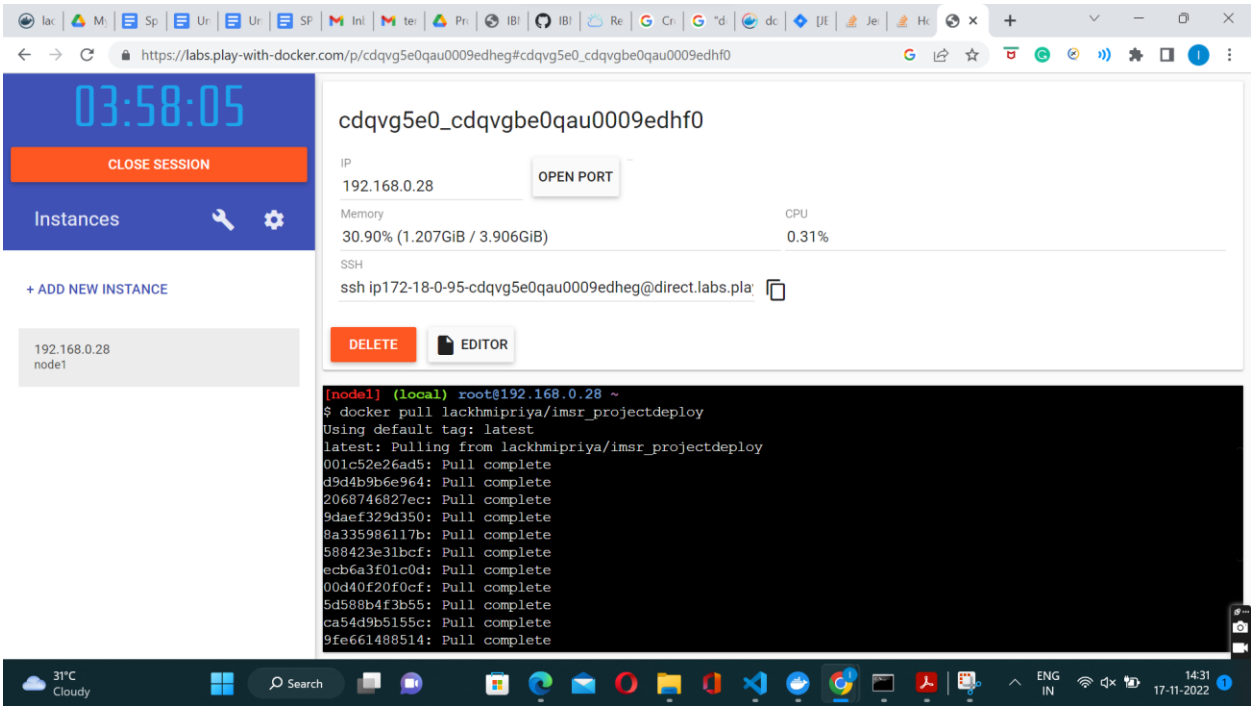
ASSIGNMENT-3

Kubernetes / Docker

ASSIGNMENT DATE	**25 OCTOBER 2022**
STUDENT NAME	**Renisha A**
STUDENT ROLL NO	**9517201903121**
MAXIMUM MARKS	**2 Marks**

Question1 Pull an Image from docker hub and run it in docker playground.



cdqvg5e0_cdqvgbe0qau0009edhf0

IP
192.168.0.28
OPEN PORT

Memory
30.89% (1.207GiB / 3.906GiB)

CPU
0.18%

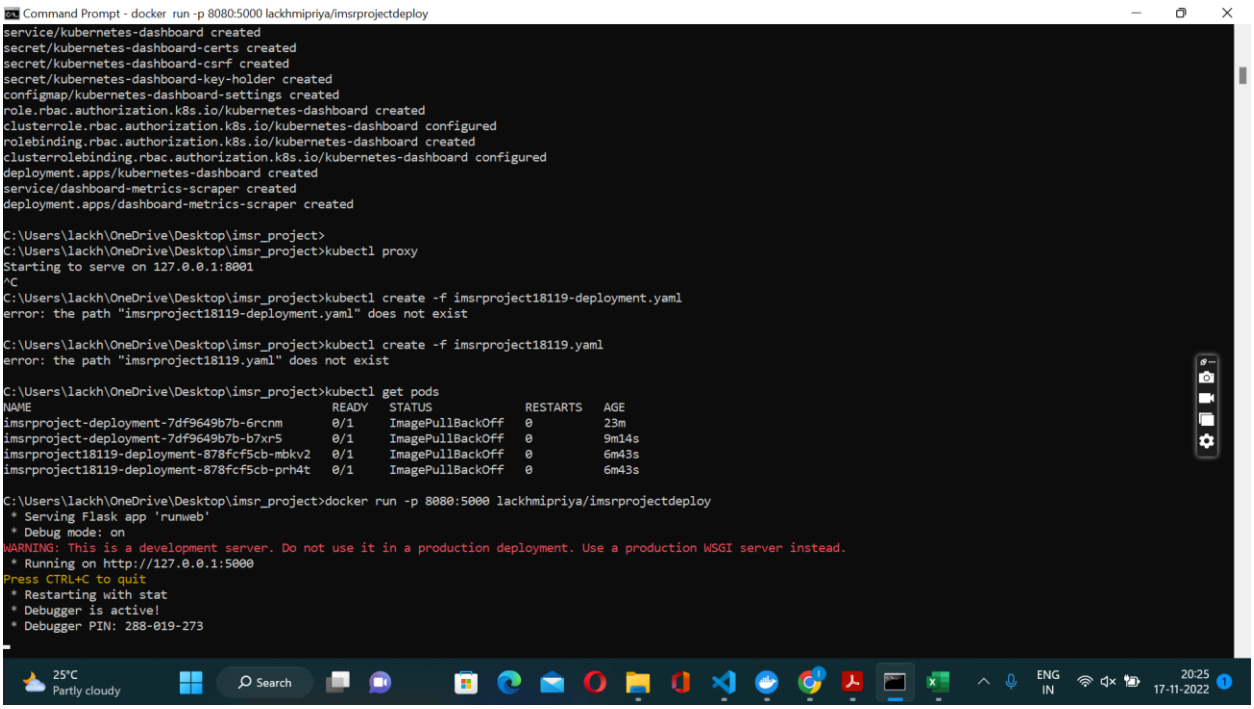
SSH
ssh ip172-18-0-95-cdqvg5e0qau0009edheg@direct.labs.pla

