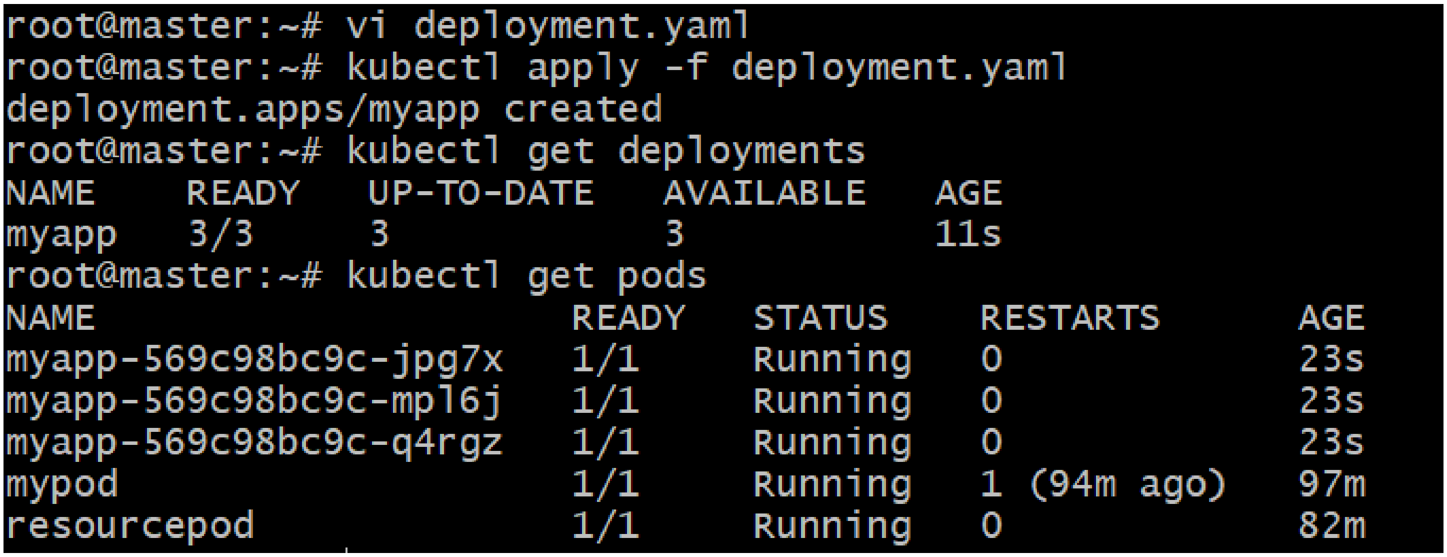
K8s-03

1) Deploy an application using a Deployment with 3 replicas and a rolling update strategy.

→CREATE A YAML FILE deployment.yaml AND ADD THE BELOW TEMPLATE

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: myapp
spec:
  replicas: 3
  selector:
    matchLabels:
      app: myapp
  template:
    metadata:
      labels:
        app: myapp
    spec:
      containers:
      - name: myapp-container
        image: nginx:latest
        ports:
        - containerPort: 80
  strategy:
    type: RollingUpdate
    rollingUpdate:
      maxUnavailable: 1
      maxSurge: 1
```

```
# kubectl apply -f deployment.yaml
# kubectl get deployments
# kubectl get pods
```



