

- 1- Install k8s cluster (minikube) (optional you can use <https://www.katacoda.com/courses/kubernetes/playground>)

```
File Edit View Search Terminal Help
dina@dina:~/Documents/cloud computing/Sprints - DevOps$ kubectl get nodes
> kubectl.sha256: 64 B / 64 B [-----] 100.00% ? p/s 0s
> kubectl: 43.59 MiB / 43.59 MiB [-----] 100.00% 458.60 KiB p/s 1m38s
NAME          STATUS    ROLES          AGE    VERSION
minikube      Ready     control-plane   22h    v1.24.1
dina@dina:~/Documents/cloud computing/Sprints - DevOps$ kubectl get pods
No resources found in default namespace.
```

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

```
dina@dina:~/Documents/cloud computing/Sprints - DevOps$ kubectl run redis --image redis
pod/redis created
dina@dina:~/Documents/cloud computing/Sprints - DevOps$ kubectl get pods
NAME    READY   STATUS    RESTARTS   AGE
redis   0/1     ContainerCreating   0          5s
dina@dina:~/Documents/cloud computing/Sprints - DevOps$ kubectl get pods
NAME    READY   STATUS    RESTARTS   AGE
redis   0/1     ContainerCreating   0         34s
dina@dina:~/Documents/cloud computing/Sprints - DevOps$ kubectl get pods
NAME    READY   STATUS    RESTARTS   AGE
redis   0/1     ContainerCreating   0         64s
dina@dina:~/Documents/cloud computing/Sprints - DevOps$ kubectl get pods
NAME    READY   STATUS    RESTARTS   AGE
redis   1/1     Running    0          2m
dina@dina:~/Documents/cloud computing/Sprints - DevOps$
```

- 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!

```
File Edit View Search Terminal Help
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl create -f nginx123.yaml
pod/nginx created
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl get po
NAME    READY   STATUS    RESTARTS   AGE
nginx   0/1     ErrImagePull   0          10s
redis   1/1     Running    0          20m
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$
```

- 4- What is the Nginx pod status?

ErrImagePull

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

```
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl get po
NAME    READY   STATUS    RESTARTS   AGE
nginx   1/1     Running    0          3m35s
redis   1/1     Running    0          23m
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$
```

- 6- How many ReplicaSets exist on the system?

None

## 7- Create a ReplicaSet with

- name= replica-set-1
- image= busybox
- replicas= 3

```
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl apply -f replica-set-1.yaml
replicaset.apps/replica-set-1 created
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl get rs
NAME                DESIRED   CURRENT   READY   AGE
replica-set-1       3         3         0       9s
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl get po
NAME                READY     STATUS    RESTARTS   AGE
nginx               1/1       Running   0           57m
redis               1/1       Running   0           77m
replica-set-1-bznkf 0/1       ContainerCreating 0           18s
replica-set-1-vmvfv 0/1       ContainerCreating 0           18s
replica-set-1-wlgpm 0/1       ContainerCreating 0           18s
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$
```

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

```
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl scale --replicas=5 replicaset replica-set-1
replicaset.apps/replica-set-1 scaled
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl get rs
NAME                DESIRED   CURRENT   READY   AGE
replica-set-1       5         5         0       3m26s
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl get po
NAME                READY     STATUS    RESTARTS   AGE
nginx               1/1       Running   0           60m
redis               1/1       Running   0           80m
replica-set-1-bznkf 0/1       CrashLoopBackOff 4 (68s ago) 3m30s
replica-set-1-tjbnt 0/1       ContainerCreating 0           12s
replica-set-1-vmvfv 0/1       CrashLoopBackOff 3 (77s ago) 3m30s
replica-set-1-wdk95 0/1       ContainerCreating 0           12s
replica-set-1-wlgpm 0/1       CrashLoopBackOff 4 (39s ago) 3m30s
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$
```

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

0

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

```
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl get po
NAME                READY     STATUS    RESTARTS   AGE
nginx               1/1       Running   0           61m
redis               1/1       Running   0           81m
replica-set-1-bznkf 0/1       CrashLoopBackOff 5 (56s ago) 5m1s
replica-set-1-tjbnt 0/1       Completed    3 (52s ago) 103s
replica-set-1-vmvfv 0/1       CrashLoopBackOff 4 (63s ago) 5m1s
replica-set-1-wdk95 0/1       Completed    3 (41s ago) 103s
replica-set-1-wlgpm 0/1       CrashLoopBackOff 5 (29s ago) 5m1s
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl delete po replica-set-1-bznkf
pod "replica-set-1-bznkf" deleted
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl get po
NAME                READY     STATUS    RESTARTS   AGE
nginx               1/1       Running   0           62m
redis               1/1       Running   0           82m
replica-set-1-48tsv 0/1       ContainerCreating 0           10s
replica-set-1-tjbnt 0/1       CrashLoopBackOff 4 (13s ago) 2m37s
replica-set-1-vmvfv 0/1       CrashLoopBackOff 4 (117s ago) 5m55s
replica-set-1-wdk95 0/1       CrashLoopBackOff 4 (10s ago) 2m37s
replica-set-1-wlgpm 0/1       CrashLoopBackOff 5 (83s ago) 5m55s
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$
```

Why are there still 5 PODs, even after you deleted one?

The replication controller makes sure that always there are 5 created pods in replica-set-1

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

0 deployments – 1 replica-set.

12- Create a Deployment with

- name= deployment-1
- image= busybox
- replicas= 3

```
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl create -f deployment-1.yaml
deployment.apps/deployment-1 created
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$ kubectl get deploy
NAME          READY   UP-TO-DATE   AVAILABLE   AGE
deployment-1  0/3     3            0           11s
dina@dina:~/Documents/cloud computing/Sprints - DevOps/kubernetes$
```

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

1 deployment – 2 replica-sets.

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

0

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

3

16- Run kubectl describe deployment deployment-1 and check events

What is the deployment strategy used to upgrade the deployment-1?

RollingUpdate

17- Rollback the deployment-1

What is the used image with the deployment-1?

busybox

18- How many Namespaces exist on the system?

4

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

7

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

```
! beta-deployment.yaml x
! beta-deployment.yaml > {} spec > {} template > {} spec > [ ] containers > {} 0 > {} resources > {} limits > # cpu
io.k8s.api.apps.v1.Deployment (v1@deployment.json)
1  apiVersion: apps/v1
2  kind: Deployment
3  metadata:
4    name: beta-deployment
5    namespace: finance
6    labels:
7      app: redis
8  spec:
9    replicas: 2
10   selector:
11     matchLabels:
12       app: redis
13   template:
14     metadata:
15       labels:
16         app: redis
17     spec:
18       containers:
19         - name: redis
20           image: redis
21           resources:
22             requests:
23               memory: "1G"
24               cpu: "0.5"
25             limits:
26               memory: "2G"
27               cpu: "1"
28
29
```