



**kubernetes**

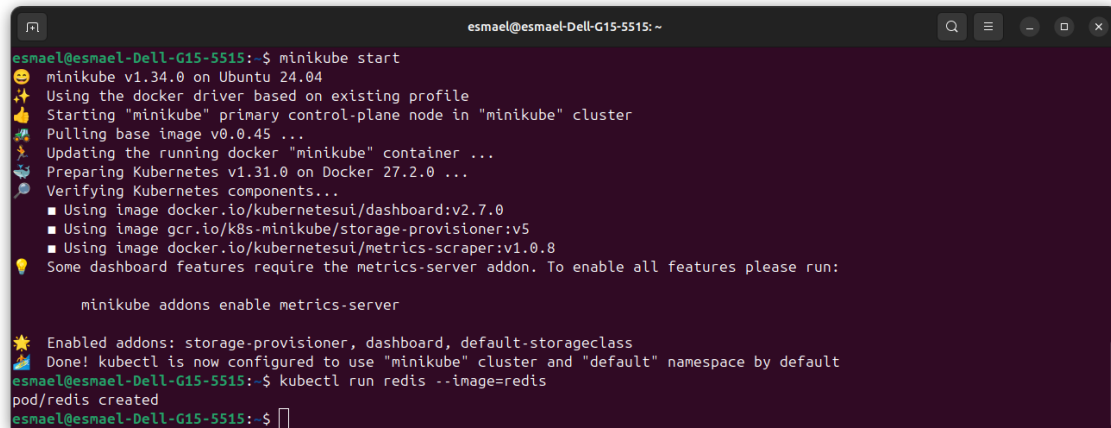
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K8S-LAB<sub>1</sub>

## 1-Install k8s cluster (minikube)

```
esmael@esmael-Dell-G15-5515: ~  
esmael@esmael-Dell-G15-5515:~$ curl -LO https://storage.googleapis.com/minikube/releases/latest/minikube-linux-amd64  
sudo install minikube-linux-amd64 /usr/local/bin/minikube && rm minikube-linux-amd64  
% Total    % Received % Xferd Average Speed   Time    Time     Time  Current  
           Dload  Upload   Total     Spent    Left  Speed  
100 99.0M  100 99.0M    0     0 3116k      0  0:00:32  0:00:32 --:--:-- 3378k  
[sudo] password for esmael:  
esmael@esmael-Dell-G15-5515:~$ minikube start  
🐹 minikube v1.34.0 on Ubuntu 24.04  
🌟 Automatically selected the docker driver. Other choices: none, ssh  
👉 Using Docker driver with root privileges  
👍 Starting "minikube" primary control-plane node in "minikube" cluster  
📥 Pulling base image v0.0.45 ...  
📦 Downloading Kubernetes v1.31.0 preload ...  
  > preloaded-images-k8s-v18-v1...: 326.69 MiB / 326.69 MiB 100.00% 1.48 Mi  
  > gcr.io/k8s-minikube/kicbase...: 487.90 MiB / 487.90 MiB 100.00% 1.87 Mi  
🔥 Creating docker container (CPUs=2, Memory=3800MB) ...  
🚧 Preparing Kubernetes v1.31.0 on Docker 27.2.0 ...  
  ■ Generating certificates and keys ...  
  ■ Booting up control plane ...  
  ■ Configuring RBAC rules ...  
🔗 Configuring bridge CNI (Container Networking Interface) ...  
🔍 Verifying Kubernetes components...  
  ■ Using image gcr.io/k8s-minikube/storage-provisioner:v5  
🌟 Enabled addons: storage-provisioner, default-storageclass  
🏁 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default  
esmael@esmael-Dell-G15-5515:~$
```

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

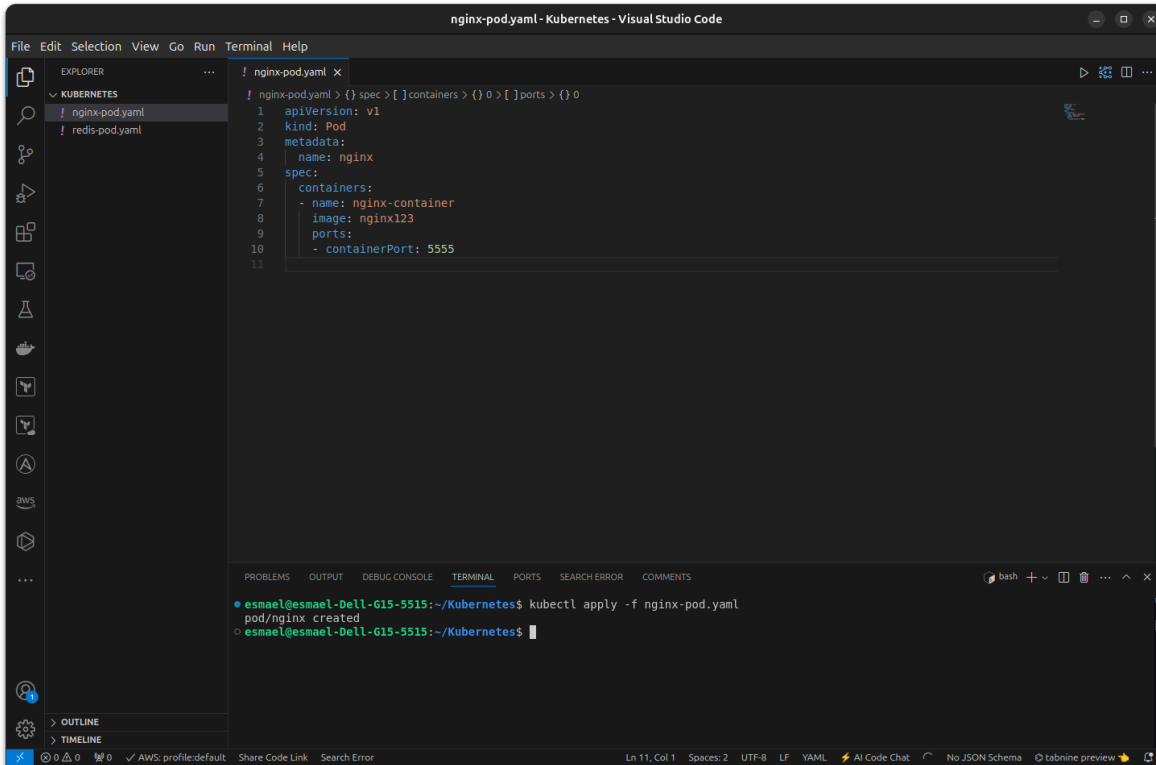
A terminal window titled 'esmael@esmael-Dell-G15-5515: ~' showing the execution of 'minikube start' and 'kubectl run redis --image=redis'. The 'minikube start' command outputs various status messages including version information, driver selection, and component verification. It also lists enabled addons: storage-provisioner, dashboard, and default-storageclass. The 'kubectl run redis --image=redis' command successfully creates a pod named 'redis' in the default namespace.

```
esmael@esmael-Dell-G15-5515:~$ minikube start
minikube v1.34.0 on Ubuntu 24.04
Using the docker driver based on existing profile
Starting "minikube" primary control-plane node in "minikube" cluster
Pulling base image v0.0.45 ...
Updating the running docker "minikube" container ...
Preparing Kubernetes v1.31.0 on Docker 27.2.0 ...
Verifying Kubernetes components...
  ■ Using image docker.io/kubernetes/dashboard:v2.7.0
  ■ Using image gcr.io/k8s-minikube/storage-provisioner:v5
  ■ Using image docker.io/kubernetes/metrics-scrapers:v1.0.8
Some dashboard features require the metrics-server addon. To enable all features please run:

    minikube addons enable metrics-server

Enabled addons: storage-provisioner, dashboard, default-storageclass
Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default
esmael@esmael-Dell-G15-5515:~$ kubectl run redis --image=redis
pod/redis created
esmael@esmael-Dell-G15-5515:~$
```

