

## Creation the nginx pod with a yaml file:

The screenshot shows the AWS Management Console interface with a terminal window open. The terminal displays the output of the command `kubectl get nodes`, which lists the nodes in the cluster. Below this, a YAML file is shown, which is used to create an nginx pod. The terminal output for the YAML file shows the pod's status as 'Pending'.

**Terminal Output for `kubectl get nodes`:**

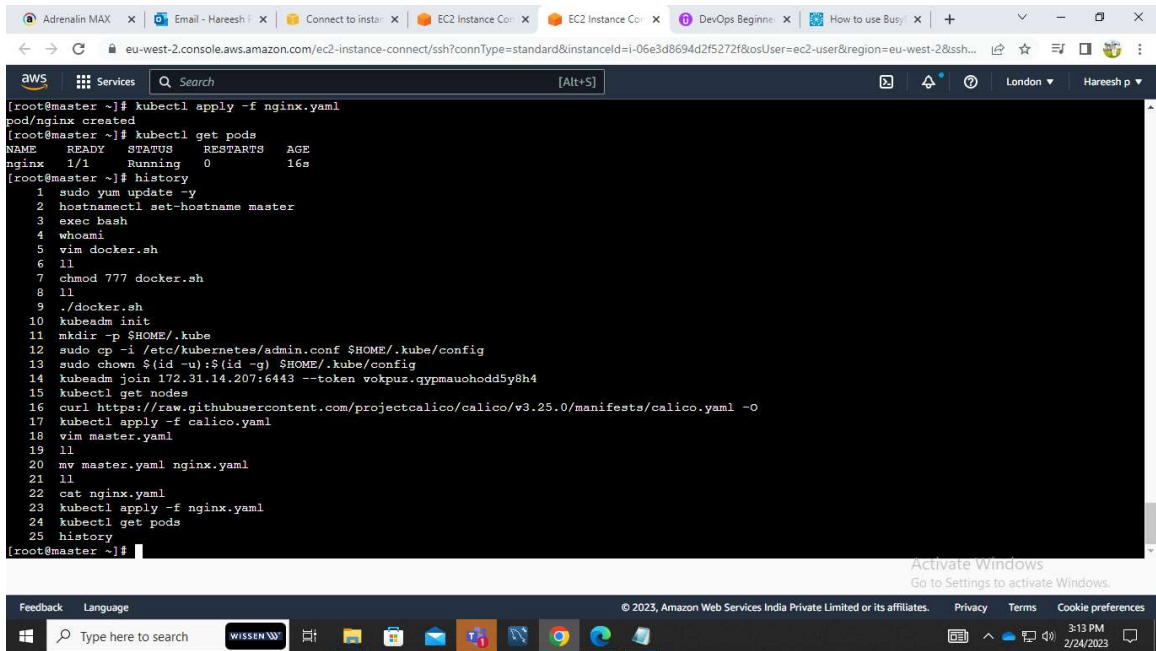
NAME	STATUS	ROLES	AGE	VERSION
master	NotReady	control-plane	3m45s	v1.26.1
worker	NotReady	<none>	63s	v1.26.1

**YAML File Content:**

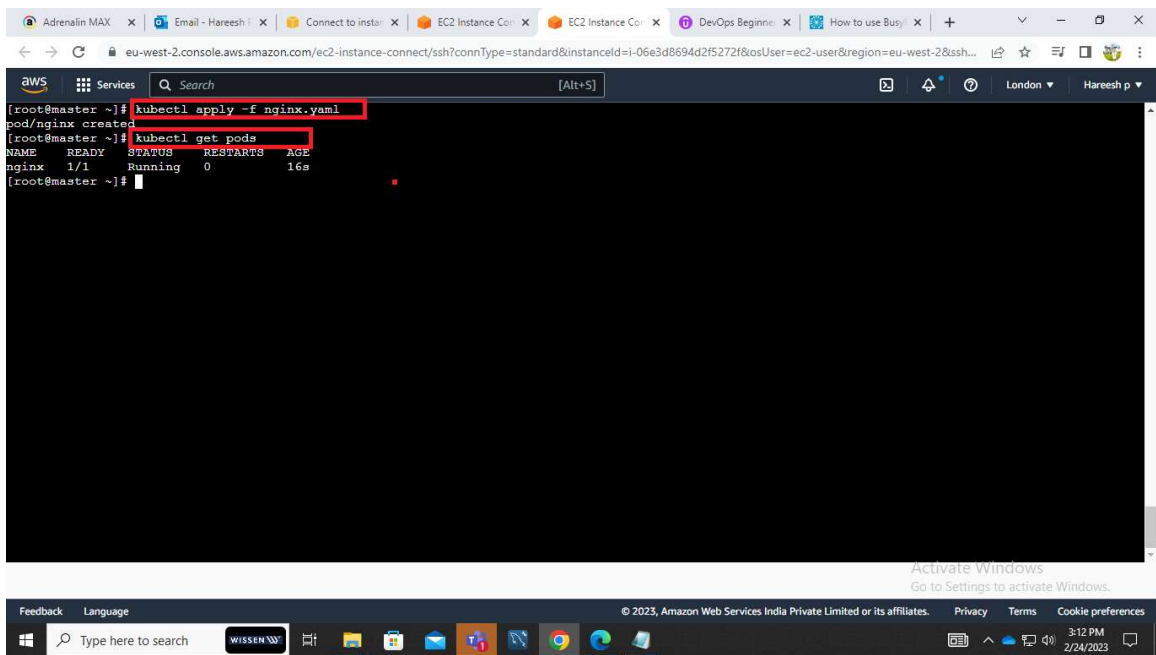
```
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: nginx
  name: nginx
spec:
  containers:
    - image: nginx
      name: nginx
      resources: {}
  dnsPolicy: ClusterFirst
  restartPolicy: Never
status: {}
```

