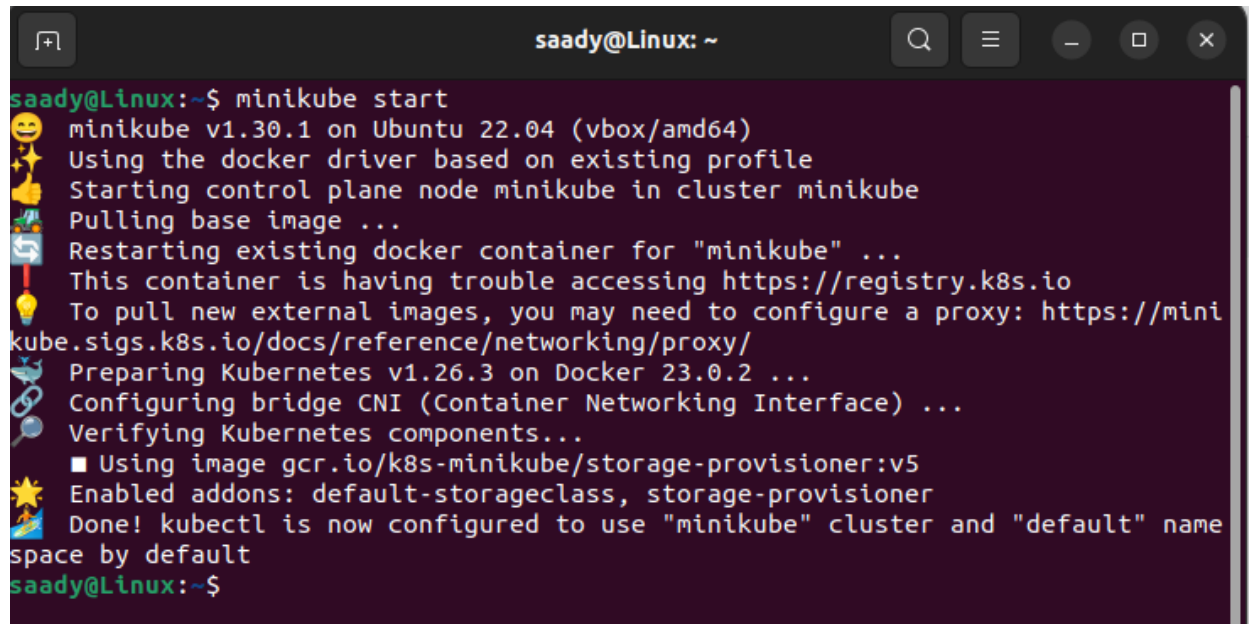


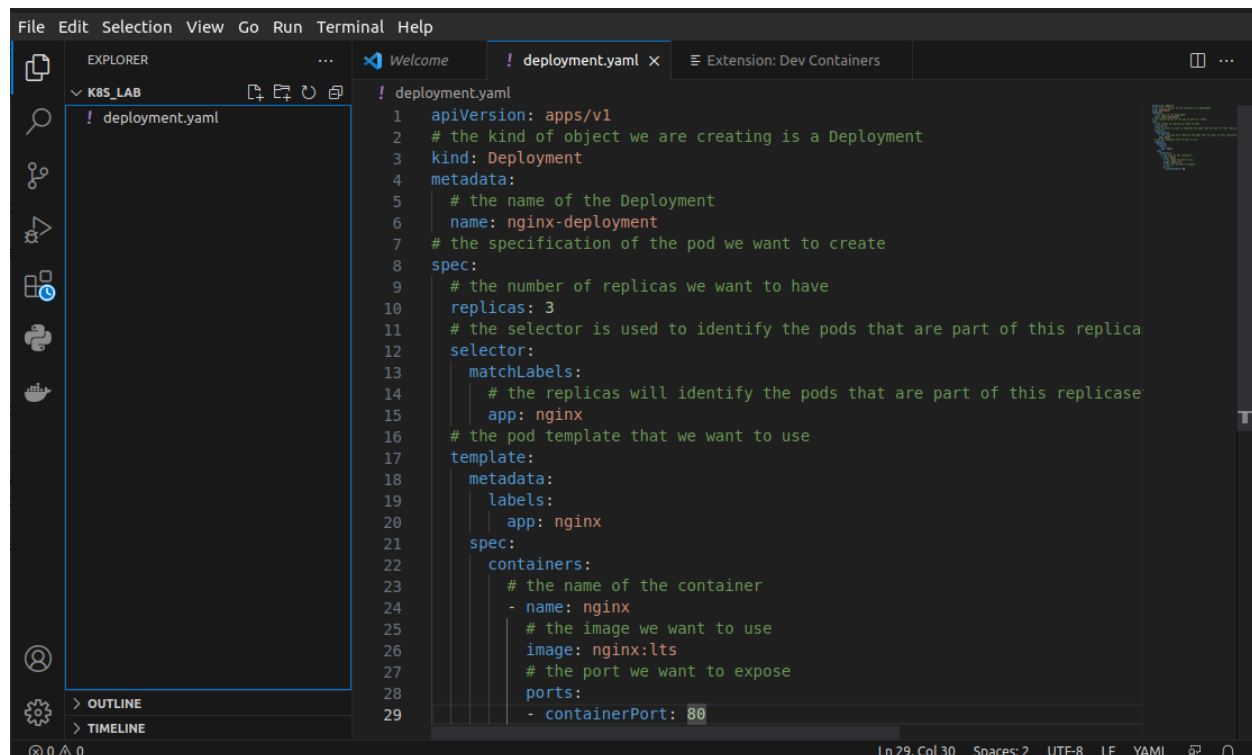
Kubernetes deployment project

1.)minikube cluster



```
saady@Linux: ~  
saady@Linux:~$ minikube start  
🐳 minikube v1.30.1 on Ubuntu 22.04 (vbox/amd64)  
🌟 Using the docker driver based on existing profile  
👉 Starting control plane node minikube in cluster minikube  
🔄 Pulling base image ...  
🔄 Restarting existing docker container for "minikube" ...  
💡 This container is having trouble accessing https://registry.k8s.io  
💡 To pull new external images, you may need to configure a proxy: https://minikube.sigs.k8s.io/docs/reference/networking/proxy/  
🔄 Preparing Kubernetes v1.26.3 on Docker 23.0.2 ...  
🔗 Configuring bridge CNI (Container Networking Interface) ...  
🔑 Verifying Kubernetes components...  
   ■ Using image gcr.io/k8s-minikube/storage-provisioner:v5  
🌟 Enabled addons: default-storageclass, storage-provisioner  
🏠 Done! kubectl is now configured to use "minikube" cluster and "default" namespace by default  
saady@Linux:~$
```

2.) The Deployment with 3 replicas:-



```
File Edit Selection View Go Run Terminal Help  
EXPLORER  
K8S_LAB  
! deployment.yaml  
! deployment.yaml  
! deployment.yaml  
1 apiVersion: apps/v1  
2 # the kind of object we are creating is a Deployment  
3 kind: Deployment  
4 metadata:  
5   # the name of the Deployment  
6   name: nginx-deployment  
7   # the specification of the pod we want to create  