3- Create a pod with the name nginx and with the image “nginx123” Use a pod-definition YAML file.



The screenshot shows the Visual Studio Code interface with a file explorer on the left containing 'KUBERNETES' and two files: 'nginx-pod.yaml' and 'redis-pod.yaml'. The main editor displays the content of 'nginx-pod.yaml', which is a Kubernetes pod definition. The terminal at the bottom shows the command 'kubectl apply -f nginx-pod.yaml' being executed, resulting in the output 'pod/nginx created'.

```
! nginx-pod.yaml x
! nginx-pod.yaml > {} spec > [ ] containers > {} 0 > [ ] ports > {} 0
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    name: nginx
5  spec:
6    containers:
7      - name: nginx-container
8        image: nginx123
9        ports:
10         - containerPort: 5555
11
```

```
esmael@esmael-Dell-615-5515:~/Kubernetes$ kubectl apply -f nginx-pod.yaml
pod/nginx created
esmael@esmael-Dell-615-5515:~/Kubernetes$
```

## 4- What is the nginx pod status?

```
esmael@esmael-Dell-G15-5515: ~  
✨ Using the docker driver based on existing profile  
👍 Starting "minikube" primary control-plane node in "minikube" cluster  
🚀 Pulling base image v0.0.45 ...  
🔧 Updating the running docker "minikube" container ...  
🐳 Preparing Kubernetes v1.31.0 on Docker 27.2.0 ...  
🔍 Verifying Kubernetes components...  
  ■ Using image docker.io/kubernetesui/dashboard:v2.7.0  
  ■ Using image gcr.io/k8s-minikube/storage-provisioner:v5  
  ■ Using image docker.io/kubernetesui/metrics-scraper:v1.0.8  
💡 Some dashboard features require the metrics-server addon. To enable all features please run:  
  
    minikube addons enable metrics-server  
  
✨ Enabled addons: storage-provisioner, dashboard, default-storageclass  
🚀 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default  
esmael@esmael-Dell-G15-5515:~$ kubectl run redis --image=redis  
pod/redis created  
esmael@esmael-Dell-G15-5515:~$ kubectl get pod nginx  
NAME      READY   STATUS             RESTARTS   AGE  
nginx     0/1     ImagePullBackOff   0           53s  
esmael@esmael-Dell-G15-5515:~$
```

nginx-pod.yaml - Kubernetes - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER

- KUBERNETES
  - ! nginx-pod.yaml
  - ! redis-pod.yaml

TERMINAL

```
Name: nginx  
Namespace: default  
Priority: 0  
Service Account: default  
Node: minikube/192.168.49.2  
Start Time: Thu, 19 Sep 2024 22:04:28 +0300  
Labels: <none>  
Annotations: <none>  
Status: Pending  
IP: 10.244.0.11  
IPs: 10.244.0.11  
Containers:  
  nginx-container:  
    Container ID:   
    Image: nginx123  
    Image ID:   
    Port: 5555/TCP  
    Host Port: 0/TCP  
    State: Waiting  
      Reason: ImagePullBackOff  
    Ready: False  
    Restart Count: 0  
    Environment: <none>  
    Mounts:   
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-n4v28 (ro)  
Conditions:  
  Type Status  
  PodReadyToStartContainers True  
  Initialized True  
  Ready False  
  ContainersReady False  
  PodScheduled True  
Volumes:  
  kube-api-access-n4v28:  
    Type: Projected (a volume that contains injected data from multiple sources)  
    TokenExpirationSeconds: 3607  
    ConfigMapName: kube-root-ca.crt  
    ConfigMapOptional: <nil>  
    DownwardAPI: true  
QoS Class: BestEffort  
Node-Selectors: <none>  
Tolerations: node.kubernetes.io/not-ready:NoExecute op=Exists for 300s  
              node.kubernetes.io/unreachable:NoExecute op=Exists for 300s  
Events:  
  Type Reason Age From Message  
  ---  
  Normal Scheduled 2m25s default-scheduler Successfully assigned default/nginx to minikube  
  Normal Pulling 42s (x4 over 2m25s) kubelet Pulling image "nginx123"  
  Warning Failed 48s (x4 over 2m28s) kubelet Failed to pull image "nginx123": Error response from daemon: pull access denied for nginx123, repository does not exist or may be
```

