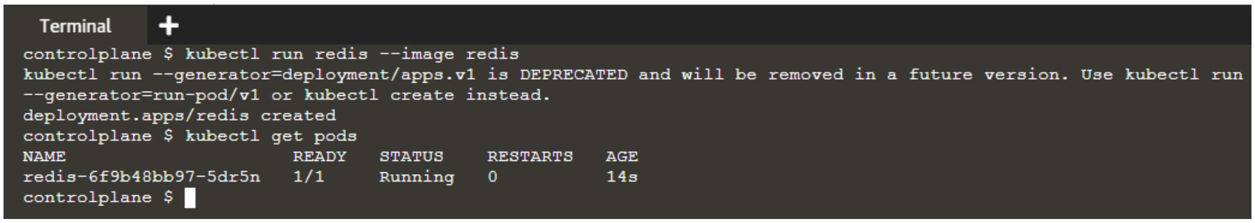
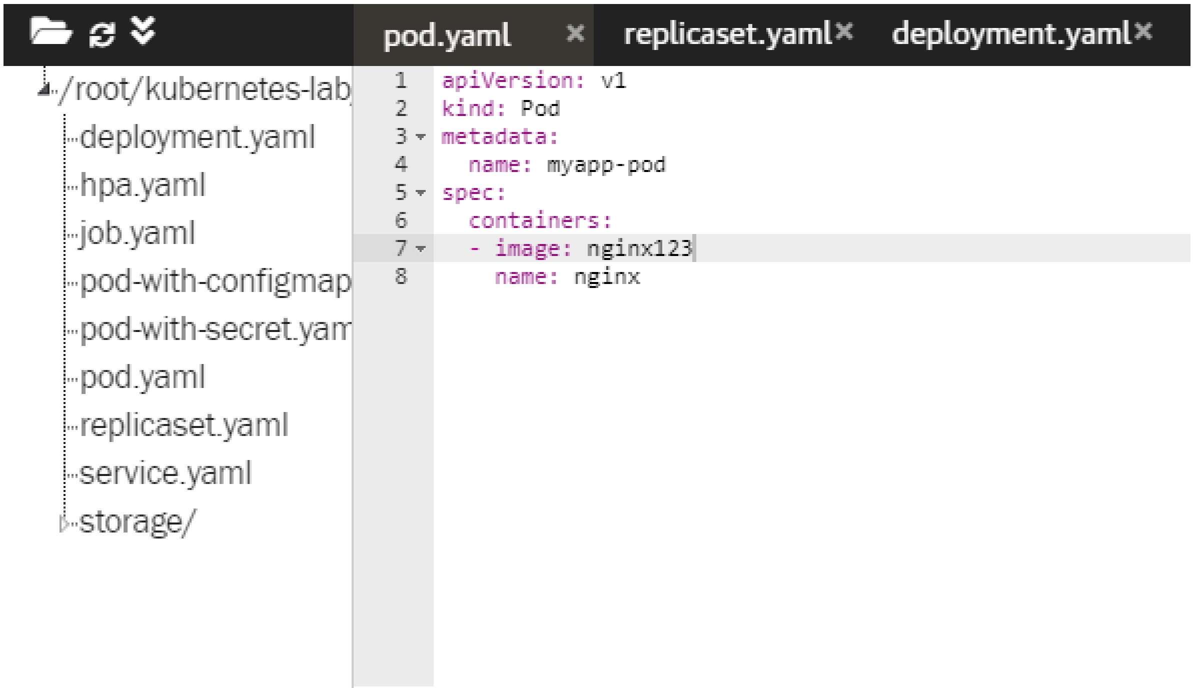
Kubernetes Lab 1

2- Create a pod with the name redis and with the image redis.

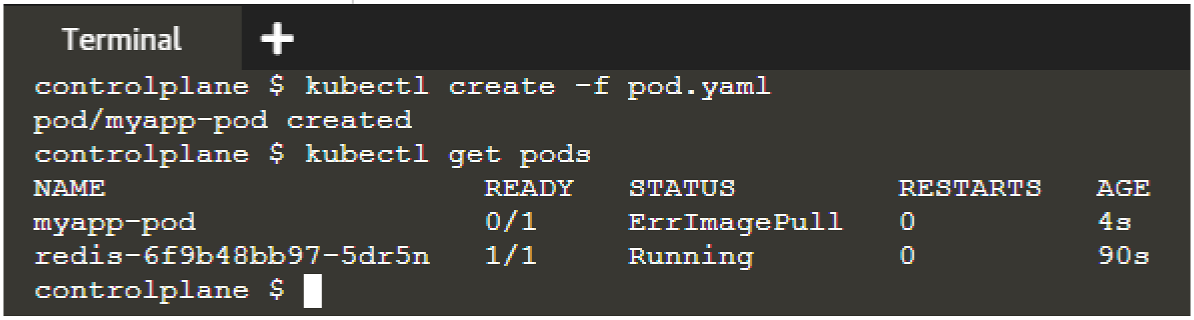


```
controlplane $ kubectl run redis --image redis
kubectl run --generator=deployment/apps.v1 is DEPRECATED and will be removed in a future version. Use kubectl run
--generator=run-pod/v1 or kubectl create instead.
deployment.apps/redis created
controlplane $ kubectl get pods
NAME                     READY   STATUS    RESTARTS   AGE
redis-6f9b48bb97-5dr5n   1/1     Running   0          14s
controlplane $
```

3- Create a pod with the name nginx and with the image nginx123. Use a pod-definition YAML file. And yes the image name is wrong!   4- What is the nginx pod status?