**Terminal Output for the Pod:**

```
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: nginx
  name: nginx
spec:
  containers:
    - image: nginx
      name: nginx
      resources: {}
  dnsPolicy: ClusterFirst
  restartPolicy: Never
status: {}
```



```
[root@master ~]# kubectl apply -f nginx.yaml
pod/nginx created
[root@master ~]# kubectl get pods
NAME      READY   STATUS    RESTARTS   AGE
nginx     1/1     Running   0           16s
[root@master ~]# history
1 sudo yum update -y
2 hostnamectl set-hostname master
3 exec bash
4 whoami
5 vim docker.sh
6 ll
7 chmod 777 docker.sh
8 ll
9 ./docker.sh
10 kubeadm init
11 mkdir -p $HOME/.kube
12 sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config
13 sudo chown $(id -u):$(id -g) $HOME/.kube/config
14 kubeadm join 172.31.14.207:6443 --token v0kpuz.qypmauhodd5y8h4
15 kubectl get nodes
16 curl https://raw.githubusercontent.com/projectcalico/calico/v3.25.0/manifests/calico.yaml -O
17 kubectl apply -f calico.yaml
18 vim master.yaml
19 ll
20 mv master.yaml nginx.yaml
21 ll
22 cat nginx.yaml
23 kubectl apply -f nginx.yaml
24 kubectl get pods
25 history
[root@master ~]#
```



```
[root@master ~]# kubectl apply -f nginx.yaml
pod/nginx created
[root@master ~]# kubectl get pods
NAME      READY   STATUS    RESTARTS   AGE
nginx     1/1     Running   0           16s
[root@master ~]#
```