```
root@master:~# vi deployment.yaml
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp created
root@master:~# kubectl get deployments
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
myapp   3/3     3            3           11s
root@master:~# kubectl get pods
NAME                     READY   STATUS    RESTARTS       AGE
myapp-569c98bc9c-jpg7x   1/1     Running   0              23s
myapp-569c98bc9c-mpl6j   1/1     Running   0              23s
myapp-569c98bc9c-q4rgz   1/1     Running   0              23s
mypod                    1/1     Running   1 (94m ago)    97m
resourcepod              1/1     Running   0              82m
```

2) Configure a Deployment with a Recreate strategy and observe the downtime.

→MODIFY THE deploymet.yaml to use the recreate strategy

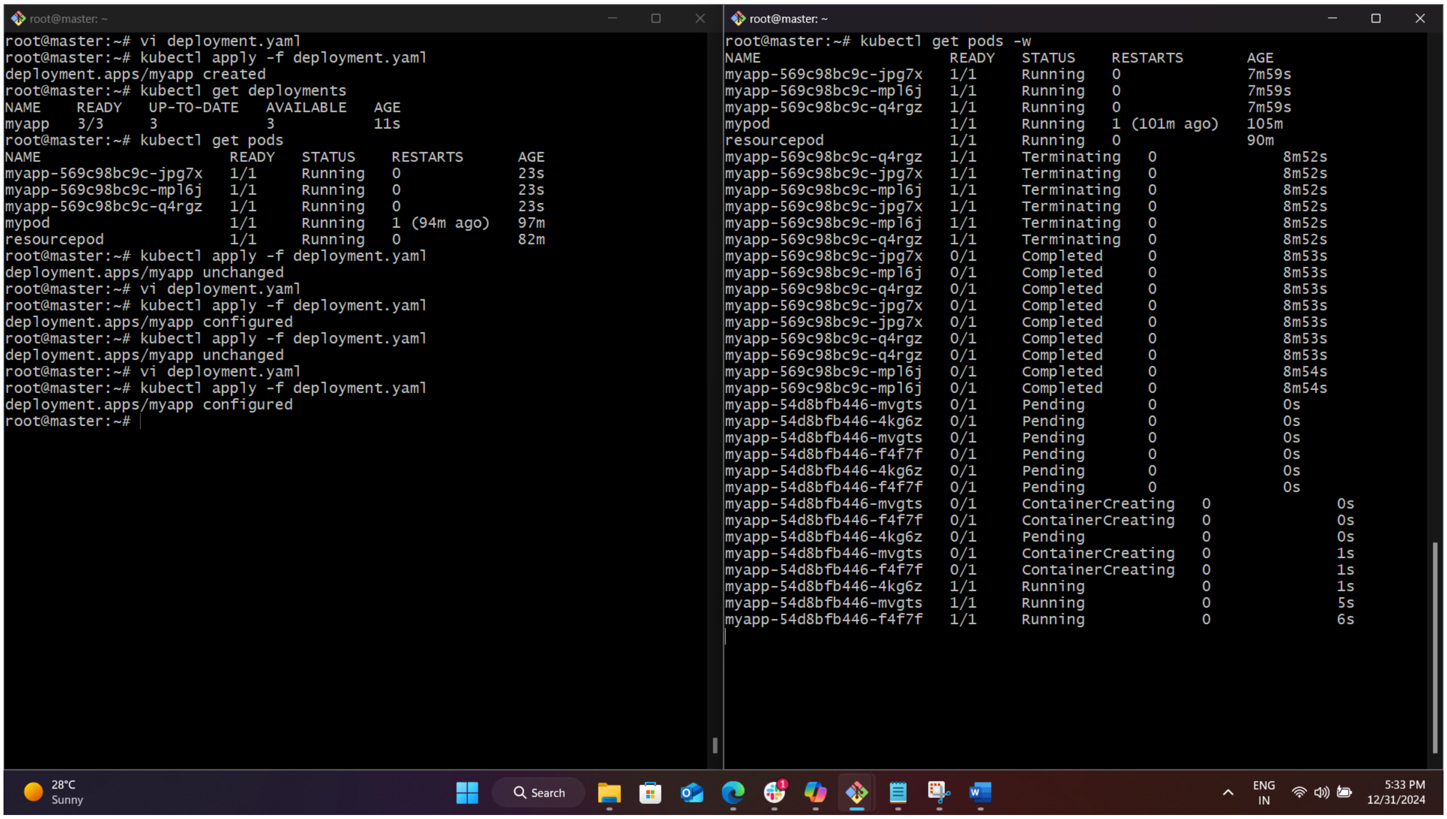
```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: myapp
spec:
  replicas: 3
  selector:
    matchLabels:
      app: myapp
  template:
    metadata:
      labels:
        app: myapp
    spec:
      containers:
      - name: myapp-container
        image: httpd:latest
        ports:
        - containerPort: 80
  strategy:
    type: Recreate
```

→IN DIFFERENT TERMINAL WATCH THE DOWNTIME

kubectl get pods -w

→HIT THIS COMMAND TO APPLY

kubectl apply -f deployment.yaml