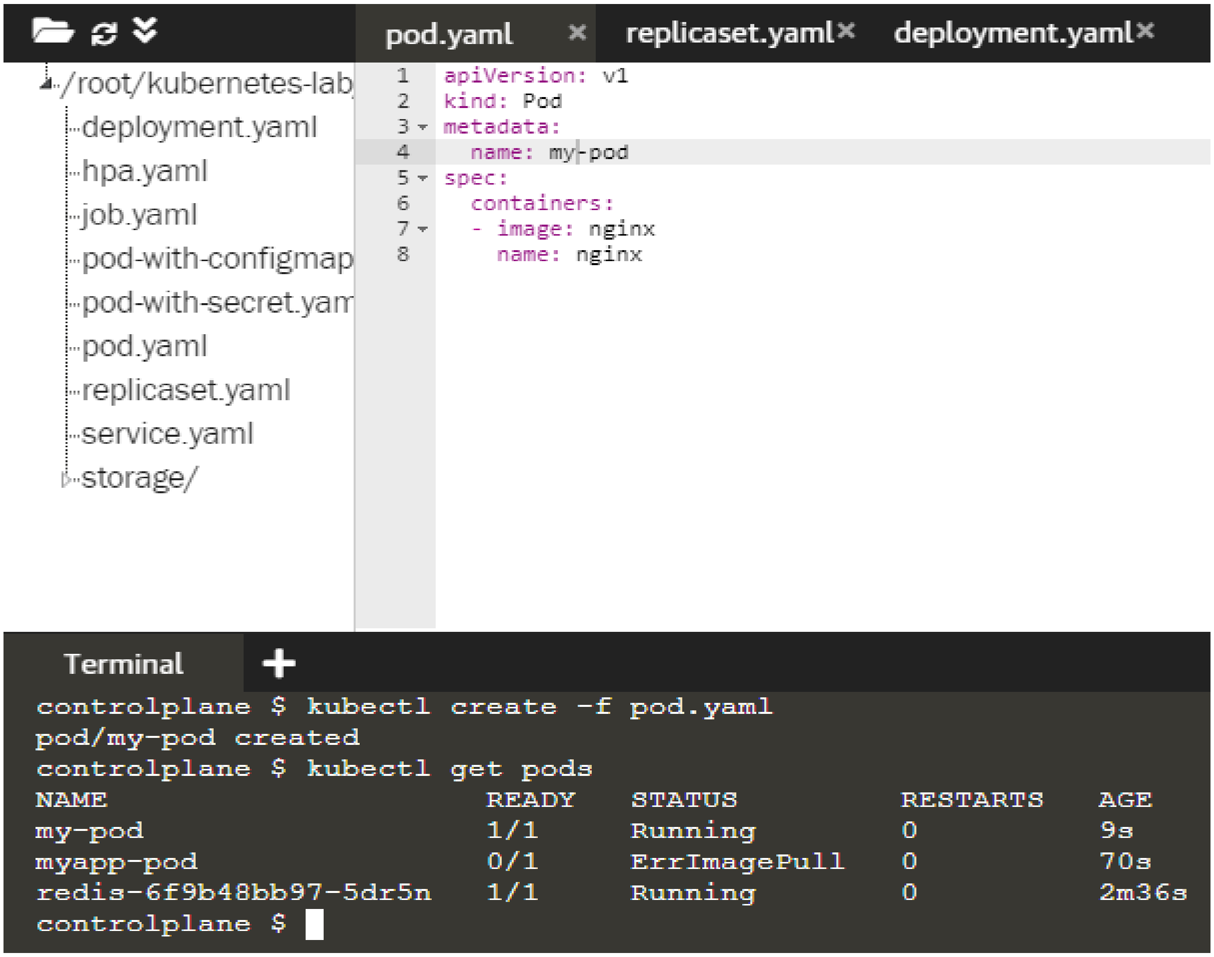


```yaml
apiVersion: v1
kind: Pod
metadata:
  name: myapp-pod
spec:
  containers:
  - image: nginx123
    name: nginx
```



```
controlplane $ kubectl create -f pod.yaml
pod/myapp-pod created
controlplane $ kubectl get pods
NAME                     READY   STATUS         RESTARTS   AGE
myapp-pod                0/1     ErrImagePull   0          4s
redis-6f9b48bb97-5dr5n   1/1     Running        0          90s
controlplane $
```

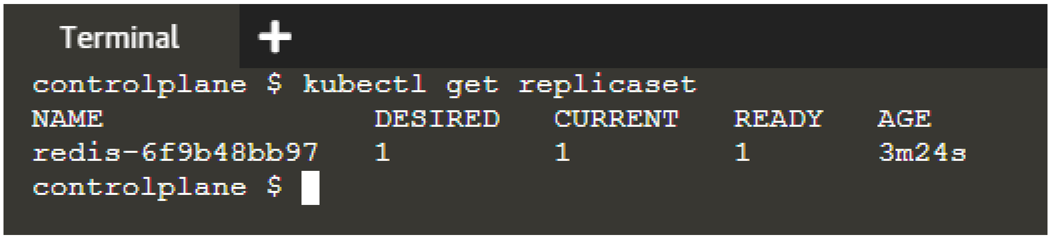
5- Change the nginx pod image to nginx check the status again



```yaml
apiVersion: v1
kind: Pod
metadata:
  name: my-pod
spec:
  containers:
  - image: nginx
    name: nginx
```

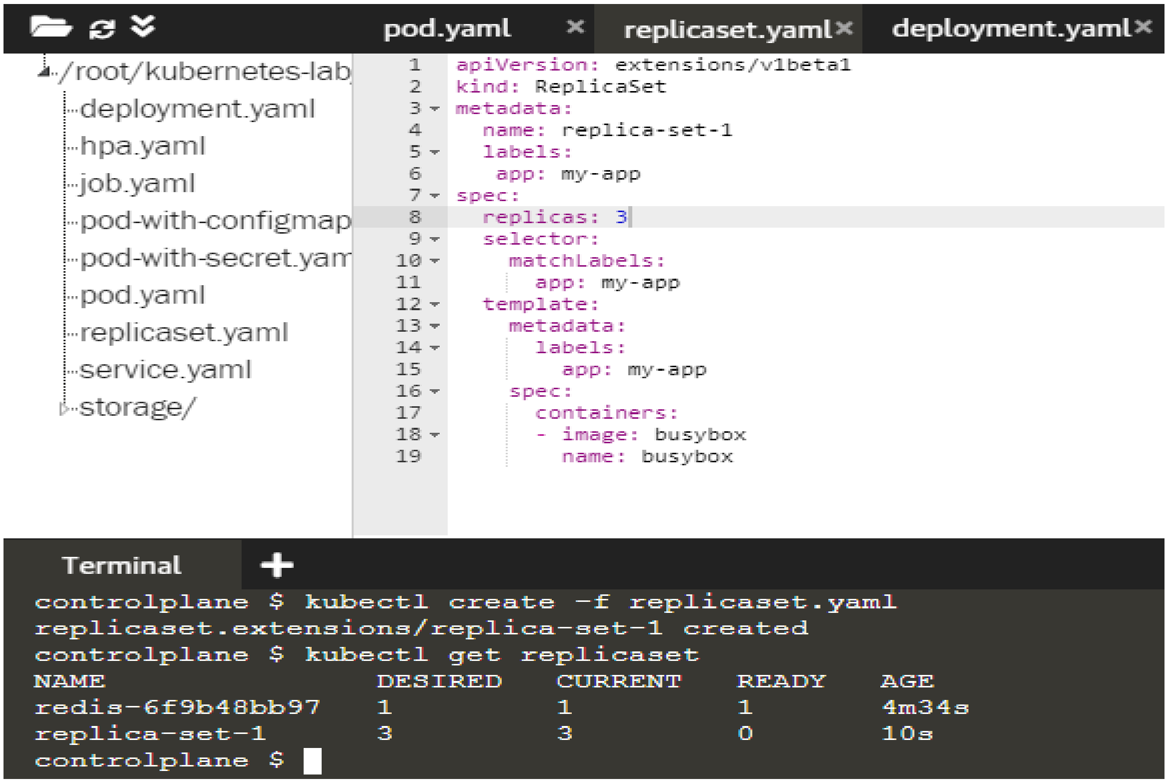
```
controlplane $ kubectl create -f pod.yaml
pod/my-pod created
controlplane $ kubectl get pods
NAME                     READY   STATUS         RESTARTS   AGE
my-pod                   1/1     Running        0          9s
myapp-pod                0/1     ErrImagePull   0          70s
redis-6f9b48bb97-5dr5n   1/1     Running        0          2m36s
controlplane $
```

6- How many ReplicaSets exist on the system?



```
controlplane $ kubectl get replicaset
NAME               DESIRED   CURRENT   READY   AGE
redis-6f9b48bb97   1         1         1       3m24s
controlplane $
```

