

Lab Exercise 11 :- Deployments with Rolling Updates and Recreate Strategies

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Batch:- DevOps B1

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

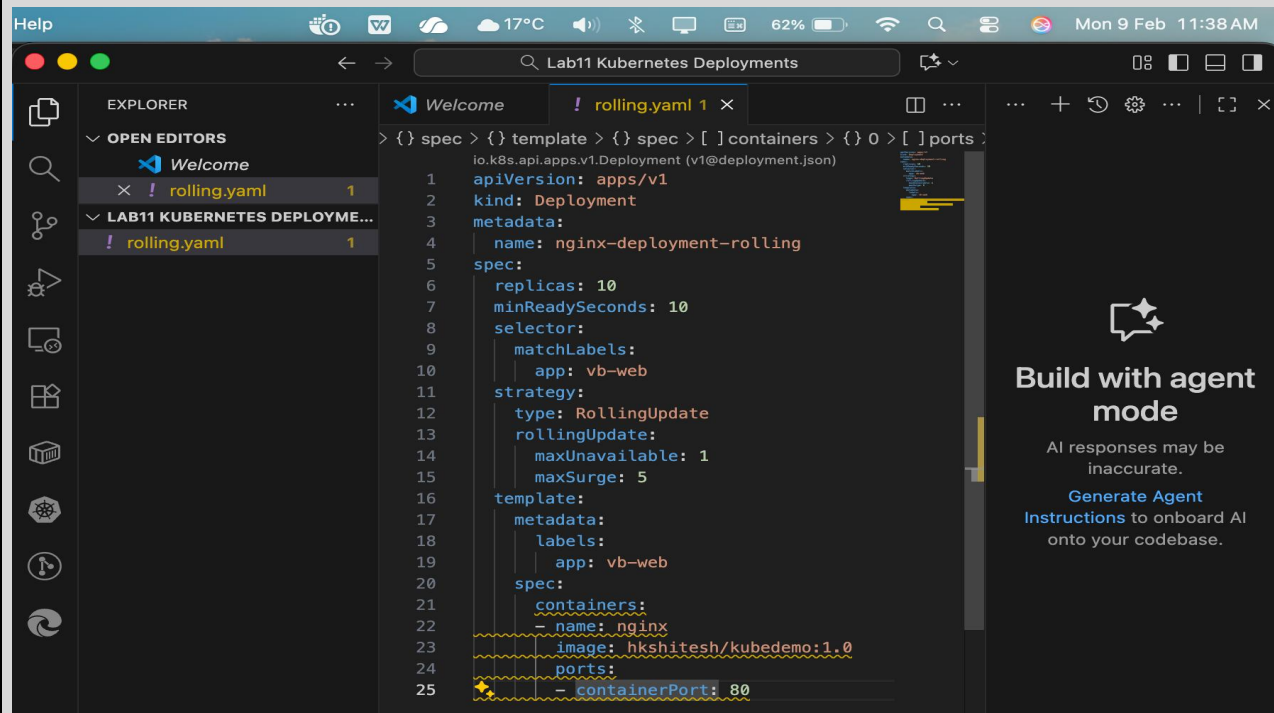
Step 1: Create a Deployment with Rolling Update Strategy

Create a YAML file for the deployment:

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

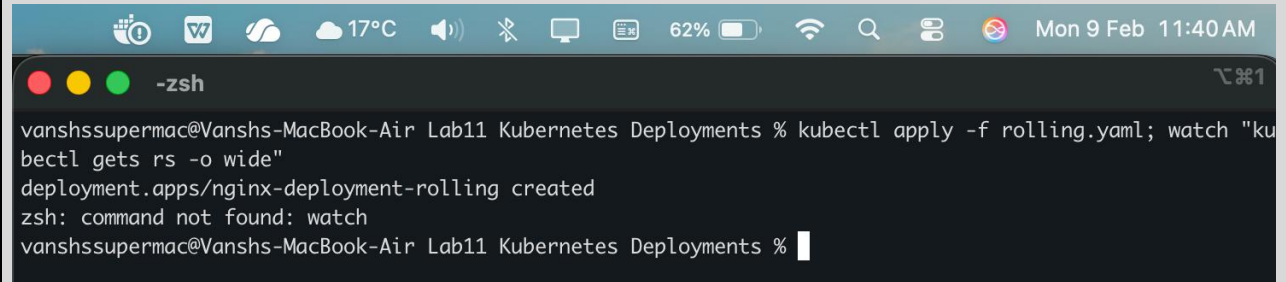
```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment-rolling
spec:
  replicas: 10
  minReadySeconds: 10
```