```
root@master:~# vi deployment.yaml
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp created
root@master:~# kubectl get deployments
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
myapp   3/3     3            3           11s
root@master:~# kubectl get pods
NAME                     READY   STATUS    RESTARTS      AGE
myapp-569c98bc9c-jpg7x   1/1     Running   0             23s
myapp-569c98bc9c-mpl6j   1/1     Running   0             23s
myapp-569c98bc9c-q4rgz   1/1     Running   0             23s
mypod                    1/1     Running   1 (94m ago)   97m
resourcepod              1/1     Running   0             82m
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp unchanged
root@master:~# vi deployment.yaml
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp configured
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp unchanged
root@master:~# vi deployment.yaml
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp configured
root@master:~#
```

```
root@master:~# kubectl get pods -w
NAME                     READY   STATUS    RESTARTS       AGE
myapp-569c98bc9c-jpg7x   1/1     Running   0              7m59s
myapp-569c98bc9c-mpl6j   1/1     Running   0              7m59s
myapp-569c98bc9c-q4rgz   1/1     Running   0              7m59s
mypod                    1/1     Running   1 (101m ago)   105m
resourcepod              1/1     Running   0              90m
myapp-569c98bc9c-q4rgz   1/1     Terminating   0              8m52s
myapp-569c98bc9c-jpg7x   1/1     Terminating   0              8m52s
myapp-569c98bc9c-mpl6j   1/1     Terminating   0              8m52s
myapp-569c98bc9c-jpg7x   1/1     Terminating   0              8m52s
myapp-569c98bc9c-mpl6j   1/1     Terminating   0              8m52s
myapp-569c98bc9c-q4rgz   1/1     Terminating   0              8m52s
myapp-569c98bc9c-jpg7x   0/1     Completed     0              8m53s
myapp-569c98bc9c-mpl6j   0/1     Completed     0              8m53s
myapp-569c98bc9c-q4rgz   0/1     Completed     0              8m53s
myapp-569c98bc9c-jpg7x   0/1     Completed     0              8m53s
myapp-569c98bc9c-jpg7x   0/1     Completed     0              8m53s
myapp-569c98bc9c-q4rgz   0/1     Completed     0              8m53s
myapp-569c98bc9c-q4rgz   0/1     Completed     0              8m53s
myapp-569c98bc9c-mpl6j   0/1     Completed     0              8m54s
myapp-569c98bc9c-mpl6j   0/1     Completed     0              8m54s
myapp-54d8bfb446-mvgts   0/1     Pending       0              0s
