Lab Exercise 11- Deployments with Rolling Update and Recreate Strategies

Name- Vishal Pandey
500125280
B2 DevOps

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

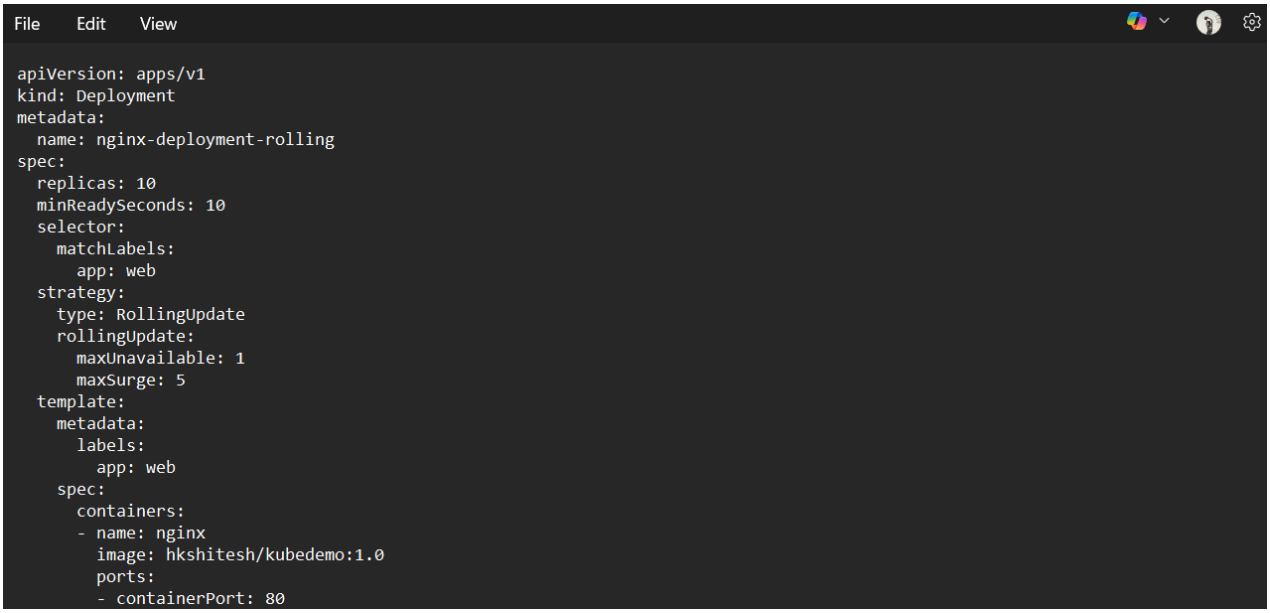
Step 1: Create a Deployment with Rolling Update Strategy

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"
```

Verify the deployment:

```
kubectl get deployments
kubectl get pods -l app=web
```

```
PS C:\Users\ASUS\Desktop> kubectl get deployments
NAME                        READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment-rolling    10/10   10           10          74s
PS C:\Users\ASUS\Desktop> kubectl get pods -l app=web
NAME                                        READY   STATUS    RESTARTS   AGE
nginx-deployment-rolling-85cf8767cc-4zfvb   1/1     Running   0          91s
nginx-deployment-rolling-85cf8767cc-5fw4w   1/1     Running   0          91s
nginx-deployment-rolling-85cf8767cc-5xn5n   1/1     Running   0          91s
nginx-deployment-rolling-85cf8767cc-7b2km   1/1     Running   0          91s
nginx-deployment-rolling-85cf8767cc-7xczx   1/1     Running   0          91s
nginx-deployment-rolling-85cf8767cc-bxscx   1/1     Running   0          91s
nginx-deployment-rolling-85cf8767cc-cshh2   1/1     Running   0          91s
nginx-deployment-rolling-85cf8767cc-gccdc   1/1     Running   0          91s
nginx-deployment-rolling-85cf8767cc-n4fb8   1/1     Running   0          91s
nginx-deployment-rolling-85cf8767cc-pw7wl   1/1     Running   0          91s
PS C:\Users\ASUS\Desktop>
```

Update the deployment to a new image:

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