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



Apply the deployment:

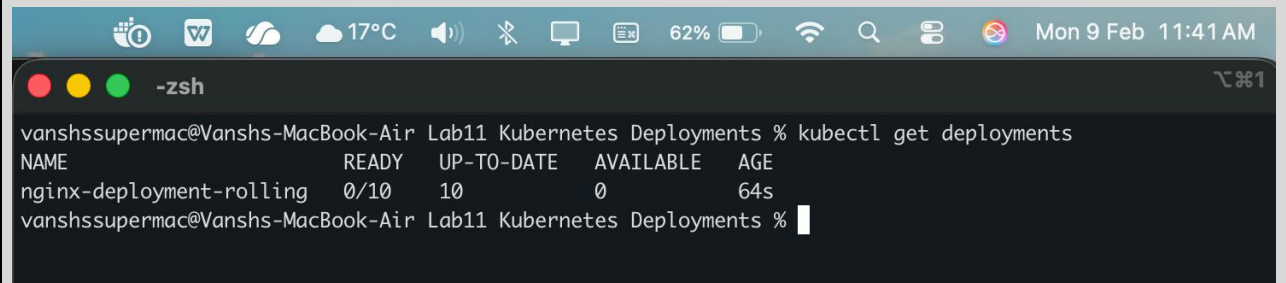
```
kubectl apply -f nginx-deployment-rolling.yaml ; watch "kubectl get rs -o wide"
```



```
-zsh
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl apply -f rolling.yaml; watch "ku
bectl gets rs -o wide"
deployment.apps/nginx-deployment-rolling created
zsh: command not found: watch
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

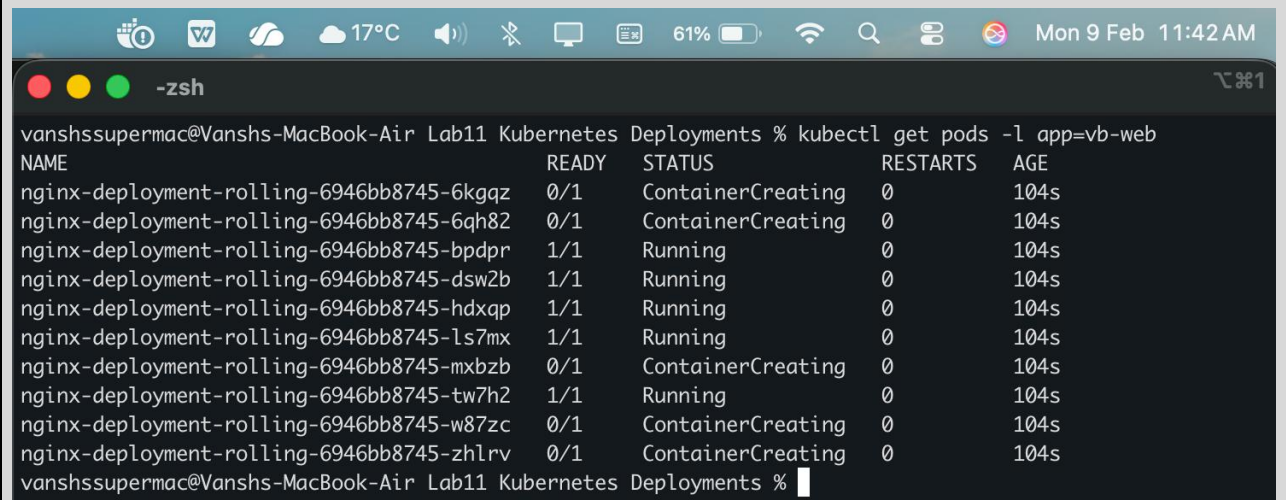
Verify the deployment:

```
kubectl get deployments
```



```
-zsh
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl get deployments
NAME                READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment-rolling 0/10    10           0           64s
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

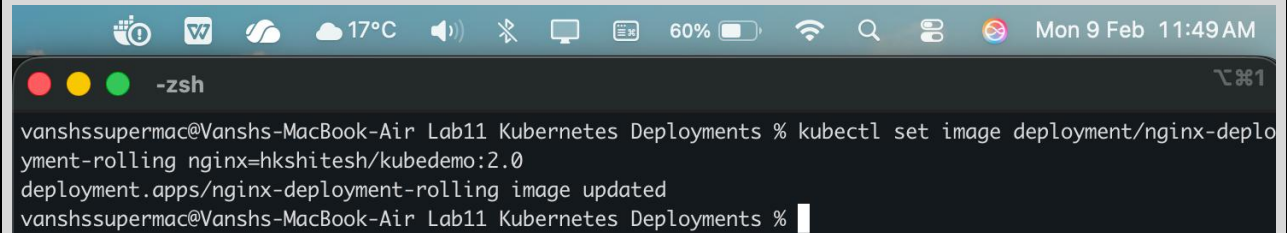
```
kubectl get pods -l app=nginx
```



```
-zsh
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl get pods -l app=nginx
NAME                                READY   STATUS              RESTARTS   AGE
nginx-deployment-rolling-6946bb8745-6kgqz 0/1     ContainerCreating   0          104s
nginx-deployment-rolling-6946bb8745-6qh82 0/1     ContainerCreating   0          104s
nginx-deployment-rolling-6946bb8745-bpdpr 1/1     Running             0          104s
nginx-deployment-rolling-6946bb8745-dsw2b 1/1     Running             0          104s
nginx-deployment-rolling-6946bb8745-hdxqp 1/1     Running             0          104s
nginx-deployment-rolling-6946bb8745-ls7mx 1/1     Running             0          104s
nginx-deployment-rolling-6946bb8745-mxbzb 0/1     ContainerCreating   0          104s
nginx-deployment-rolling-6946bb8745-tw7h2 1/1     Running             0          104s
nginx-deployment-rolling-6946bb8745-w87zc 0/1     ContainerCreating   0          104s
nginx-deployment-rolling-6946bb8745-zhlrv 0/1     ContainerCreating   0          104s
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

Update the deployment to a new image:

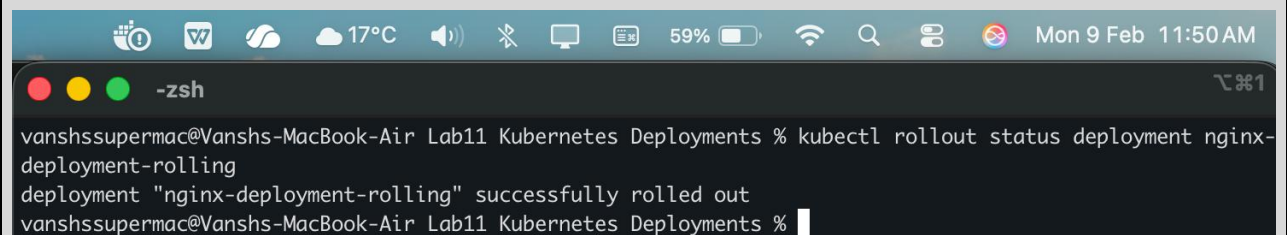
```
kubectl set image deployment/nginx-deployment-rolling nginx=hkshitesh/kubedemo:2.0
```



A screenshot of a macOS terminal window. The title bar shows system status icons (Wi-Fi, battery, temperature, etc.) and the date/time 'Mon 9 Feb 11:49 AM'. The terminal window has a title bar with three colored buttons (red, yellow, green) and the text '-zsh'. The prompt is 'vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %'. The command entered is 'kubectl set image deployment/nginx-deployment-rolling nginx=hkshitesh/kubedemo:2.0'. The output is 'deployment.apps/nginx-deployment-rolling image updated'. The prompt is now 'vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %'.

Monitor the rolling update:

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



A screenshot of a macOS terminal window. The title bar shows system status icons and the date/time 'Mon 9 Feb 11:50 AM'. The terminal window has a title bar with three colored buttons and the text '-zsh'. The prompt is 'vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %'. The command entered is 'kubectl rollout status deployment nginx-deployment-rolling'. The output is 'deployment "nginx-deployment-rolling" successfully rolled out'. The prompt is now 'vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %'.

Verify the updated pods:

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