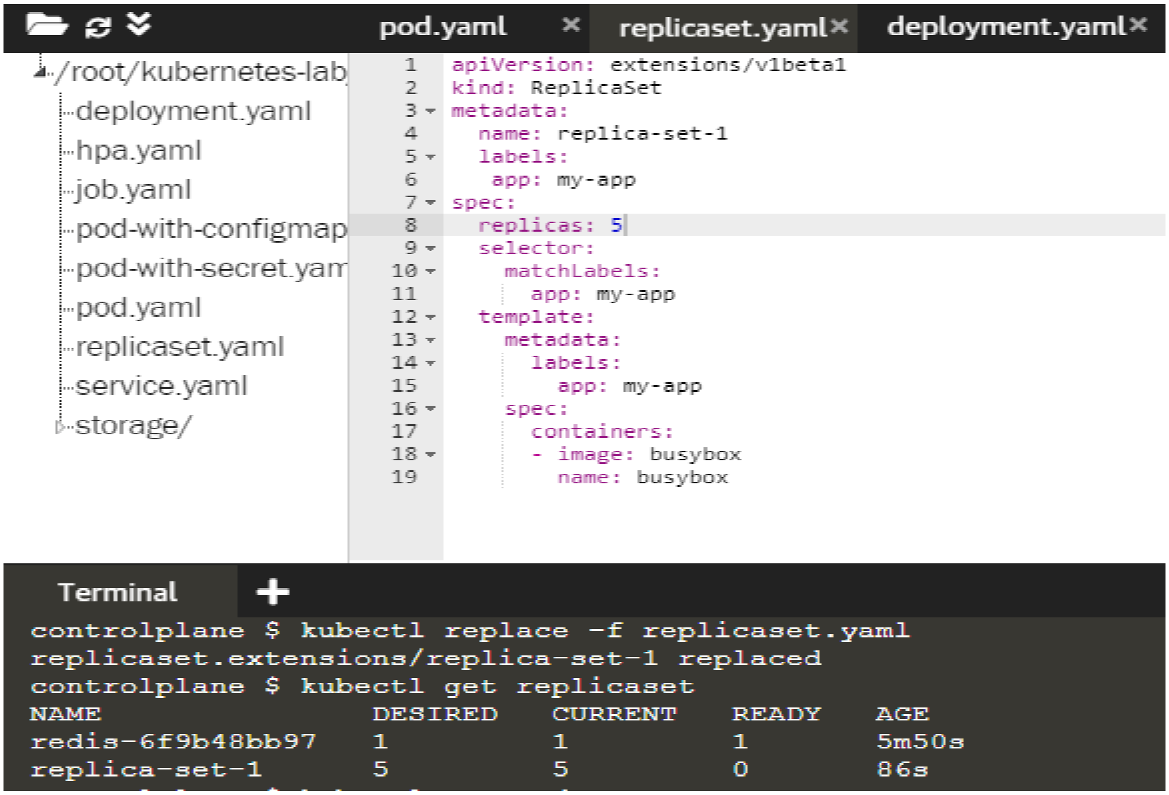
7- create a ReplicaSet with name= replica-set-1 image= busybox replicas= 3



```yaml
apiVersion: extensions/v1beta1
kind: ReplicaSet
metadata:
  name: replica-set-1
  labels:
   app: my-app
spec:
  replicas: 3
  selector:
    matchLabels:
      app: my-app
  template:
    metadata:
      labels:
        app: my-app
    spec:
      containers:
      - image: busybox
        name: busybox
```

```
controlplane $ kubectl create -f replicaset.yaml
replicaset.extensions/replica-set-1 created
controlplane $ kubectl get replicaset
NAME                DESIRED    CURRENT    READY    AGE
redis-6f9b48bb97    1          1          1        4m34s
replica-set-1       3          3          0        10s
controlplane $
```

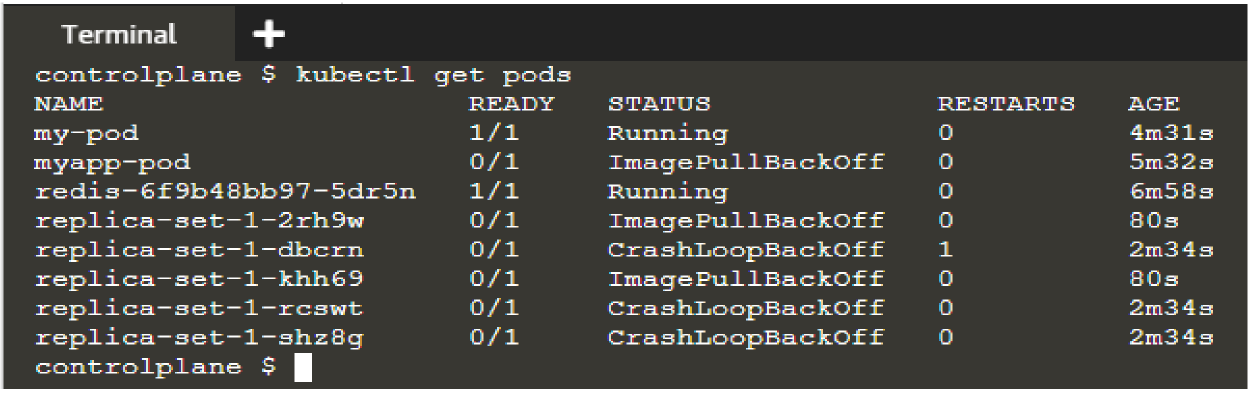
8- Scale the ReplicaSet replica-set-1 to 5 PODs.



```yaml
apiVersion: extensions/v1beta1
kind: ReplicaSet
metadata:
  name: replica-set-1
  labels:
   app: my-app
spec:
  replicas: 5
  selector:
    matchLabels:
      app: my-app
  template:
    metadata:
      labels:
        app: my-app
    spec:
      containers:
      - image: busybox
        name: busybox
```

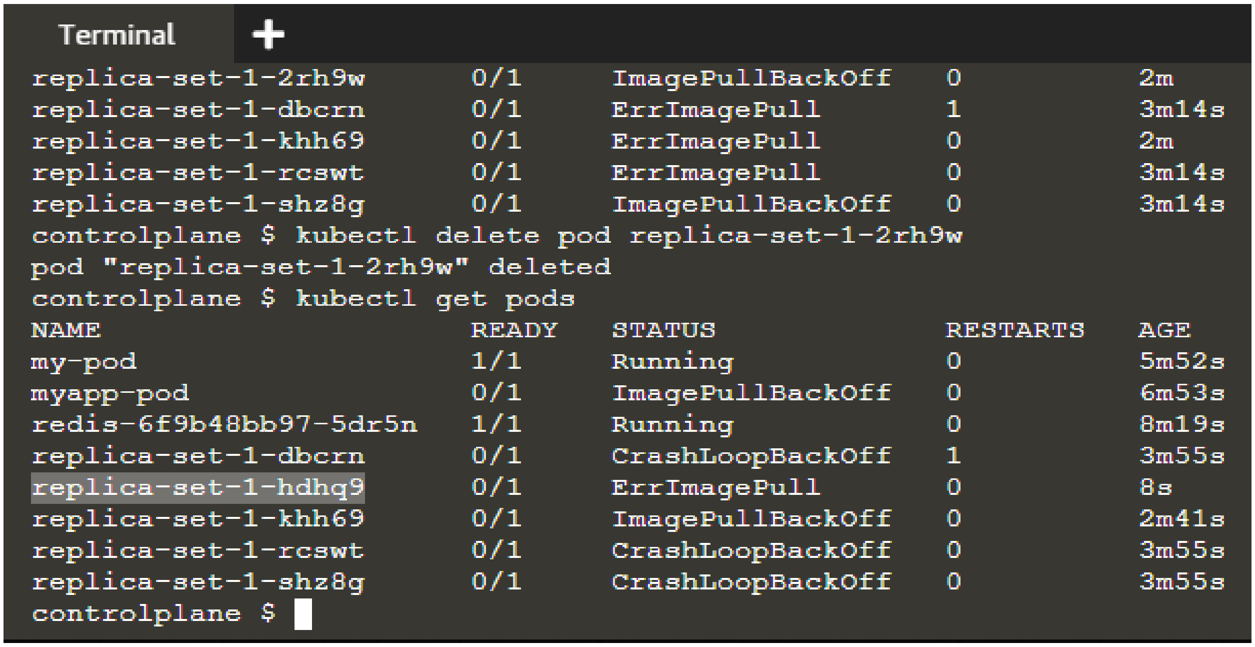
```
controlplane $ kubectl replace -f replicaset.yaml
replicaset.extensions/replica-set-1 replaced
controlplane $ kubectl get replicaset
NAME                DESIRED    CURRENT    READY    AGE
redis-6f9b48bb97    1          1          1        5m50s
replica-set-1       5          5          0        86s
```

