:
      labels:
        app: fitness

    spec:
      containers:
        - name: fitness-container
          image: bhagwat07/fitness-app:v1.0.0
          ports:
            - containerPort: 80
~
```

Step 4:We apply the deployment.yaml file and check the pods , replicaset and deployments

```
controlplane:~$ kubectl get all -n bhagwat-ns
NAME                                        READY   STATUS    RESTARTS   AGE
pod/fitness-deployment-6786b46dfd-9qqft     1/1     Running   0          19s
pod/fitness-deployment-6786b46dfd-gq4wp     1/1     Running   0          19s
pod/fitness-deployment-6786b46dfd-jw8fg     1/1     Running   0          19s
pod/fitness-deployment-6786b46dfd-mjtp8     1/1     Running   0          19s
pod/fitness-deployment-6786b46dfd-mnbqs     1/1     Running   0          19s

NAME                                   READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/fitness-deployment     5/5     5            5           20s

NAME                                              DESIRED   CURRENT   READY   AGE
replicaset.apps/fitness-deployment-6786b46dfd     5         5         5       20s
controlplane:~$
```

Step 5: New image of fitness app is given and after that it is applied

Editor Tab 1 +

```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: fitness-deployment
  namespace: bhagwat-ns

spec:
  replicas: 5
  selector:
    matchLabels:
      app: fitness

  template:
    metadata:
      labels:
        app: fitness

    spec:
      containers:
        - name: fitness-container
          image: bhagwat07/fitness-app:v1.0.1
          ports:
            - containerPort: 80
```

Step 6: check the pods , replicaset and deployments as new pod are created old get deleted new replicaset is also created

```
controlplane:~$ kubectl get all -n bhagwat-ns
NAME                                       READY   STATUS    RESTARTS   AGE
pod/fitness-deployment-665798d8ff-42x92    1/1     Running   0          85s
pod/fitness-deployment-665798d8ff-64g52    1/1     Running   0          82s
pod/fitness-deployment-665798d8ff-cwrx6    1/1     Running   0          82s
pod/fitness-deployment-665798d8ff-q6ng2    1/1     Running   0          85s
pod/fitness-deployment-665798d8ff-znkgf    1/1     Running   0          85s

NAME                                  READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/fitness-deployment    5/5     5            5           3m14s

NAME                                             DESIRED   CURRENT   READY   AGE
replicaset.apps/fitness-deployment-665798d8ff    5         5         5       86s
replicaset.apps/fitness-deployment-6786b46dfd    0         0         0       3m15s
```

Step 7: Here in description we can check pod is of newer version

```
controlplane:~$ kubectl describe pod fitness-deployment-665798d8ff-znkgf  -n bhagwat-ns
Name:             fitness-deployment-665798d8ff-znkgf
Namespace:        bhagwat-ns
Priority:         0
Service Account:  default
Node:             node01/172.30.2.2
Start Time:       Thu, 19 Feb 2026 17:10:30 +0000
Labels:           app=fitness
                  pod-template-hash=665798d8ff
Annotations:      cni.projectcalico.org/containerID: ed52448407065371544b53591b0289c14ca70073f74e828be5215222d487d008
                  cni.projectcalico.org/podIP: 192.168.1.8/32
                  cni.projectcalico.org/podIPs: 192.168.1.8/32
Status:           Running
IP:               192.168.1.8
IPs:
  IP:           192.168.1.8
Controlled By:  ReplicaSet/fitness-deployment-665798d8ff
Containers:
  fitness-container:
    Container ID:   containerd://2a88d7d25cab382a2877980ef25c4bf1c467034fd6f56ce422b496ca43fbedce
    Image:          bhagwat07/fitness-app:v1.0.1
    Image ID:       docker.io/bhagwat07/fitness-app@sha256:bed86bfc6b35251afb4b81300ec45fa714a10e32f7cebb7a960ef74569127800
    Port:           80/TCP
    Host Port:      0/TCP
    State:          Running
      Started:      Thu, 19 Feb 2026 17:10:32 +0000
    Ready:          True
    Restart Count:  0
    Environment:    <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-tdfjc (ro)
Conditions:
  Type                        Status
```

Step 8: We have used rollback command