Check the connection of the nginx pod from the busybox pod:

```
apiVersion: v1
kind: Pod
metadata:
  creationTimestamp: null
  labels:
    run: busybox
    name: busybox
spec:
  containers:
    - args:
      - bin/sh
      - -c
      - ls; sleep 3600
      image: busybox
      name: busybox1
      resources: {}
    - args:
      - bin/sh
      - -c
      - echo Hello busy box pod; sleep 3600
      image: busybox
      name: busybox2
      resources: {}
    - args:
      - bin/sh
      - -c
      - echo this is third container; sleep 3600
      image: busybox
      name: busybox3
      resources: {}
  dnsPolicy: ClusterFirst
```



```
[root@master ~]# kubectl get nodes
NAME        STATUS    ROLES    AGE   VERSION
master      NotReady  control-plane  3m45s  v1.26.1
worker      NotReady  <none>        63s    v1.26.1

[root@master ~]# curl https://raw.githubusercontent.com/projectcalico/calico/v3.25.0/manifests/calico.yaml -O
[root@master ~]# vim busybox.yaml
[root@master ~]# kubectl apply -f busybox.yaml
pod/busybox created

[root@master ~]# kubectl get pods
NAME        READY   STATUS    RESTARTS   AGE
busybox     3/3     Running   0           14s
nginx       1/1     Running   0           5m40s

[root@master ~]# kubectl get pods -o wide
NAME        READY   STATUS    RESTARTS   AGE   IP            NODE        NOMINATED NODE   READINESS GATES
busybox     3/3     Running   0           42s   192.168.171.69  worker      <none>            <none>
nginx       1/1     Running   0           6m8s   192.168.171.68  worker      <none>            <none>

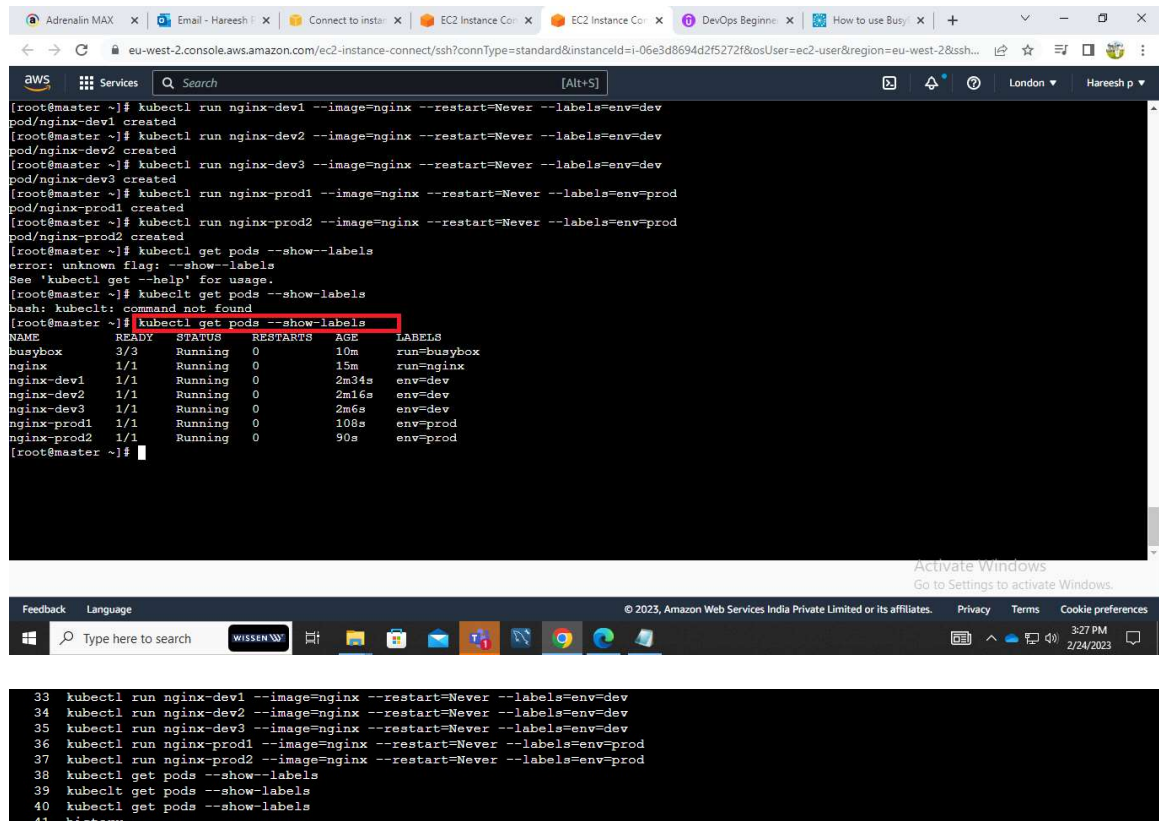
[root@master ~]# kubectl exec -it busybox -- wget -O- 192.168.171.68
Connecting to 192.168.171.68 (192.168.171.68:80)
saving to 'index.html'
index.html 100% |*****| 615 0:00:00 ETA
'index.html' saved
[root@master ~]# kubectl exec -it busybox -- bin/sh
Defaulted container 'busybox1' out of: busybox1, busybox2, busybox3
/ # cat index.html
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
```



```
26 vim busybox.yaml
27 kubectl apply -f busybox.yaml
28 kubectl get pods
29 kubectl get pods -o wide
30 kubectl exec -it busybox -- wget -O- 192.168.171.68
31 kubectl exec -it busybox -- bin/sh
32 history
```