9- How many PODs are READY in the replica-set-1?



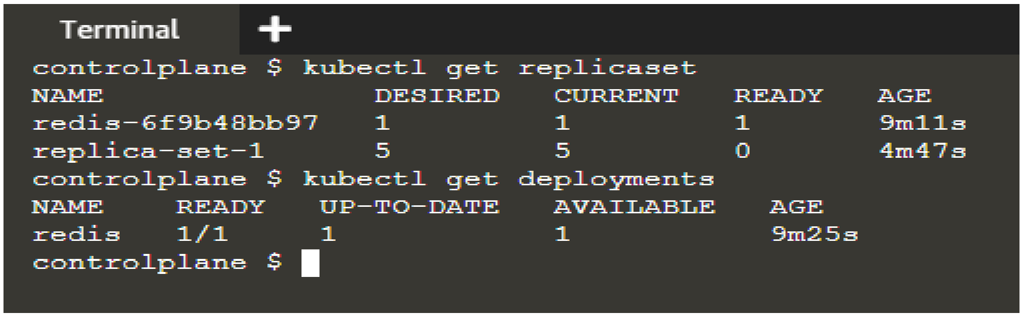
```
controlplane $ kubectl get pods
NAME                       READY   STATUS             RESTARTS   AGE
my-pod                     1/1     Running            0          4m31s
myapp-pod                  0/1     ImagePullBackOff   0          5m32s
redis-6f9b48bb97-5dr5n     1/1     Running            0          6m58s
replica-set-1-2rh9w        0/1     ImagePullBackOff   0          80s
replica-set-1-dbcrn        0/1     CrashLoopBackOff   1          2m34s
replica-set-1-khh69        0/1     ImagePullBackOff   0          80s
replica-set-1-rcswt        0/1     CrashLoopBackOff   0          2m34s
replica-set-1-shz8g        0/1     CrashLoopBackOff   0          2m34s
controlplane $ 
```

10- Delete any one of the 5 PODs then check How many PODs exist now? Why are there still 5 PODs, even after you deleted one?



```
replica-set-1-2rh9w        0/1     ImagePullBackOff   0          2m
replica-set-1-dbcrn        0/1     ErrImagePull       1          3m14s
replica-set-1-khh69        0/1     ErrImagePull       0          2m
replica-set-1-rcswt        0/1     ErrImagePull       0          3m14s
replica-set-1-shz8g        0/1     ImagePullBackOff   0          3m14s
controlplane $ kubectl delete pod replica-set-1-2rh9w
pod "replica-set-1-2rh9w" deleted
controlplane $ kubectl get pods
NAME                       READY   STATUS             RESTARTS   AGE
my-pod                     1/1     Running            0          5m52s
myapp-pod                  0/1     ImagePullBackOff   0          6m53s
redis-6f9b48bb97-5dr5n     1/1     Running            0          8m19s
replica-set-1-dbcrn        0/1     CrashLoopBackOff   1          3m55s
replica-set-1-hdhq9        0/1     ErrImagePull       0          8s
replica-set-1-khh69        0/1     ImagePullBackOff   0          2m41s
replica-set-1-rcswt        0/1     CrashLoopBackOff   0          3m55s
replica-set-1-shz8g        0/1     CrashLoopBackOff   0          3m55s
controlplane $ 
```

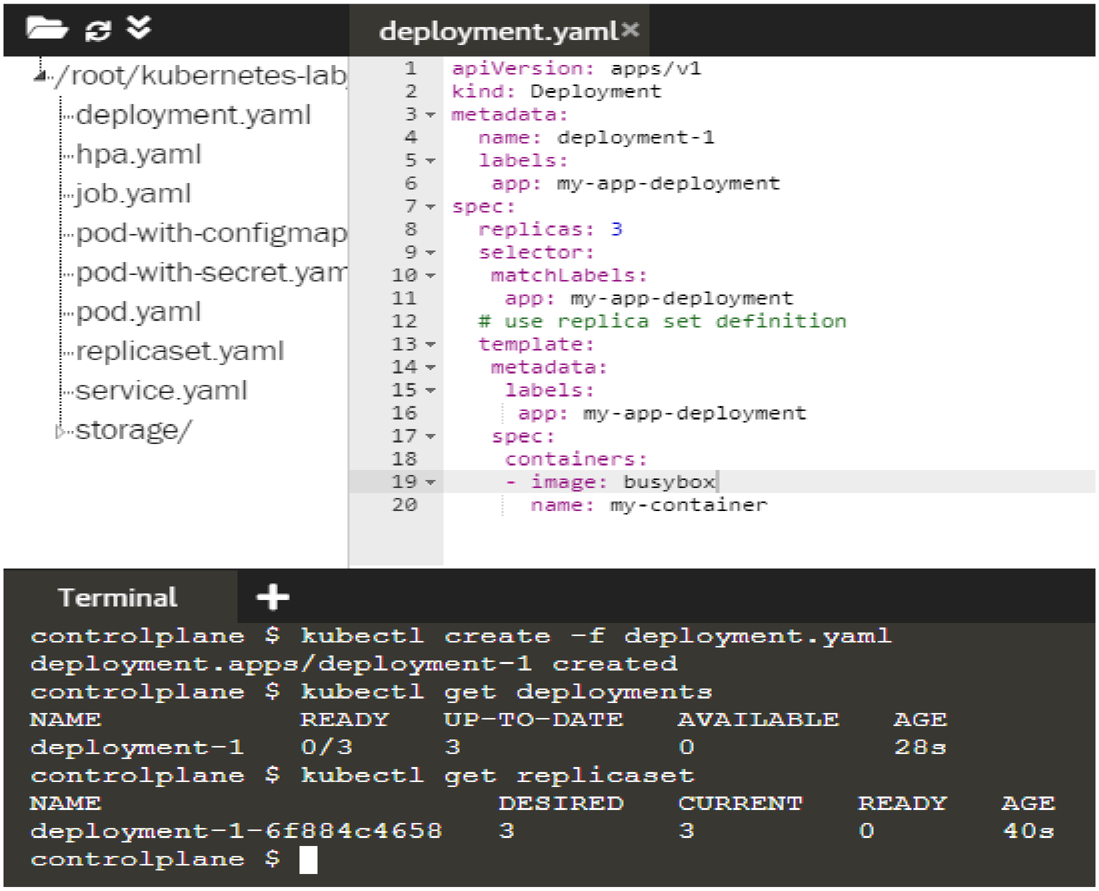
11- How many Deployments and ReplicaSets exist on the system?



```
controlplane $ kubectl get replicaset
NAME                DESIRED   CURRENT   READY   AGE
redis-6f9b48bb97    1         1         1       9m11s
replica-set-1       5         5         0       4m47s
controlplane $ kubectl get deployments
NAME    READY   UP-TO-DATE   AVAILABLE   AGE
redis   1/1     1            1           9m25s
controlplane $ 
```

