

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

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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
```

```
Help
```

```
! rolling.yaml 1
```

```
EXPLORER
```

```
OPEN EDITORS
```

```
LAB11 KUBERNETES DEPLOYME...
```

```
! rolling.yaml 1
```

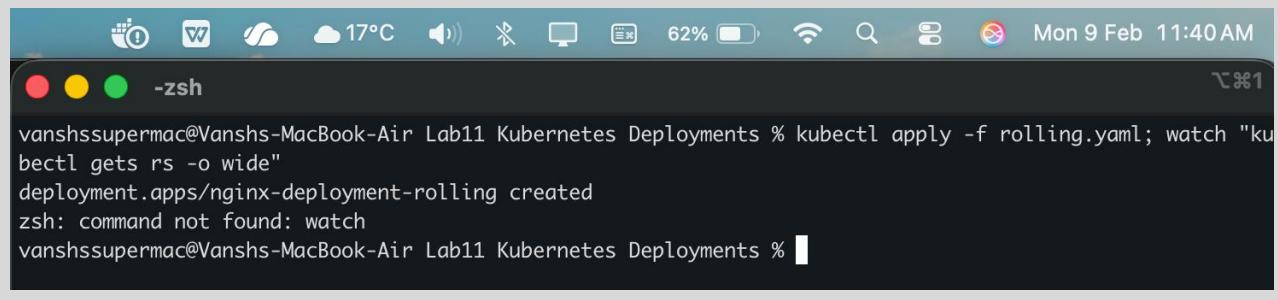
```
io.k8s.api.apps.v1.Deployment (v1@deployment.json)
```

```
 1 apiVersion: apps/v1
 2 kind: Deployment
 3 metadata:
 4   name: nginx-deployment-rolling
 5 spec:
 6   replicas: 10
 7   minReadySeconds: 10
 8   selector:
 9     matchLabels:
10       app: vb-web
11   strategy:
12     type: RollingUpdate
13     rollingUpdate:
14       maxUnavailable: 1
15       maxSurge: 5
16   template:
17     metadata:
18       labels:
19         app: vb-web
20     spec:
21       containers:
22         - name: nginx
23           image: hkshitesh/kubedemo:1.0
24       ports:
25         - containerPort: 80
```

Build with agent mode  
AI responses may be inaccurate.  
Generate Agent Instructions to onboard AI onto your codebase.

Apply the deployment:

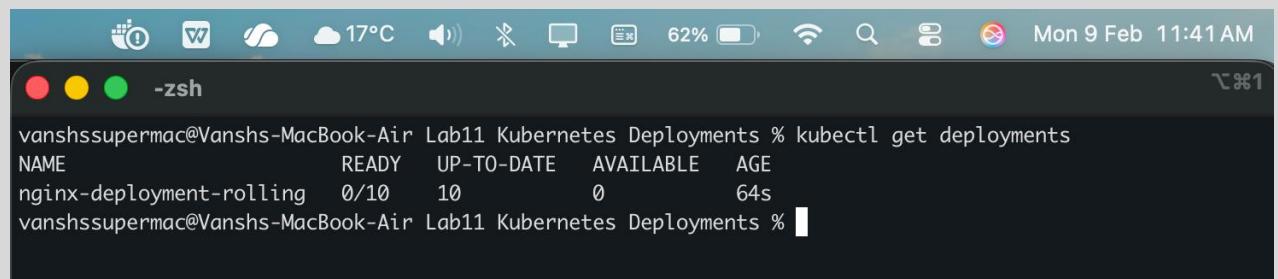
```
kubectl apply -f nginx-deployment-rolling.yaml ; watch "kubectl get rs -o wide"
```



A screenshot of a macOS terminal window titled "-zsh". The window shows the command "kubectl apply -f nginx-deployment-rolling.yaml ; watch \"kubectl get rs -o wide\"". The output indicates that the deployment was created successfully: "deployment.apps/nginx-deployment-rolling created". However, there is an error with the "watch" command: "zsh: command not found: watch". The timestamp in the top right corner is "Mon 9 Feb 11:40 AM".

Verify the deployment:

```
kubectl get deployments
```

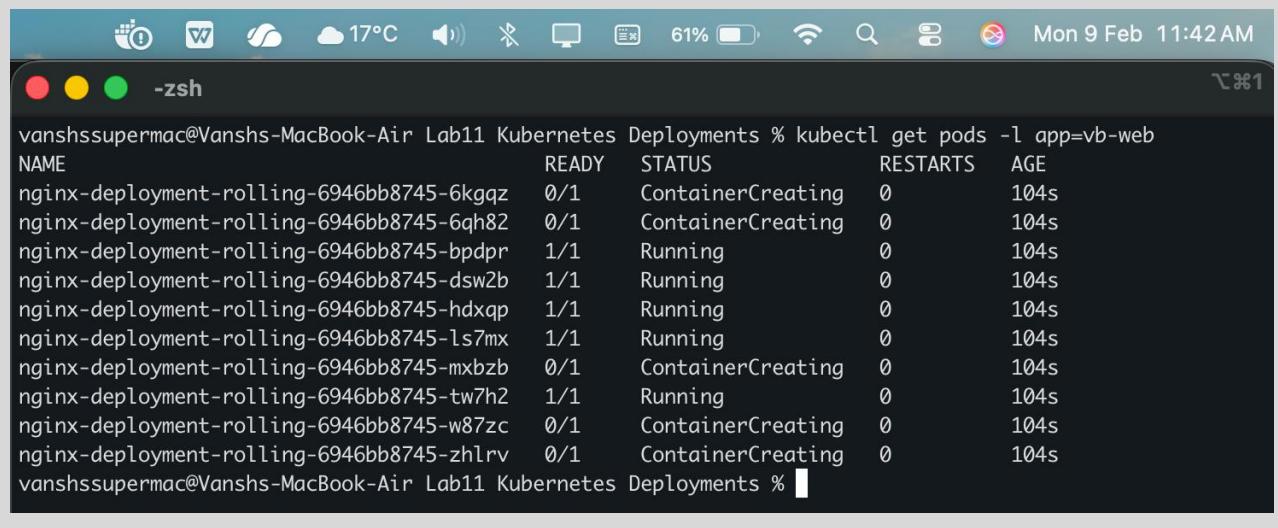


A screenshot of a macOS terminal window titled "-zsh". The window shows the command "kubectl get deployments". The output displays a table with the following data:

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
nginx-deployment-rolling	0/10	10	0	64s

The timestamp in the top right corner is "Mon 9 Feb 11:41 AM".

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



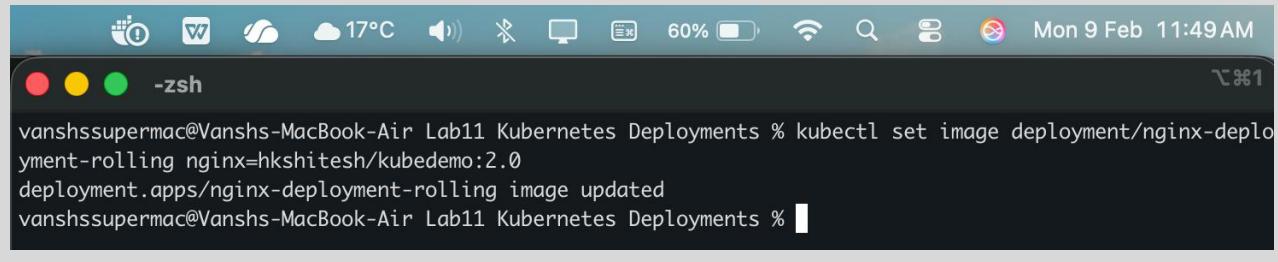
A screenshot of a macOS terminal window titled "-zsh". The window shows the command "kubectl get pods -l app=vb-web". The output displays a table with the following data:

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

The timestamp in the top right corner is "Mon 9 Feb 11:42 AM".

Update the deployment to a new image:

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

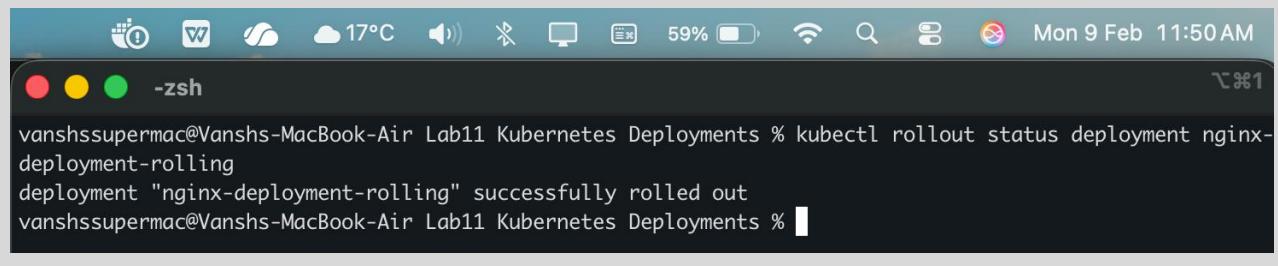


A screenshot of a macOS terminal window titled '-zsh'. The window shows the command 'kubectl set image deployment/nginx-deployment-rolling nginx=hkshitesh/kubedemo:2.0' being run and its output. The output indicates that the deployment's image has been updated. The terminal is located on a Mac desktop with various icons in the Dock.

