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

```
[root@yara ~]# kubectl get daemonset --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 on the kube-system namespace?

```
[root@yara ~]# kubectl get daemonset -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

```
[root@yara ~]# kubectl describe daemonset kube-proxy -n kube-system | grep Image
    Image:      registry.k8s.io/kube-proxy:v1.32.0
```

4- Deploy a DaemonSet for `FluentD` Logging. Use the given specifications.

Name: elasticsearch

Namespace: kube-system

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

```
[root@yara ~]# vim  fluentd-daemonset1.yaml
[root@yara ~]# kubectl apply -f fluentd-daemonset1.yaml
daemonset.apps/elasticsearch created
```

5- Deploy a pod named `nginx-pod` using the `nginx:alpine` image with the labels set to `tier=backend`.

```
[root@yara ~]# vim nginx-pod.yaml
[root@yara ~]# kubectl apply -f nginx-pod.yaml
pod/nginx-pod created
```

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

```
[root@yara ~]# kubectl run test-nginx-pod --image=nginx:alpine
pod/test-nginx-pod created
```

7- Create a service `backend-service` to expose the `backend` application within the cluster on port `80`.

```
[root@yara ~]# vim  backend-service.yaml
[root@yara ~]# kubectl apply -f backend-service.yaml
service/backend-service created
```

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

```
[root@yara ~]# kubectl exec -it test-nginx-pod -- sh -c "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>
```

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

```
[root@yara ~]# vim web-app-deployment.yaml
[root@yara ~]# kubectl apply -f web-app-deployment.yaml
deployment.apps/web-app created
```

10- Expose the `web-app` as service `web-app-service` application on port 80 and nodeport `30082` on the nodes on the cluster

```
[root@yara ~]# vim web-app-service.yaml
[root@yara ~]# kubectl apply -f web-app-service.yaml
service/web-app-service created
```

11- access the web app from the node

```
[root@yara ~]# kubectl get nodes -o wide
NAME       STATUS   ROLES           AGE   VERSION   INTERNAL-IP    EXTERNAL-IP   OS-IMAGE             KERNEL-VERSION                 CONTAINER-
RUNTIME
minikube   Ready    control-plane   10h   v1.32.0   192.168.49.2   <none>        Ubuntu 22.04.5 LTS   5.14.0-503.22.1.el9_5.x86_64   docker://2
7.4.1
[root@yara ~]# curl 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>
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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>
```

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

```
[root@yara ~]# kubectl get pods --all-namespaces -o yaml | grep 'kind: Node'
      kind: Node
      kind: Node
      kind: Node
      kind: Node
```

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

```
[root@yara ~]# kubectl get pods --all-namespaces -o yaml | grep -i 'nodename'
    nodeName: minikube
    nodeName: minikube
    nodeName: minikube
    nodeName: minikube
    nodeName: minikube
    nodeName: minikube
    nodeName: minikube
    nodeName: minikube
    nodeName: minikube
          fieldPath: spec.nodeName
    nodeName: minikube
    nodeName: minikube
    nodeName: minikube
[root@yara ~]#
```