1. How many DaemonSets are created in the cluster in all namespaces?

```
deployment.apps/blue created
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get daemonsets --all-namespaces
NAMESPACE     NAME         DESIRED   CURRENT   READY   UP-TO-DATE   AVAILABLE   NODE SELECTOR            AGE
kube-system   kube-proxy   1         1         1       1            1           kubernetes.io/os=linux   10h
```

2. What DaemonSets exist in the kube-system namespace?

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get daemonsets -n kube-system
NAME         DESIRED   CURRENT   READY   UP-TO-DATE   AVAILABLE   NODE SELECTOR            AGE
kube-proxy   1         1         1       1            1           kubernetes.io/os=linux   10h
```

3. What is the image used by the pod deployed by the kube-proxy DaemonSet?

registry.k8s.io/kube-proxy:v1.27.4

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get daemonset kube-proxy -n kube-system -o jsonpath="{.spec.te
mplate.spec.containers[*].image}" \

registry.k8s.io/kube-proxy:v1.27.4abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$
```

4. Deploy a DaemonSet for FluentD Logging. Use the given specs:

Name: elasticsearch

Namespace: kube-system

Image: k8s.gcr.io/fluentd-elasticsearch:1.20

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ nano fluentd-daemonset.yaml
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl apply -f fluentd-daemonset.yaml
daemonset.apps/elasticsearch created
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$
```

#

fluentd-daemonset.yaml

```
apiVersion: apps/v1
kind: DaemonSet
metadata:
  name: elasticsearch
  namespace: kube-system
spec:
  selector:
    matchLabels:
      name: elasticsearch
  template:
    metadata:
      labels:
        name: elasticsearch
    spec:
      containers:
      - name: fluentd
        image: k8s.gcr.io/fluentd-elasticsearch:1.20
```

5. Deploy a pod named `nginx-pod` using the `nginx:alpine` image with label `tier=backend.'`

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl run nginx-pod --image=nginx:alpine --labels="tier=backend"
pod/nginx-pod created
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$
```

6. Deploy a test pod using the `nginx:alpine` image.

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl run test-pod --image=nginx:alpine --restart=Never
pod/test-pod created
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$
```

7. Create a service `backend-service` to expose the backend app on port 80 inside the cluster.

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl expose pod nginx-pod --port=80 --name=backend-service
service/backend-service exposed
```

8. Try to `curl` the backend-service from the test pod. What is the response?

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl exec -it test-pod -- curl backend-service
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>

<p><em>Thank you for using nginx.</em></p>
</body>
</html>
```

Create a deployment named `web-app` using image `nginx` with 2 replicas.

Expose `web-app` as a NodePort service on port 80 and nodePort 30082.

Access the web app from the node

9 & 10 & 11

```
apiVersion: apps/v1
kind: Deployment
metadata:
  name: web-app
spec:
  replicas: 2
  selector:
    matchLabels:
      app: web-app
  template:
    metadata:
      labels:
        app: web-app
    spec:
      containers:
      - name: nginx
        image: nginx
        ports:
        - containerPort: 80
---
apiVersion: v1
kind: Service
metadata:
  name: web-app-service
spec:
  selector:
    app: web-app
  type: NodePort
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
      nodePort: 30082
```

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl apply -f web-app.yaml
deployment.apps/web-app created
service/web-app-service created
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get pods
NAME                          READY   STATUS              RESTARTS   AGE
[redacted]
web-app-85685476f6-cfn26      0/1     ContainerCreating   0          2s
web-app-85685476f6-qt7fr      0/1     ContainerCreating   0          2s
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get pods
```

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get services
NAME              TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
[redacted]
web-app-service   NodePort    10.98.27.71     <none>        80:30082/TCP   46s
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$
```

```
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ kubectl get svc
NAME              TYPE        CLUSTER-IP      EXTERNAL-IP   PORT(S)        AGE
backend-service   ClusterIP   10.99.196.138   <none>        80/TCP         117m
kubernetes        ClusterIP   10.96.0.1       <none>        443/TCP        13h
web-app-service   NodePort    10.98.27.71     <none>        80:30082/TCP   2m55s
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ minikube ip
192.168.49.2
abdo@abdo-Lenovo-ideapad-520-15IKB:~/NTI/docker-k8s/k8s$ curl http://192.168.49.2:30082
<!DOCTYPE html>
<html>
<head>
<title>Welcome to nginx!</title>
<style>
html { color-scheme: light dark; }
body { width: 35em; margin: 0 auto;
font-family: Tahoma, Verdana, Arial, sans-serif; }
</style>
</head>
<body>
<h1>Welcome to nginx!</h1>
<p>If you see this page, the nginx web server is successfully installed and
working. Further configuration is required.</p>

<p>For online documentation and support please refer to
<a href="http://nginx.org/">nginx.org</a>.<br/>
Commercial support is available at
<a href="http://nginx.com/">nginx.com</a>.</p>
```

12. How many static pods exist in this cluster in all namespaces?

kubectl get pods --all-namespaces -o wide | grep static

13. On which nodes are the static pods created currently?

kubectl get pods -A -o wide

Check the NODE column to see where the static pods are running.