```
vanhssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl get pods -l app=nb-web -o wide
NAME                                READY   STATUS    RESTARTS   AGE   IP            NODE
nginx-deployment-rolling-7b6bf94d74-85tx5  1/1     Running   0          97s   10.1.0.33     docker-desktop
<none>                                <none>   <none>     <none>     <none>
nginx-deployment-rolling-7b6bf94d74-9wjdq  1/1     Running   0          97s   10.1.0.31     docker-desktop
<none>                                <none>   <none>     <none>     <none>
nginx-deployment-rolling-7b6bf94d74-kw22q  1/1     Running   0          79s   10.1.0.34     docker-desktop
<none>                                <none>   <none>     <none>     <none>
nginx-deployment-rolling-7b6bf94d74-l9pxj  1/1     Running   0          97s   10.1.0.32     docker-desktop
<none>                                <none>   <none>     <none>     <none>
nginx-deployment-rolling-7b6bf94d74-nzg96  1/1     Running   0          97s   10.1.0.28     docker-desktop
<none>                                <none>   <none>     <none>     <none>
nginx-deployment-rolling-7b6bf94d74-qf2s8  1/1     Running   0          77s   10.1.0.35     docker-desktop
<none>                                <none>   <none>     <none>     <none>
nginx-deployment-rolling-7b6bf94d74-ql28s  1/1     Running   0          73s   10.1.0.37     docker-desktop
<none>                                <none>   <none>     <none>     <none>
nginx-deployment-rolling-7b6bf94d74-sds27  1/1     Running   0          97s   10.1.0.30     docker-desktop
<none>                                <none>   <none>     <none>     <none>
nginx-deployment-rolling-7b6bf94d74-tbp9w  1/1     Running   0          97s   10.1.0.29     docker-desktop
<none>                                <none>   <none>     <none>     <none>
nginx-deployment-rolling-7b6bf94d74-x9pt7  1/1     Running   0          75s   10.1.0.36     docker-desktop
<none>                                <none>   <none>     <none>     <none>
vanhssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