DELETE
EDITOR

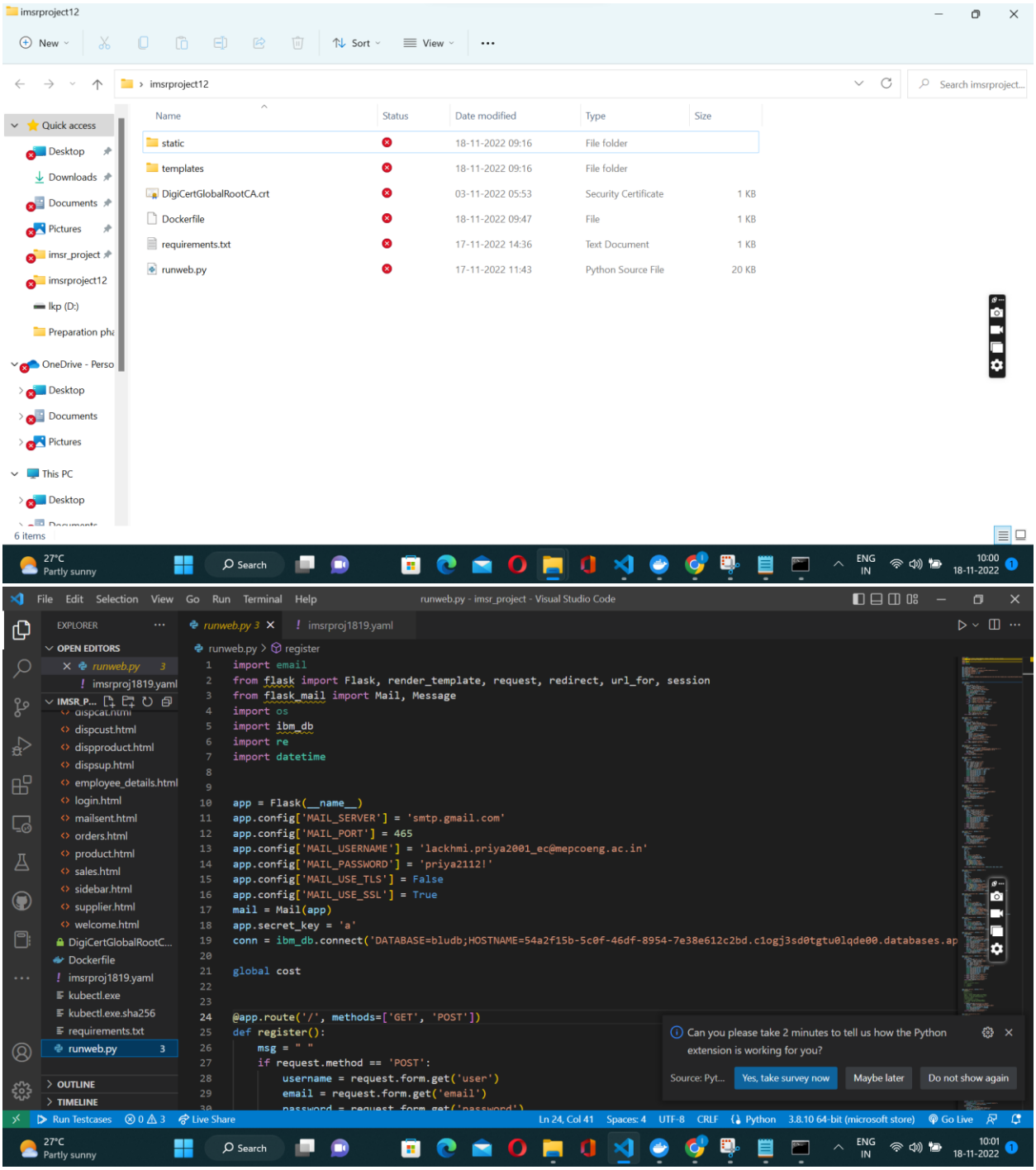
```
5d588b4f3b55: Pull complete
ca54d9b5155c: Pull complete
9fe661488514: Pull complete
f6fc4f9725f4: Pull complete
c8d3c8a0060c: Pull complete
7dc8e0a43ce2: Pull complete
Digest: sha256:23bb0601d8893c42dd4c0c7084d9e4e77e6c5c9016007f67211e38f04625be3c
Status: Downloaded newer image for lackhmipriya/imsr_projectdeploy:latest
docker.io/lackhmipriya/imsr_projectdeploy:latest
[node1] (local) root@192.168.0.28 ~
$ docker images
REPOSITORY                          TAG       IMAGE ID       CREATED             SIZE
lackhmipriya/imsr_projectdeploy     latest    6d667290ffeb   About an hour ago   1.1GB
[node1] (local) root@192.168.0.28 ~
$
```

Command Prompt - docker run -p 8080:5000 lackhmipriya/imsrprojectdeploy

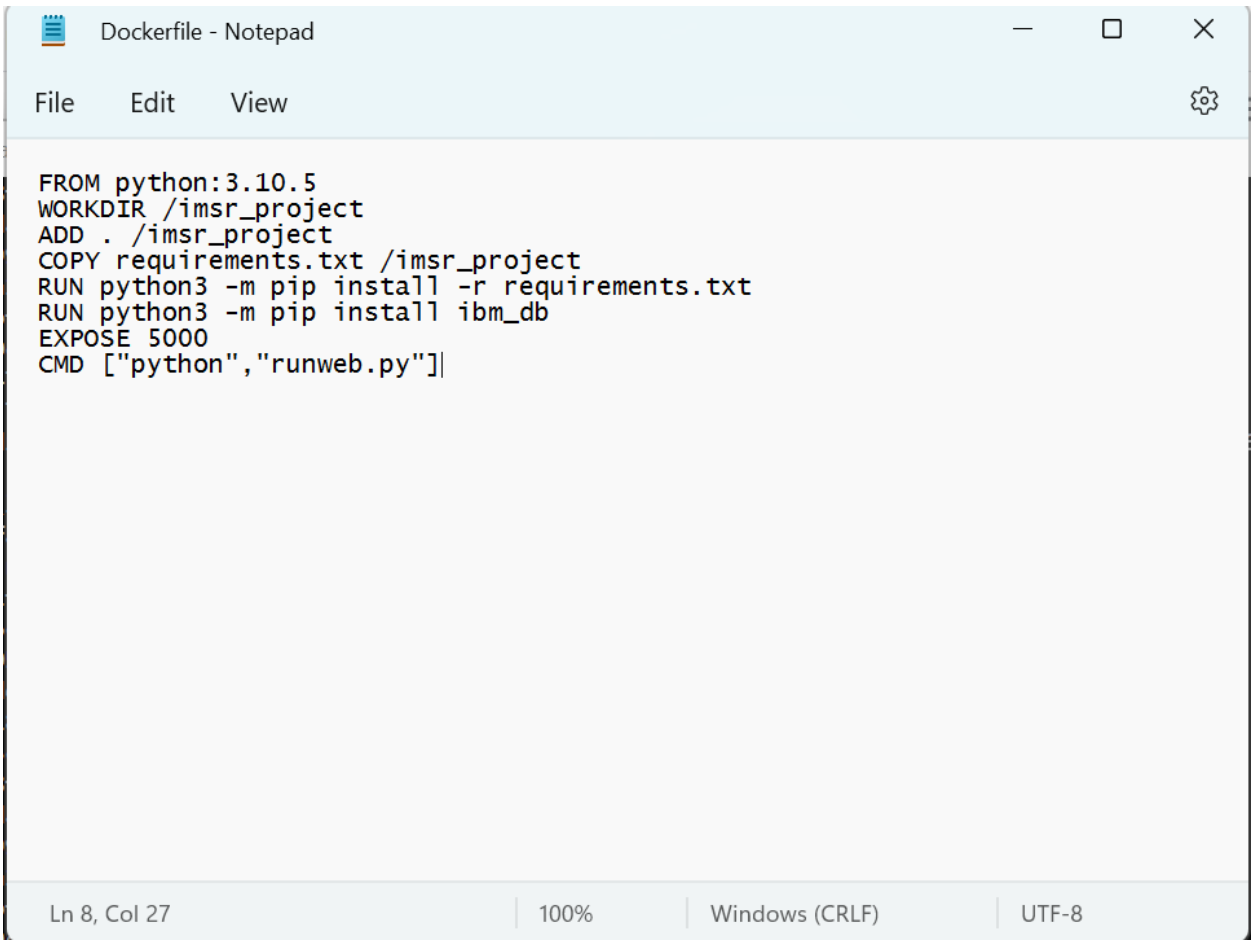
```
service/kubernetes-dashboard created
secret/kubernetes-dashboard-certs created
secret/kubernetes-dashboard-csrf created
secret/kubernetes-dashboard-key-holder created
configmap/kubernetes-dashboard-settings created
role.rbac.authorization.k8s.io/kubernetes-dashboard created
clusterrole.rbac.authorization.k8s.io/kubernetes-dashboard configured
rolebinding.rbac.authorization.k8s.io/kubernetes-dashboard created
clusterrolebinding.rbac.authorization.k8s.io/kubernetes-dashboard configured
deployment.apps/kubernetes-dashboard created
service/dashboard-metrics-scraper created
deployment.apps/dashboard-metrics-scraper created

C:\Users\lackh\OneDrive\Desktop\imsr_project>
C:\Users\lackh\OneDrive\Desktop\imsr_project>kubectl proxy
Starting to serve on 127.0.0.1:8001
^C
C:\Users\lackh\OneDrive\Desktop\imsr_project>kubectl create -f imsrproject18119-deployment.yaml
error: the path "imsrproject18119-deployment.yaml" does not exist

C:\Users\lackh\OneDrive\Desktop\imsr_project>kubectl create -f imsrproject18119.yaml
error: the path "imsrproject18119.yaml" does not exist

C:\Users\lackh\OneDrive\Desktop\imsr_project>kubectl get pods
NAME                                        READY   STATUS             RESTARTS   AGE
imsrproject-deployment-7df9649b7b-6rcnm     0/1     ImagePullBackOff   0          23m
imsrproject-deployment-7df9649b7b-b7xr5     0/1     ImagePullBackOff   0          9m14s
imsrproject18119-deployment-878fcf5cb-mbkv2 0/1     ImagePullBackOff   0          6m43s
imsrproject18119-deployment-878fcf5cb-prh4t 0/1     ImagePullBackOff   0          6m43s

C:\Users\lackh\OneDrive\Desktop\imsr_project>docker run -p 8080:5000 lackhmipriya/imsrprojectdeploy
 * Serving Flask app 'runweb'
 * Debug mode: on
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on http://127.0.0.1:5000
Press CTRL+C to quit
 * Restarting with stat
 * Debugger is active!
 * Debugger PIN: 288-019-273
```