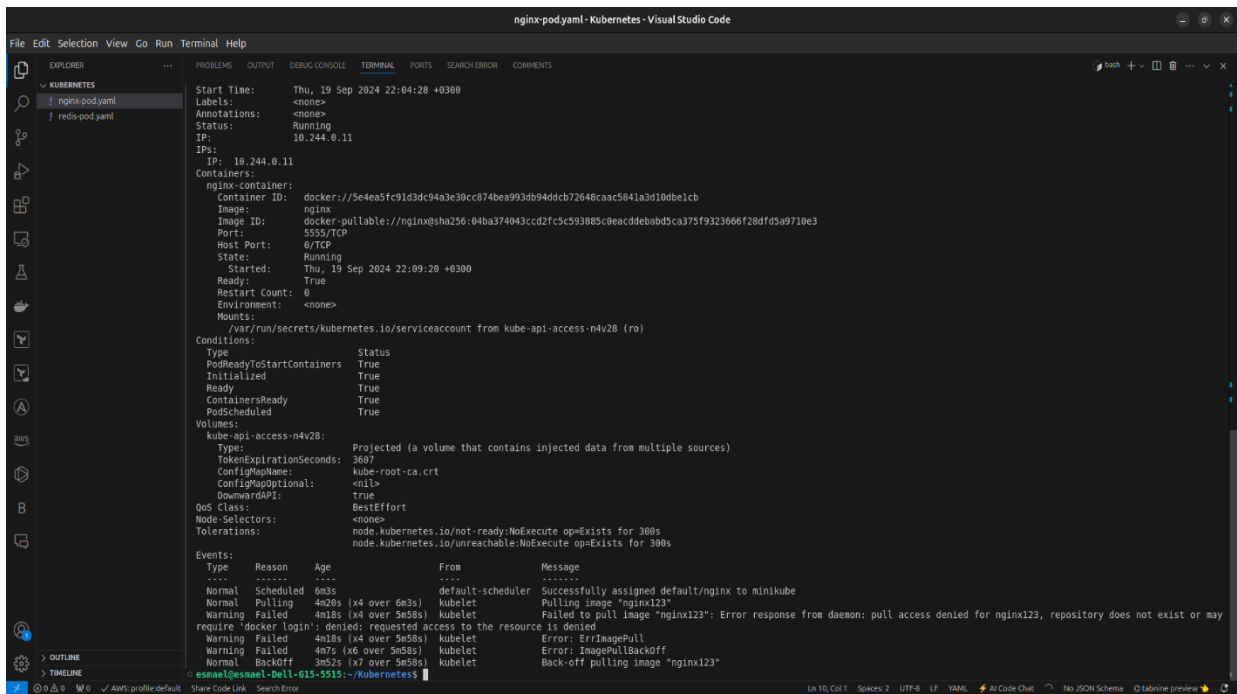
OUTLINE

TIMELINE

Ln 8, Col 17 Spaces: 2 UTF-8 LF YAML AI Code Chat No JSON Schema tabnine preview

## 5- Change the nginx pod image to “nginx” check the status again

```
esmael@esmael-Dell-G15-5515: ~  
Preparing Kubernetes v1.31.0 on Docker 27.2.0 ...  
Verifying Kubernetes components...  
■ Using image docker.io/kubernetesui/dashboard:v2.7.0  
■ Using image gcr.io/k8s-minikube/storage-provisioner:v5  
■ Using image docker.io/kubernetesui/metrics-scraper:v1.0.8  
💡 Some dashboard features require the metrics-server addon. To enable all features please run:  
  
    minikube addons enable metrics-server  
  
🌟 Enabled addons: storage-provisioner, dashboard, default-storageclass  
🔥 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default  
esmael@esmael-Dell-G15-5515:~$ kubectl run redis --image=redis  
pod/redis created  
esmael@esmael-Dell-G15-5515:~$ kubectl get pod nginx  
NAME      READY   STATUS    RESTARTS   AGE  
nginx     0/1     ImagePullBackOff    0          53s  
esmael@esmael-Dell-G15-5515:~$ kubectl set image pod/nginx nginx-container=nginx  
pod/nginx image updated  
esmael@esmael-Dell-G15-5515:~$ kubectl get replicaset  
No resources found in default namespace.  
esmael@esmael-Dell-G15-5515:~$
```



## 6- How many ReplicaSets exist on the system?

```
esmael@esmael-Dell-G15-5515: ~  
Preparing Kubernetes v1.31.0 on Docker 27.2.0 ...  
Verifying Kubernetes components...  
■ Using image docker.io/kubernetes/dashboard:v2.7.0  
■ Using image gcr.io/k8s-minikube/storage-provisioner:v5  
■ Using image docker.io/kubernetes/metrics-scraper:v1.0.8  
💡 Some dashboard features require the metrics-server addon. To enable all features please run:  
  
minikube addons enable metrics-server  
  
🌟 Enabled addons: storage-provisioner, dashboard, default-storageclass  
🏗 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default  
esmael@esmael-Dell-G15-5515:~$ kubectl run redis --image=redis  
pod/redis created  
esmael@esmael-Dell-G15-5515:~$ kubectl get pod nginx  
NAME    READY   STATUS             RESTARTS   AGE  
nginx   0/1     ImagePullBackOff   0           53s  
esmael@esmael-Dell-G15-5515:~$ kubectl set image pod/nginx nginx-container=nginx  
pod/nginx image updated  
esmael@esmael-Dell-G15-5515:~$ kubectl get replicaset  
No resources found in default namespace.  
esmael@esmael-Dell-G15-5515:~$
```