12- create a Deployment with name= deployment-1 image= busybox replicas= 3

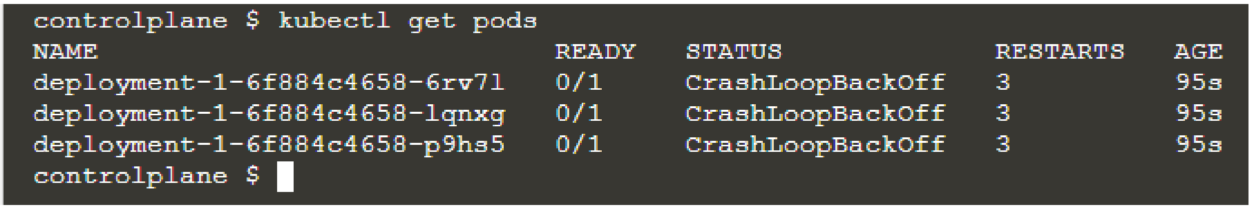
13- How many Deployments and ReplicaSets exist on the system now?



```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: deployment-1
  labels:
   app: my-app-deployment
spec:
  replicas: 3
  selector:
   matchLabels:
    app: my-app-deployment
  # use replica set definition
  template:
   metadata:
    labels:
     app: my-app-deployment
   spec:
    containers:
    - image: busybox
      name: my-container
```

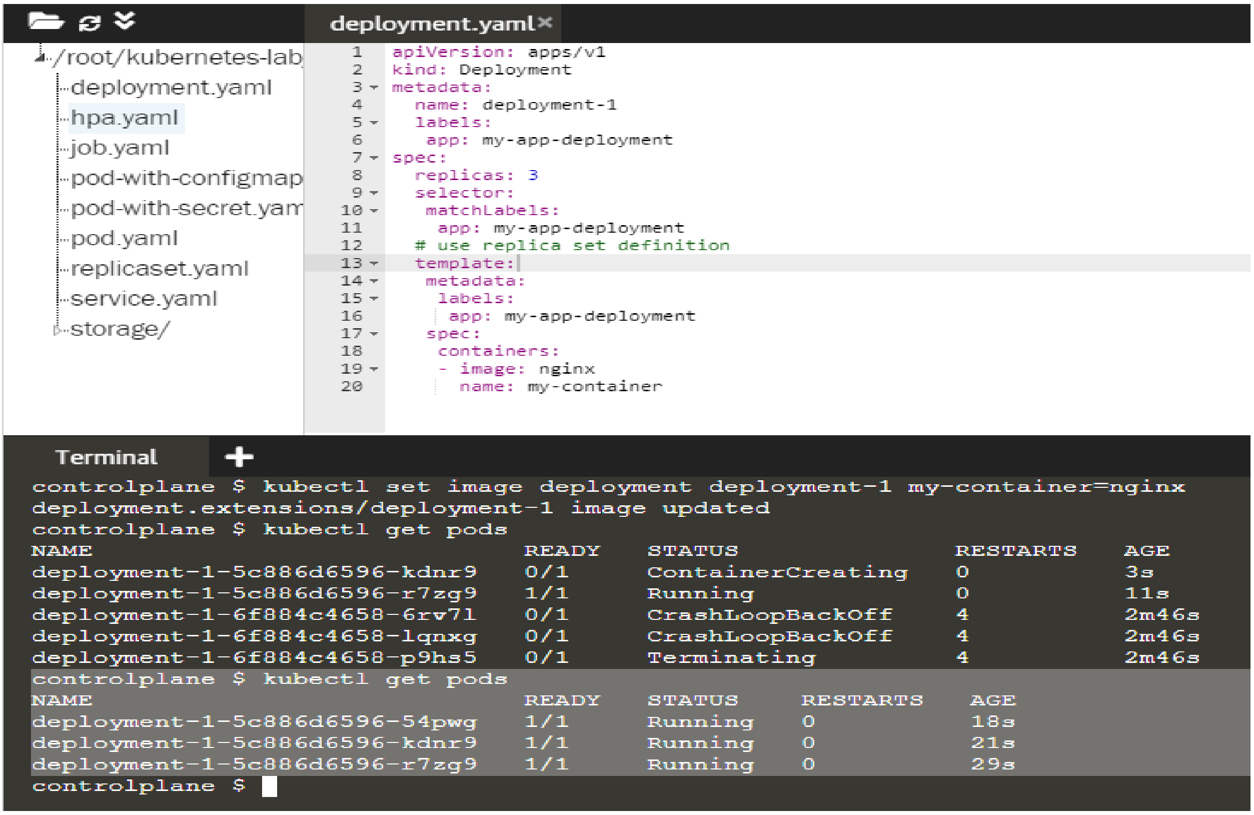
```
controlplane $ kubectl create -f deployment.yaml
deployment.apps/deployment-1 created
controlplane $ kubectl get deployments
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
deployment-1   0/3     3            0           28s
controlplane $ kubectl get replicaset
NAME                      DESIRED   CURRENT   READY   AGE
deployment-1-6f884c4658   3         3         0       40s
controlplane $
```

14- How many pods are ready with the deployment-1?



```
controlplane $ kubectl get pods
NAME                            READY   STATUS             RESTARTS   AGE
deployment-1-6f884c4658-6rv7l   0/1     CrashLoopBackOff   3          95s
deployment-1-6f884c4658-lqnxg   0/1     CrashLoopBackOff   3          95s
deployment-1-6f884c4658-p9hs5   0/1     CrashLoopBackOff   3          95s
controlplane $
```