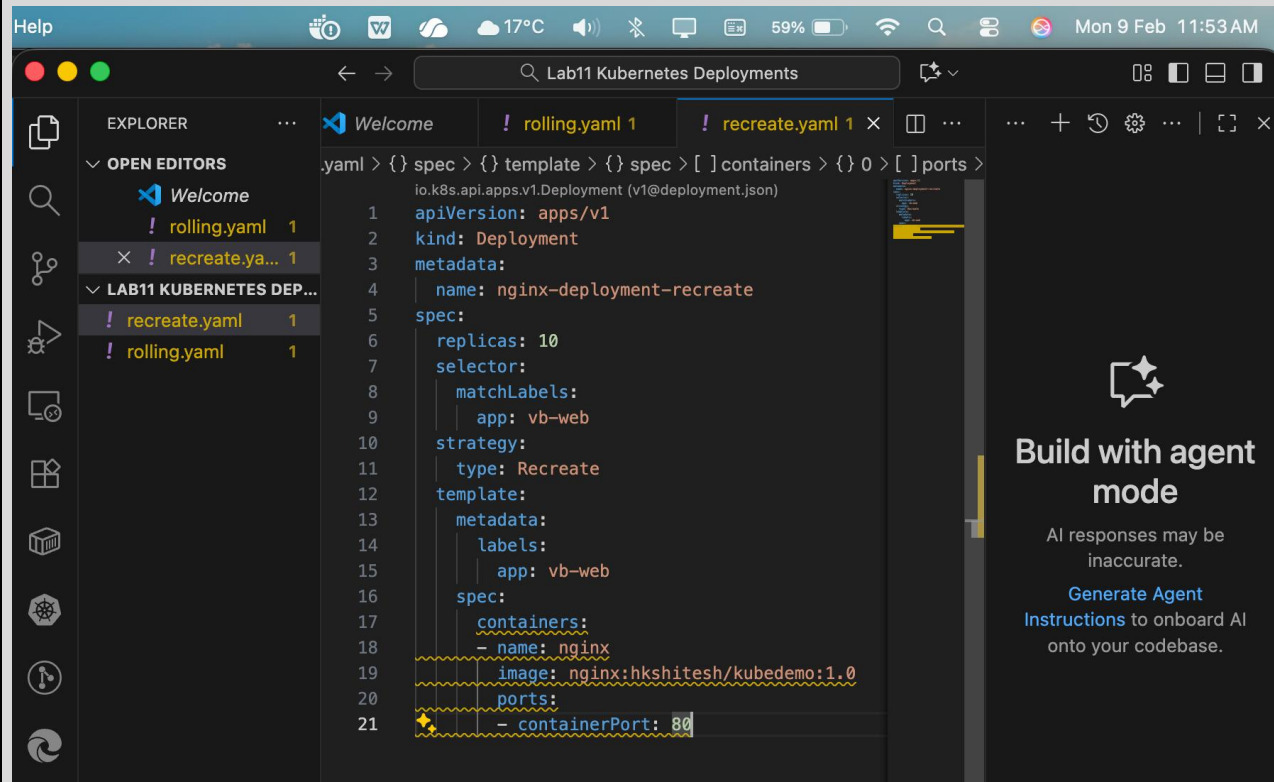
Step 2: Create a Deployment with Recreate Strategy

Create a YAML file for the deployment:

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

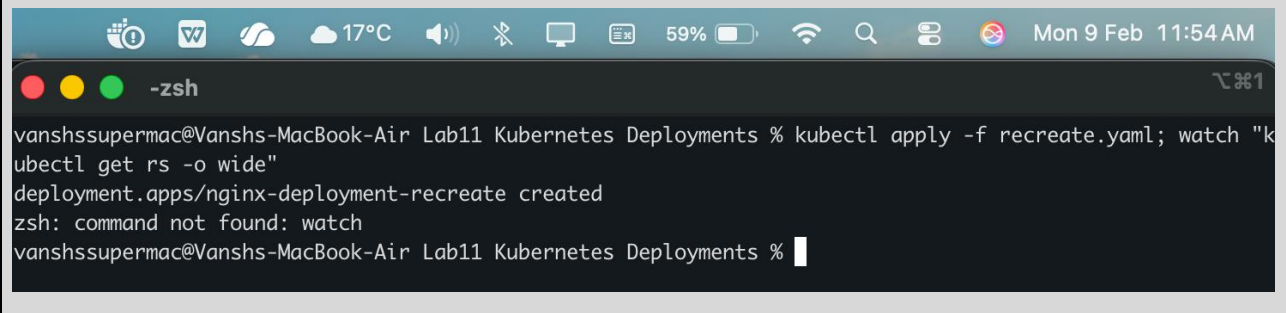
```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment-recreate
spec:
  replicas: 10
  selector:
```

```
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"
```