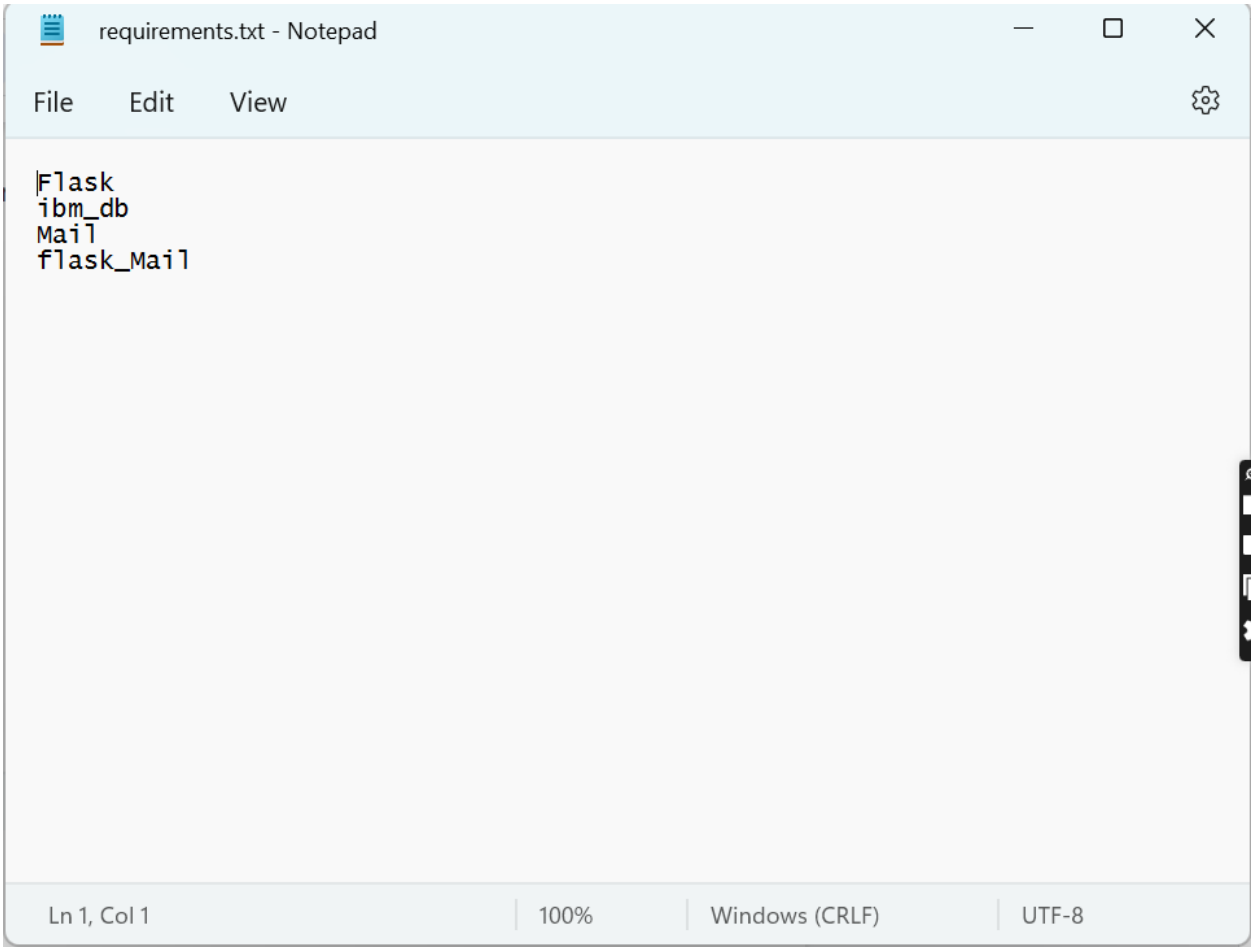
2. Create a docker file for the application and deploy it in the Docker desktop application.