myapp-54d8bfb446-4kg6z   0/1     Pending       0              0s
myapp-54d8bfb446-mvgts   0/1     Pending       0              0s
myapp-54d8bfb446-f4f7f   0/1     Pending       0              0s
myapp-54d8bfb446-4kg6z   0/1     Pending       0              0s
myapp-54d8bfb446-f4f7f   0/1     Pending       0              0s
myapp-54d8bfb446-mvgts   0/1     ContainerCreating   0              0s
myapp-54d8bfb446-f4f7f   0/1     ContainerCreating   0              0s
myapp-54d8bfb446-4kg6z   0/1     Pending             0              0s
myapp-54d8bfb446-mvgts   0/1     ContainerCreating   0              1s
myapp-54d8bfb446-f4f7f   0/1     ContainerCreating   0              1s
myapp-54d8bfb446-4kg6z   1/1     Running             0              1s
myapp-54d8bfb446-mvgts   1/1     Running             0              5s
myapp-54d8bfb446-f4f7f   1/1     Running             0              6s
```

3) Update an existing Deployment and perform a rollback to the previous version.

→CHANGE THE TAG OF NGINX IN FILE

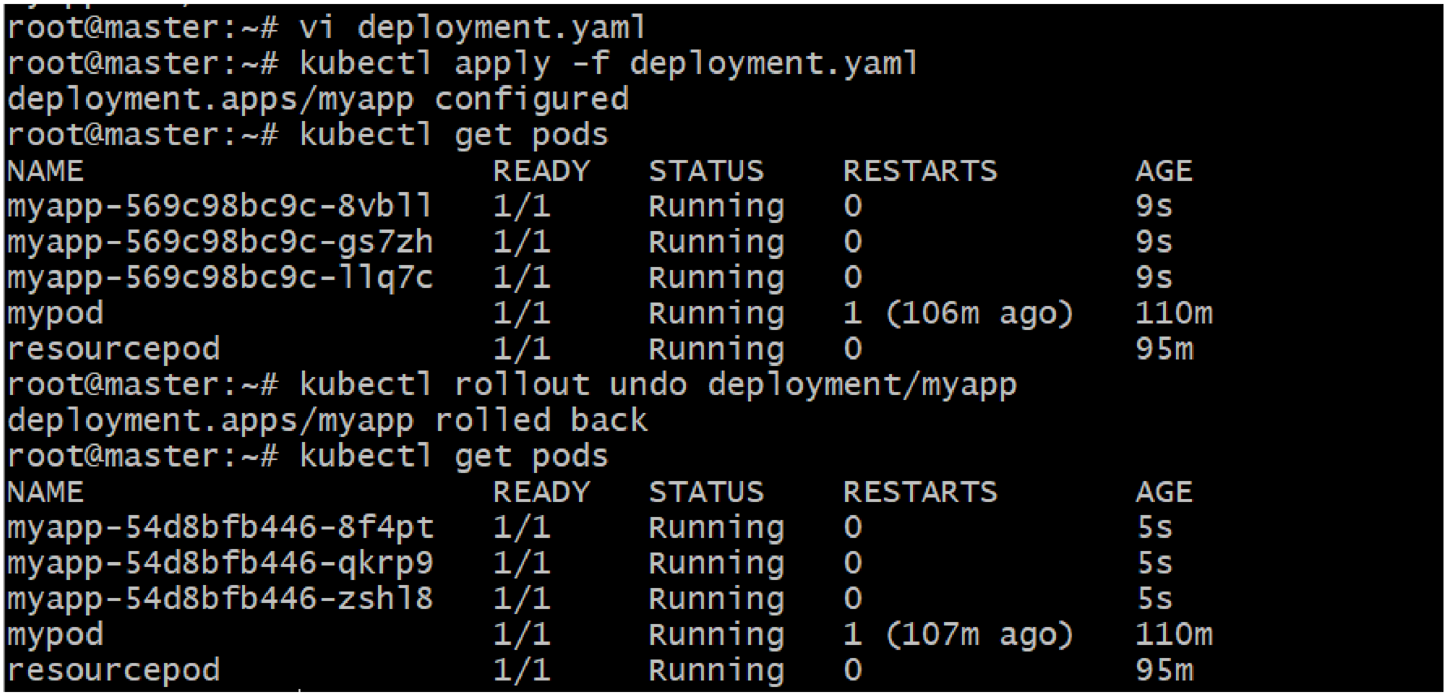
```
spec:
  containers:
  - name: myapp-
container
    image: nginx:1.21.6
```

kubectl apply -f deployment.yaml

kubectl get pods

kubectl rollout undo deployment/myapp

kubectl get pods



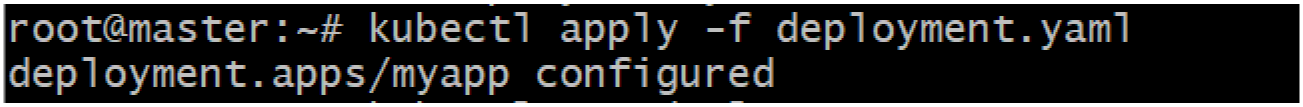
```
root@master:~# vi deployment.yaml
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp configured
root@master:~# kubectl get pods
NAME                     READY   STATUS    RESTARTS        AGE
myapp-569c98bc9c-8vbll   1/1     Running   0               9s
myapp-569c98bc9c-gs7zh   1/1     Running   0               9s
myapp-569c98bc9c-llq7c   1/1     Running   0               9s
mypod                    1/1     Running   1 (106m ago)    110m
resourcepod              1/1     Running   0               95m
root@master:~# kubectl rollout undo deployment/myapp
deployment.apps/myapp rolled back
root@master:~# kubectl get pods
NAME                     READY   STATUS    RESTARTS        AGE
myapp-54d8bfb446-8f4pt   1/1     Running   0               5s
myapp-54d8bfb446-qkrp9   1/1     Running   0               5s
myapp-54d8bfb446-zshl8   1/1     Running   0               5s
mypod                    1/1     Running   1 (107m ago)    110m
resourcepod              1/1     Running   0               95m
```

4) Modify a Deployment to add resource requests and limits for CPU and memory.

→UPDATE THE deployment.yaml TO INCLUDE RESOURCE REQUESTS AND LIMITS