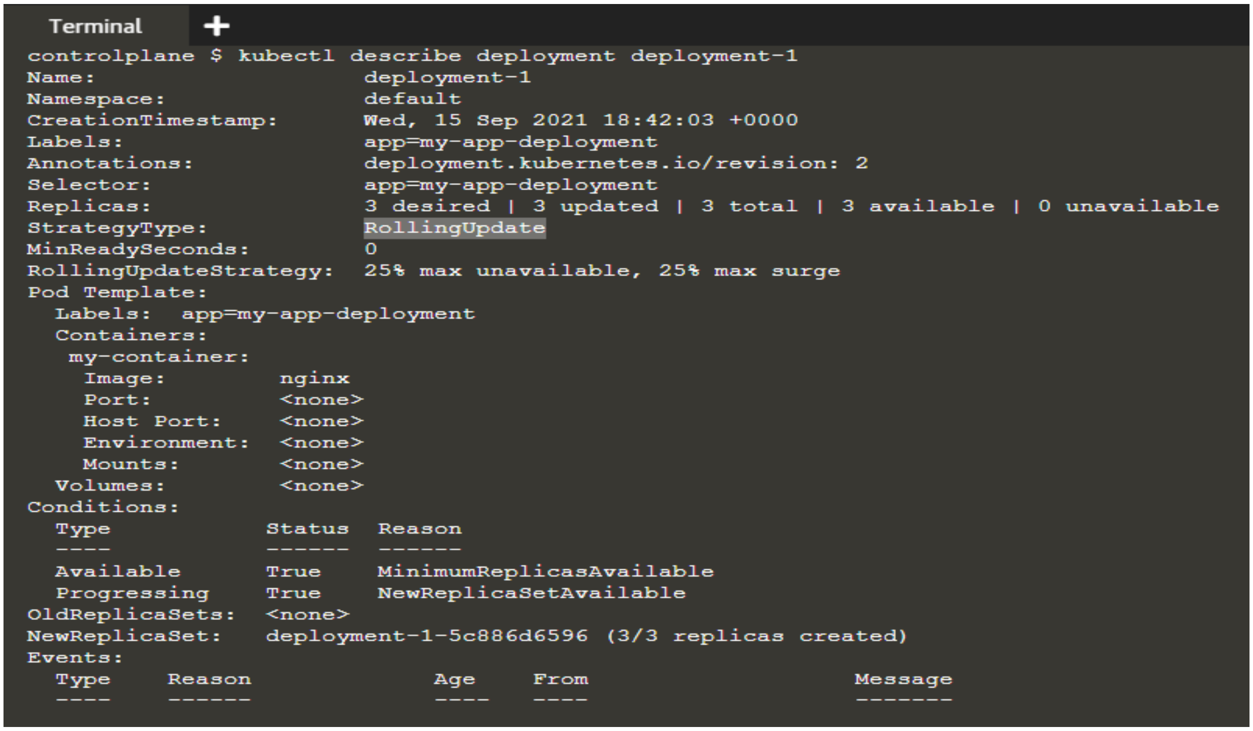
15- Update deployment-1 image to nginx then check the ready pods again



```yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: deployment-1
  labels:
   app: my-app-deployment
spec:
  replicas: 3
  selector:
   matchLabels:
    app: my-app-deployment
  # use replica set definition
  template:
   metadata:
    labels:
     app: my-app-deployment
   spec:
    containers:
    - image: nginx
      name: my-container
```

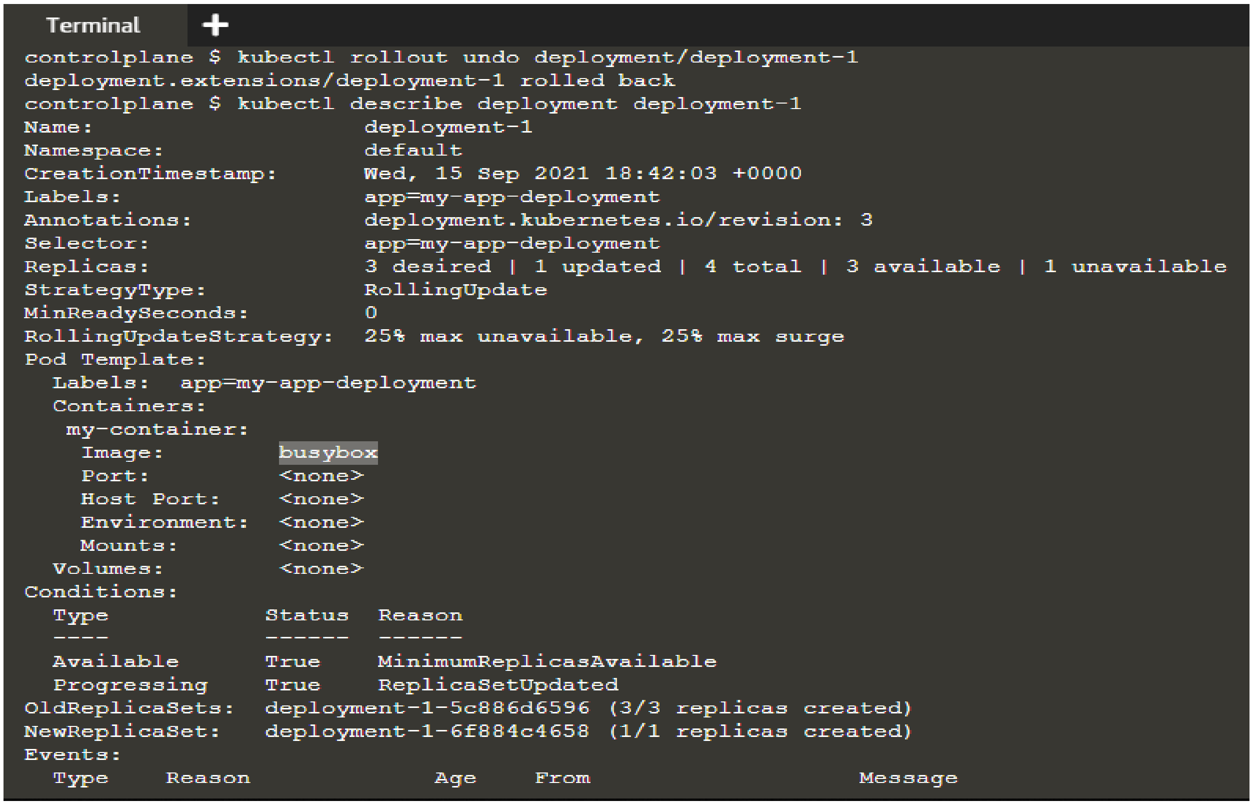
```
controlplane $ kubectl set image deployment deployment-1 my-container=nginx
deployment.extensions/deployment-1 image updated
controlplane $ kubectl get pods
NAME                             READY     STATUS              RESTARTS   AGE
deployment-1-5c886d6596-kdnr9    0/1       ContainerCreating   0          3s
deployment-1-5c886d6596-r7zg9    1/1       Running             0          11s
deployment-1-6f884c4658-6rv7l    0/1       CrashLoopBackOff    4          2m46s
deployment-1-6f884c4658-lqnxg    0/1       CrashLoopBackOff    4          2m46s
deployment-1-6f884c4658-p9hs5    0/1       Terminating         4          2m46s
controlplane $ kubectl get pods
NAME                             READY     STATUS    RESTARTS   AGE
deployment-1-5c886d6596-54pwg    1/1       Running   0          18s
deployment-1-5c886d6596-kdnr9    1/1       Running   0          21s
deployment-1-5c886d6596-r7zg9    1/1       Running   0          29s
controlplane $
```

16- Run kubectl describe deployment deployment-1 and check events What is the deployment strategy used to upgrade the deployment-1?



