

LAB1

1- Create a pod with the name “imperative-nginx” and with the image nginx and latest tag. using Imperative command (not yaml).

```
maly@localhost:~  
File Edit View Search Terminal Help  
[maly@localhost ~]$ minikube start --driver=docker  
🐼 minikube v1.28.0 on Centos 8  
🌟 Using the docker driver based on existing profile  
👍 Starting control plane node minikube in cluster minikube  
📡 Pulling base image ...  
🔄 Restarting existing docker container for "minikube" ...  
🔥 minikube 1.29.0 is available! Download it: https://github.com/kubernetes/minikube/releases/tag/v1.29.0  
💡 To disable this notice, run: 'minikube config set WantUpdateNotification false'  
  
🐼 Preparing Kubernetes v1.25.3 on Docker 20.10.20 ...  
🔍 Verifying Kubernetes components...  
  ■ Using image gcr.io/k8s-minikube/storage-provisioner:v5  
🌟 Enabled addons: default-storageclass, storage-provisioner  
🏡 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default  
[maly@localhost ~]$ kubectl run imperative-nginx --image=nginx  
pod/imperative-nginx created  
[maly@localhost ~]$ kubectl get pod  
NAME          READY   STATUS    RESTARTS   AGE  
imperative-nginx 1/1     Running   0           53s
```

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

3- What is the nginx pod status?

```
! labs.yaml 1 x  
home > maly > Sprints > K8S > ! labs.yaml > {} spec > [ ] containers > {} 0  
io.k8s.api.core.v1.Pod (v1@pod.json)  
1  apiVersion: v1  
2  kind: Pod  
3  metadata:  
4    name: webserver  
5  spec:  
6    containers:  
7      - name: nginx  
8        image: nginx:123  
9  
  
PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL bash - K8S  
● [maly@localhost K8S]$ kubectl apply -f labs.yaml  
pod/webserver created  
● [maly@localhost K8S]$ kubectl get pods  
NAME          READY   STATUS    RESTARTS   AGE  
imperative-nginx 1/1     Running   1 (52m ago)  81m  
webserver      0/1     ErrImagePull 0           15s  
○ [maly@localhost K8S]$
```

```
! labs.yaml 1 x
home > maly > Sprints > K8S > ! labs.yaml > {} spec > [ ] containers > {} 0
io.k8s.api.core.v1.Pod (v1@pod.json)
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    name: webserver
5  spec:
6    containers:
7      - name: nginx
8        image: nginx:123
9

PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL
-----
Normal    Scheduled    4m6s          default-scheduler    Successfully assigned defa
ult/webserver to minikube
Normal    Pulling      2m33s (x4 over 4m5s) kubelet              Pulling image "nginx:123"
Warning   Failed       2m31s (x4 over 4m3s) kubelet              Failed to pull image "ngin
x:123": rpc error: code = Unknown desc = Error response from daemon: manifest for nginx:1
23 not found: manifest unknown: manifest unknown
Warning   Failed       2m31s (x4 over 4m3s) kubelet              Error: ErrImagePull
Warning   Failed       2m17s (x6 over 4m3s) kubelet              Error: ImagePullBackOff
Normal    BackOff      2m6s (x7 over 4m3s) kubelet              Back-off pulling image "ng
inx:123"
[maly@localhost K8S]$
```

4- Change the nginx pod image to "nginx" check the status again

```
! labs.yaml 1 x
home > maly > Sprints > K8S > ! labs.yaml > {} spec > [ ] containers > {} 0 > image
io.k8s.api.core.v1.Pod (v1@pod.json)
1  apiVersion: v1
2  kind: Pod
3  metadata:
4    name: webserver
5  spec:
6    containers:
7      - name: nginx
8        image: nginx
9

PROBLEMS 2 OUTPUT DEBUG CONSOLE TERMINAL
-----
• [maly@localhost K8S]$ kubectl apply -f labs.yaml
pod/webserver configured
• [maly@localhost K8S]$ kubectl get pods
NAME                READY   STATUS    RESTARTS   AGE
imperative-nginx    1/1     Running   1 (57m ago) 86m
webserver            1/1     Running   0           5m36s
[maly@localhost K8S]$
```

5- How many pods are running in the system? Type the command to show this

```
[maly@localhost K8S]$ kubectl get pods
NAME                READY   STATUS    RESTARTS   AGE
imperative-nginx    1/1    Running   1 (57m ago) 86m
webserver            1/1    Running   0           5m36s
[maly@localhost K8S]$
```

6- What does READY column in the output of get pods command indicate?

it shows how many containers in a pod are considered ready

7- Delete first pod named imperative-nginx you just created. Type the command to do this

```
[maly@localhost K8S]$ kubectl delete pod imperative-nginx
pod "imperative-nginx" deleted
[maly@localhost K8S]$ kubectl get pods
NAME                READY   STATUS    RESTARTS   AGE
webserver            1/1    Running   0           14m
[maly@localhost K8S]$
```

8- Which node is pod named webserver running on (list two commands to do this)

```
[maly@localhost K8S]$ kubectl get pod -o wide
NAME                READY   STATUS    RESTARTS   AGE   IP           NODE       NOMINATED NODE   R
EADINESS GATES
webserver            1/1    Running   0           16m   172.17.0.2   minikube   <none>           <
none>
[maly@localhost K8S]$ kubectl describe pod webserver
Name:               webserver
Namespace:          default
Priority:            0
Service Account:    default
Node:               minikube/192.168.49.2
Start Time:         Fri, 03 Feb 2023 02:35:46 +0200
Select JSON Schema
```