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

```
replica-set-1.yaml - Kubernetes - Visual Studio Code

File Edit Selection View Go Run Terminal Help

EXPLORER
KUBERNETES
  nginx-pod.yaml
  redis-pod.yaml
  replica-set-1.yaml

replica-set-1.yaml x
1 apiVersion: apps/v1
2 kind: ReplicaSet
3 metadata:
4   name: replica-set-1
5 spec:
6   replicas: 3
7   selector:
8     matchLabels:
9       app: busybox-app
10  template:
11    metadata:
12      labels:
13        app: busybox-app
14    spec:
15      containers:
16        - name: busybox-container
17          image: busybox
18
19

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH/ERROR COMMENTS
Normal Scheduled 6m3s default-scheduler Successfully assigned default/nginx to minikube
Normal Pulling 4m20s (x4 over 6m3s) kubelet Pulling image "nginx123"
Warning Failed 4m18s (x4 over 5m58s) kubelet Failed to pull image "nginx123": Error response from daemon: pull access denied for nginx123, repository does not exist or may require 'docker login': denied: requested access to the resource is denied
Warning Failed 4m18s (x4 over 5m58s) kubelet Error: ErrImagePull
Warning Failed 4m7s (x6 over 5m58s) kubelet Error: ImagePullBackOff
Normal Backoff 3m52s (x7 over 5m58s) kubelet Back-off pulling image "nginx123"
• esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get replicaset
No resources found in default namespace.
• esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl apply -f replica-set-1.yaml
replicaset.apps/replica-set-1 created
• esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get replicaset
NAME                                DESIRED    CURRENT    READY    AGE
replica-set-1                        3          2          3        16s
• esmael@esmael-Dell-G15-5515:~/Kubernetes$
```



- 8- Scale the ReplicaSet replica-set-1 to 5 PODs.
- 9- How many PODs are READY in the replica-set-1?

The screenshot shows the Visual Studio Code interface with the 'replica-set-1.yaml' file open. The file content is as follows:

```
1 apiVersion: apps/v1
2 kind: ReplicaSet
3 metadata:
4   name: replica-set-1
5 spec:
6   replicas: 3
7   selector:
8     matchLabels:
9       app: busybox-app
10  template:
11    metadata:
12      labels:
13        app: busybox-app
14  spec:
15    containers:
16      - name: busybox-container
17        image: busybox
```

The terminal window shows the following commands and output:

```
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl scale replicaset replica-set-1 --replicas=5
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
nginx	1/1	Running	0	17m
redis	1/1	Running	0	26m
replica-set-1-4jtgf	0/1	Completed	4 (63s ago)	2m
replica-set-1-4xvfg	0/1	CrashLoopBackOff	4 (20s ago)	2m
replica-set-1-5lvvk	0/1	Completed	3 (11s ago)	54s
replica-set-1-j54hf	0/1	CrashLoopBackOff	4 (14s ago)	2m
replica-set-1-lazsm	0/1	Completed	3 (34s ago)	54s

- 10- Delete any one of the 5 PODs then check How many PODs exist now?

The screenshot shows the Visual Studio Code interface with the 'replica-set-1.yaml' file open. The file content is the same as in the previous screenshot.

The terminal window shows the following commands and output:

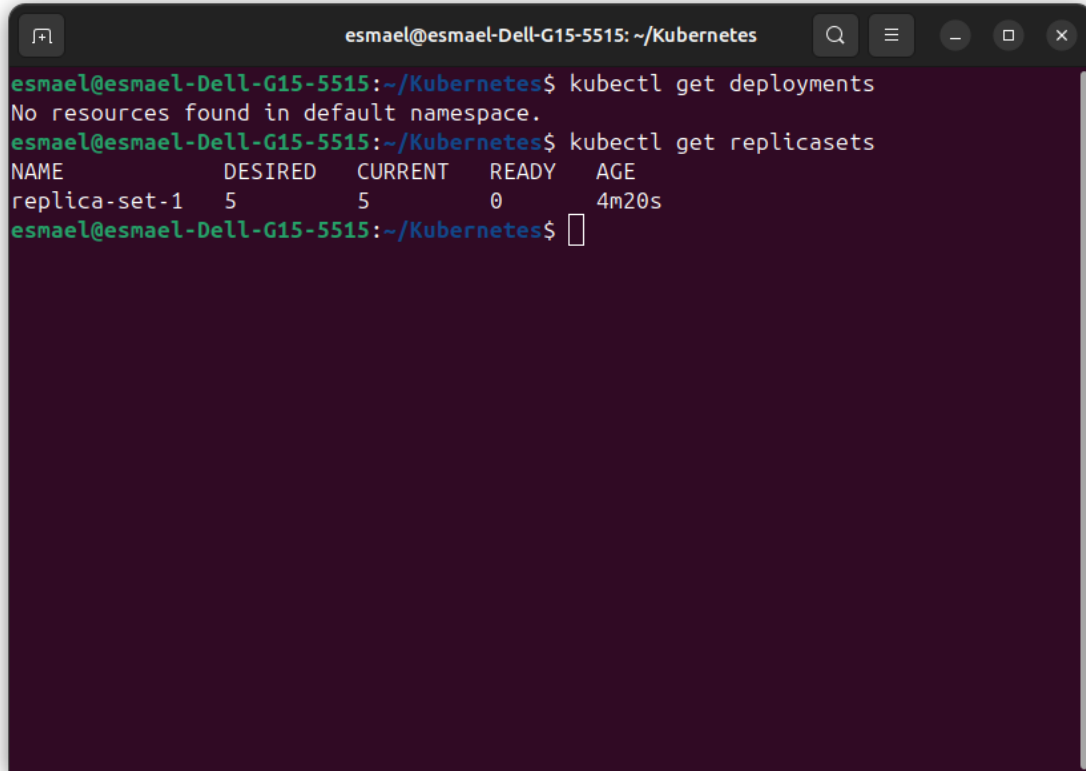
```
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl delete pod replica-set-1-4jtgf
pod "replica-set-1-4jtgf" deleted
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
nginx	1/1	Running	0	18m
redis	1/1	Running	0	26m
replica-set-1-4xvfg	0/1	CrashLoopBackOff	4 (66s ago)	2m46s
replica-set-1-5lvvk	0/1	Completed	4 (56s ago)	100s
replica-set-1-j54hf	0/1	CrashLoopBackOff	4 (66s ago)	2m46s
replica-set-1-lazsm	0/1	Completed	4 (69s ago)	100s
replica-set-1-nlbzw	0/1	ContainerCreating	0	2s

WHY ARE THERE STILL 5 PODS, EVEN AFTER YOU DELETED ONE?