Create 5 nginx pods in which two of them is labeled env=prod

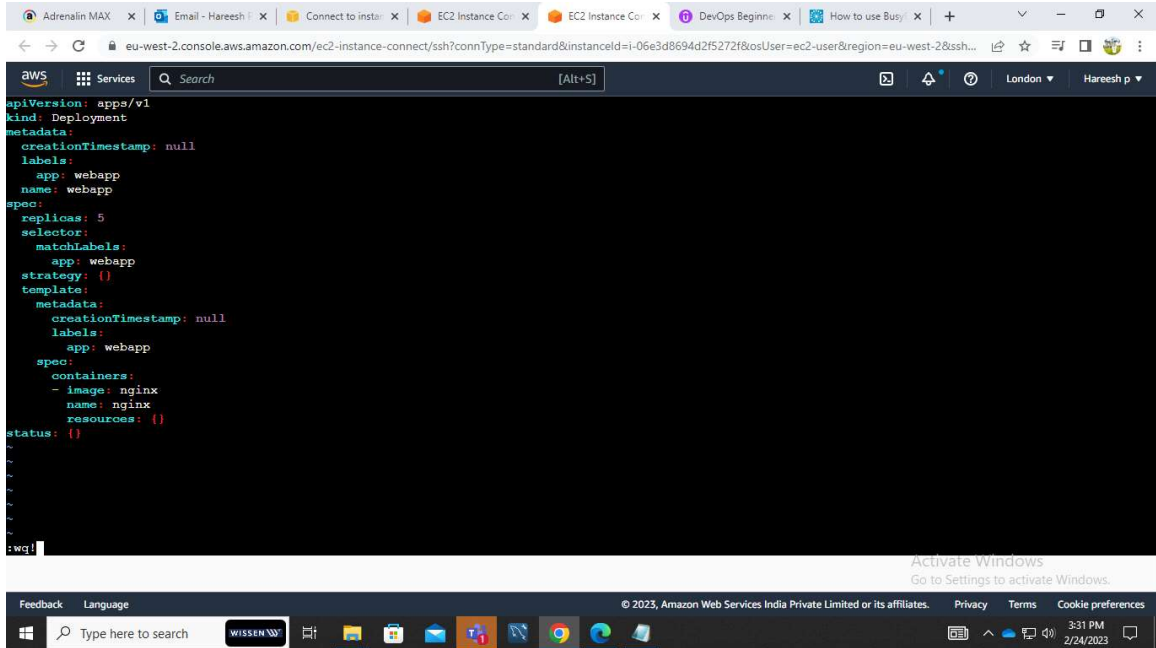
and three of them is labeled env=dev:



```
[root@master ~]# kubectl run nginx-dev1 --image=nginx --restart=Never --labels=env=dev
pod/nginx-dev1 created
[root@master ~]# kubectl run nginx-dev2 --image=nginx --restart=Never --labels=env=dev
pod/nginx-dev2 created
[root@master ~]# kubectl run nginx-dev3 --image=nginx --restart=Never --labels=env=dev
pod/nginx-dev3 created
[root@master ~]# kubectl run nginx-prod1 --image=nginx --restart=Never --labels=env=prod
pod/nginx-prod1 created
[root@master ~]# kubectl run nginx-prod2 --image=nginx --restart=Never --labels=env=prod
pod/nginx-prod2 created
[root@master ~]# kubectl get pods --show-labels
error: unknown flag: --show-labels
See 'kubectl get --help' for usage.
[root@master ~]# kubectl get pods --show-labels
bash: kubectl: command not found
[root@master ~]# kubectl get pods --show-labels
NAME          READY   STATUS    RESTARTS   AGE   LABELS
busybox       3/3     Running   0           10m   run=busybox
nginx         1/1     Running   0           15m   run=nginx
nginx-dev1    1/1     Running   0          2m34s   env=dev
nginx-dev2    1/1     Running   0          2m16s   env=dev
nginx-dev3    1/1     Running   0          2m6s   env=dev
nginx-prod1   1/1     Running   0          108s   env=prod
nginx-prod2   1/1     Running   0          90s   env=prod
[root@master ~]#
```