8 spec:  
9   # the number of replicas we want to have  
10  replicas: 3  
11  # the selector is used to identify the pods that are part of this replica  
12  selector:  
13    matchLabels:  
14      # the replicas will identify the pods that are part of this replicase  
15      app: nginx  
16  # the pod template that we want to use  
17  template:  
18    metadata:  
19      labels:  
20        app: nginx  
21    spec:  
22      containers:  
23        # the name of the container  
24        - name: nginx  
25          # the image we want to use  
26          image: nginx:1.25  
27          # the port we want to expose  
28          ports:  
29            - containerPort: 80
```

```
saady@Linux:~/Documents$ mkdir K8s_Lab
saady@Linux:~/Documents$ cd K8s_Lab
bash: cd: K8s_Lab: No such file or directory
saady@Linux:~/Documents$ cd K8s_Lab
saady@Linux:~/Documents/K8s_Lab$ code .
saady@Linux:~/Documents/K8s_Lab$ kubectl apply deployment.yaml
error: Unexpected args: [deployment.yaml]
See 'kubectl apply -h' for help and examples
saady@Linux:~/Documents/K8s_Lab$ kubectl apply -f deployment.yaml
deployment.apps/nginx-deployment created
saady@Linux:~/Documents/K8s_Lab$ kubectl get po
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-5d96978b55-65ztz	0/1	ContainerCreating	0	11s
nginx-deployment-5d96978b55-6z4mg	0/1	ContainerCreating	0	11s
nginx-deployment-5d96978b55-b68xs	0/1	ContainerCreating	0	11s