```
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl set image deployment/nginx-deployment-rolling nginx=hkshitesh/kubedemo:2.0
deployment.apps/nginx-deployment-rolling image updated
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 titled '-zsh'. The window shows the command 'kubectl rollout status deployment nginx-deployment-rolling' being run and its output. The output indicates that the deployment successfully rolled out. The terminal is located on a Mac desktop with various icons in the Dock.

```
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl rollout status deployment nginx-deployment-rolling
deployment "nginx-deployment-rolling" successfully rolled out
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

Verify the updated pods:

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

```

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

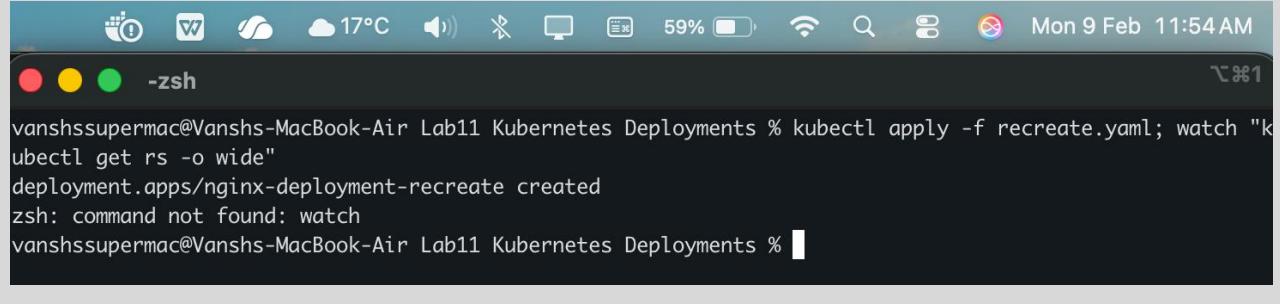
The screenshot shows the Visual Studio Code interface with a dark theme. The title bar reads "Lab11 Kubernetes Deployments". The left sidebar has icons for Explorer, Search, Open Editors, and Lab11 Kubernetes Deployments. The main area shows three tabs: "Welcome", "! rolling.yaml 1", and "! recreate.yaml 1". The "recreate.yaml" tab is active, displaying the following Kubernetes Deployment YAML code:

```
yaml > {} spec > {} template > {} spec > [ ] containers > {} 0 > [ ] ports >  
io.k8s.api.apps.v1.Deployment (v1@deployment.json)  
1  apiVersion: apps/v1  
2  kind: Deployment  
3  metadata:  
4    name: nginx-deployment-recreate  
5  spec:  
6    replicas: 10  
7    selector:  
8      matchLabels:  
9        app: vb-web  
10   strategy:  
11     type: Recreate  
12   template:  
13     metadata:  
14       labels:  
15         app: vb-web  
16     spec:  
17       containers:  
18         - name: nginx  
19           image: nginx:hkshitesh/kubedemo:1.0  
20       ports:  
21         - containerPort: 80
```

A status bar at the bottom right says "Build with agent mode" and "AI responses may be inaccurate. Generate Agent Instructions to onboard AI onto your codebase."