Create a docker file

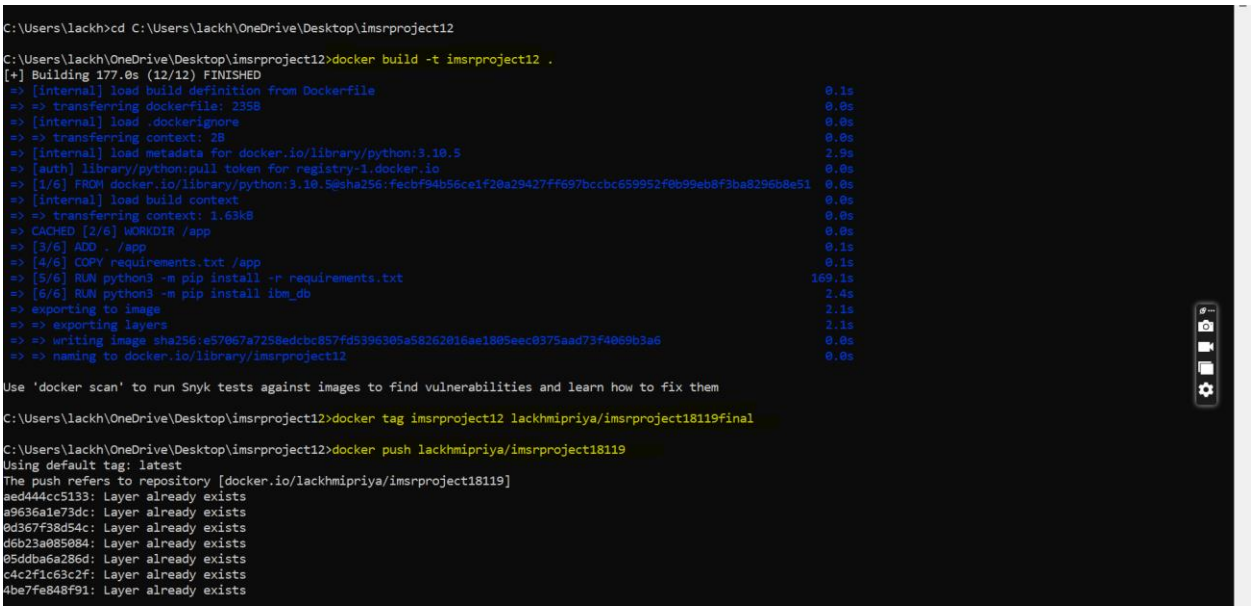


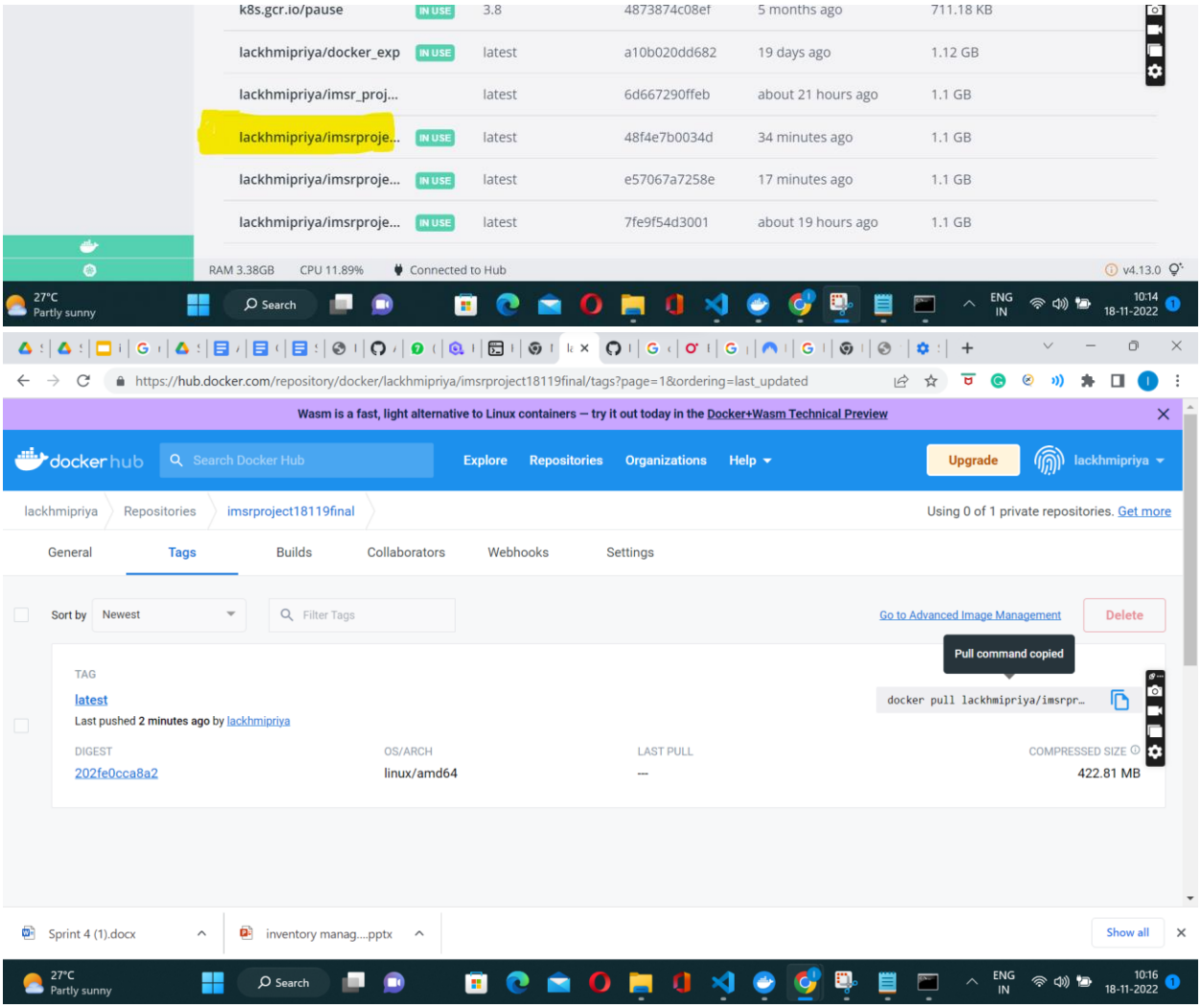
Create a requirement file



Build the application

-> The commands are highlighted





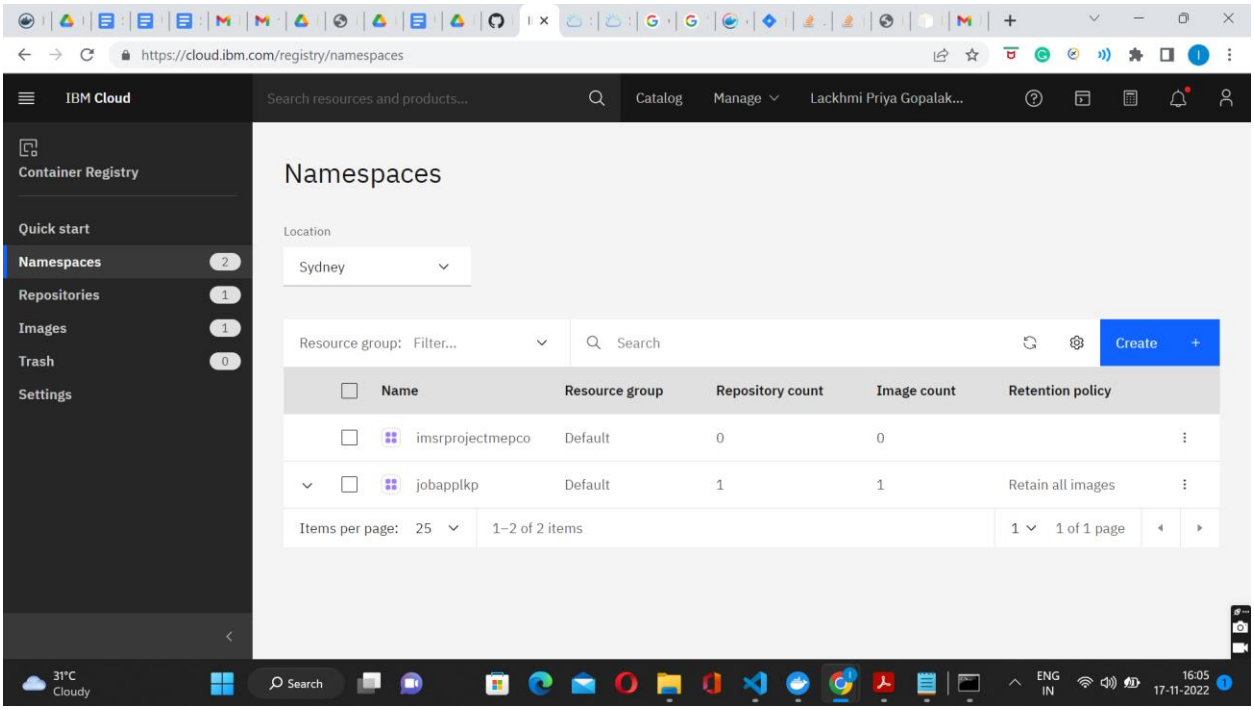
Question 3. Create an IBM container registry and deploy an app.

IBM CLOUD CLI

1) Login to IBM cloud CLI

```
Command Prompt
C:\Users\lackh\OneDrive\Desktop\imsr_project>ibmcloud login
API endpoint: https://cloud.ibm.com
Region: au-syd

Email> lackhmipriyagopal@gmail.com

Password>
Authenticating...
OK

Targeted account Lackhmi Priya Gopalakrishnan's Account (c8c352587f834445a5fd10e6e00e1efa)


API endpoint:      https://cloud.ibm.com
Region:            au-syd
User:              lackhmipriyagopal@gmail.com
Account:           Lackhmi Priya Gopalakrishnan's Account (c8c352587f834445a5fd10e6e00e1efa)
Resource group:    No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Space:

New version 2.12.1 is available.
Change logs: https://github.com/IBM-Cloud/ibm-cloud-cli-release/releases/tag/v2.12.1
TIP: use 'ibmcloud config --check-version=false' to disable update check.

Do you want to update? [y/N] > N

C:\Users\lackh\OneDrive\Desktop\imsr_project>ibmcloud plugin install container-service
Looking up 'container-service' from repository 'IBM Cloud'...
Plug-in 'container-service[kubernetes-service/ks] 1.0.459' found in repository 'IBM Cloud'
Attempting to download the binary file...
 26.86 MiB / 26.86 MiB [==========================================================================================================================================] 100.00% 4s
28168192 bytes downloaded
Installing binary...
OK
Plug-in 'container-service 1.0.459' was successfully installed into C:\Users\lackh\.bluemix\plugins\container-service. Use 'ibmcloud plugin show container-service' to show
its details.

C:\Users\lackh\OneDrive\Desktop\imsr_project>
```