```
saady@Linux:~/Documents/K8s_Lab$ kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-85996f8dbd-8hltc	1/1	Running	0	69s
nginx-deployment-85996f8dbd-cs7hx	1/1	Running	0	21s
nginx-deployment-85996f8dbd-hn5zn	1/1	Running	0	25s

```
saady@Linux:~/Documents/K8s_Lab$ kubectl get pods
```

NAME	READY	STATUS	RESTARTS	AGE
nginx-deployment-85996f8dbd-8hltc	1/1	Running	0	72s
nginx-deployment-85996f8dbd-cs7hx	1/1	Running	0	24s
nginx-deployment-85996f8dbd-hn5zn	1/1	Running	0	28s

```
saady@Linux:~/Documents/K8s_Lab$
```

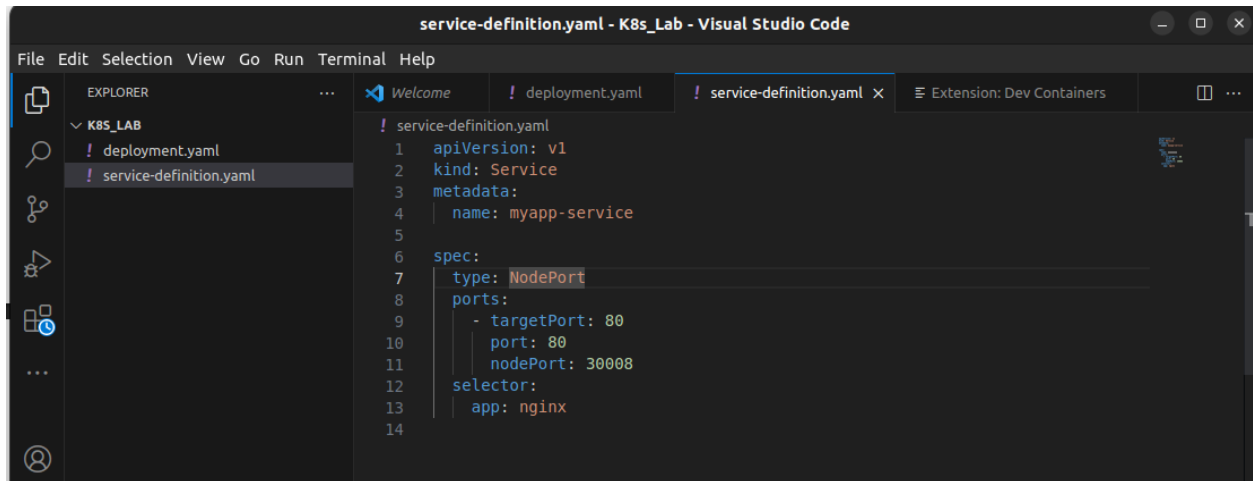
```
saady@Linux:~/Documents/K8s_Lab$ kubectl describe Deployment nginx-deployment
```

```
Name: nginx-deployment
Namespace: default
CreationTimestamp: Sat, 17 Jun 2023 18:42:12 +0300
Labels: <none>
Annotations: deployment.kubernetes.io/revision: 1
Selector: app=nginx
Replicas: 3 desired | 3 updated | 3 total | 0 available | 3 unavailable
StrategyType: RollingUpdate
MinReadySeconds: 0
RollingUpdateStrategy: 25% max unavailable, 25% max surge
Pod Template:
  Labels: app=nginx
  Containers:
    nginx:
      Image: nginx:lts
      Port: 80/TCP
      Host Port: 0/TCP
      Environment: <none>
      Mounts: <none>
      Volumes: <none>
Conditions:
  Type           Status  Reason
  ----           -
  Available      False   MinimumReplicasUnavailable
  Progressing    True    ReplicaSetUpdated
OldReplicaSets: <none>
NewReplicaSet:  nginx-deployment-5d96978b55 (3/3 replicas created)
Events:
```