```
spec:
  containers:
  - name: myapp-container
    image: nginx:latest
    resources:
      requests:
        memory: "64Mi"
        cpu: "250m"
      limits:
        memory: "128Mi"
        cpu: "500m"
```

kubectl apply -f deployment.yaml



```
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp configured
```

5) Create a Deployment with MaxSurge and MaxUnavailable configurations.

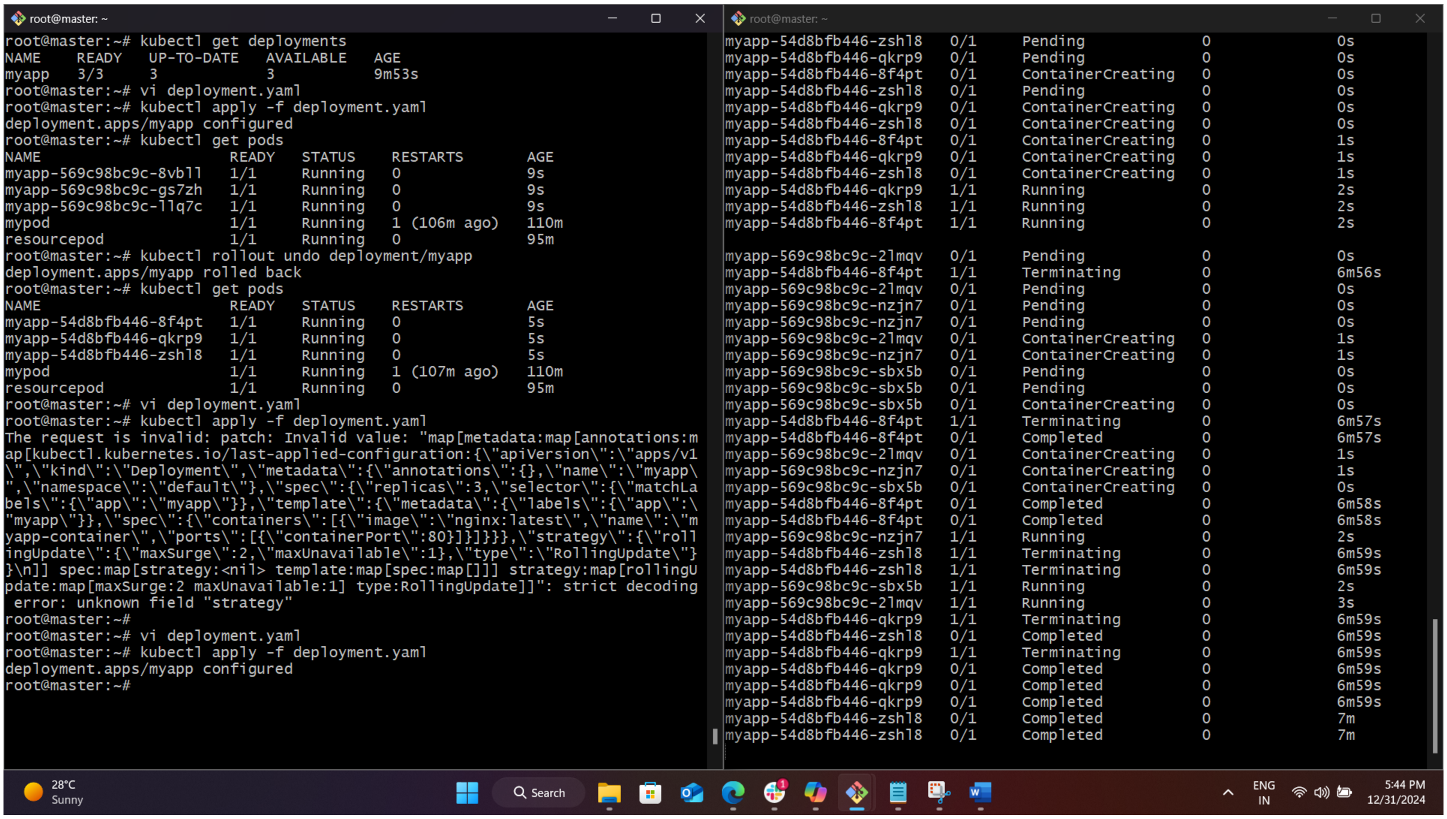
→UPDATE THE deployment.yaml TO INCLUDE MAXSURGE AND MAXUNAVAILABLE

