Assignment 2 ::
Create a deployment called webapp with image nginx with 5 replicas.
Get the deployment you just created with labels.
Output the yaml file of the deployment you just created.
Get the pods of this deployment.
Scale the deployment from 5 replicas to 20 replicas and verify.
Get the deployment rollout status.
Get the replicaset that created with this deployment.
Get the yaml of the replicaset and pods of this deployment.
Delete the deployment you just created and watch all the pods are also being deleted

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Task 1 :: Create a deployment called webapp with image nginx with 5 replicas.

kubectl create deploy webapp --image=nginx:1.7.9 --replicas=5 --dry-run=client -o yaml > webapp.yaml

kubectl apply -f webapp.yaml
kubectl get node -o wide
kubectl get pod -o wide

```
[root@ip-172-31-24-167 deploy]# kubectl create deploy webapp --image=nginx:1.7.9 --replicas=5 --dry-run=client -o yaml > webapp.yaml
[root@ip-172-31-24-167 deploy]# cat webapp.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  creationTimestamp: null
  labels:
    app: webapp
  name: webapp
spec:
  replicas: 5
  selector:
    matchLabels:
      app: webapp
  strategy: {}
  template:
    metadata:
      creationTimestamp: null
      labels:
        app: webapp
    spec:
      containers:
      - image: nginx:1.7.9
        name: nginx
        resources: {}
status: {}
[root@ip-172-31-24-167 deploy]# kubectl apply -f webapp.yaml
deployment.apps/webapp created
[root@ip-172-31-24-167 deploy]# kubectl get node -o wide
NAME                         STATUS   ROLES           AGE   VERSION   INTERNAL-IP   EXTERNAL-IP   OS-IMAGE            KERNEL-VERSION                  CONTAINER-RUNTIME
assignment-1a-control-plane  Ready    control-plane   90m   v1.25.0   172.18.0.2    <none>        Ubuntu 22.04.1 LTS  5.10.135-122.509.amzn2.x86_64   containerd://1.6.7
assignment-1a-worker         Ready    <none>          89m   v1.25.0   172.18.0.3    <none>        Ubuntu 22.04.1 LTS  5.10.135-122.509.amzn2.x86_64   containerd://1.6.7
assignment-1a-worker2        Ready    <none>          89m   v1.25.0   172.18.0.5    <none>        Ubuntu 22.04.1 LTS  5.10.135-122.509.amzn2.x86_64   containerd://1.6.7
assignment-1a-worker3        Ready    <none>          89m   v1.25.0   172.18.0.4    <none>        Ubuntu 22.04.1 LTS  5.10.135-122.509.amzn2.x86_64   containerd://1.6.7
[root@ip-172-31-24-167 deploy]#
[root@ip-172-31-24-167 deploy]# kubectl get pod -o wide
NAME                       READY   STATUS    RESTARTS   AGE   IP           NODE                   NOMINATED NODE   READINESS GATES
mywebapp                   1/1     Running   0          21m   10.244.3.3   assignment-1a-worker   <none>           <none>
webapp-6b8dc6f48c-7qhnd    1/1     Running   0          22s   10.244.2.3   assignment-1a-worker2  <none>           <none>
webapp-6b8dc6f48c-9h6n2    1/1     Running   0          22s   10.244.2.4   assignment-1a-worker2  <none>           <none>
webapp-6b8dc6f48c-b65km    1/1     Running   0          22s   10.244.1.5   assignment-1a-worker3  <none>           <none>
webapp-6b8dc6f48c-sxxkz    1/1     Running   0          22s   10.244.3.4   assignment-1a-worker   <none>           <none>
webapp-6b8dc6f48c-txf8w    1/1     Running   0          22s   10.244.1.4   assignment-1a-worker3  <none>           <none>
[root@ip-172-31-24-167 deploy]#
```

Task 2 :: Get the deployment you just created with labels.

kubectl get pod --show-labels

```
[root@ip-172-31-24-167 deploy]# kubectl get pod --show-labels
NAME                      READY   STATUS    RESTARTS   AGE     LABELS
mywebapp                  1/1     Running   0          23m     run=mywebapp
webapp-6b8dc6f48c-7qhnd   1/1     Running   0          2m16s   app=webapp,pod-template-hash=6b8dc6f48c
webapp-6b8dc6f48c-9h6n2   1/1     Running   0          2m16s   app=webapp,pod-template-hash=6b8dc6f48c
webapp-6b8dc6f48c-b65km   1/1     Running   0          2m16s   app=webapp,pod-template-hash=6b8dc6f48c
webapp-6b8dc6f48c-sxxkz   1/1     Running   0          2m16s   app=webapp,pod-template-hash=6b8dc6f48c
webapp-6b8dc6f48c-txf8w   1/1     Running   0          2m16s   app=webapp,pod-template-hash=6b8dc6f48c
[root@ip-172-31-24-167 deploy]#
```