Type	Reason	Age	From	Message
Normal	ScalingReplicaSet	3m4s	deployment-controller	Scaled up replica set nginx-deployment-5d96978b55 to 3

```
saady@Linux:~/Documents/K8s_Lab$
```

service to point to this deployment , type NodePort :-



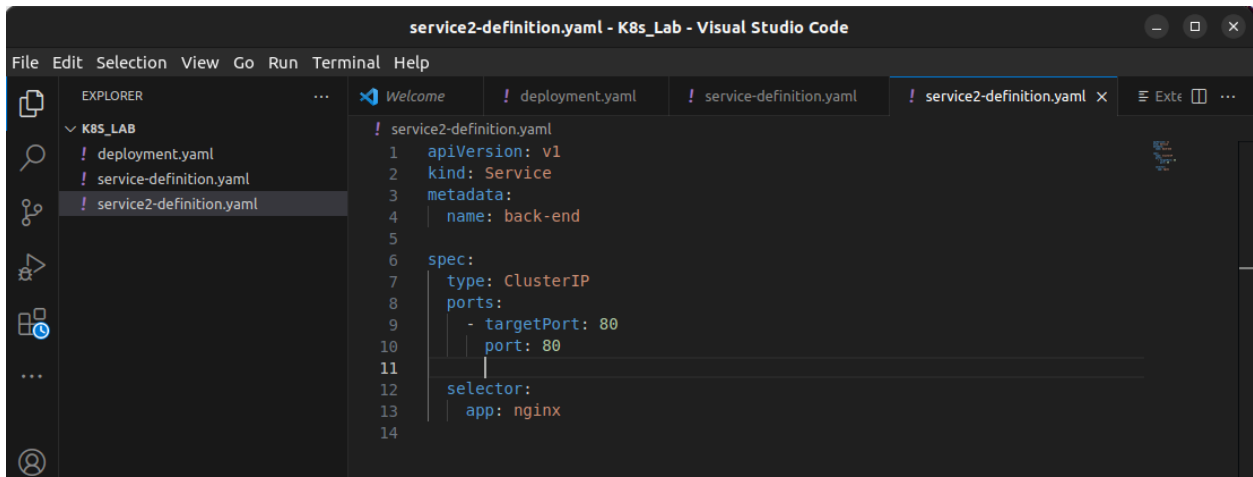
```
1  apiVersion: v1
2  kind: Service
3  metadata:
4    name: myapp-service
5
6  spec:
7    type: NodePort
8    ports:
9      - targetPort: 80
10      port: 80
11      nodePort: 30008
12    selector:
13      app: nginx
14
```

```
saady@Linux:~/Documents/K8s_Lab$ kubectl create -f service-definition.yaml
service/myapp-service created
saady@Linux:~/Documents/K8s_Lab$ kubectl get services
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	5d
myapp-service	NodePort	10.106.80.59	<none>	80:30008/TCP	18s

```
saady@Linux:~/Documents/K8s_Lab$
```

service to point to this deployment , type cluster IP :-



```
1  apiVersion: v1
2  kind: Service
3  metadata:
4    name: back-end
5
6  spec:
7    type: ClusterIP
8    ports:
9      - targetPort: 80
10      port: 80
11
12    selector:
13      app: nginx
14
```