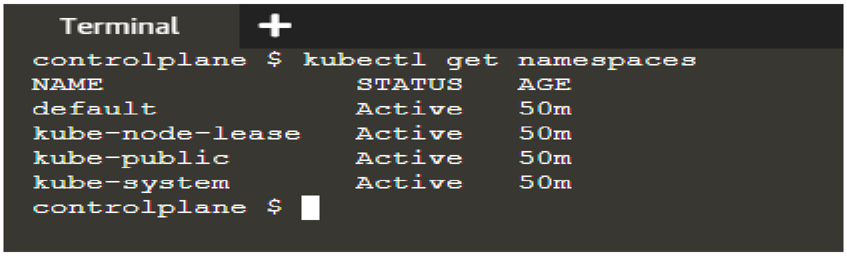
```
controlplane $ kubectl describe deployment deployment-1
Name:                   deployment-1
Namespace:              default
CreationTimestamp:      Wed, 15 Sep 2021 18:42:03 +0000
Labels:                 app=my-app-deployment
Annotations:            deployment.kubernetes.io/revision: 2
Selector:               app=my-app-deployment
Replicas:               3 desired | 3 updated | 3 total | 3 available | 0 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=my-app-deployment
  Containers:
   my-container:
    Image:        nginx
    Port:         <none>
    Host Port:    <none>
    Environment:  <none>
    Mounts:       <none>
  Volumes:        <none>
Conditions:
  Type           Status  Reason
  ----           ------  ------
  Available      True    MinimumReplicasAvailable
  Progressing    True    NewReplicaSetAvailable
OldReplicaSets:  <none>
NewReplicaSet:   deployment-1-5c886d6596 (3/3 replicas created)
Events:
  Type    Reason            Age   From                    Message
  ----    ------            ----  ----                    -------
```

17- Rollback the deployment-1 What is the used image with the deployment-1?



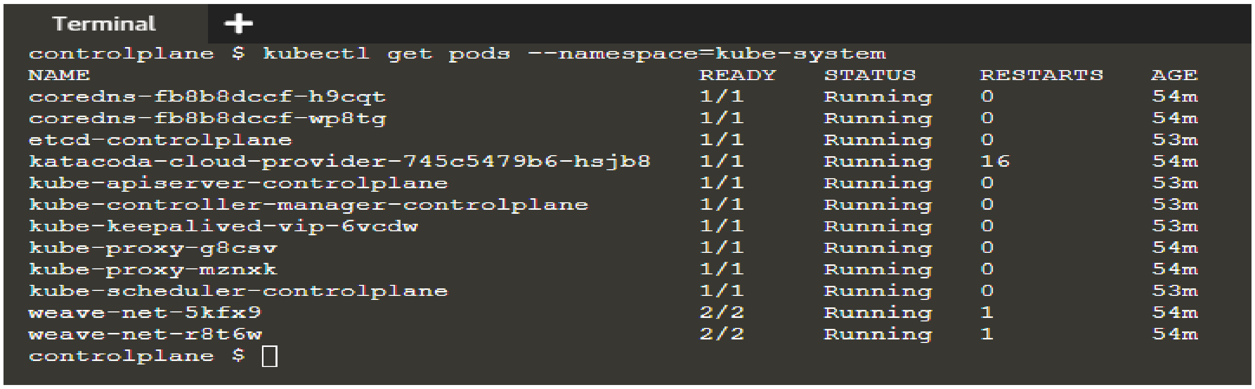
```
controlplane $ kubectl rollout undo deployment/deployment-1
deployment.extensions/deployment-1 rolled back
controlplane $ kubectl describe deployment deployment-1
Name:                   deployment-1
Namespace:              default
CreationTimestamp:      Wed, 15 Sep 2021 18:42:03 +0000
Labels:                 app=my-app-deployment
Annotations:            deployment.kubernetes.io/revision: 3
Selector:               app=my-app-deployment
Replicas:               3 desired | 1 updated | 4 total | 3 available | 1 unavailable
StrategyType:           RollingUpdate
MinReadySeconds:        0
RollingUpdateStrategy:  25% max unavailable, 25% max surge
Pod Template:
  Labels:  app=my-app-deployment
  Containers:
   my-container:
    Image:         busybox
    Port:          <none>
    Host Port:     <none>
    Environment:   <none>
    Mounts:        <none>
  Volumes:         <none>
Conditions:
  Type           Status  Reason
  ----           ------  ------
  Available      True    MinimumReplicasAvailable
  Progressing    True    ReplicaSetUpdated
OldReplicaSets:  deployment-1-5c886d6596 (3/3 replicas created)
NewReplicaSet:   deployment-1-6f884c4658 (1/1 replicas created)
Events:
  Type    Reason             Age    From                   Message
```

18- How many Namespaces exist on the system?



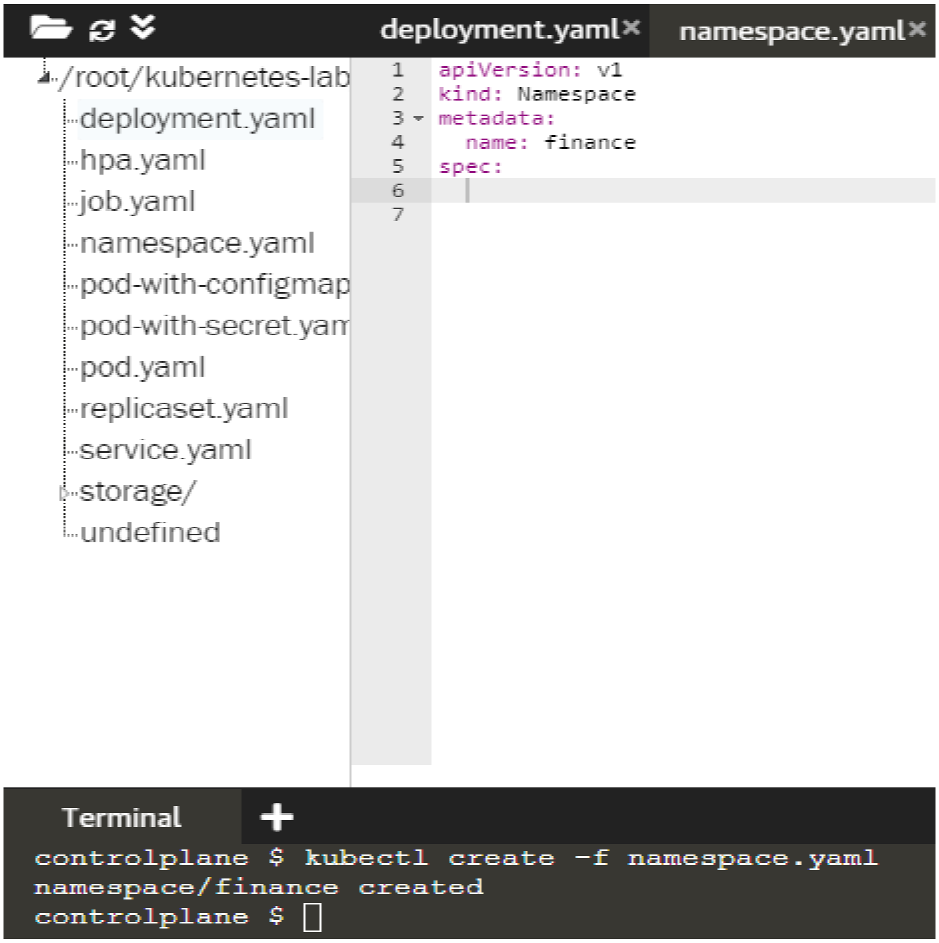
```
controlplane $ kubectl get namespaces
NAME              STATUS   AGE
default           Active   50m
kube-node-lease   Active   50m
kube-public       Active   50m
kube-system       Active   50m
controlplane $
```

19- How many pods exist in the kube-system namespace?