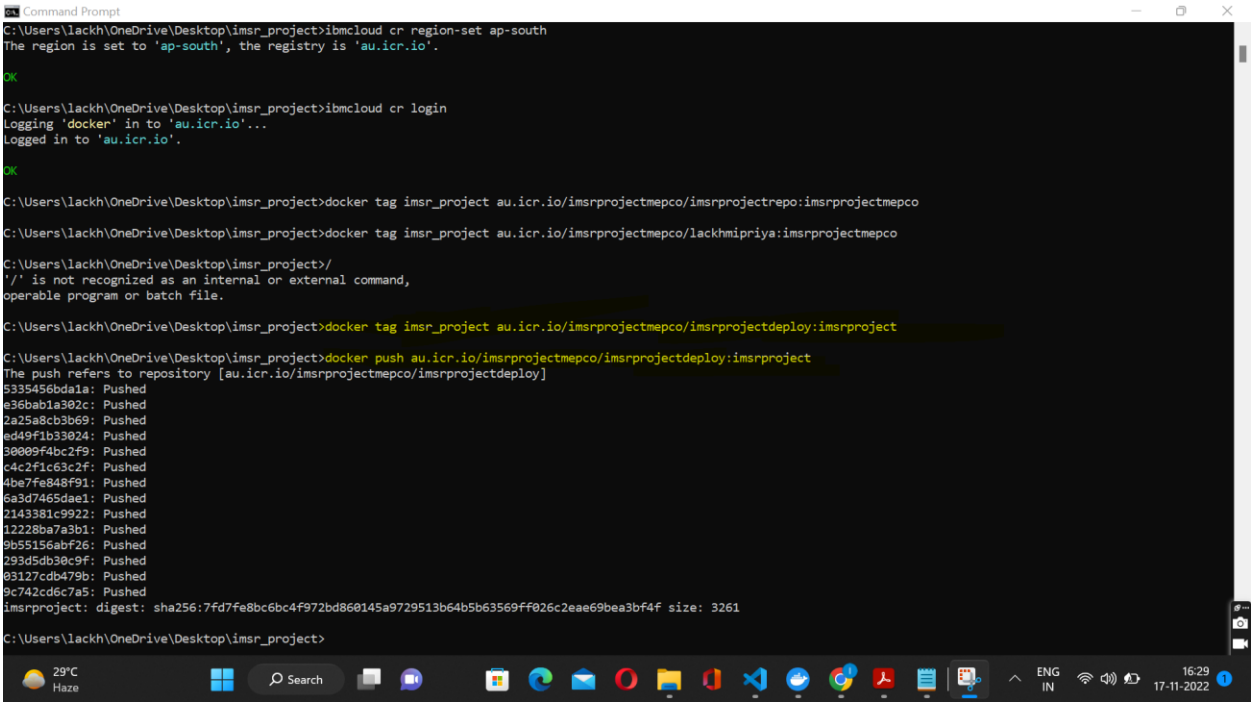
2) Create a namespace in the IBM Container registry



4) Log your local Docker daemon into the IBM Cloud Container Registry.

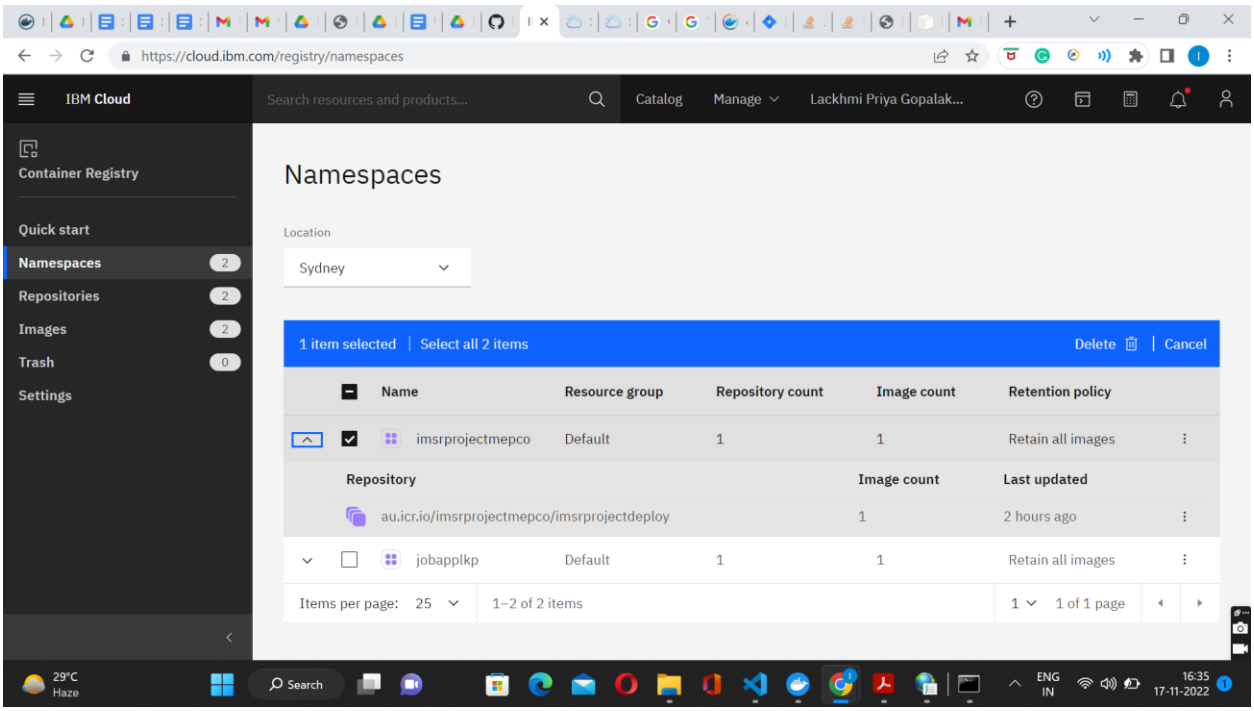
```
New version 2.12.1 is available.
Change logs: https://github.com/IBM-Cloud/ibm-cloud-cli-release/releases/tag/v2.12.1
TIP: use 'ibmcloud config --check-version=false' to disable update check.

Do you want to update? [y/N] > N

C:\Users\lackh\OneDrive\Desktop\imsr_project>docker login
Authenticating with existing credentials...
Login Succeeded

Logging in with your password grants your terminal complete access to your account.
For better security, log in with a limited-privilege personal access token. Learn more at https://docs.docker.com/go/access-tokens/

C:\Users\lackh\OneDrive\Desktop\imsr_project>ibmcloud cr region-set ap-south
The region is set to 'ap-south', the registry is 'au.icr.io'.

OK

C:\Users\lackh\OneDrive\Desktop\imsr_project>ibmcloud cr login
Logging 'docker' in to 'au.icr.io'...
Logged in to 'au.icr.io'.

OK
```

5) Pushing the project into IBM Container Registry.