```
saady@Linux:~/Documents/K8s_Lab$ kubectl create -f service2-definition.yaml
service/back-end created
saady@Linux:~/Documents/K8s_Lab$ kubectl get services
```

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
back-end	ClusterIP	10.103.162.137	<none>	80/TCP	5s
kubernetes	ClusterIP	10.96.0.1	<none>	443/TCP	5d
myapp-service	NodePort	10.106.80.59	<none>	80:30008/TCP	5m7s

```
saady@Linux:~/Documents/K8s_Lab$
```

debug pod to test the service

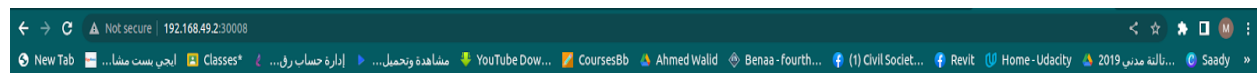
```
saady@Linux: ~/Documents/K8s_Lab$ kubectl describe pods
Name:          nginx-deployment-85996f8dbd-8hltc
Namespace:     default
Priority:       0
Service Account: default
Node:          minkube/192.168.49.2
Start Time:    Sat, 17 Jun 2023 19:52:51 +0300
Labels:        app=nginx
               pod-template-hash=85996f8dbd
Annotations:   <none>
Status:        Running
IP:            10.244.0.10
IPs:           <none>
IP:            10.244.0.10
Controlled By: ReplicaSet/nginx-deployment-85996f8dbd
Containers:
  nginx:
    Container ID:  docker://a51bb191aafc16409a6e0ec88f449f7e6ec09223e06f1685a43c452064cada3e
    Image:         nginx:1.14.2
    Image ID:      docker-pullable://nginx@sha256:f7988fb0c92e0ce69257d9bd9cf37ae20a60f1df7563c3a2a6abe24160306b8d
    Port:          80/TCP
    Host Port:     0/TCP
    State:         Running
      Started:     Sat, 17 Jun 2023 19:53:32 +0300
    Ready:         True
    Restart Count:  0
    Environment:   <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-b6w9d (ro)
Conditions:
  Type             Status
  Initialized       True
  Ready            True
  ContainersReady  True
  PodScheduled     True
Volumes:
  kube-api-access-b6w9d:
    Type:          Projected (a volume that contains injected data from multiple sources)
    TokenExpirationSeconds: 3607
    ConfigMapName:  kube-root-ca.crt
    ConfigMapOptional: <nil>
    DownwardAPI:    true
  QoS Class:       BestEffort
  Node-Selectors:  <none>
  Tolerations:     node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
                   node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
  Type     Reason      Age   From      Message
  ----     -
  Normal   Scheduled   5m11s default-scheduler Successfully assigned default/nginx-deployment-85996f8dbd-8hltc to minkube
  Normal   Pulling     5m05s kubelet    Pulling image "nginx:1.14.2"
  Normal   Pulled      4m32s kubelet    Successfully pulled image "nginx:1.14.2" in 34.140194994s (34.140213577s including waiting)
  Normal   Created     4m30s kubelet    Created container nginx
  Normal   Started     4m30s kubelet    Started container nginx
```