```
PS C:\Users\ASUS\Desktop> kubectl set image deployment/nginx-deployment-roll
ing nginx=hkshitesh/kubedemo:2.0
deployment.apps/nginx-deployment-rolling image updated
PS C:\Users\ASUS\Desktop>
```

Monitor the rolling update:

```
kubectl rollout status deployment nginx-deployment-rolling
```

```
PS C:\Users\ASUS\Desktop> kubectl rollout status deployment nginx-deployment
-rolling
deployment "nginx-deployment-rolling" successfully rolled out
PS C:\Users\ASUS\Desktop>
```

Verify the updated pods:

```
kubectl get pods -l app=web -o wide
```

```
PS C:\Users\ASUS\Desktop> kubectl get pods -l app=web -o wide
NAME                                          READY   STATUS    RESTARTS   AGE
   IP            NODE       NOMINATED NODE   READINESS GATES
nginx-deployment-rolling-8587c95656-2qzt2   1/1     Running   0          56s
   10.244.0.36   minikube   <none>           <none>
nginx-deployment-rolling-8587c95656-6mwb4   1/1     Running   0          76s
   10.244.0.31   minikube   <none>           <none>
nginx-deployment-rolling-8587c95656-7pwft   1/1     Running   0          76s
   10.244.0.30   minikube   <none>           <none>
nginx-deployment-rolling-8587c95656-89czj   1/1     Running   0          53s
   10.244.0.37   minikube   <none>           <none>
nginx-deployment-rolling-8587c95656-dbghz   1/1     Running   0          76s
   10.244.0.32   minikube   <none>           <none>
nginx-deployment-rolling-8587c95656-gqx85   1/1     Running   0          76s
   10.244.0.33   minikube   <none>           <none>
nginx-deployment-rolling-8587c95656-kdswg   1/1     Running   0          76s
   10.244.0.29   minikube   <none>           <none>
nginx-deployment-rolling-8587c95656-n4ftg   1/1     Running   0          58s
   10.244.0.35   minikube   <none>           <none>
nginx-deployment-rolling-8587c95656-rrlvg   1/1     Running   0          51s
   10.244.0.38   minikube   <none>           <none>
nginx-deployment-rolling-8587c95656-zdt29   1/1     Running   0          76s
   10.244.0.34   minikube   <none>           <none>
```