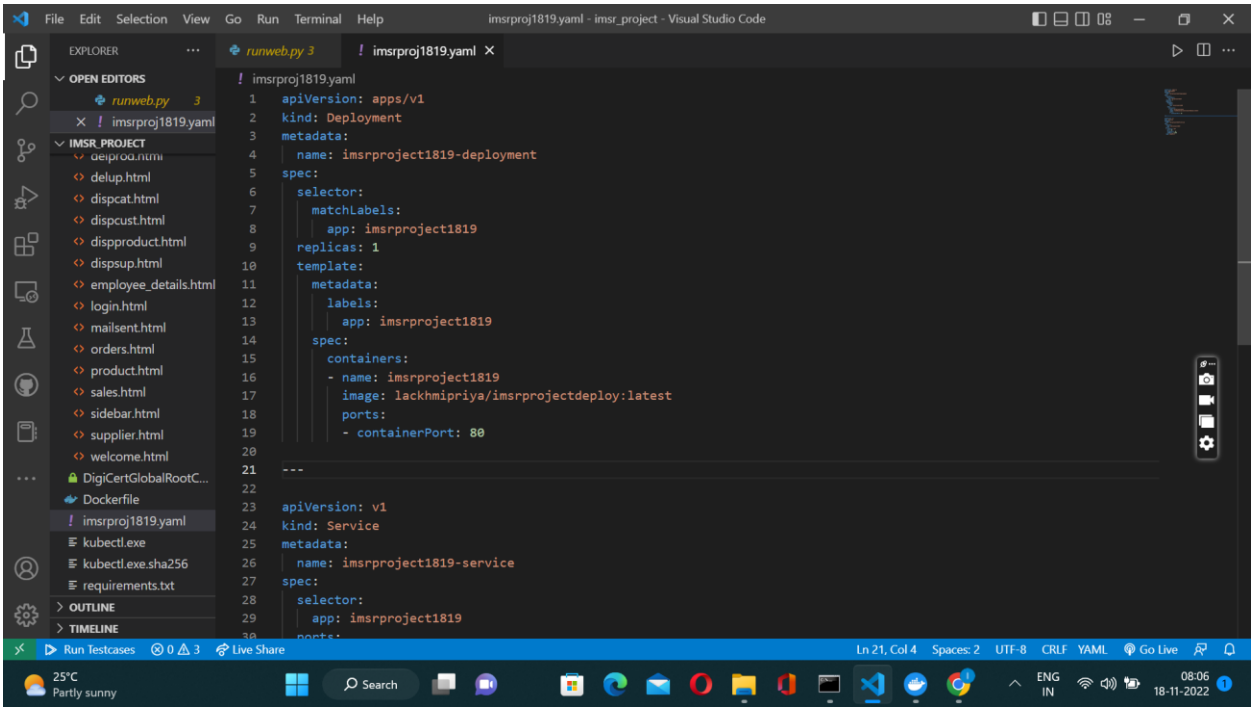
5. Verify that your image is in your private registry

```
C:\Users\lackh\OneDrive\Desktop\imsr_project>ibmcloud cr image-list
Listing images...

Repository                                      Tag           Digest        Namespace          Created       Size     Security status
au.icr.io/imsrprojectmepco/imsrprojectdeploy    imsrproject   7fd7fe8bc6bc  imsrprojectmepco   1 hour ago    443 MB   -
au.icr.io/jobapplkp/testrepo                    jobportaltest ae8079f651d8  jobapplkp          2 weeks ago   449 MB   -

OK
```

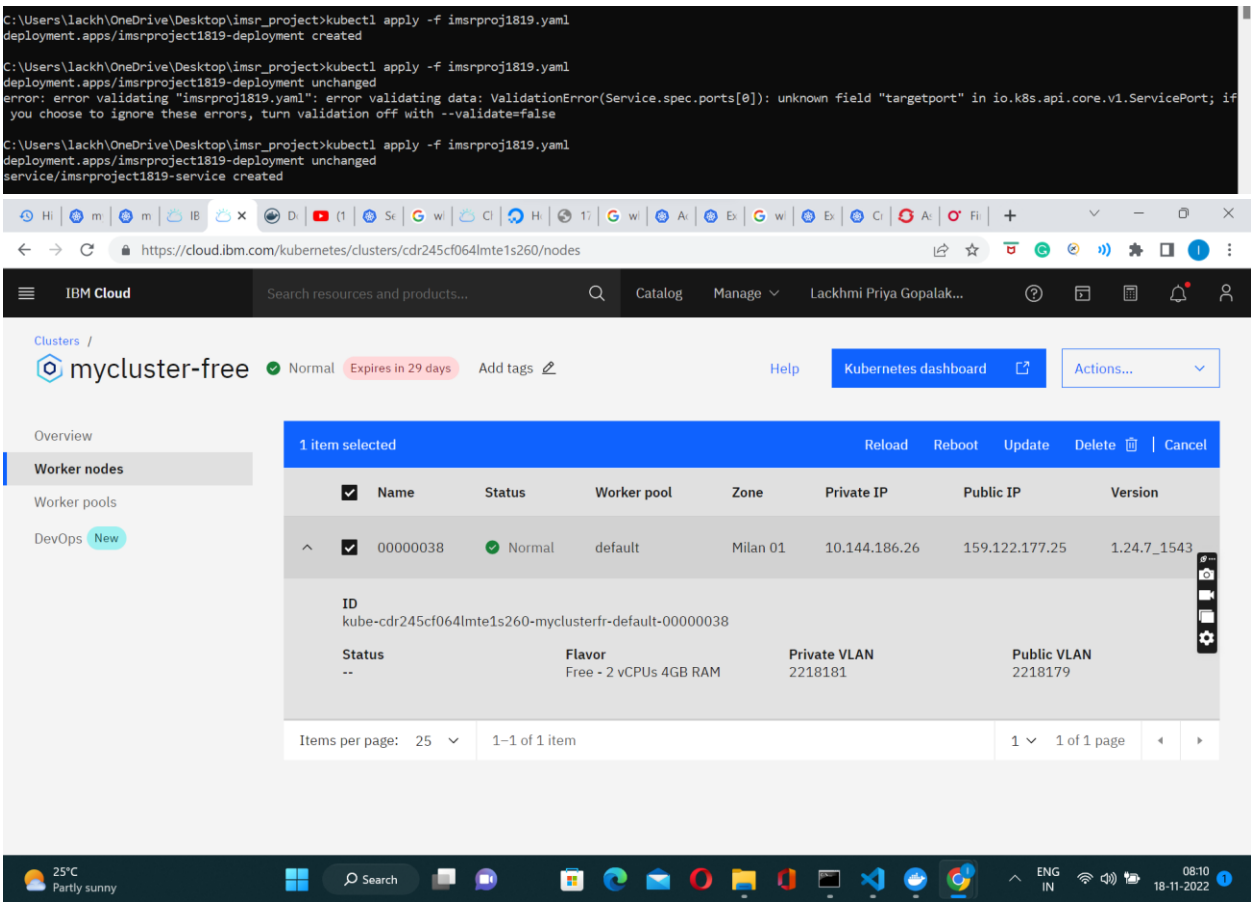


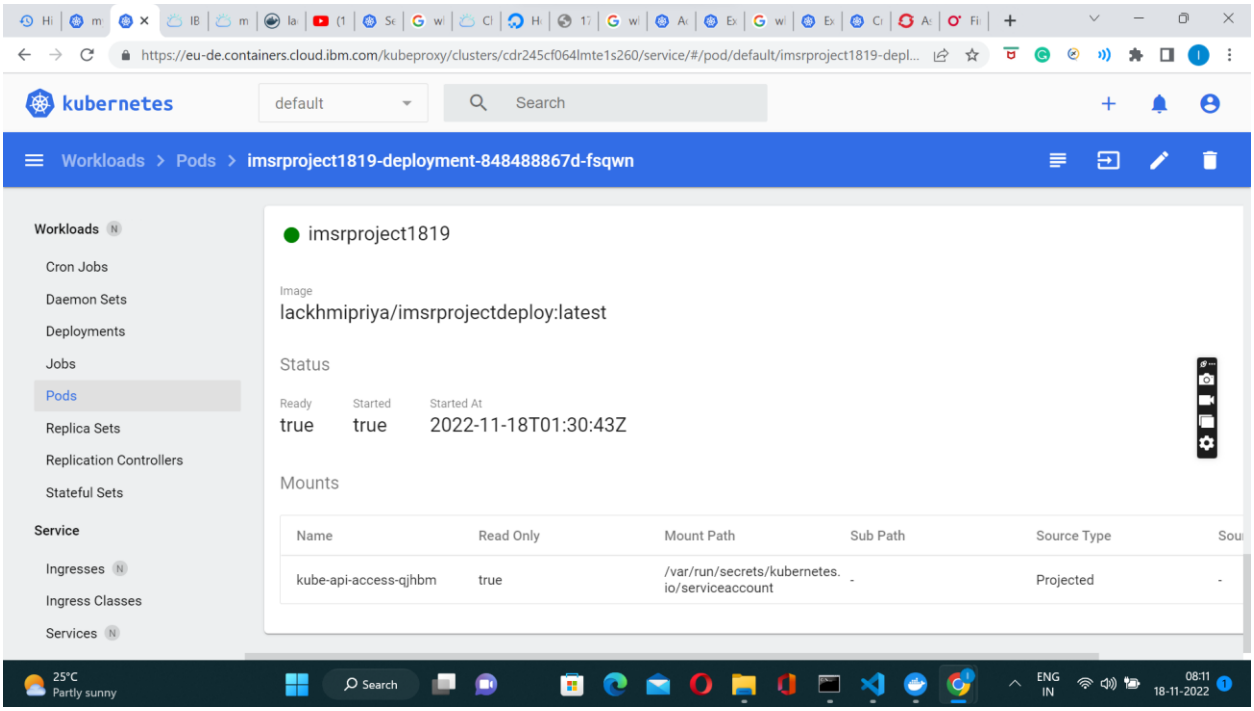
4. Create a Kubernetes cluster in IBM cloud and deploy image and also expose the same app to run in node port.