Task 3 :: Output the yaml file of the deployment you just created.

cat webapp.yaml

```
[root@ip-172-31-24-167 deploy]# cat webapp.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  creationTimestamp: null
  labels:
    app: webapp
  name: webapp
spec:
  replicas: 5
  selector:
    matchLabels:
      app: webapp
  strategy: {}
  template:
    metadata:
      creationTimestamp: null
      labels:
        app: webapp
    spec:
      containers:
      - image: nginx:1.7.9
        name: nginx
        resources: {}
status: {}
[root@ip-172-31-24-167 deploy]#
```

Task 4 :: Get the pods of this deployment.

kubectl get pods -o wide

```
[root@ip-172-31-24-167 deploy]# kubectl get pods -o wide
NAME                      READY   STATUS    RESTARTS   AGE     IP           NODE                    NOMINATED NODE   READINESS GATES
mywebapp                  1/1     Running   0          27m     10.244.3.3   assignment-1a-worker    <none>           <none>
webapp-6b8dc6f48c-7qhnd   1/1     Running   0          6m32s   10.244.2.3   assignment-1a-worker2   <none>           <none>
webapp-6b8dc6f48c-9h6n2   1/1     Running   0          6m32s   10.244.2.4   assignment-1a-worker2   <none>           <none>
webapp-6b8dc6f48c-b65km   1/1     Running   0          6m32s   10.244.1.5   assignment-1a-worker3   <none>           <none>
webapp-6b8dc6f48c-sxxkz   1/1     Running   0          6m32s   10.244.3.4   assignment-1a-worker    <none>           <none>
webapp-6b8dc6f48c-txf8w   1/1     Running   0          6m32s   10.244.1.4   assignment-1a-worker3   <none>           <none>
[root@ip-172-31-24-167 deploy]#
```

Task 5 :: Scale the deployment from 5 replicas to 20 replicas and verify.

kubectl scale deploy webapp --replicas=20
kubectl get all -o wide

```
[root@ip-172-31-24-167 deploy]# kubectl scale deploy webapp --replicas=20
deployment.apps/webapp scaled
[root@ip-172-31-24-167 deploy]# kubectl get all -o wide
NAME                            READY   STATUS             RESTARTS   AGE    IP            NODE                    NOMINATED NODE   READINESS GATES
pod/mywebapp                    1/1     Running            0          28m    10.244.3.3    assignment-1a-worker    <none>           <none>
pod/webapp-6b8dc6f48c-5pc74     1/1     Running            0          2s     10.244.1.6    assignment-1a-worker3   <none>           <none>
pod/webapp-6b8dc6f48c-5zjhd     1/1     Running            0          3s     10.244.3.5    assignment-1a-worker    <none>           <none>
pod/webapp-6b8dc6f48c-7qhnd     1/1     Running            0          8m5s   10.244.2.3    assignment-1a-worker2   <none>           <none>
pod/webapp-6b8dc6f48c-8cd5h     0/1     ContainerCreating  0          2s     <none>        assignment-1a-worker2   <none>           <none>
pod/webapp-6b8dc6f48c-8xbw4     0/1     ContainerCreating  0          2s     <none>        assignment-1a-worker    <none>           <none>
pod/webapp-6b8dc6f48c-9h6n2     1/1     Running            0          8m5s   10.244.2.4    assignment-1a-worker2   <none>           <none>
pod/webapp-6b8dc6f48c-b65km     1/1     Running            0          8m5s   10.244.1.5    assignment-1a-worker3   <none>           <none>
pod/webapp-6b8dc6f48c-d52gt     0/1     ContainerCreating  0          2s     <none>        assignment-1a-worker    <none>           <none>
pod/webapp-6b8dc6f48c-f54q5     0/1     ContainerCreating  0          2s     <none>        assignment-1a-worker    <none>           <none>
pod/webapp-6b8dc6f48c-fppff     1/1     Running            0          2s     10.244.1.8    assignment-1a-worker3   <none>           <none>
pod/webapp-6b8dc6f48c-hqjjs     1/1     Running            0          2s     10.244.1.7    assignment-1a-worker3   <none>           <none>
pod/webapp-6b8dc6f48c-j8z8f     0/1     ContainerCreating  0          2s     <none>        assignment-1a-worker2   <none>           <none>
pod/webapp-6b8dc6f48c-k9jdz     0/1     ContainerCreating  0          2s     <none>        assignment-1a-worker3   <none>           <none>
pod/webapp-6b8dc6f48c-kgkwm     0/1     ContainerCreating  0          2s     <none>        assignment-1a-worker    <none>           <none>
pod/webapp-6b8dc6f48c-mkmqc     0/1     ContainerCreating  0          2s     <none>        assignment-1a-worker2   <none>           <none>
pod/webapp-6b8dc6f48c-rkkfr     1/1     Running            0          2s     10.244.2.5    assignment-1a-worker2   <none>           <none>
pod/webapp-6b8dc6f48c-rqd4c     1/1     Running            0          2s     10.244.2.6    assignment-1a-worker2   <none>           <none>
pod/webapp-6b8dc6f48c-sxxkz     1/1     Running            0          8m5s   10.244.3.4    assignment-1a-worker    <none>           <none>
pod/webapp-6b8dc6f48c-txf8w     1/1     Running            0          8m5s   10.244.1.4    assignment-1a-worker3   <none>           <none>
pod/webapp-6b8dc6f48c-vtqgp     1/1     Running            0          2s     10.244.1.9    assignment-1a-worker3   <none>           <none>

NAME                   TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)          AGE    SELECTOR
service/kubernetes     ClusterIP   10.96.0.1      <none>        443/TCP          97m    <none>
service/webservice     NodePort    10.96.61.93    <none>        8080:30672/TCP   25m    run=mywebapp

NAME                      READY   UP-TO-DATE   AVAILABLE   AGE    CONTAINERS   IMAGES        SELECTOR
deployment.apps/webapp    12/20   20           12          8m5s   nginx        nginx:1.7.9   app=webapp

NAME                                DESIRED   CURRENT   READY   AGE    CONTAINERS   IMAGES        SELECTOR
replicaset.apps/webapp-6b8dc6f48c   20        20        12      8m5s   nginx        nginx:1.7.9   app=webapp,pod-template-hash=6b8dc6f48c
[root@ip-172-31-24-167 deploy]#
```