Apply the deployment:

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



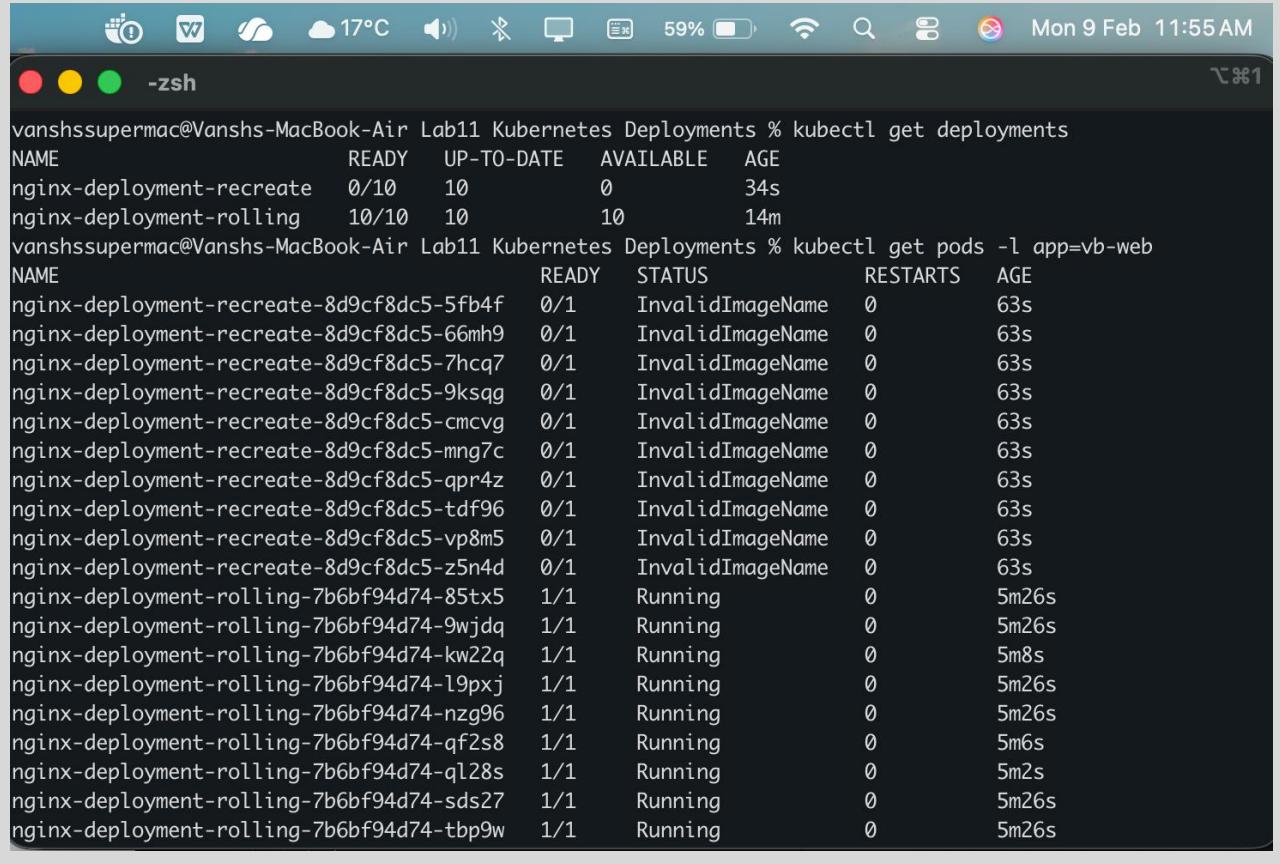
A screenshot of a macOS terminal window titled '-zsh'. The window shows the command 'kubectl apply -f recreate.yaml; watch "kubectl get rs -o wide"' being run. The output indicates that the deployment 'nginx-deployment-recreate' was created successfully. However, the command 'watch' is listed as a 'command not found'. The terminal status bar shows the date as 'Mon 9 Feb 11:54 AM'.

```
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl apply -f recreate.yaml; watch "kubectl 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
```