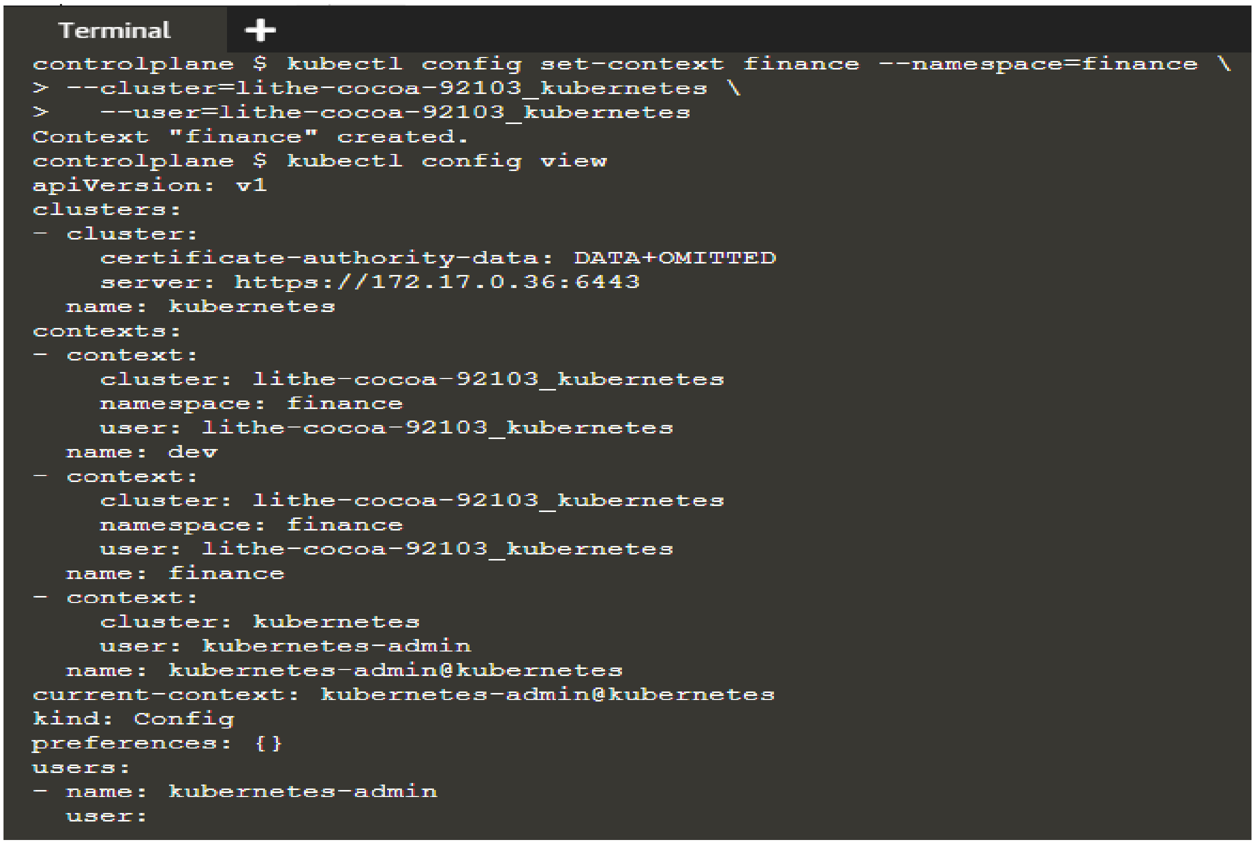
```
controlplane $ kubectl get pods --namespace=kube-system
NAME                                       READY   STATUS    RESTARTS   AGE
coredns-fb8b8dccf-h9cqt                    1/1     Running   0          54m
coredns-fb8b8dccf-wp8tg                    1/1     Running   0          54m
etcd-controlplane                          1/1     Running   0          53m
katacoda-cloud-provider-745c5479b6-hsjb8   1/1     Running   16         54m
kube-apiserver-controlplane                1/1     Running   0          53m
kube-controller-manager-controlplane       1/1     Running   0          53m
kube-keepalived-vip-6vcdw                  1/1     Running   0          53m
kube-proxy-g8csv                           1/1     Running   0          54m
kube-proxy-mznxk                           1/1     Running   0          54m
kube-scheduler-controlplane                1/1     Running   0          53m
weave-net-5kfx9                            2/2     Running   1          54m
weave-net-r8t6w                            2/2     Running   1          54m
controlplane $
```

20- Create a deployment with Name: beta Image: redis Replicas: 2 Namespace: finance Resources Requests: CPU: .5 vcpu Mem: 1G Resources Limits: CPU: 1 vcpu Mem: 2G

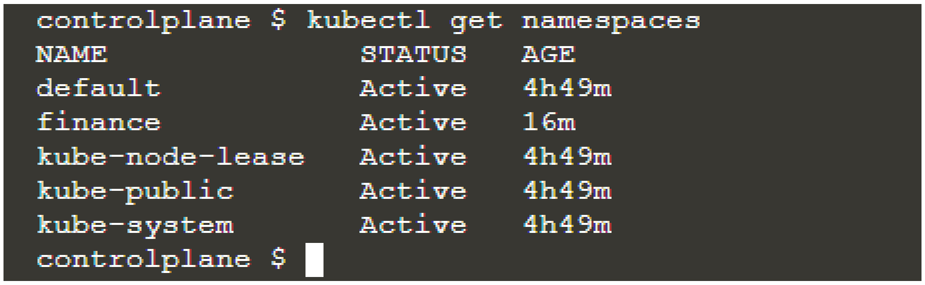


```yaml
apiVersion: v1
kind: Namespace
metadata:
  name: finance
spec:
```

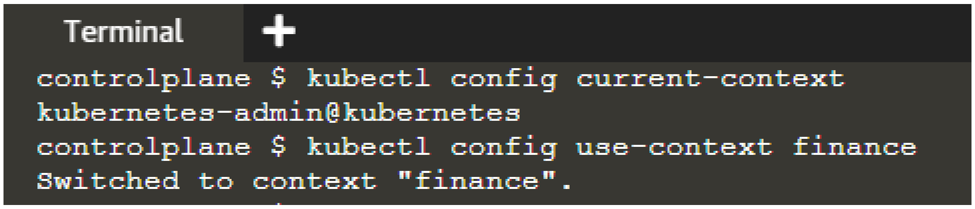
```
controlplane $ kubectl create -f namespace.yaml
namespace/finance created
controlplane $
```



```
controlplane $ kubectl config set-context finance --namespace=finance \
> --cluster=lithe-cocoa-92103_kubernetes \
>   --user=lithe-cocoa-92103_kubernetes
Context "finance" created.
controlplane $ kubectl config view
apiVersion: v1
clusters:
- cluster:
    certificate-authority-data: DATA+OMITTED
    server: https://172.17.0.36:6443
  name: kubernetes
contexts:
- context:
    cluster: lithe-cocoa-92103_kubernetes
    namespace: finance
    user: lithe-cocoa-92103_kubernetes
  name: dev
- context:
    cluster: lithe-cocoa-92103_kubernetes
    namespace: finance
    user: lithe-cocoa-92103_kubernetes
  name: finance
- context:
    cluster: kubernetes
    user: kubernetes-admin
  name: kubernetes-admin@kubernetes
current-context: kubernetes-admin@kubernetes
kind: Config
preferences: {}
users:
- name: kubernetes-admin
  user:
```



```
controlplane $ kubectl get namespaces
NAME              STATUS   AGE
default           Active   4h49m
finance           Active   16m
kube-node-lease   Active   4h49m
kube-public       Active   4h49m
kube-system       Active   4h49m
controlplane $
```



```
controlplane $ kubectl config current-context
kubernetes-admin@kubernetes
controlplane $ kubectl config use-context finance
Switched to context "finance".
```