Task 6 :: Get the deployment rollout status.

kubectl rollout history deploy webapp

```
[root@ip-172-31-24-167 deploy]# kubectl rollout history deploy webapp
deployment.apps/webapp
REVISION   CHANGE-CAUSE
1          <none>

[root@ip-172-31-24-167 deploy]#
```

Task 7 :: Get the replicaset that created with this deployment.

kubectl get rs

```
[root@ip-172-31-24-167 deploy]# kubectl get rs
NAME                DESIRED   CURRENT   READY   AGE
webapp-6b8dc6f48c   20        20        20      12m
[root@ip-172-31-24-167 deploy]#
```

Task 8 :: Get the yaml of the replicaset and pods of this deployment.

kubectl get rs webapp-6b8dc6f48c -o yaml > rs.yaml

```
[root@ip-172-31-24-167 deploy]# kubectl get rs webapp-6b8dc6f48c -o yaml > rs.yaml
[root@ip-172-31-24-167 deploy]# cat rs.yaml
apiVersion: apps/v1
kind: ReplicaSet
metadata:
  annotations:
    deployment.kubernetes.io/desired-replicas: "20"
    deployment.kubernetes.io/max-replicas: "25"
    deployment.kubernetes.io/revision: "1"
  creationTimestamp: "2022-10-04T15:13:10Z"
  generation: 2
  labels:
    app: webapp
    pod-template-hash: 6b8dc6f48c
  name: webapp-6b8dc6f48c
  namespace: default
  ownerReferences:
  - apiVersion: apps/v1
    blockOwnerDeletion: true
    controller: true
    kind: Deployment
    name: webapp
    uid: 821d56bc-fb45-43a3-8826-05a098cab50f
  resourceVersion: "9791"
  uid: 54ee1a29-e24f-4f8a-9917-5939c08487bb
spec:
  replicas: 20
  selector:
    matchLabels:
      app: webapp
      pod-template-hash: 6b8dc6f48c
  template:
    metadata:
      creationTimestamp: null
      labels:
        app: webapp
        pod-template-hash: 6b8dc6f48c
    spec:
      containers:
      - image: nginx:1.7.9
        imagePullPolicy: IfNotPresent
        name: nginx
        resources: {}
        terminationMessagePath: /dev/termination-log
        terminationMessagePolicy: File
      dnsPolicy: ClusterFirst
      restartPolicy: Always
      schedulerName: default-scheduler
      securityContext: {}
      terminationGracePeriodSeconds: 30
status:
  availableReplicas: 20
  fullyLabeledReplicas: 20
  observedGeneration: 2
  readyReplicas: 20
  replicas: 20
[root@ip-172-31-24-167 deploy]#
```