```
strategy:
  type: RollingUpdate
  rollingUpdate:
    maxUnavailable: 1
    maxSurge: 2
```

```
# kubectl get pods -w
```

→HIT THIS COMMAND TO APPLY

```
# kubectl apply -f deployment.yaml
```



```
root@master:~# kubectl get deployments
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
myapp   3/3     3            3           9m53s
root@master:~# vi deployment.yaml
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp configured
root@master:~# kubectl get pods
NAME                     READY   STATUS    RESTARTS       AGE
myapp-569c98bc9c-8vbll   1/1     Running   0              9s
myapp-569c98bc9c-gs7zh   1/1     Running   0              9s
myapp-569c98bc9c-llq7c   1/1     Running   0              9s
mypod                    1/1     Running   1 (106m ago)   110m
resourcepod              1/1     Running   0              95m
root@master:~# kubectl rollout undo deployment/myapp
deployment.apps/myapp rolled back
root@master:~# kubectl get pods
NAME                     READY   STATUS    RESTARTS       AGE
myapp-54d8bfb446-8f4pt   1/1     Running   0              5s
myapp-54d8bfb446-qkrp9   1/1     Running   0              5s
myapp-54d8bfb446-zshl8   1/1     Running   0              5s
mypod                    1/1     Running   1 (107m ago)   110m
resourcepod              1/1     Running   0              95m
root@master:~# vi deployment.yaml
root@master:~# kubectl apply -f deployment.yaml
The request is invalid: patch: Invalid value: "map[metadata:map[annotations:m
ap[kubectl.kubernetes.io/last-applied-configuration:{\"apiVersion\":\"apps/v1
\",\"kind\":\"Deployment\",\"metadata\":{\"annotations\":{},\"name\":\"myapp\
",\"namespace\":\"default\"},\"spec\":{\"replicas\":3,\"selector\":{\"matchLa
bels\":{\"app\":\"myapp\"}},\"template\":{\"metadata\":{\"labels\":{\"app\":\
"myapp\"}},\"spec\":{\"containers\":[{\"image\":\"nginx:latest\",\"name\":\"m
yapp-container\",\"ports\":[{\"containerPort\":80}]}]}}},\"strategy\":{\"roll
ingUpdate\":{\"maxSurge\":2,\"maxUnavailable\":1},\"type\":\"RollingUpdate\"}
}\n]] spec:map[strategy:<nil> template:map[spec:map[]]] strategy:map[rollingU
pdate:map[maxSurge:2 maxUnavailable:1] type:RollingUpdate]]": strict decoding
 error: unknown field "strategy"
root@master:~#
root@master:~# vi deployment.yaml
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp configured
root@master:~#
```

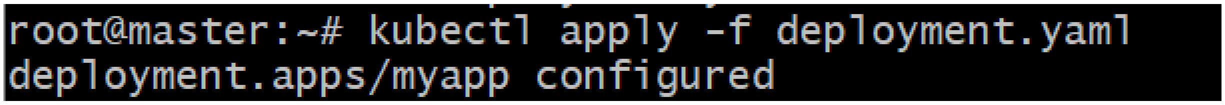
```
myapp-54d8bfb446-zshl8   0/1     Pending             0          0s
myapp-54d8bfb446-qkrp9   0/1     Pending             0          0s
myapp-54d8bfb446-8f4pt   0/1     ContainerCreating   0          0s
myapp-54d8bfb446-zshl8   0/1     Pending             0          0s
myapp-54d8bfb446-qkrp9   0/1     ContainerCreating   0          0s
myapp-54d8bfb446-zshl8   0/1     ContainerCreating   0          0s
myapp-54d8bfb446-8f4pt   0/1     ContainerCreating   0          1s
myapp-54d8bfb446-qkrp9   0/1     ContainerCreating   0          1s
myapp-54d8bfb446-zshl8   0/1     ContainerCreating   0          1s
myapp-54d8bfb446-qkrp9   1/1     Running             0          2s
myapp-54d8bfb446-zshl8   1/1     Running             0          2s
myapp-54d8bfb446-8f4pt   1/1     Running             0          2s