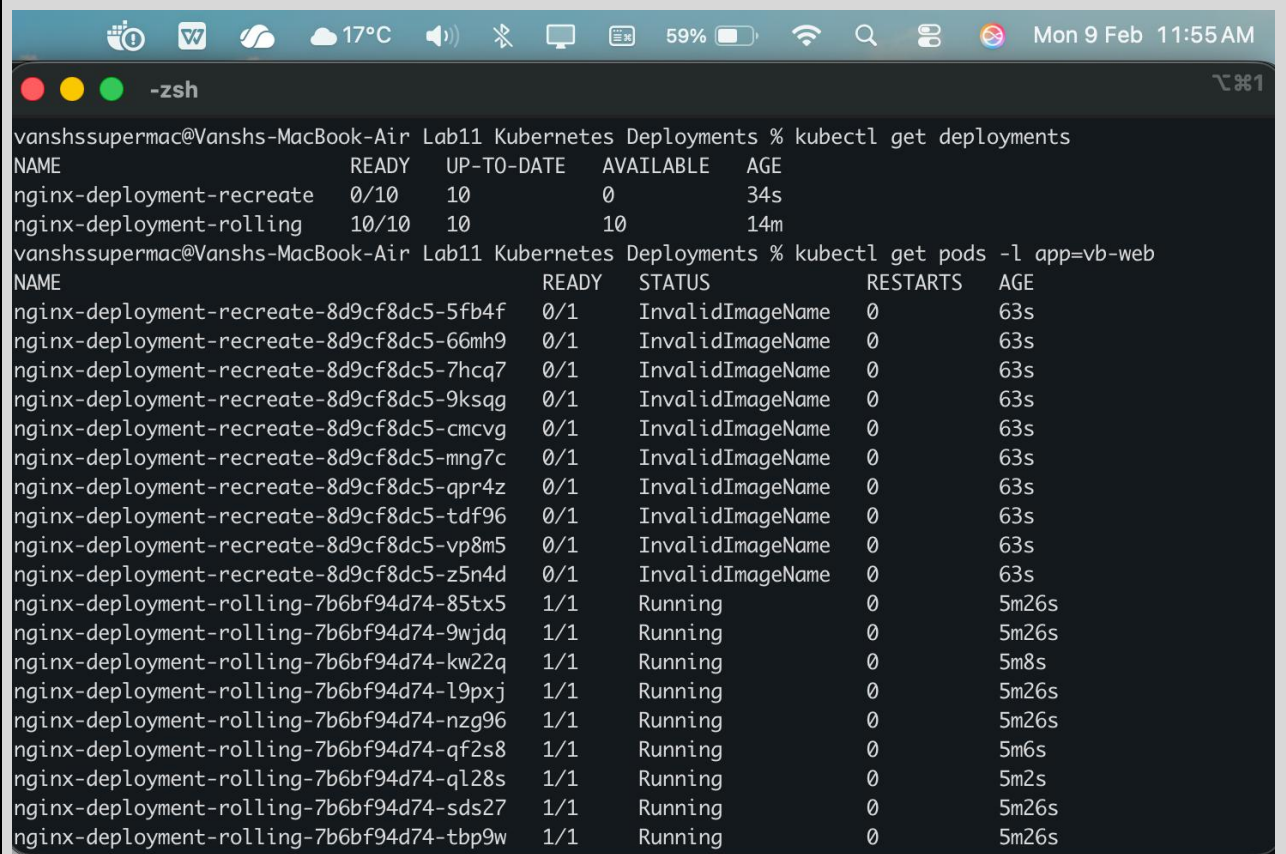


```
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl apply -f recreate.yaml; watch "k
ubectl get rs -o wide"
deployment.apps/nginx-deployment-recreate created
zsh: command not found: watch
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

Verify the deployment:

```
kubectl get deployments
```

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