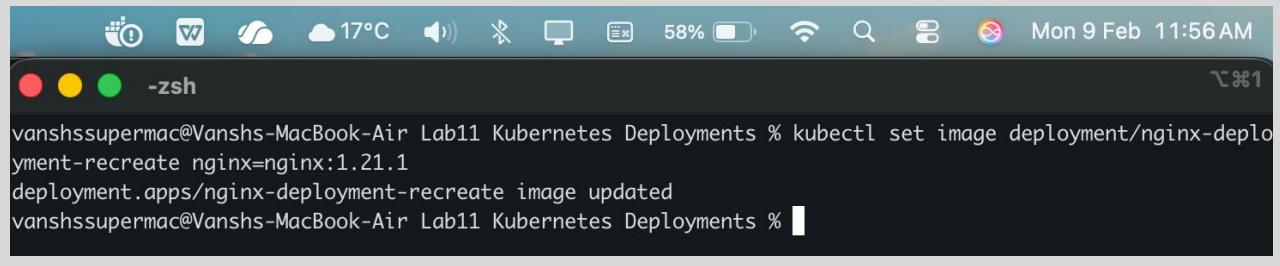


A screenshot of a macOS terminal window titled '-zsh'. The window shows two commands being run: 'kubectl get deployments' and 'kubectl get pods -l app=nginx-recreate'. The first command lists the deployment 'nginx-deployment-recreate' with 0/10 pods ready and 0 available. The second command lists multiple pods under 'nginx-deployment-recreate' and 'nginx-deployment-rolling' with various names and statuses. The terminal status bar shows the date as 'Mon 9 Feb 11:55 AM'.

```
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:

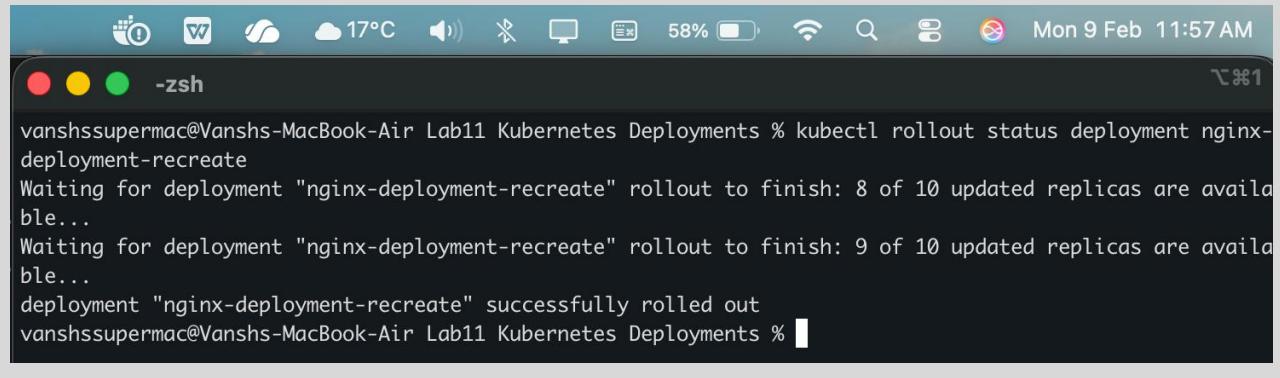
```
kubectl set image deployment/nginx-deployment-recreate nginx=nginx:1.21.1
```



```
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments % kubectl set image deployment/nginx-deployment-recreate nginx=nginx:1.21.1
deployment.apps/nginx-deployment-recreate image updated
vanshssupermac@Vanshs-MacBook-Air Lab11 Kubernetes Deployments %
```

Monitor the update:

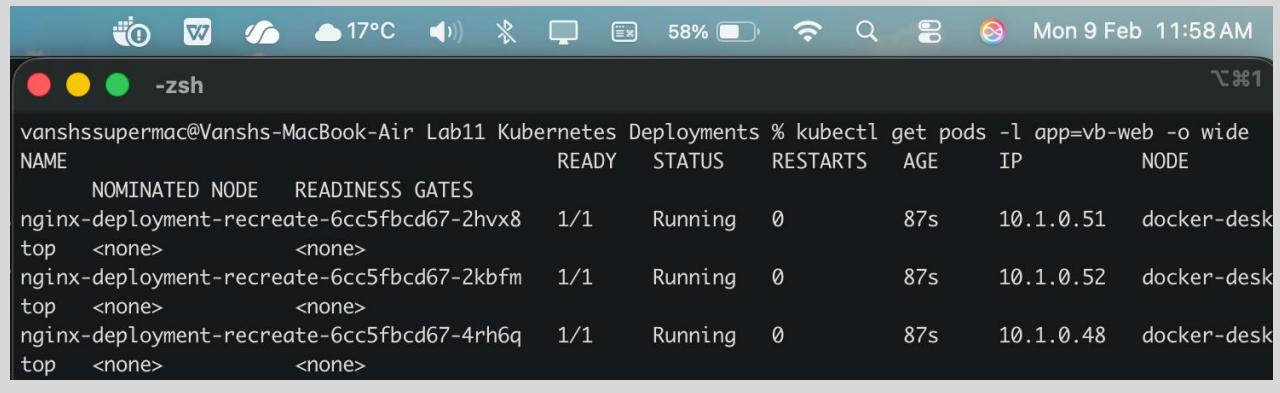
```
kubectl rollout status deployment nginx-deployment-recreate
```