myapp-569c98bc9c-2lmqv   0/1     Pending             0          0s
myapp-54d8bfb446-8f4pt   1/1     Terminating         0          6m56s
myapp-569c98bc9c-2lmqv   0/1     Pending             0          0s
myapp-569c98bc9c-nzjn7   0/1     Pending             0          0s
myapp-569c98bc9c-nzjn7   0/1     Pending             0          0s
myapp-569c98bc9c-2lmqv   0/1     ContainerCreating   0          1s
myapp-569c98bc9c-nzjn7   0/1     ContainerCreating   0          1s
myapp-569c98bc9c-sbx5b   0/1     Pending             0          0s
myapp-569c98bc9c-sbx5b   0/1     Pending             0          0s
myapp-569c98bc9c-sbx5b   0/1     ContainerCreating   0          0s
myapp-54d8bfb446-8f4pt   1/1     Terminating         0          6m57s
myapp-54d8bfb446-8f4pt   0/1     Completed           0          6m57s
myapp-569c98bc9c-2lmqv   0/1     ContainerCreating   0          1s
myapp-569c98bc9c-nzjn7   0/1     ContainerCreating   0          1s
myapp-569c98bc9c-sbx5b   0/1     ContainerCreating   0          0s
myapp-54d8bfb446-8f4pt   0/1     Completed           0          6m58s
myapp-54d8bfb446-8f4pt   0/1     Completed           0          6m58s
myapp-569c98bc9c-nzjn7   1/1     Running             0          2s
myapp-54d8bfb446-zshl8   1/1     Terminating         0          6m59s
myapp-54d8bfb446-zshl8   1/1     Terminating         0          6m59s
myapp-569c98bc9c-sbx5b   1/1     Running             0          2s
myapp-569c98bc9c-2lmqv   1/1     Running             0          3s
myapp-54d8bfb446-qkrp9   1/1     Terminating         0          6m59s
myapp-54d8bfb446-zshl8   0/1     Completed           0          6m59s
myapp-54d8bfb446-qkrp9   1/1     Terminating         0          6m59s
myapp-54d8bfb446-qkrp9   0/1     Completed           0          6m59s
myapp-54d8bfb446-qkrp9   0/1     Completed           0          6m59s
myapp-54d8bfb446-qkrp9   0/1     Completed           0          6m59s
myapp-54d8bfb446-zshl8   0/1     Completed           0          7m
myapp-54d8bfb446-zshl8   0/1     Completed           0          7m
```

6) Set up a Deployment with a custom revision history limit.

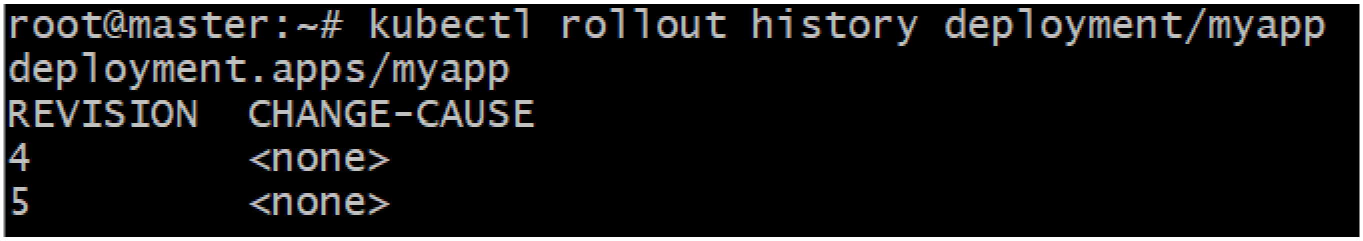
```
spec:
  revisionHistoryLimit: 5
```

