Working with Kubernetes

Assignment 2 (Working with Kubernetes deployment and replica set)

Task 1: Install and configure Kubernetes(K8s) on your local system

Install K8s on a VM of your choice. You can also do this on your laptop. K8s can be installed on all major platforms such as MacOS, Windows and Linux.

Check the following link if needed for K8s Installation:

https://kubernetes.io/docs/tasks/tools/

Task 2: Write a manifest file to create a K8s deployment using a replica set:

a) Kubernetes deployment specifications:
- name : deploy-nginx
- label : webserver
- replicas: 3 [Replica set to maintain a set of 3 pods running all the time]

b) Pod specifications:
- Label: webserver

c) Container specifications:
- name : ctr-nginx
- Image : nginx
- port : 80

Task 3: Deploy the Manifest file and validate the output

Note: To carry out this task you need to be on a machine which has kubectl installed and configured correctly to communicate to a K8s cluster.

a) Deploy the manifest file.

   Hint: ”kubectl apply -f file.yml” [file.yml is the yml file where you have defined your k8s pod and the container]

b) Validate the deployment.

   Hint: “ kubectl get deploy”

c) Validate if the pod has been created successfully, ideally now there should be 3 pods reflecting in running state

   Hint : “kubectl get pods”

Task 4: Test Self-healing

a) list all the pods currently running (as created in step 3a, ideally 3 Pods should be reflecting currently).

b) Delete one pod using its pod-name
   Hint: “kubectl delete pod pod-name”

c) Now again list all pods.

(**Expected Output:** ideally again the number of pods would be reflecting as 3, wherein the third pod would already be in Container Creating status running or would be already in running status by now thus exhibiting self-healing character of Kubernetes)

Task 5: Scaling with Kubernetes

a) Update the manifest file created in step 2a with replicas set to 5.
   - replicas: 5

b) Deploy the updated manifest file and validate the number of pods currently running.
   (**Expected Output:** with replicas updated to 5 now, the number of pods appearing will also be increased to 5 pods now)

c) Update the manifest file created earlier with replicas set to 2 this time.
   - replicas: 2

d) Deploy the updated manifest file and validate again the number of pods currently running.
   (**Expected Output:** with replicas updated to 2 now, the number of pods appearing will also be decreased to 2 pods now)

Task 6: Cleanup

a) Delete the manifest file used earlier to create deployment, replicaset and pods

   Hint: “kubectl delete -f file.yml”