YOU WILL SEE 5 PODS EVEN AFTER DELETING ONE BECAUSE THE REPLICASET AUTOMATICALLY MANAGES THE NUMBER OF REPLICAS. IT WILL CREATE A NEW POD TO MAINTAIN THE DESIRED STATE OF 5 PODS. THIS IS ONE OF THE KEY FEATURES OF REPLICASETS—THEY ENSURE THAT THE SPECIFIED NUMBER OF REPLICAS IS ALWAYS RUNNING.

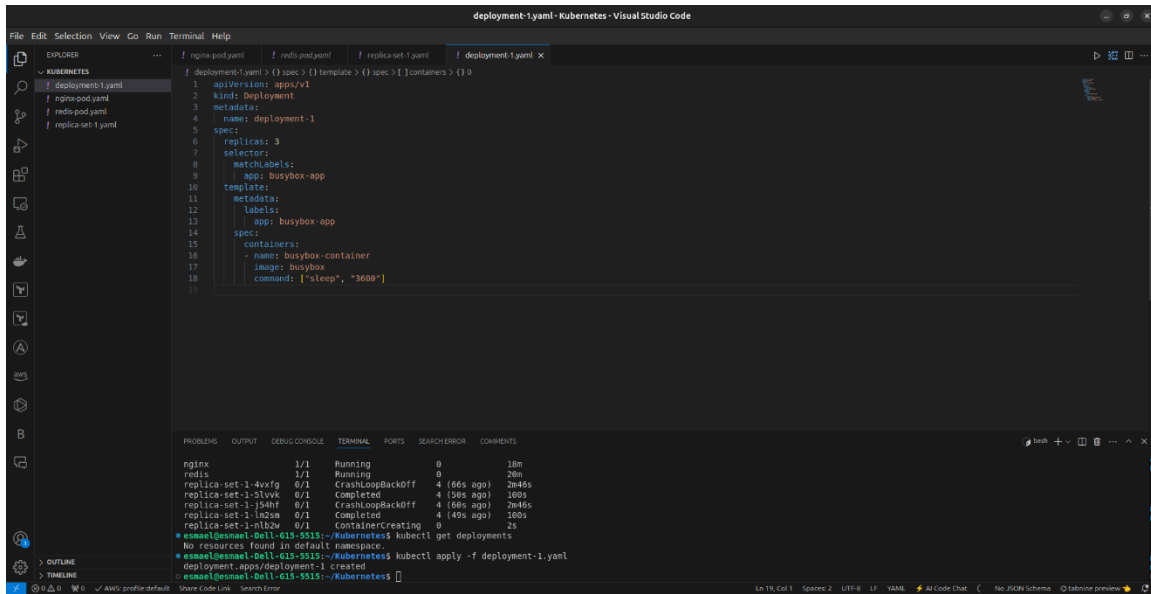
11- How many Deployments and ReplicaSets exist on the system?



```
esmael@esmael-Dell-G15-5515: ~/Kubernetes
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get deployments
No resources found in default namespace.
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get replicasets
NAME          DESIRED   CURRENT   READY   AGE
replica-set-1 5         5         0       4m20s
esmael@esmael-Dell-G15-5515:~/Kubernetes$
```

The image shows a terminal window with a dark background. The prompt is 'esmael@esmael-Dell-G15-5515: ~/Kubernetes'. The first command is 'kubectl get deployments', which returns 'No resources found in default namespace.'. The second command is 'kubectl get replicasets', which returns a table with 5 columns: NAME, DESIRED, CURRENT, READY, and AGE. The table has one row: 'replica-set-1', '5', '5', '0', and '4m20s'. The prompt is followed by a cursor.

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



The screenshot shows the Visual Studio Code interface with a Kubernetes Deployment manifest file named `deployment-1.yaml` open in the editor. The manifest defines a Deployment with 3 replicas of a container named `busybox-container` using the `busybox` image. The terminal at the bottom shows the command `kubectl apply -f deployment-1.yaml` being executed, which successfully creates the deployment. The terminal also displays the output of `kubectl get deployments`, showing the deployment `deployment.apps/deployment-1` in a `Completed` state.