```
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl get deployments
NAME                                READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment-recreate           0/10    10           0           34s
nginx-deployment-rolling            10/10   10           10          14m
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl get pods -l app=nginx-recreate
NAME                                READY   STATUS              RESTARTS   AGE
nginx-deployment-recreate-8d9cf8dc5-5fb4f  0/1     InvalidImageName    0          63s
nginx-deployment-recreate-8d9cf8dc5-66mh9  0/1     InvalidImageName    0          63s
nginx-deployment-recreate-8d9cf8dc5-7hcq7  0/1     InvalidImageName    0          63s
nginx-deployment-recreate-8d9cf8dc5-9ksqg  0/1     InvalidImageName    0          63s
nginx-deployment-recreate-8d9cf8dc5-cmcvg  0/1     InvalidImageName    0          63s
nginx-deployment-recreate-8d9cf8dc5-mng7c  0/1     InvalidImageName    0          63s
nginx-deployment-recreate-8d9cf8dc5-qpr4z  0/1     InvalidImageName    0          63s
nginx-deployment-recreate-8d9cf8dc5-tdf96  0/1     InvalidImageName    0          63s
nginx-deployment-recreate-8d9cf8dc5-vp8m5  0/1     InvalidImageName    0          63s
nginx-deployment-recreate-8d9cf8dc5-z5n4d  0/1     InvalidImageName    0          63s
nginx-deployment-rolling-7b6bf94d74-85tx5  1/1     Running             0          5m26s
nginx-deployment-rolling-7b6bf94d74-9wjdq  1/1     Running             0          5m26s
nginx-deployment-rolling-7b6bf94d74-kw22q  1/1     Running             0          5m8s
nginx-deployment-rolling-7b6bf94d74-l9pxj  1/1     Running             0          5m26s
nginx-deployment-rolling-7b6bf94d74-nzg96  1/1     Running             0          5m26s
nginx-deployment-rolling-7b6bf94d74-qf2s8  1/1     Running             0          5m6s
nginx-deployment-rolling-7b6bf94d74-ql28s  1/1     Running             0          5m2s
nginx-deployment-rolling-7b6bf94d74-sds27  1/1     Running             0          5m26s
nginx-deployment-rolling-7b6bf94d74-tbp9w  1/1     Running             0          5m26s
```

Update the deployment to a new image:

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

```
Mon 9 Feb 11:56 AM
-zsh
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl set image deployment/nginx-deplo
yment-recreate nginx=nginx:1.21.1
deployment.apps/nginx-deployment-recreate image updated
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

Monitor the update:

kubectl rollout status deployment nginx-deployment-recreate

```
Mon 9 Feb 11:57 AM
-zsh
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl rollout status deployment nginx-
deployment-recreate
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 8 of 10 updated replicas are availa
ble...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 9 of 10 updated replicas are availa
ble...
deployment "nginx-deployment-recreate" successfully rolled out
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

Verify the updated pods:

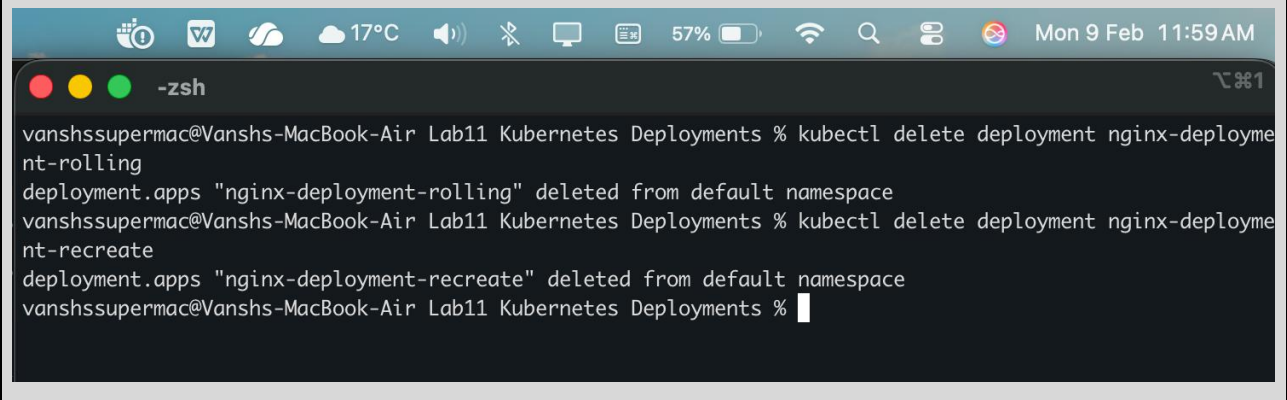
kubectl get pods -l app=nginx-recreate -o wide