```
controlplane:~$ kubectl rollout undo deployment fitness-deployment -n bhagwat-ns
deployment.apps/fitness-deployment rolled back
controlplane:~$
```

Step 9: After rollback newer replicas pod get deleted and old replicas pods get generated also number in front of replicaset is changed

```
controlplane:~$ kubectl rollout undo deployment fitness-deployment -n bhagwat-ns
deployment.apps/fitness-deployment rolled back
controlplane:~$ kubectl get all -n bhagwat-ns
NAME                                      READY   STATUS    RESTARTS   AGE
pod/fitness-deployment-6786b46dfd-2zwhs   1/1     Running   0          39s
pod/fitness-deployment-6786b46dfd-jfwrv   1/1     Running   0          41s
pod/fitness-deployment-6786b46dfd-m4z4z   1/1     Running   0          39s
pod/fitness-deployment-6786b46dfd-pxn72   1/1     Running   0          41s
pod/fitness-deployment-6786b46dfd-tmzjr   1/1     Running   0          41s

NAME                                 READY   UP-TO-DATE   AVAILABLE   AGE
deployment.apps/fitness-deployment   5/5     5            5           7m17s

NAME                                            DESIRED   CURRENT   READY   AGE
replicaset.apps/fitness-deployment-665798d8ff   0         0         0       5m28s
replicaset.apps/fitness-deployment-6786b46dfd   5         5         5       7m17s
```

Step 10: Here in description we can check pod is of older version

```
controlplane:~/k8s-yaml-files$ kubectl describe pod fitness-deployment-6786b46dfd-tmzjr -n bhagwat-ns
Name:             fitness-deployment-6786b46dfd-tmzjr
Namespace:        bhagwat-ns
Priority:         0
Service Account:  default
Node:             node01/172.30.2.2
Start Time:       Thu, 19 Feb 2026 17:15:16 +0000
Labels:           app=fitness
                  pod-template-hash=6786b46dfd
Annotations:      cni.projectcalico.org/containerID: 7ee022ddbdb112c1ecf68d6e4504a67970ee5d2122ed1cc8a67e90028fa55f5b
                  cni.projectcalico.org/podIP: 192.168.1.10/32
                  cni.projectcalico.org/podIPs: 192.168.1.10/32
Status:           Running
IP:               192.168.1.10
IPs:
  IP:           192.168.1.10
Controlled By:  ReplicaSet/fitness-deployment-6786b46dfd
Containers:
  fitness-container:
    Container ID:   containerd://08d1f8031a70ed85a8570eeea7cd8f837b465f972e019c1d551edb74683faa57
    Image:          bhagwat07/fitness-app:v1.0.0
    Image ID:       docker.io/bhagwat07/fitness-app@sha256:bed86bfc6b35251afb4b81300ec45fa714a10e32f7cebb7a960ef74569127800
    Port:           80/TCP
    Host Port:      0/TCP
    State:          Running
      Started:      Thu, 19 Feb 2026 17:15:18 +0000
    Ready:          True
    Restart Count:  0
    Environment:    <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-r9s9g (ro)
Conditions:
```

Step 11 : Here we can see status that rolled out is successful

```
controlplane:~/k8s-yaml-files$ kubectl rollout history deployment fitness-deployment -n bhagwat-ns
deployment.apps/fitness-deployment
REVISION  CHANGE-CAUSE
2         <none>
3         <none>

controlplane:~/k8s-yaml-files$ kubectl rollout status deployment fitness-deployment -n bhagwat-ns
deployment "fitness-deployment" successfully rolled out
controlplane:~/k8s-yaml-files$
```