1) Created an YAML file

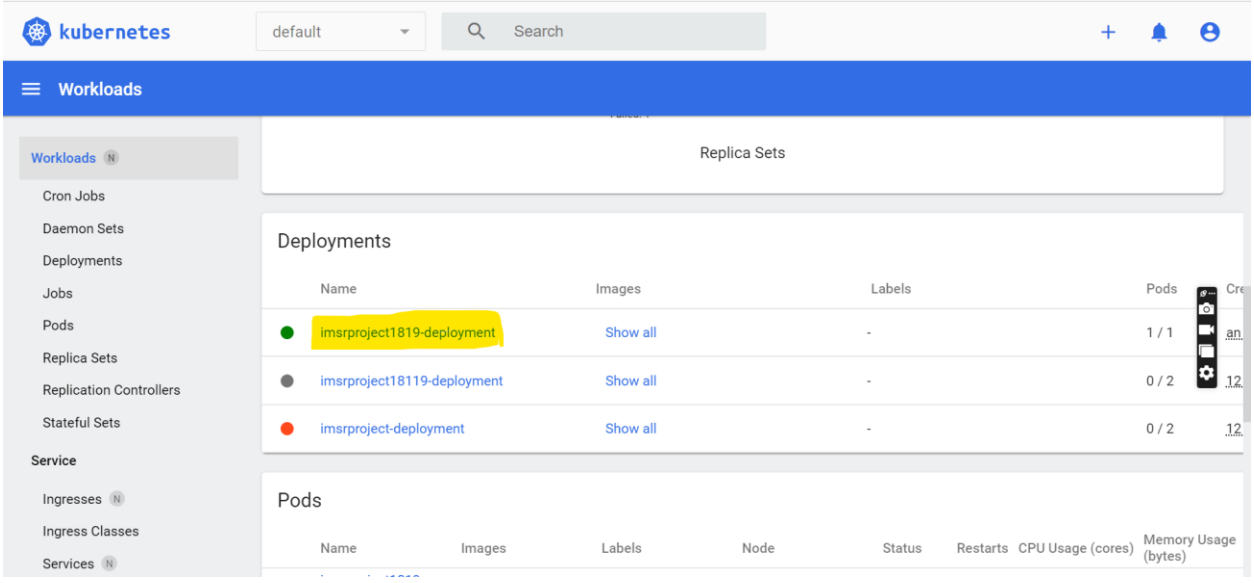


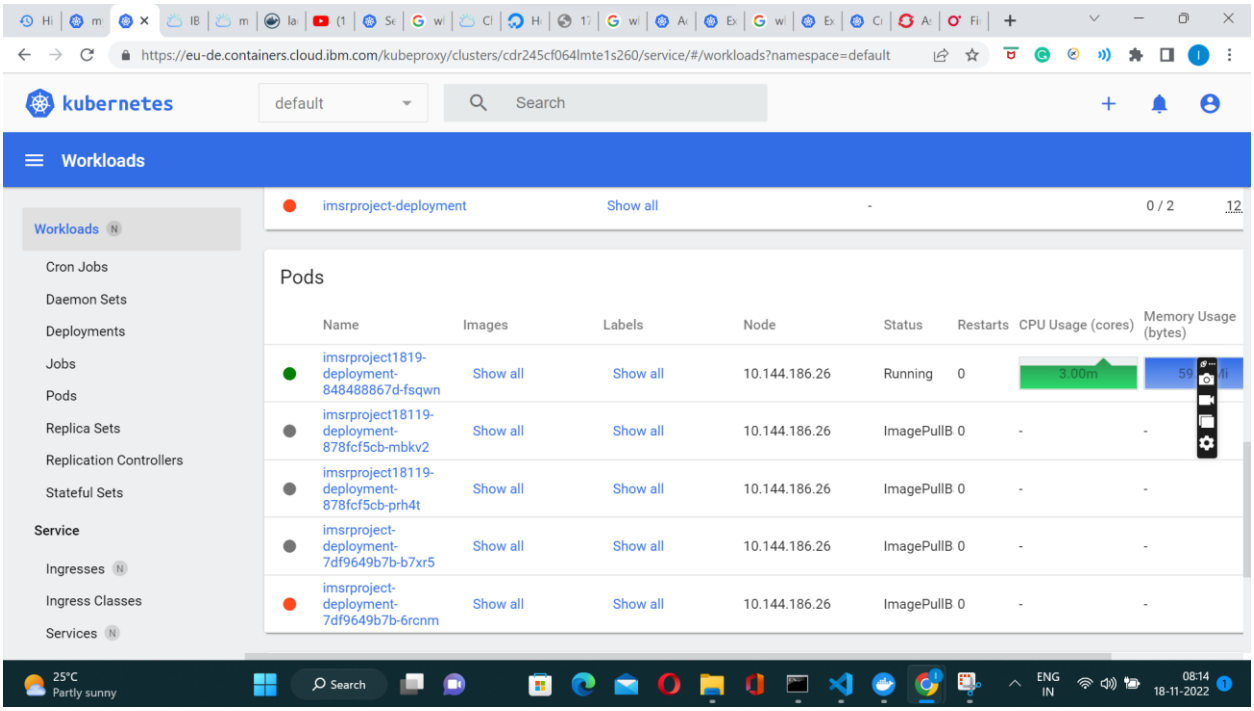
2)Deploy the YAML file in Kubernetes



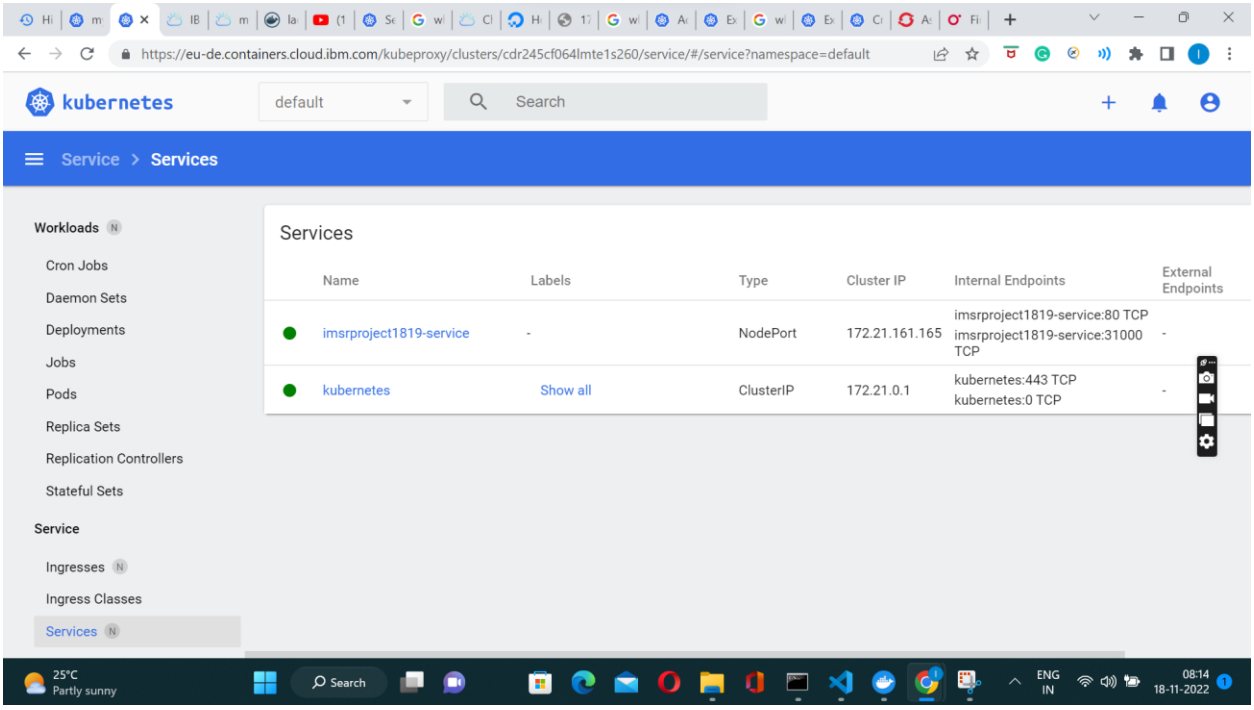


The deployed file is highlighted





Nodeport:31000
Target port :80



3)View all the files deployed in Kubernetes

```
C:\Users\lackh\OneDrive\Desktop\imsr_project>kubectl get deployments
NAME                        READY   UP-TO-DATE   AVAILABLE   AGE
imsrproject-deployment      0/2     2            0           11h
imsrproject18119-deployment 0/2     2            0           11h
imsrproject1819-deployment  1/1     1            1           18m

C:\Users\lackh\OneDrive\Desktop\imsr_project>kubectl get pod -o wide
NAME                                        READY   STATUS             RESTARTS   AGE   IP             NODE            NOMINATED NODE   READINESS GATES
imsrproject-deployment-7df9649b7b-6rcnm     0/1     ImagePullBackOff   0          11h   172.30.45.205  10.144.186.26   <none>           <none>
imsrproject-deployment-7df9649b7b-b7xr5     0/1     ImagePullBackOff   0          11h   172.30.45.207  10.144.186.26   <none>           <none>
imsrproject18119-deployment-878fcf5cb-mbkv2 0/1     ImagePullBackOff   0          11h   172.30.45.208  10.144.186.26   <none>           <none>
imsrproject18119-deployment-878fcf5cb-prh4t 0/1     ErrImagePull       0          11h   172.30.45.209  10.144.186.26   <none>           <none>
imsrproject1819-deployment-848488867d-fsqwn 1/1     Running            0          35m   172.30.45.210  10.144.186.26   <none>           <none>

C:\Users\lackh\OneDrive\Desktop\imsr_project>kubectl get service --all-namespaces
NAMESPACE              NAME                                TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)                  AGE
default                imsrproject1819-service             NodePort    172.21.161.165   <none>        80:31000/TCP             25m
default                kubernetes                          ClusterIP   172.21.0.1       <none>        443/TCP                  14h
kube-system            calico-typha                        ClusterIP   172.21.148.38    <none>        5473/TCP                 13h
kube-system            dashboard-metrics-scraper           ClusterIP   172.21.78.107    <none>        8000/TCP                 13h