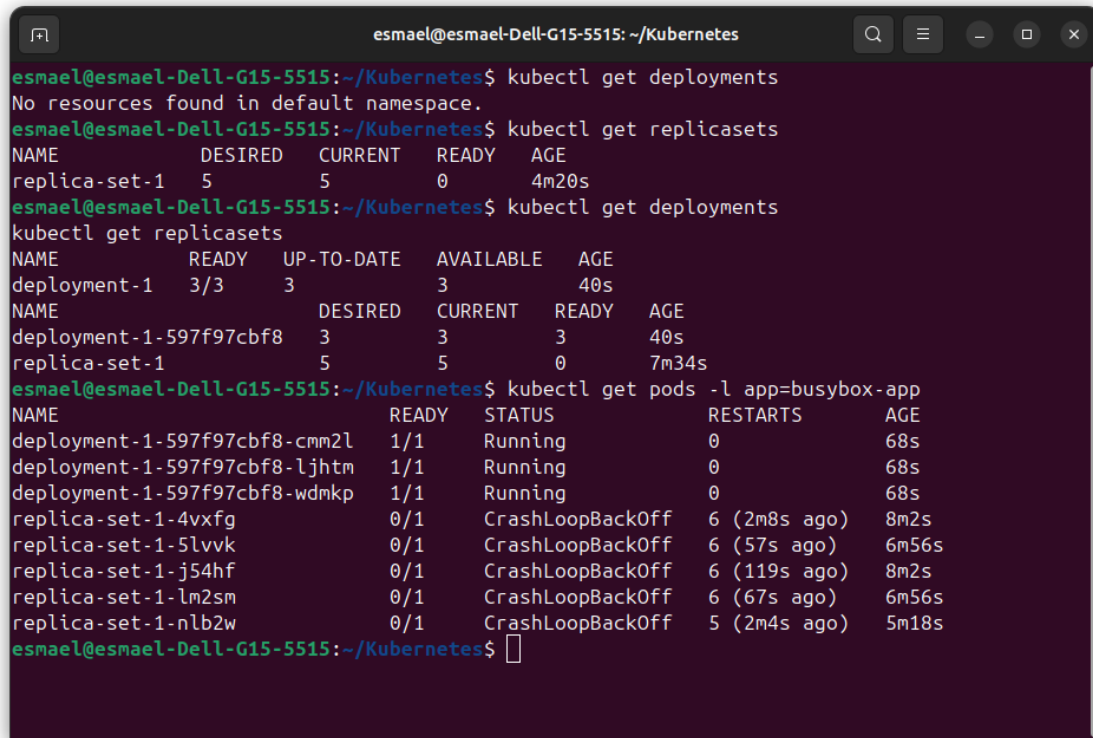
```
deployment-1.yaml - Kubernetes - Visual Studio Code

1 apiVersion: apps/v1
2 kind: Deployment
3 metadata:
4   name: deployment-1
5 spec:
6   replicas: 3
7   selector:
8     matchLabels:
9       app: busybox-app
10  template:
11    metadata:
12      labels:
13        app: busybox-app
14    spec:
15      containers:
16      - name: busybox-container
17        image: busybox
18        command: ["sleep", "3600"]
19
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS SEARCH/ERROR COMMENTS
nginx 1/1 Running 0 18m
redis 1/1 Running 0 26m
replica-set-1-4rvxf 0/1 CrashLoopBackOff 4 (66s ago) 2m46s
replica-set-1-5lvvk 0/1 Completed 4 (56s ago) 180s
replica-set-1-j44ht 0/1 CrashLoopBackOff 4 (66s ago) 2m46s
replica-set-1-lq2sm 0/1 Completed 4 (49s ago) 100s
replica-set-1-mlb2w 0/1 ContainerCreating 0 2s
esmael@esmael-Bell-615-5515:~/Kubernetes$ kubectl get deployments
No resources found in default namespace.
esmael@esmael-Bell-615-5515:~/Kubernetes$ kubectl apply -f deployment-1.yaml
deployment.apps/deployment-1 created
esmael@esmael-Bell-615-5515:~/Kubernetes$
```

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

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



```
esmael@esmael-Dell-G15-5515: ~/Kubernetes
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get deployments
No resources found in default namespace.
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get replicasets
NAME           DESIRED   CURRENT   READY   AGE
replica-set-1   5         5         0       4m20s
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get deployments
kubectl get replicasets
NAME           READY   UP-TO-DATE   AVAILABLE   AGE
deployment-1    3/3     3            3           40s
NAME           DESIRED   CURRENT   READY   AGE
deployment-1-597f97cbf8  3         3         3       40s
replica-set-1   5         5         0       7m34s
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get pods -l app=busybox-app
NAME                                READY   STATUS              RESTARTS   AGE
deployment-1-597f97cbf8-cmm2l        1/1     Running             0          68s
deployment-1-597f97cbf8-ljhtm        1/1     Running             0          68s
deployment-1-597f97cbf8-wdmkp        1/1     Running             0          68s
replica-set-1-4vxfg                   0/1     CrashLoopBackOff    6 (2m8s ago)  8m2s
replica-set-1-5lvvk                   0/1     CrashLoopBackOff    6 (57s ago)   6m56s
replica-set-1-j54hf                   0/1     CrashLoopBackOff    6 (119s ago)  8m2s
replica-set-1-lm2sm                   0/1     CrashLoopBackOff    6 (67s ago)   6m56s
replica-set-1-nlb2w                   0/1     CrashLoopBackOff    5 (2m4s ago)  5m18s
esmael@esmael-Dell-G15-5515:~/Kubernetes$
```

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

```
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl set image deployment/deployment-1 busybox-container=nginx
deployment.apps/deployment-1 image updated
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get pods -l app=busybox-app
NAME                                READY   STATUS    RESTARTS   AGE
deployment-1-5b657cc464-b8jxh      1/1     Running   0           77s
deployment-1-5b657cc464-ktn7k      1/1     Running   0           74s
deployment-1-5b657cc464-nmsct      1/1     Running   0           80s
replica-set-1-4vxfg                0/1     CrashLoopBackOff   7 (37s ago)    11m
replica-set-1-5lvvk                0/1     CrashLoopBackOff   6 (4m35s ago)  10m
replica-set-1-j54hf                0/1     CrashLoopBackOff   7 (34s ago)    11m
replica-set-1-lm2sm                0/1     CrashLoopBackOff   6 (4m45s ago)  10m
replica-set-1-nlb2w                0/1     CrashLoopBackOff   6 (3m ago)     8m56s
esmael@esmael-Dell-G15-5515:~/Kubernetes$
```