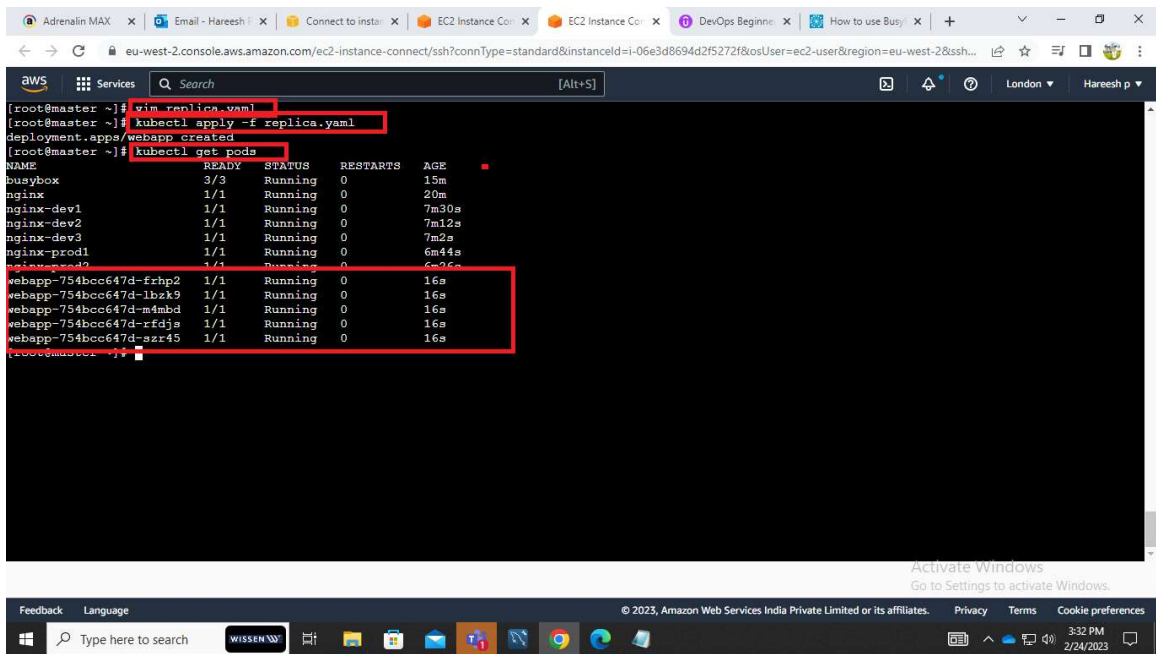
33 kubectl run nginx-dev1 --image=nginx --restart=Never --labels=env=dev  
34 kubectl run nginx-dev2 --image=nginx --restart=Never --labels=env=dev  
35 kubectl run nginx-dev3 --image=nginx --restart=Never --labels=env=dev  
36 kubectl run nginx-prod1 --image=nginx --restart=Never --labels=env=prod  
37 kubectl run nginx-prod2 --image=nginx --restart=Never --labels=env=prod  
38 kubectl get pods --show-labels  
39 kubectl get pods --show-labels  
40 kubectl get pods --show-labels  
41 history

Create a deployment called webapp with image nginx with 5 replicas:



The screenshot shows the AWS Management Console interface for an EC2 instance. The terminal window displays the configuration for a Kubernetes Deployment named 'webapp'. The configuration includes metadata, labels, and a spec with 5 replicas. The status is shown as 'Pending'.

```
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
          name: nginx
          resources: {}
status: {}
```



The screenshot shows the AWS Management Console interface for an EC2 instance. The terminal window displays the output of the 'kubectl get pods' command. The output shows a table of pods with columns: NAME, READY, STATUS, RESTARTS, and AGE. The pods are listed as follows:

NAME	READY	STATUS	RESTARTS	AGE
busybox	3/3	Running	0	15m
nginx	1/1	Running	0	20m
nginx-dev1	1/1	Running	0	7m30s
nginx-dev2	1/1	Running	0	7m12s
nginx-dev3	1/1	Running	0	7m2s
nginx-prod1	1/1	Running	0	6m44s
nginx-prod2	1/1	Running	0	6m26s
webapp-754bcc647d-frhp2	1/1	Running	0	16s
webapp-754bcc647d-lbzk9	1/1	Running	0	16s
webapp-754bcc647d-m4mbd	1/1	Running	0	16s
webapp-754bcc647d-rfdjs	1/1	Running	0	16s
webapp-754bcc647d-szr45	1/1	Running	0	16s