9- Get a shell to the running container i.e ssh into it (figure out the command)

10- Run cat /etc/os-release inside the container

11- Exit from the shell (/bin/bash) session

```
[maly@localhost K8S]$ kubectl exec -it webserver -- /bin/bash
root@webserver:/# cat /etc/os-release
PRETTY_NAME="Debian GNU/Linux 11 (bullseye)"
NAME="Debian GNU/Linux"
VERSION_ID="11"
VERSION="11 (bullseye)"
VERSION_CODENAME=bullseye
ID=debian
HOME_URL="https://www.debian.org/"
SUPPORT_URL="https://www.debian.org/support"
BUG_REPORT_URL="https://bugs.debian.org/"
root@webserver:/# exit
exit
```

12- Get logs of pod, what are logs and what they are used for?

```
[maly@localhost K8S]$ kubectl logs webserver
/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
2023/02/03 00:41:18 [notice] 1#1: using the "epoll" event method
2023/02/03 00:41:18 [notice] 1#1: nginx/1.23.3
2023/02/03 00:41:18 [notice] 1#1: built by gcc 10.2.1 202110110 (Debian 10.2.1-6)
2023/02/03 00:41:18 [notice] 1#1: OS: Linux 4.18.0-408.el8.x86_64
2023/02/03 00:41:18 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2023/02/03 00:41:18 [notice] 1#1: start worker processes
2023/02/03 00:41:18 [notice] 1#1: start worker process 29
2023/02/03 00:41:18 [notice] 1#1: start worker process 30
```

13- How many ReplicaSets exist on the system?

```
[maly@localhost K8S]$ kubectl get rs
No resources found in default namespace.
```

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

```
! labs.yaml x
home > maly > Sprints > K8S > ! labs.yaml > {} spec > {} template > {} spec > [ ] containers > {} 0
1  apiVersion: apps/v1
2  kind: ReplicaSet
3  metadata:
4    name: replica-set-1
5    labels:
6      app: lab
7      tier: replica-set-1
8  spec:
9    # modify replicas according to your case
10   replicas: 3
11   selector:
12     matchLabels:
13       tier: replica-set-1
14   template:
15     metadata:
16       labels:
17         tier: replica-set-1
18     spec:
19       containers:
20         - name: busybox
21           image: busybox
22           tty: true
```

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
[maly@localhost K8S]$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
webserver     1/1     Running   2 (3m8s ago) 17h
[maly@localhost K8S]$ kubectl apply -f labs.yaml
replicaset.apps/replica-set-1 created
[maly@localhost K8S]$ kubectl get rs
NAME          DESIRED   CURRENT   READY   AGE
replica-set-1 3          3         3       11s
[maly@localhost K8S]$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
replica-set-1-g9mgc 1/1     Running   0          72s
replica-set-1-jksd2 1/1     Running   0          72s
replica-set-1-nxhtm 1/1     Running   0          72s
webserver     1/1     Running   2 (4m48s ago) 17h
[maly@localhost K8S]$
```

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

16- How many PODs are READY in the replica-set-1? 5

```
[maly@localhost K8S]$ kubectl scale --replicas=5 rs/replica-set-1
replicaset.apps/replica-set-1 scaled
[maly@localhost K8S]$ kubectl get pods
NAME          READY   STATUS    RESTARTS   AGE
replica-set-1-b5ht9 1/1     Running   0          9s
replica-set-1-g9mgc 1/1     Running   0          5m13s
replica-set-1-jksd2 1/1     Running   0          5m13s
replica-set-1-nxhtm 1/1     Running   0          5m13s
replica-set-1-qv4wb 1/1     Running   0          9s
webserver     1/1     Running   2 (8m49s ago) 17h
[maly@localhost K8S]$ kubectl get rs
NAME          DESIRED   CURRENT   READY   AGE
replica-set-1 5          5         5       5m24s
[maly@localhost K8S]$
```

17- 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?

```
NAME                READY   STATUS    RESTARTS   AGE
replica-set-1-b5ht9 1/1     Running   0           9s
replica-set-1-g9mgc 1/1     Running   0          5m13s
replica-set-1-jksd2 1/1     Running   0          5m13s
replica-set-1-nxhtm 1/1     Running   0          5m13s
replica-set-1-qv4wb 1/1     Running   0           9s
webserver            1/1     Running   2 (8m49s ago) 17h
[maly@localhost K8S]$ kubectl get rs
NAME                DESIRED   CURRENT   READY   AGE
replica-set-1       5         5         5       5m24s
[maly@localhost K8S]$ kubectl delete pod replica-set-1-b5ht9
pod "replica-set-1-b5ht9" deleted
[maly@localhost K8S]$ kubectl get pods
NAME                READY   STATUS    RESTARTS   AGE
replica-set-1-g9mgc 1/1     Running   0          9m28s
replica-set-1-jksd2 1/1     Running   0          9m28s
replica-set-1-nxhtm 1/1     Running   0          9m28s
replica-set-1-qv4wb 1/1     Running   0          4m24s
replica-set-1-zb4rh 1/1     Running   0           46s
webserver            1/1     Running   2 (13m ago) 17h
[maly@localhost K8S]$
```