```
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 available...
Waiting for deployment "nginx-deployment-recreate" rollout to finish: 9 of 10 updated replicas are available...
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
```

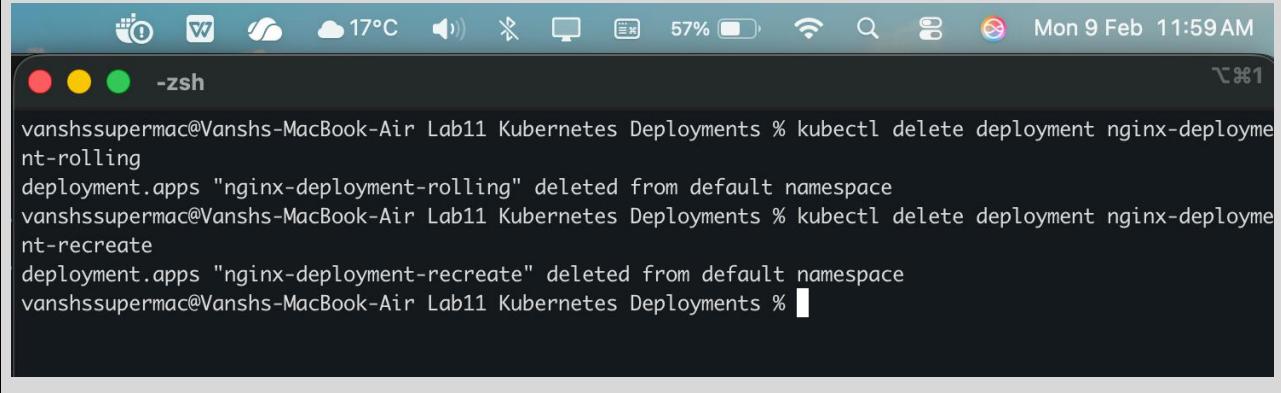


NAME	NOMINATED NODE	READY	STATUS	RESTARTS	AGE	IP	NODE
nginx-deployment-recreate-6cc5fbcd67-2hv8x	top	1/1	Running	0	87s	10.1.0.51	docker-desk
nginx-deployment-recreate-6cc5fbcd67-2kbfm	top	1/1	Running	0	87s	10.1.0.52	docker-desk
nginx-deployment-recreate-6cc5fbcd67-4rh6q	top	1/1	Running	0	87s	10.1.0.48	docker-desk

### Step 3: Clean Up

Delete the deployments:

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

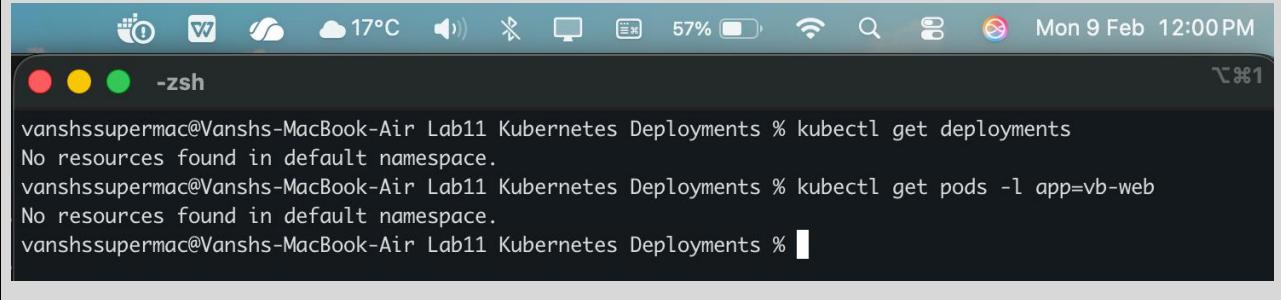


A screenshot of a macOS terminal window titled "-zsh". The window shows the command line and the output of the two kubectl delete commands. The system tray at the top indicates it's Monday, February 9, 11:59 AM, with a battery level of 57%.

```
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". It shows the results of three kubectl get commands: deployments, pods with app=vb-web, and pods with app=nginx-recreate. All outputs indicate "No resources found in default namespace". The system tray at the top shows it's Monday, February 9, 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 %
```