Create a Job with an image node which prints node version and also verifies there is a pod created for this job:



```
Adrenalin MAX | Email - Hareesh | Connect to inst... | EC2 Instance Con... | EC2 Instance Con... | DevOps Beginn... | How to use Busy... | +
eu-west-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-06e3d8694d2f5272f&osUser=ec2-user&region=eu-west-2&ssh...
AWS | Services | Search | [Alt+S] | London | Hareesh p
nginx-dev3 1/1 Running 0 7m2s
nginx-prod1 1/1 Running 0 6m44s
nginx-prod2 1/1 Running 0 6m26s
webapp-754bcc647d-frhp2 1/1 Running 0 16s
webapp-754bcc647d-lbzk9 1/1 Running 0 16s
webapp-754bcc647d-m4mbd 1/1 Running 0 16s
webapp-754bcc647d-rfdjs 1/1 Running 0 16s
webapp-754bcc647d-szr45 1/1 Running 0 16s
[root@master ~]# kubectl create job nodeversion --image=node -- node -v
job.batch/nodeversion created
[root@master ~]# kubectl get job -w
NAME COMPLETIONS DURATION AGE
nodeversion 0/1 27s 27s
nodeversion 0/1 29s 29s
nodeversion 0/1 30s 30s
nodeversion 1/1 20s 30s
^C[root@master ~]# kubectl get pods
NAME READY STATUS RESTARTS AGE
busybox 3/3 Running 0 17m
nginx 1/1 Running 0 22m
nginx-dev1 1/1 Running 0 9m39s
nginx-dev2 1/1 Running 0 9m21s
nginx-dev3 1/1 Running 0 9m11s
nginx-prod1 1/1 Running 0 8m53s
nginx-prod2 1/1 Running 0 8m35s
nodeversion-kvame 0/1 Completed 0 53s
webapp-754bcc647d-frhp2 1/1 Running 0 2m25s
webapp-754bcc647d-lbzk9 1/1 Running 0 2m25s
webapp-754bcc647d-m4mbd 1/1 Running 0 2m25s
webapp-754bcc647d-rfdjs 1/1 Running 0 2m25s
webapp-754bcc647d-szr45 1/1 Running 0 2m25s
[root@master ~]#
```

```
45 kubectl create job nodeversion --image=node -- node -v
46 kubectl get job -w
47 kubectl get pods
```

Create a Cronjob with busybox image that prints date and hello from kubernetes cluster message for every minute:

```
Adrenalin MAX | Email - Hareesh | Connect to inst... | EC2 Instance Con... | EC2 Instance Con... | DevOps Beginn... | How to use Busy... | +
eu-west-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-06e3d8694d2f5272f&osUser=ec2-user&region=eu-west-2&ssh...
AWS | Services | Search | [Alt+S] | London | Hareesh p
16 curl https://raw.githubusercontent.com/projectcalico/calico/v3.25.0/manifests/calico.yaml -O
17 kubectl apply -f calico.yaml
[root@master ~]# kubectl create cronjob date-job --image=busybox --schedule="*/1 * * * *" -- bin/sh -c "date; echo Hello from kubernetes cluster"
cronjob.batch/date-job created
[root@master ~]# kubectl get job
NAME COMPLETIONS DURATION AGE
nodeversion 1/1 30s 3m30s
[root@master ~]# kubectl get po
NAME READY STATUS RESTARTS AGE
busybox 3/3 Running 0 19m
nginx 1/1 Running 0 25m
nginx-dev1 1/1 Running 0 12m
nginx-dev2 1/1 Running 0 12m
nginx-dev3 1/1 Running 0 11m
nginx-prod1 1/1 Running 0 11m
nginx-prod2 1/1 Running 0 11m
nodeversion-kvame 0/1 Completed 0 3m38s
webapp-754bcc647d-frhp2 1/1 Running 0 5m10s
[root@master ~]# kubectl delete po nginx-prod1
pod "nginx-prod1" deleted
[root@master ~]# kubectl delete po nginx-prod2
pod "nginx-prod2" deleted
[root@master ~]# kubectl get po
NAME READY STATUS RESTARTS AGE
busybox 3/3 Running 0 23m
date-job-27953889-nwzrz 0/1 Completed 0 2m16s
date-job-27953890-64rbw 0/1 Completed 0 76s
date-job-27953891-tfmvp 0/1 Completed 0 16s
nodeversion-kvame 0/1 Completed 0 7m10s
webapp-754bcc647d-frhp2 1/1 Running 0 8m42s
webapp-754bcc647d-lbzk9 1/1 Running 0 8m42s
webapp-754bcc647d-m4mbd 1/1 Running 0 8m42s
[root@master ~]#
```

```

50 kubectl get job
51 kubectl get po
52 kubectl logs date-job-27953888-cbp6f
53 kubectl delete po nginx
54 kubectl delete po nginx-dev1
55 kubectl delete po nginx-dev2
56 kubectl delete po nginx-dev3
57 kubectl delete po nginx-prod1
58 kubectl delete po nginx-prod2
59 kubectl get po

```

Create the nginx pod with version 1.17.4 and expose it on port

80:

The screenshot shows the AWS Management Console interface. The top navigation bar includes the AWS logo, a search bar, and the user's location (London) and name (Hareesh p). The main content area displays the details of an EC2 instance named 'eu-west-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-06e3d8694d2f5272f&osUser=ec2-user&region=eu-west-2&ssh...'. The instance is in the 'Running' state with an IP address of 192.168.171.88. The 'Containers' section shows a single container named 'nginx' with the following details:

- Container ID: containerd://1f5698023f497818ae27c646b7239116a6ce7e7452d2407f409aaa17fa1e10b9
- Image: nginx:1.17.4
- Port: 80/TCP (highlighted with a red box)
- Host Port: 0/TCP
- State: Running
- Started: Fri, 24 Feb 2023 10:14:19 +0000
- Ready: True
- Restart Count: 0
- Environment: <none>
- Mounts: /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-pchkp (ro)

The 'Conditions' section shows the following status:

Type	Status
Initialized	True
Ready	True
ContainersReady	True
PodScheduled	True

The 'Volumes' section shows a single volume named 'kube-api-access-pchkp' with the following details:

- 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

The bottom of the screenshot shows the Windows taskbar with the search bar, task view button, and several application icons. The system clock shows 3:45 PM on 2/24/2023.

```

61 kubectl run nginx --image=nginx:1.17.4 --restart=Never --port=80
62 kubectl get pods
63 kubectl describe po nginx

```

Create an nginx pod in a default namespace and verify the pod

running:

```
Adrenalin MAX x Email - Hareesh x Connect to inst... EC2 Instance Con... EC2 Instance Con... DevOps Beginn... How to use Busy... x + - x
eu-west-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-06e3d8694d2f5272f8&osUser=ec2-user&region=eu-west-2&sshPort=...
AWS Services Search [Alt+S] London Hareesh p
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2023/02/24 10:29:19 [notice] 1#1: using the "epoll" event method
2023/02/24 10:29:19 [notice] 1#1: nginx/1.23.3
2023/02/24 10:29:19 [notice] 1#1: built by gcc 10.2.1 20210110 (Debian 10.2.1-6)
2023/02/24 10:29:19 [notice] 1#1: OS: Linux 5.10.165-143.735.amzn2.x86_64
2023/02/24 10:29:19 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2023/02/24 10:29:19 [notice] 1#1: start worker processes
2023/02/24 10:29:19 [notice] 1#1: start worker process 29
2023/02/24 10:29:19 [notice] 1#1: start worker process 30
[root@master ~]# kubectl describe pod nginx
Name: nginx
Namespace: default
Priority: 0
Service Account: default
Node: worker/172.31.11.87
Start Time: Fri, 24 Feb 2023 10:29:17 +0000
Labels: run=nginx
Annotations: cni.projectcalico.org/containerID: b458a136db9743f6d86ee8bdee3b53cfff3837d0656ab0cefc5354a2fa782e6d
cni.projectcalico.org/podIP: 192.168.171.104/32
cni.projectcalico.org/podIPs: 192.168.171.104/32
Status: Running
IP: 192.168.171.104
IPs:
  IP: 192.168.171.104
Containers:
  nginx:
    Container ID: containerd://3bb131ff37cec5b8094eb71c044e2e24b3603f1f530be6a0ae7859102e4bf1d3
    Image: nginx
    Image ID: docker.io/library/nginx@sha256:6650513efd1d27e1f8a5351cbd33edf85cc7e0d9d0fcb4ffb23d8fa9b601ba8
Activate Windows
Go to Settings to activate Windows.
Feedback Language © 2023, Amazon Web Services India Private Limited or its affiliates. Privacy Terms Cookie preferences
Type here to search WISSEN 4:00 PM 2/24/2023
```

```
88 kubectl run nginx --image=nginx --restart=Never
89 kubectl get pods
90 kubectl logs nginx
91 kubectl describe pod nginx
```