kubectl get pod webapp-6b8dc6f48c-5pc74 -o yaml > pods.yaml

```
[root@ip-172-31-24-167 deploy]# kubectl get pod
NAME                        READY   STATUS    RESTARTS   AGE
mywebapp                    1/1     Running   0          37m
webapp-6b8dc6f48c-5pc74     1/1     Running   0          8m13s
webapp-6b8dc6f48c-5zjhd     1/1     Running   0          8m14s
webapp-6b8dc6f48c-7qhnd     1/1     Running   0          16m
webapp-6b8dc6f48c-8cd5h     1/1     Running   0          8m13s
webapp-6b8dc6f48c-8xbw4     1/1     Running   0          8m13s
webapp-6b8dc6f48c-9h6n2     1/1     Running   0          16m
webapp-6b8dc6f48c-b65km     1/1     Running   0          16m
webapp-6b8dc6f48c-d52gt     1/1     Running   0          8m13s
webapp-6b8dc6f48c-f54q5     1/1     Running   0          8m13s
webapp-6b8dc6f48c-fppff     1/1     Running   0          8m13s
webapp-6b8dc6f48c-hqjjs     1/1     Running   0          8m13s
webapp-6b8dc6f48c-j8z8f     1/1     Running   0          8m13s
webapp-6b8dc6f48c-k9jdz     1/1     Running   0          8m13s
webapp-6b8dc6f48c-kgkwm     1/1     Running   0          8m13s
webapp-6b8dc6f48c-mkmqc     1/1     Running   0          8m13s
webapp-6b8dc6f48c-rkkfr     1/1     Running   0          8m13s
webapp-6b8dc6f48c-rqd4c     1/1     Running   0          8m13s
webapp-6b8dc6f48c-sxxkz     1/1     Running   0          16m
webapp-6b8dc6f48c-txf8w     1/1     Running   0          16m
webapp-6b8dc6f48c-vtqgp     1/1     Running   0          8m13s
[root@ip-172-31-24-167 deploy]#
[root@ip-172-31-24-167 deploy]# kubectl get pod webapp-6b8dc6f48c-5pc74 -o yaml > pods.yaml
[root@ip-172-31-24-167 deploy]# cat pods.yaml
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: "2022-10-04T15:21:13Z"
  generateName: webapp-6b8dc6f48c-
  labels:
    app: webapp
    pod-template-hash: 6b8dc6f48c
  name: webapp-6b8dc6f48c-5pc74
  namespace: default
  ownerReferences:
  - apiVersion: apps/v1
    blockOwnerDeletion: true
    controller: true
    kind: ReplicaSet
    name: webapp-6b8dc6f48c
    uid: 54ee1a29-e24f-4f8a-9917-5939c08487bb
  resourceVersion: "9745"
  uid: 19d06a93-9496-4caa-bd39-56fe0dae3bd2
spec:
  containers:
  - image: nginx:1.7.9
    imagePullPolicy: IfNotPresent
    name: nginx
    resources: {}
    terminationMessagePath: /dev/termination-log
    terminationMessagePolicy: File
    volumeMounts:
      mountPath: /var/run/secrets/kubernetes.io/serviceaccount
```

Task 9 :: Delete the deployment you just created and watch all the pods are also being deleted

kubectl delete deploy webapp

```
[root@ip-172-31-24-167 deploy]# kubectl delete deploy webapp
deployment.apps "webapp" deleted
[root@ip-172-31-24-167 deploy]#
```

kubectl get all -o wide
kubectl get pod -o wide
kubectl get rs -o wide

```
[root@ip-172-31-24-167 deploy]# kubectl get all -o wide
NAME            READY   STATUS    RESTARTS   AGE   IP           NODE                 NOMINATED NODE   READINESS GATES
pod/mywebapp    1/1     Running   0          41m   10.244.3.3   assignment-1a-worker   <none>           <none>

NAME                 TYPE        CLUSTER-IP     EXTERNAL-IP   PORT(S)          AGE    SELECTOR
service/kubernetes   ClusterIP   10.96.0.1      <none>        443/TCP          110m   <none>
service/webservice   NodePort    10.96.61.93    <none>        8080:30672/TCP   37m    run=mywebapp
[root@ip-172-31-24-167 deploy]#
[root@ip-172-31-24-167 deploy]# kubectl get pod -o wide
NAME        READY   STATUS    RESTARTS   AGE   IP           NODE                 NOMINATED NODE   READINESS GATES
mywebapp    1/1     Running   0          41m   10.244.3.3   assignment-1a-worker   <none>           <none>
[root@ip-172-31-24-167 deploy]# kubectl get rs -o wide
No resources found in default namespace.
[root@ip-172-31-24-167 deploy]#
```