```
# kubectl apply -f deployment.yaml
```



```
root@master:~# kubectl apply -f deployment.yaml
deployment.apps/myapp configured
```

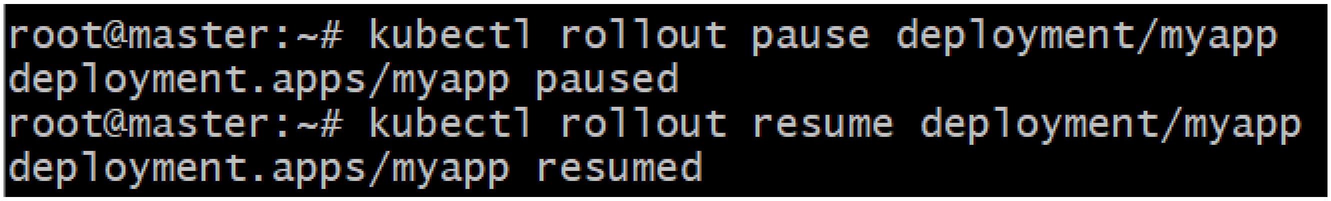
```
# kubectl rollout history deployment/myapp
```



```
root@master:~# kubectl rollout history deployment/myapp
deployment.apps/myapp
REVISION  CHANGE-CAUSE
4         <none>
5         <none>
```

7) Pause a Deployment during an update, and then resume it.

```
# kubectl rollout pause deployment/myapp
# kubectl rollout resume deployment/myapp
```



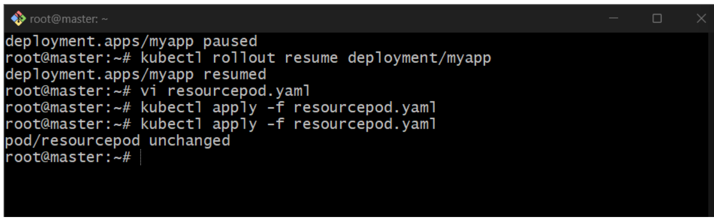
```
root@master:~# kubectl rollout pause deployment/myapp
deployment.apps/myapp paused
root@master:~# kubectl rollout resume deployment/myapp
deployment.apps/myapp resumed
```

8) Create a pod using resource requests for memory and CPU, and observe how the scheduler assigns it to a node.

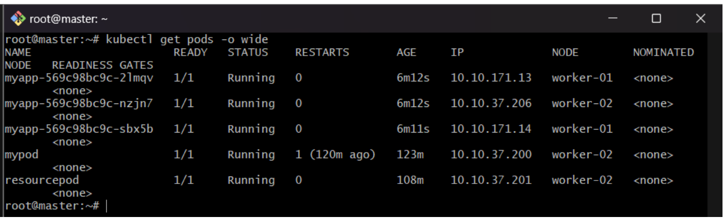
→ CREATE A YAML FILE NAMED resourcepod.yaml AND ADD THE BELOW TEMPLATE

```
apiVersion: v1
kind: Pod
metadata:
  name: resourcepod
spec:
  containers:
  - name: nginx-container
    image: nginx:latest
    resources:
      requests:
        memory: "64Mi"
        cpu: "250m"
      limits:
        memory: "128Mi"
        cpu: "500m"
```

```
# kubectl apply -f resourcepod.yaml
# kubectl get pods -o wide
```



```
deployment.apps/myapp paused
root@master:~# kubectl rollout resume deployment/myapp
deployment.apps/myapp resumed
root@master:~# vi resourcepod.yaml
root@master:~# kubectl apply -f resourcepod.yaml
root@master:~# kubectl apply -f resourcepod.yaml
pod/resourcepod unchanged
root@master:~#
```



```
root@master:~# kubectl get pods -o wide
NAME                     READY   STATUS    RESTARTS       AGE     IP             NODE        NOMINATED
NODE   READINESS GATES
myapp-569c98bc9c-2lmqv   1/1     Running   0              6m12s   10.10.171.13   worker-01   <none>
       <none>
myapp-569c98bc9c-nzjn7   1/1     Running   0              6m12s   10.10.37.206   worker-02   <none>
       <none>
myapp-569c98bc9c-sbx5b   1/1     Running   0              6m11s   10.10.171.14   worker-01   <none>
       <none>
mypod                    1/1     Running   1 (120m ago)   123m    10.10.37.200   worker-02   <none>
       <none>
resourcepod              1/1     Running   0              108m    10.10.37.201   worker-02   <none>
       <none>
root@master:~# |
```