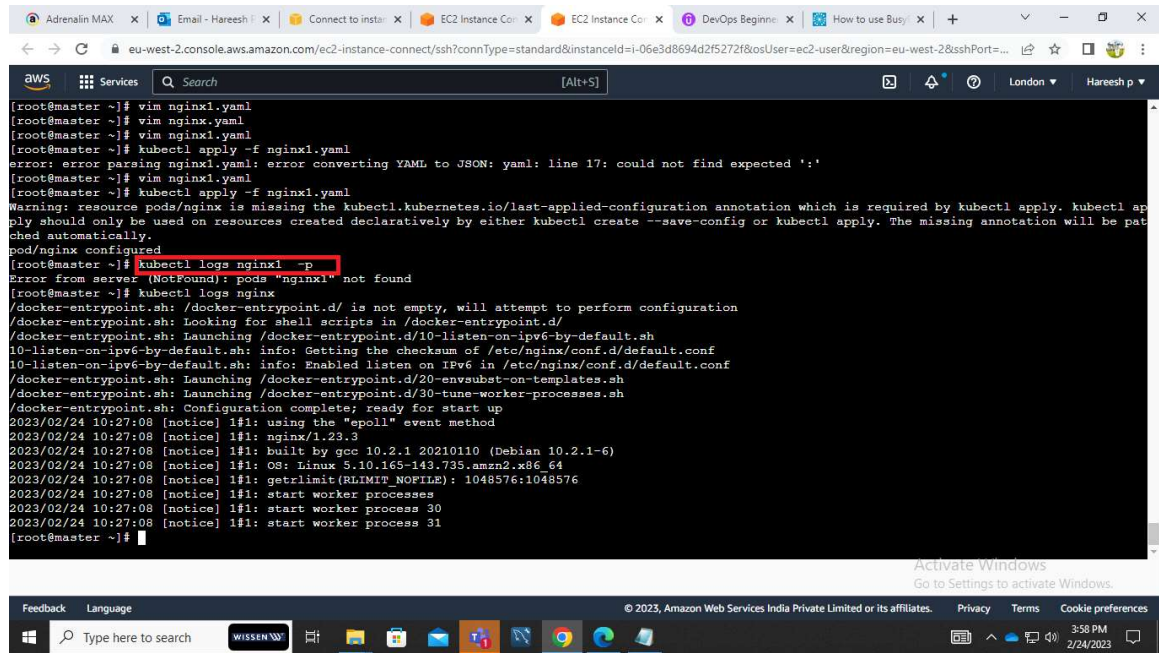
Create a busybox pod and run command ls while creating it and check the logs:

```
Adrenalin MAX x Email - Hareesh x Connect to inst... EC2 Instance Con... EC2 Instance Con... DevOps Beginn... How to use Busy... x + - x
eu-west-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-06e3d8694d2f5272f8&osUser=ec2-user&region=eu-west-2&sshPort=...
AWS Services Search [Alt+S] London Hareesh p
[root@master ~]# kubectl logs busybox
Defaulted container "busybox1" out of: busybox1, busybox2, busybox3
bin
dev
etc
home
lib
lib64
proc
root
sys
tmp
usr
var
[root@master ~]# kubectl logs busybox -c busybox2
Hello busy box pod
[root@master ~]# kubectl logs busybox -c busybox3
this is third container
[root@master ~]#
Activate Windows
Go to Settings to activate Windows.
Feedback Language © 2023, Amazon Web Services India Private Limited or its affiliates. Privacy Terms Cookie preferences
Type here to search WISSEN 3:49 PM 2/24/2023
```



```
65 kubectl logs busybox
66 kubectl logs busybox -c busybox2
67 kubectl logs busybox -c busybox3
```

If pod crashed, how to check the previous logs of the pod":



The screenshot shows a terminal window with the following content:

```
[root@master ~]# vim nginx1.yaml
[root@master ~]# vim nginx.yaml
[root@master ~]# vim nginx1.yaml
[root@master ~]# kubectl apply -f nginx1.yaml
error: error parsing nginx1.yaml: error converting YAML to JSON: yaml: line 17: could not find expected ':'
[root@master ~]# vim nginx1.yaml
[root@master ~]# kubectl apply -f nginx1.yaml
Warning: resource pods/nginx is missing the kubectrl.kubernetes.io/last-applied-configuration annotation which is required by kubectl apply. kubectl ap
ply should only be used on resources created declaratively by either kubectl create --save-config or kubectl apply. The missing annotation will be pat
ched automatically.
pod/nginx configured
[root@master ~]# kubectl logs nginx1 -p
Error from server (NotFound): pods "nginx1" not found
[root@master ~]# kubectl logs nginx
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2023/02/24 10:27:08 [notice] 1#1: using the "epoll" event method
2023/02/24 10:27:08 [notice] 1#1: nginx/1.23.3
2023/02/24 10:27:08 [notice] 1#1: built by gcc 10.2.1 20211010 (Debian 10.2.1-6)
2023/02/24 10:27:08 [notice] 1#1: OS: Linux 5.10.165-143.735.amzn2.x86_64
2023/02/24 10:27:08 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2023/02/24 10:27:08 [notice] 1#1: start worker processes
2023/02/24 10:27:08 [notice] 1#1: start worker process 30
2023/02/24 10:27:08 [notice] 1#1: start worker process 31
[root@master ~]#
```

The terminal window is titled "eu-west-2.console.aws.amazon.com/ec2-instance-connect/ssh?connType=standard&instanceId=i-06e3d8694d2f5272f&osUser=ec2-user&region=eu-west-2&sshPort=...". The Windows taskbar at the bottom shows the time as 3:58 PM on 2/24/2023.