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

```
esmael@esmael-Dell-G15-5515: ~/Kubernetes
Command:
  sleep
  3600
Environment:  <none>
Mounts:       <none>
Volumes:      <none>
Node-Selectors:  <none>
Tolerations:   <none>
Conditions:
  Type           Status  Reason
  ----           -
  Available      True    MinimumReplicasAvailable
  Progressing    True    NewReplicaSetAvailable
OldReplicaSets:  deployment-1-597f97cbf8 (0/0 replicas created)
NewReplicaSet:   deployment-1-5b657cc464 (3/3 replicas created)
Events:
  Type           Reason             Age             From             Message
  ----           -
  Normal         ScalingReplicaSet   5m30s          deployment-controller  Scaled up replica set deployment-1-597f97cbf8 to 3
  Normal         ScalingReplicaSet   2m4s          deployment-controller  Scaled up replica set deployment-1-5b657cc464 to 1
  Normal         ScalingReplicaSet   2m1s          deployment-controller  Scaled down replica set deployment-1-597f97cbf8 to 2 from 3
  Normal         ScalingReplicaSet   2m1s          deployment-controller  Scaled up replica set deployment-1-5b657cc464 to 2 from 1
  Normal         ScalingReplicaSet   118s          deployment-controller  Scaled down replica set deployment-1-597f97cbf8 to 1 from 2
  Normal         ScalingReplicaSet   118s          deployment-controller  Scaled up replica set deployment-1-5b657cc464 to 3 from 2
  Normal         ScalingReplicaSet   115s          deployment-controller  Scaled down replica set deployment-1-597f97cbf8 to 0 from 1
esmael@esmael-Dell-G15-5515:~/Kubernetes$
```

**-THE DEFAULT DEPLOYMENT STRATEGY USED FOR KUBERNETES DEPLOYMENTS IS ROLLING UPDATE. THIS STRATEGY ALLOWS FOR UPDATING THE PODS GRADUALLY, ENSURING THAT SOME PODS REMAIN AVAILABLE DURING THE UPGRADE PROCESS. THE ROLLING UPDATE STRATEGY MINIMIZES DOWNTIME BY**

UPDATING A FEW PODS AT A TIME UNTIL ALL HAVE BEEN UPDATED TO THE NEW IMAGE.

## 17- Rollback the deployment

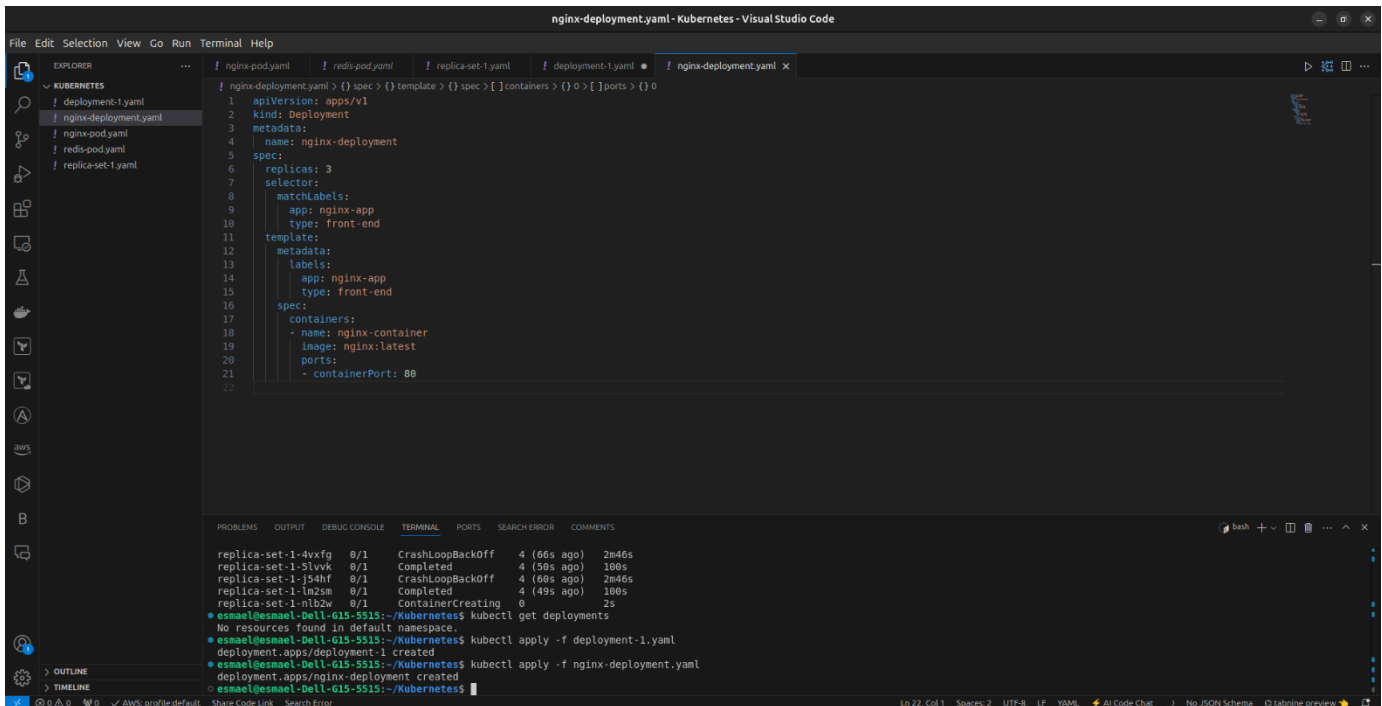
WHAT IS THE USED IMAGE WITH THE DEPLOYMENT-1?

```
esmael@esmael-Dell-G15-5515: ~/Kubernetes
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl rollout undo deployment/deployment-1
deployment.apps/deployment-1 rolled back
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get pods -l app=busybox-app
NAME                                READY   STATUS              RESTARTS   AGE
deployment-1-597f97cbf8-h8rrq       1/1     Running             0           7s
deployment-1-597f97cbf8-qs2sv       1/1     Running             0           10s
deployment-1-597f97cbf8-swnjn       1/1     Running             0           4s
deployment-1-5b657cc464-b8jxh       1/1     Terminating        0           3m32s
deployment-1-5b657cc464-ktn7k       1/1     Terminating        0           3m29s
deployment-1-5b657cc464-nmsct       1/1     Terminating        0           3m35s
replica-set-1-4vxfg                  0/1     CrashLoopBackOff    7 (2m52s ago)  13m
replica-set-1-5lvvk                  0/1     CrashLoopBackOff    7 (104s ago)   12m
replica-set-1-j54hf                  0/1     CrashLoopBackOff    7 (2m49s ago)  13m
replica-set-1-lm2sm                  0/1     CrashLoopBackOff    7 (117s ago)   12m
replica-set-1-nlb2w                  0/1     Completed           7 (5m15s ago)  11m
esmael@esmael-Dell-G15-5515:~/Kubernetes$
```

```
esmael@esmael-Dell-G15-5515: ~/Kubernetes
Name: deployment-1
Namespace: default
CreationTimestamp: Thu, 19 Sep 2024 22:26:38 +0300
Labels: <none>
Annotations: deployment.kubernetes.io/revision: 3
Selector: app=busybox-app
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=busybox-app
  Containers:
    busybox-container:
      Image: busybox
      Port: <none>
      Host Port: <none>
      Command:
        sleep
        3600
  Environment: <none>
  Mounts: <none>
  Volumes: <none>
  Node-Selectors: <none>
  Tolerations: <none>
Conditions:
```

```
esmael@esmael-Dell-G15-5515: ~/Kubernetes
Mounts:          <none>
Volumes:         <none>
Node-Selectors:  <none>
Tolerations:     <none>
Conditions:
  Type           Status Reason
  ----           -
  Available      True   MinimumReplicasAvailable
  Progressing    True   NewReplicaSetAvailable
OldReplicaSets:  deployment-1-5b657cc464 (0/0 replicas created)
NewReplicaSet:   deployment-1-597f97cbf8 (3/3 replicas created)
Events:
  Type    Reason             Age    From                      Message
  ----    -
  Normal  ScalingReplicaSet  7m23s  deployment-controller     Scaled up replica set deployment-1-597f97cbf8 to 3
  Normal  ScalingReplicaSet  3m57s  deployment-controller     Scaled up replica set deployment-1-5b657cc464 to 1
  Normal  ScalingReplicaSet  3m54s  deployment-controller     Scaled down replica set deployment-1-597f97cbf8 to 2 from 3
  Normal  ScalingReplicaSet  3m54s  deployment-controller     Scaled up replica set deployment-1-5b657cc464 to 2 from 1
  Normal  ScalingReplicaSet  3m51s  deployment-controller     Scaled down replica set deployment-1-597f97cbf8 to 1 from 2
  Normal  ScalingReplicaSet  3m51s  deployment-controller     Scaled up replica set deployment-1-5b657cc464 to 3 from 2
  Normal  ScalingReplicaSet  3m48s  deployment-controller     Scaled down replica set deployment-1-597f97cbf8 to 0 from 1
  Normal  ScalingReplicaSet  32s    deployment-controller     Scaled up replica set deployment-1-597f97cbf8 to 1 from 0
  Normal  ScalingReplicaSet  30s    deployment-controller     Scaled down replica set deployment-1-5b657cc464 to 2 from 3
  Normal  ScalingReplicaSet  24s    deployment-controller     (combined from similar events): Scaled down replica set deployment-1-5b657cc464 to 0 from 1
esmael@esmael-Dell-G15-5515:~/Kubernetes$
```

