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Lab Exercise 11- Deployments with Rolling Update and Recreate Strategies

Understand how to use the rolling update and recreate strategies for deploying applications using Kubernetes Deployments.

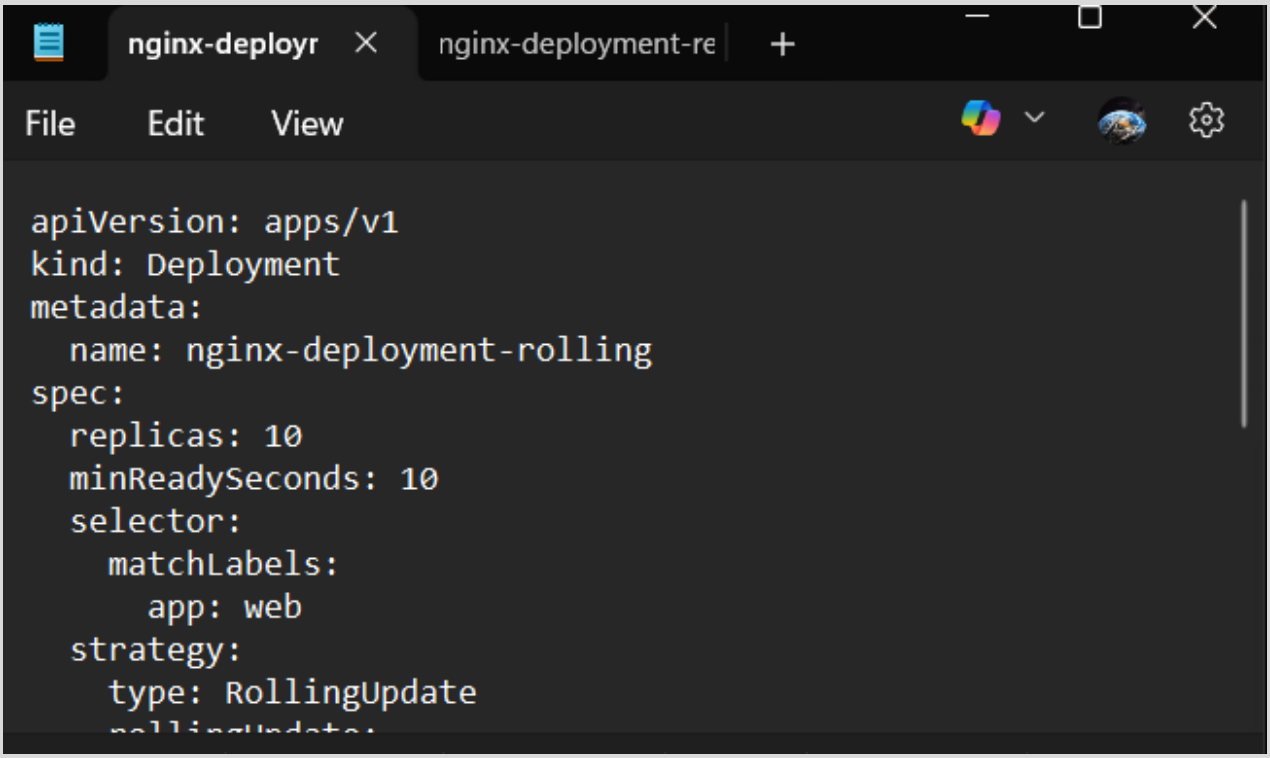
Step 1: Create a Deployment with Rolling Update Strategy

Create a YAML file for the deployment:

Create a file named **nginx-deployment-rolling.yaml** with the following content:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment-rolling
spec:
  replicas: 10
  minReadySeconds: 10
  selector:
    matchLabels:
      app: web
  strategy:
    type: RollingUpdate
```

```
  rollingUpdate:
    maxUnavailable: 1
    maxSurge: 5
  template:
    metadata:
      labels:
        app: web
    spec:
      containers:
      - name: nginx
        image: hkshitesh/kubedemo:1.0
        ports:
        - containerPort: 80
```



Apply the deployment:

```
kubectl apply -f nginx-deployment-rolling.yaml ; watch "kubectl get rs -o wide"
```

```
C:\Users\prati\rolling>kubectl apply -f nginx-deployment-rolling.yaml
deployment.apps/nginx-deployment-rolling created
```

Verify the deployment:

kubectl get deployments

kubectl get pods -l app=web

```
C:\Users\prati\rolling>kubectl get deployments
NAME                        READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment-rolling    0/10    10           0           14s