```
saady@Linux: ~/Documents/K8s_Lab$ kubectl describe pods
Name:          nginx-deployment-85996f8dbd-hn5zn
Namespace:     default
Priority:       0
Service Account: default
Node:          minkube/192.168.49.2
Start Time:    Sat, 17 Jun 2023 19:53:34 +0300
Labels:        app=nginx
               pod-template-hash=85996f8dbd
Annotations:   <none>
Status:        Running
IP:            10.244.0.11
IPs:           <none>
IP:            10.244.0.11
Controlled By: ReplicaSet/nginx-deployment-85996f8dbd
Containers:
  nginx:
    Container ID:  docker://bc278fd5fc430969e51a25c301f27798ce81055e6bdfce800400df1b4860ea8
    Image:         nginx:1.14.2
    Image ID:      docker-pullable://nginx@sha256:f7988fb0c92e0ce69257d9bd9cf37ae20a60f1df7563c3a2a6abe24160306b8d
    Port:          80/TCP
    Host Port:     0/TCP
    State:         Running
      Started:     Sat, 17 Jun 2023 19:53:37 +0300
    Ready:         True
    Restart Count:  0
    Environment:   <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-dl4q5 (ro)
Conditions:
  Type             Status
  Initialized       True
  Ready            True
  ContainersReady  True
  PodScheduled     True
Volumes:
  kube-api-access-dl4q5:
    Type:          Projected (a volume that contains injected data from multiple sources)
    TokenExpirationSeconds: 3607
    ConfigMapName:  kube-root-ca.crt
    ConfigMapOptional: <nil>
    DownwardAPI:    true
  QoS Class:       BestEffort
  Node-Selectors:  <none>
  Tolerations:     node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
                   node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
  Type     Reason      Age   From      Message
  ----     -
  Normal   Scheduled   4m29s default-scheduler Successfully assigned default/nginx-deployment-85996f8dbd-hn5zn to minkube
  Normal   Pulled     4m27s kubelet    Container image "nginx:1.14.2" already present on machine
  Normal   Created     4m27s kubelet    Created container nginx
  Normal   Started     4m26s kubelet    Started container nginx
saady@Linux: ~/Documents/K8s_Lab$
```

```
saady@Linux: ~/Documents/K8s_Lab

Name:          nginx-deployment-85996f8dbd-cs7hx
Namespace:     default
Priority:       0
Service Account: default
Node:          minikube/192.168.49.2
Start Time:    Sat, 17 Jun 2023 19:53:38 +0300
Labels:        app=nginx
               pod-template-hash=85996f8dbd
Annotations:   <none>
Status:        Running
IP:            10.244.0.12
IPs:           IP: 10.244.0.12
Controlled By: ReplicaSet/nginx-deployment-85996f8dbd
Containers:
  nginx:
    Container ID:  docker://80d913b1c3bb2634714f63bec8787285acec9ad51f5deb37300ed405ea1e8dee
    Image:          nginx:1.14.2
    Image ID:       docker-pullable://nginx@sha256:f7988fb6c02e0ce69257d9bd9cf37ae20a60f1df7563c3a2a6be24160306b8d
    Port:           80/TCP
    Host Port:      0/TCP
    State:          Running
      Started:      Sat, 17 Jun 2023 19:53:41 +0300
    Ready:          True
    Restart Count:  0
    Environment:    <none>
    Mounts:
      /var/run/secrets/kubernetes.io/serviceaccount from kube-api-access-jrj6n (ro)
Conditions:
  Type             Status
  Initialized       True
  Ready             True
  ContainersReady   True
  PodScheduled      True
Volumes:
  kube-api-access-jrj6n:
    Type:          Projected (a volume that contains injected data from multiple sources)
    TokenExpirationSeconds: 3607
    ConfigMapName:  kube-root-ca.crt
    ConfigMapOptional:  <nil>
    DownwardAPI:    true
  qos-class:
    BestEffort
Node-Selectors:
  <none>
Tolerations:
  node.kubernetes.io/not-ready:NoExecute op=Exists for 300s
  node.kubernetes.io/unreachable:NoExecute op=Exists for 300s
Events:
  Type     Reason      Age   From          Message
  ----     ------      ---   -
  Normal   Scheduled    4m25s default-scheduler   Successfully assigned default/nginx-deployment-85996f8dbd-cs7hx to minikube
  Normal   Pulled       4m23s kubelet        Container image "nginx:1.14.2" already present on machine
  Normal   Created      4m23s kubelet        Created container nginx
  Normal   Started      4m22s kubelet        Started container nginx
```

Access the Node by Public IP and NodePort Service :-



Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.