```
PS C:\Users\ASUS\Desktop> kubectl delete deployment nginx-deployment-rolling

deployment.apps "nginx-deployment-rolling" deleted from default namespace
PS C:\Users\ASUS\Desktop>
```

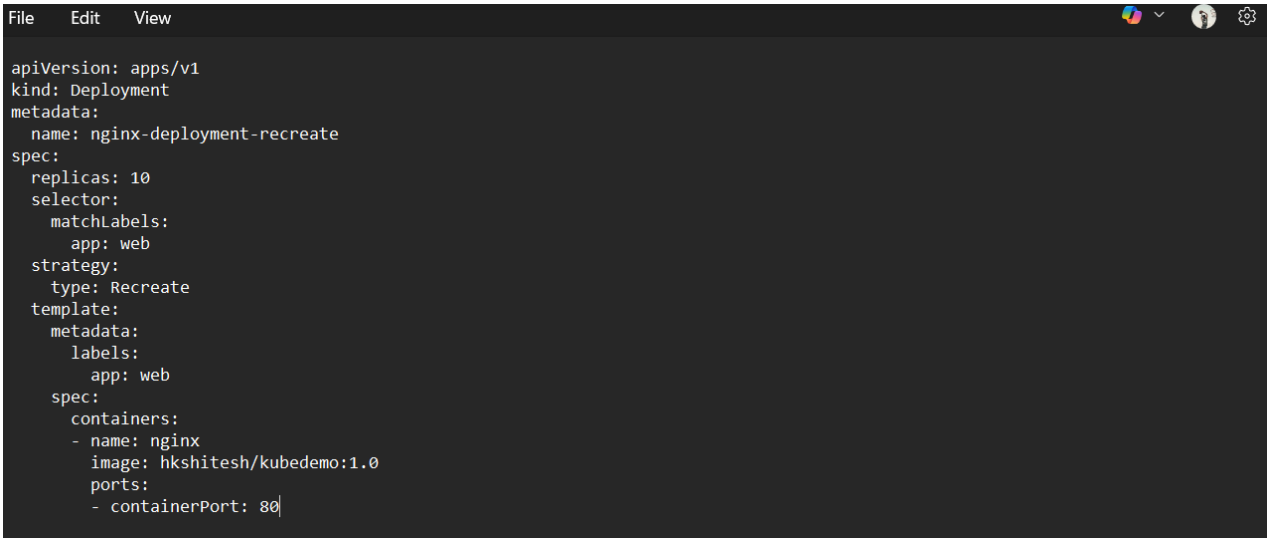
Step 2: Create a Deployment with Recreate Strategy

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"
```

```
PS C:\Users\ASUS\Desktop> notepad nginx-deployment-recreate.yaml
PS C:\Users\ASUS\Desktop> kubectl apply -f nginx-deployment-recreate.yaml
deployment.apps/nginx-deployment-recreate created
PS C:\Users\ASUS\Desktop>
```

Verify the deployment:

```
kubectl get deployments
kubectl get pods -l app=nginx-recreate
```

```
PS C:\Users\ASUS\Desktop> kubectl get deployments
NAME                        READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment-recreate   10/10   10           10          21s
PS C:\Users\ASUS\Desktop> kubectl get pods -l app=web
NAME                                        READY   STATUS    RESTARTS   AG
E
nginx-deployment-recreate-85cf8767cc-768rp   1/1     Running   0          28
s
nginx-deployment-recreate-85cf8767cc-7dmd4   1/1     Running   0          28
s
nginx-deployment-recreate-85cf8767cc-lcjqz   1/1     Running   0          28
s
nginx-deployment-recreate-85cf8767cc-nxlk9   1/1     Running   0          28
s
nginx-deployment-recreate-85cf8767cc-pb926   1/1     Running   0          28
s
nginx-deployment-recreate-85cf8767cc-ps88c   1/1     Running   0          28
s
nginx-deployment-recreate-85cf8767cc-q8rl7   1/1     Running   0          28
s
nginx-deployment-recreate-85cf8767cc-rgjnc   1/1     Running   0          28
s
nginx-deployment-recreate-85cf8767cc-v99xx   1/1     Running   0          28
s
nginx-deployment-recreate-85cf8767cc-wfxmw   1/1     Running   0          28
s
PS C:\Users\ASUS\Desktop>
```

Update the deployment to a new image:

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

```
PS C:\Users\ASUS\Desktop> kubectl set image deployment/nginx-deployment-recrea
te nginx=nginx:1.21.1
deployment.apps/nginx-deployment-recreate image updated
PS C:\Users\ASUS\Desktop> kubectl rollout status deployment nginx-deployment-r
ecreate
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 1 of 10
updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 2 of 10
updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 3 of 10
updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 4 of 10
updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 5 of 10
updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 6 of 10
updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 7 of 10
updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 8 of 10
updated replicas are available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 9 of 10
updated replicas are available...
deployment "nginx-deployment-recreate" successfully rolled out
PS C:\Users\ASUS\Desktop>
```

Monitor the update:

```
kubectl rollout status deployment nginx-deployment-recreate
```

Verify the updated pods:

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

Step 3: Clean Up

Delete the deployments:

```
kubectl delete deployment nginx-deployment-rolling
```

```
kubectl delete deployment nginx-deployment-recreate
```

```
PS C:\Users\ASUS\Desktop> 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
```