18- Create a deployment using nginx image with latest tag only and remember to mention tag i.e nginx:latest and name it as nginx-deployment. App labels should be app: nginx-app and type: front-end. The container should be named as nginx-container; also make sure replica counts are 3.



```
nginx-deployment.yaml - Kubernetes - Visual Studio Code
File Edit Selection View Go Run Terminal Help
EXPLORER
  KUBERNETES
    deployment-1.yaml
    nginx-deployment.yaml
    nginx-pod.yaml
    redis-pod.yaml
    replica-set-1.yaml
  nginx-deployment.yaml
1 apiVersion: apps/v1
2 kind: Deployment
3 metadata:
4   name: nginx-deployment
5 spec:
6   replicas: 3
7   selector:
8     matchLabels:
9       app: nginx-app
10      type: front-end
11   template:
12     metadata:
13       labels:
14         app: nginx-app
15         type: front-end
16     spec:
17       containers:
18         - name: nginx-container
19           image: nginx:latest
20           ports:
21             - containerPort: 80
22
TERMINAL
bash
replica-set-1-4vxfg 0/1 CrashLoopBackOff 4 (66s ago) 2m46s
replica-set-1-5lvvk 0/1 Completed 4 (58s ago) 100s
replica-set-1-j54hf 0/1 CrashLoopBackOff 4 (69s ago) 2m46s
replica-set-1-lm2sm 0/1 Completed 4 (49s ago) 100s
replica-set-1-nlb2w 0/1 ContainerCreating 0 2s
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get deployments
No resources found in default namespace.
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl apply -f deployment-1.yaml
deployment.apps/deployment-1 created
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl apply -f nginx-deployment.yaml
deployment.apps/nginx-deployment created
esmael@esmael-Dell-G15-5515:~/Kubernetes$
```



```
esmael@esmael-Dell-G15-5515: ~/Kubernetes
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get deployments
NAME                READY   UP-TO-DATE   AVAILABLE   AGE
deployment-1        3/3     3             3           10m
nginx-deployment    3/3     3             3           15s
esmael@esmael-Dell-G15-5515:~/Kubernetes$ kubectl get pods -l app=nginx-app
NAME                                READY   STATUS    RESTARTS   AGE
nginx-deployment-d85c7c6c8-8znlz    1/1     Running   0           26s
nginx-deployment-d85c7c6c8-926cq    1/1     Running   0           26s
nginx-deployment-d85c7c6c8-t27cl    1/1     Running   0           26s
esmael@esmael-Dell-G15-5515:~/Kubernetes$
```