Exercise 7.4: Working with DaemonSets

A DaemonSet is a watch loop object like a Deployment which we have been working with in the rest of the labs. The DaemonSet ensures that when a node is added to a cluster, a pod will be created on that node. A Deployment would only ensure a particular number of pods are created in general, several could be on a single node. Using a DaemonSet can be helpful to ensure applications are on each node, helpful for things like metrics and logging especially in large clusters where hardware may be swapped out often. Should a node be removed from a cluster the DaemonSet would ensure the Pods are garbage collected before removal. Starting with Kubernetes v1.12 the scheduler handles DaemonSet deployment which means we can now configure certain nodes to not have a particular DaemonSet pods.

This extra step of automation can be useful for using with products like **ceph** where storage is often added or removed, but perhaps among a subset of hardware. They allow for complex deployments when used with declared resources like memory, CPU or volumes.

1. We begin by creating a yaml file. In this case the kind would be set to DaemonSet. For ease of use we will copy the previously created rs.yaml file and make a couple edits. Remove the Replicas: 2 line.

```
student@cp:~$ cp rs.yaml ds.yaml
```

```
student@cp:~$ vim ds.yaml
```

ds.yaml

```
1  ....
2  kind: DaemonSet
3  ....
4    name: ds-one
5  ....
6    replicas: 2 #<<<----Remove this line
7  ....
8          system: DaemonSetOne #<<-- Edit both references
9  ....
10
```

2. Create and verify the newly formed DaemonSet. There should be one Pod per node in the cluster.

```
student@cp:~$ kubectl create -f ds.yaml
```

```
daemonset.apps/ds-one created
```

```
student@cp:~$ kubectl get ds
```

```
NAME      DESIRED   CURRENT   READY     UP-TO-DATE   AVAILABLE   NODE-SELECTOR   AGE
ds-one    2         2         2         2            2           <none>          1m
```

```
student@cp:~$ kubectl get pod
```

```
NAME                  READY     STATUS    RESTARTS   AGE
ds-one-b1dcv          1/1       Running   0          2m
ds-one-z31r4          1/1       Running   0          2m
```

3. Verify the image running inside the Pods. We will use this information in the next section.

```
student@cp:~$ kubectl describe pod ds-one-b1dcv | grep Image:
    Image:               nginx:1.22.1
```