C:\Users\prati\rolling>kubectl get pods -l app=web
NAME                                        READY   STATUS              REST
ARTS   AGE
nginx-deployment-rolling-55c6b7b9dd-2fbqq   0/1     ContainerCreating   0
       22s
nginx-deployment-rolling-55c6b7b9dd-7rd4w   0/1     ContainerCreating   0
       22s
nginx-deployment-rolling-55c6b7b9dd-7v647   0/1     ContainerCreating   0
       22s
nginx-deployment-rolling-55c6b7b9dd-fzp9p   0/1     ContainerCreating   0
       22s
nginx-deployment-rolling-55c6b7b9dd-hrzs2   0/1     ContainerCreating   0
       22s
nginx-deployment-rolling-55c6b7b9dd-q47lt   0/1     ContainerCreating   0
       22s
nginx-deployment-rolling-55c6b7b9dd-wg44h   0/1     ContainerCreating   0
       22s
nginx-deployment-rolling-55c6b7b9dd-zgj82   0/1     ContainerCreating   0
       22s
nginx-deployment-rolling-55c6b7b9dd-zlms7   0/1     ContainerCreating   0
       22s
nginx-deployment-rolling-55c6b7b9dd-zmzs7   0/1     ContainerCreating   0
       22s
```

Update the deployment to a new image:

kubectl set image deployment/nginx-deployment-rolling nginx= hkshitesh/kubedemo:2.0

```
C:\Users\prati\rolling>kubectl set image deployment/nginx-deployment-rolling
 nginx=hkshitesh/kubedemo:2.0
deployment.apps/nginx-deployment-rolling image updated
```

Monitor the rolling update:

kubectl rollout status deployment nginx-deployment-rolling

```
C:\Users\prati\rolling>kubectl rollout status deployment nginx-deployment-ro
lling
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out o
f 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out o
f 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out o
f 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out o
f 10 new replicas have been updated...
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Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out o
f 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 6 out o
f 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out o
f 10 new replicas have been updated...
Waiting for deployment "nginx-deployment-rolling" rollout to finish: 7 out o
f 10 new replicas have been updated...
```

Verify the updated pods:

kubectl get pods -l app=web -o wide

```
C:\Users\prati\rolling>kubectl get pods -l app=web -o wide
NAME                                          READY   STATUS    RESTARTS   AGE
   IP          NODE             NOMINATED NODE   READINESS GATES
nginx-deployment-rolling-6559d95699-8bpf2   1/1     Running   0          47s
   10.1.0.47   docker-desktop   <none>           <none>
nginx-deployment-rolling-6559d95699-d5xwd   1/1     Running   0          25s
   10.1.0.53   docker-desktop   <none>           <none>
nginx-deployment-rolling-6559d95699-h4jhv   1/1     Running   0          47s
   10.1.0.48   docker-desktop   <none>           <none>
nginx-deployment-rolling-6559d95699-jl244   1/1     Running   0          47s
   10.1.0.45   docker-desktop   <none>           <none>
nginx-deployment-rolling-6559d95699-kltv2   1/1     Running   0          30s
   10.1.0.51   docker-desktop   <none>           <none>
nginx-deployment-rolling-6559d95699-mlbfw   1/1     Running   0          47s
   10.1.0.49   docker-desktop   <none>           <none>
nginx-deployment-rolling-6559d95699-p2xkn   1/1     Running   0          27s
   10.1.0.52   docker-desktop   <none>           <none>
nginx-deployment-rolling-6559d95699-s9bxd   1/1     Running   0          23s
   10.1.0.54   docker-desktop   <none>           <none>
nginx-deployment-rolling-6559d95699-vxkwh   1/1     Running   0          47s
   10.1.0.50   docker-desktop   <none>           <none>
nginx-deployment-rolling-6559d95699-x4fm4   1/1     Running   0          47s
   10.1.0.46   docker-desktop   <none>           <none>
```

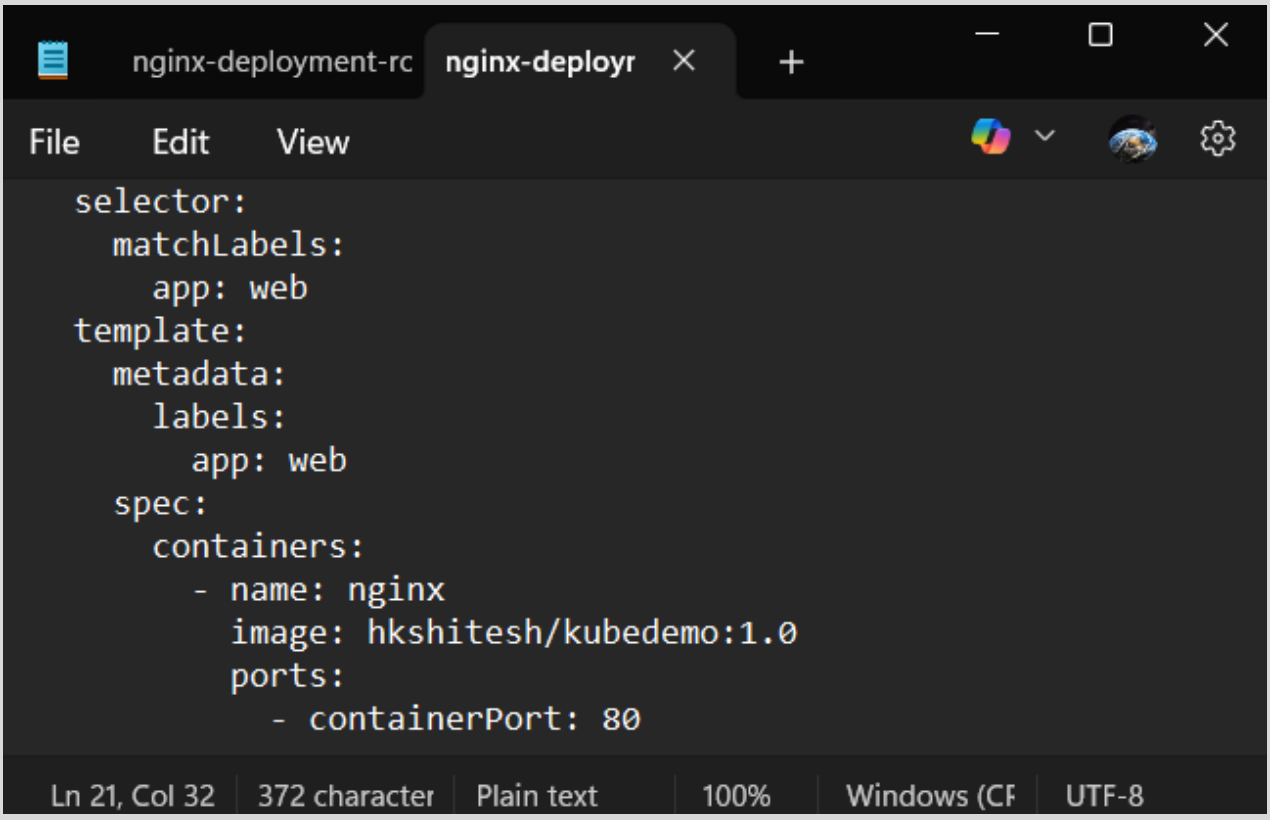
Step 2: Create a Deployment with Recreate Strategy

Create a YAML file for the deployment:

Create a file named **nginx-deployment-recreate.yaml** with the following content:

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment-recreate
spec:
  replicas: 10
  selector:
    matchLabels:
      app: web
```

```
strategy:
  type: Recreate
template:
  metadata:
    labels:
      app: web
  spec:
    containers:
    - name: nginx
      image: nginx:  hkshitesh/kubedemo:1.0
      ports:
      - containerPort: 80
```