```
Mon 9 Feb 11:58 AM
-zsh
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl get pods -l app=nginx-recreate -o wide
NAME                                READY   STATUS    RESTARTS   AGE   IP            NODE
nginx-deployment-recreate-6cc5fbcd67-2hvx8   1/1     Running   0          87s   10.1.0.51     docker-desktop
nginx-deployment-recreate-6cc5fbcd67-2kbfm   1/1     Running   0          87s   10.1.0.52     docker-desktop
nginx-deployment-recreate-6cc5fbcd67-4rh6q   1/1     Running   0          87s   10.1.0.48     docker-desktop
```


Step 3: Clean Up

Delete the deployments:

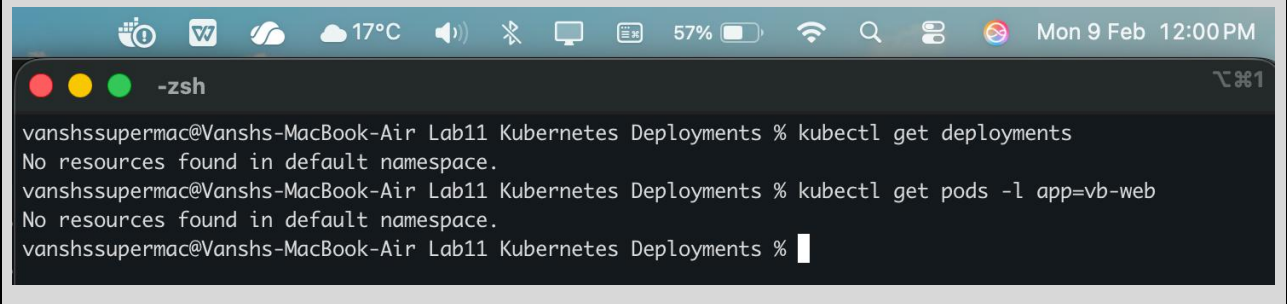
```
kubectl delete deployment nginx-deployment-rolling
kubectl delete deployment nginx-deployment-recreate
```

A screenshot of a macOS terminal window titled "-zsh". The window shows the execution of two kubectl commands to delete deployments. The first command is "kubectl delete deployment nginx-deployment-rolling", and the second is "kubectl delete deployment nginx-deployment-recreate". Both commands return the message "deployment.apps 'nginx-deployment-rolling' deleted from default namespace" and "deployment.apps 'nginx-deployment-recreate' deleted from default namespace" respectively. The terminal window has a title bar with standard macOS window controls and a status bar at the top showing system icons and the date/time "Mon 9 Feb 11:59 AM".

```
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl delete deployment nginx-deployment-rolling
deployment.apps "nginx-deployment-rolling" deleted from default namespace
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl delete deployment nginx-deployment-recreate
deployment.apps "nginx-deployment-recreate" deleted from default namespace
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

Verify that all resources are cleaned up:

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

A screenshot of a macOS terminal window titled "-zsh". The window shows the execution of three kubectl commands to verify resource cleanup. The first command is "kubectl get deployments", which returns "No resources found in default namespace.". The second command is "kubectl get pods -l app=vb-web", which also returns "No resources found in default namespace.". The third command is "kubectl get pods -l app=nginx-recreate", which is partially visible. The terminal window has a title bar with standard macOS window controls and a status bar at the top showing system icons and the date/time "Mon 9 Feb 12:00 PM".

```
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl get deployments
No resources found in default namespace.
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl get pods -l app=vb-web
No resources found in default namespace.
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```