Apply the deployment:

kubectl apply -f nginx-deployment-recreate.yaml ; watch "kubectl get rs -o wide"

```
C:\Users\prati\rolling>kubectl apply -f nginx-deployment-recreate.yaml
deployment.apps/nginx-deployment-recreate created
```

Verify the deployment:

kubectl get deployments

kubectl get pods -l app=nginx-recreate

```
C:\Users\prati\rolling>kubectl get deployments
NAME                        READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment-recreate   10/10   10           10          11s
nginx-deployment-rolling    10/10   10           10          14m

C:\Users\prati\rolling>kubectl get pods -l app=nginx-recreate
No resources found in default namespace.
```

Update the deployment to a new image:

kubectl set image deployment/nginx-deployment-recreate nginx=nginx:1.21.1

```
C:\Users\prati\rolling>kubectl set image deployment/nginx-deployment-recrea
e nginx=nginx:1.21.1
deployment.apps/nginx-deployment-recreate image updated
```

Monitor the update:

kubectl rollout status deployment nginx-deployment-recreate

```
C:\Users\prati\rolling>kubectl rollout status deployment nginx-deployment-re
create
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 0 of 1
0 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 1 of 1
0 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 2 of 1
0 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 3 of 1
0 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 4 of 1
0 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 5 of 1
0 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 6 of 1
0 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 7 of 1
0 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 8 of 1
0 updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 9 of 1
0 updated replicas are available...
deployment "nginx-deployment-recreate" successfully rolled out
```

Verify the updated pods:

kubectl get pods -l app=nginx-recreate -o wide

```
C:\Users\prati\rolling>kubectl get pods -l app=nginx-recreate -o wide
No resources found in default namespace.
```

Step 3: Clean Up

Delete the deployments:

kubectl delete deployment nginx-deployment-rolling

kubectl delete deployment nginx-deployment-recreate

```
C:\Users\prati\rolling>kubectl delete deployment nginx-deployment-rolling
deployment.apps "nginx-deployment-rolling" deleted from default namespace

C:\Users\prati\rolling>kubectl delete deployment nginx-deployment-recreate
deployment.apps "nginx-deployment-recreate" deleted from default namespace
```

Verify that all resources are cleaned up:

kubectl get deployments

kubectl get pods -l app=nginx

kubectl get pods -l app=nginx-recreate

```
C:\Users\prati\rolling>kubectl get deployments
No resources found in default namespace.

C:\Users\prati\rolling>kubectl get pods -l app=nginx
No resources found in default namespace.

C:\Users\prati\rolling>kubectl get pods -l app=nginx-recreate
No resources found in default namespace.
```