kube-system            ibm-k8s-controller-default-backend  ClusterIP   172.21.245.51    <none>        80/TCP                   13h
kube-system            kube-dns                            ClusterIP   172.21.0.10      <none>        53/UDP,53/TCP,9153/TCP   13h
kube-system            kubernetes-dashboard                ClusterIP   172.21.209.178   <none>        443/TCP                  13h
kube-system            metrics-server                      ClusterIP   172.21.67.149    <none>        443/TCP                  13h
kube-system            node-local-dns                      ClusterIP   172.21.81.212    <none>        53/UDP,53/TCP            13h
kubernetes-dashboard   dashboard-metrics-scraper           ClusterIP   172.21.219.150   <none>        8000/TCP                 12h
```

```
C:\Users\lackh\OneDrive\Desktop\imsr_project>kubectl describe services imsrproject1819-service
Name:                     imsrproject1819-service
Namespace:                default
Labels:                   <none>
Annotations:              <none>
Selector:                 app=imsrproject1819
Type:                     NodePort
IP Family Policy:         SingleStack
IP Families:              IPv4
IP:                       172.21.161.165
IPs:                      172.21.161.165
Port:                     <unset>  80/TCP
TargetPort:               80/TCP
NodePort:                 <unset>  31000/TCP
Endpoints:                172.30.45.210:80
Session Affinity:         None
External Traffic Policy:  Cluster
Events:                   <none>
```

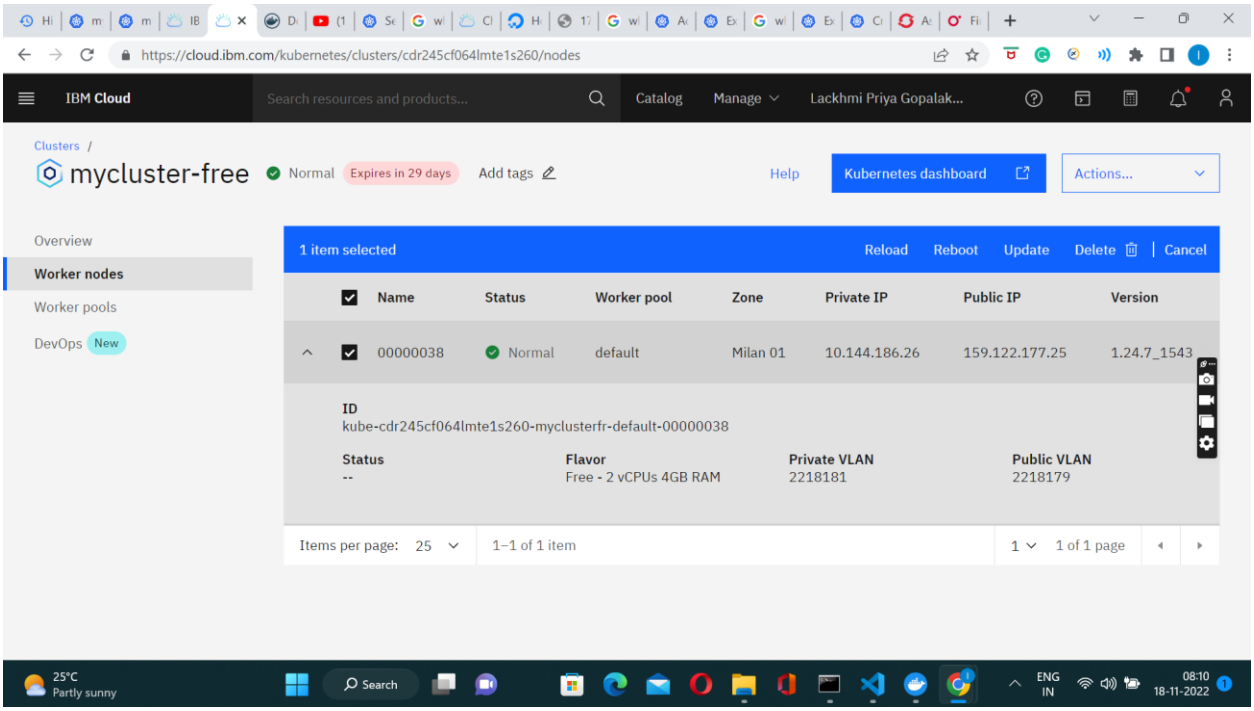
To access the web application deployed in Kubernetes

http://<external-ip>:<port>

External -ip :- 159.122.177.25

Port:31000

http://159.122.177.25:31000


https://cloud.ibm.com/kubernetes/clusters/cdr245cf064lmte1s260/nodes
IBM Cloud
Search resources and products...
Catalog
Manage
Lackhmi Priya Gopalak...
Clusters /
mycluster-free
Normal
Expires in 29 days
Add tags
Help
Kubernetes dashboard
Actions...
Overview
Worker nodes
Worker pools
DevOps
New
1 item selected
Reload
Reboot
Update
Delete
Cancel
Name
Status
Worker pool
Zone
Private IP
Public IP
Version
00000038
Normal
default
Milan 01
10.144.186.26
159.122.177.25
1.24.7_1543
ID
kube-cdr245cf064lmte1s260-myclusterfr-default-00000038
Status
--
Flavor
Free - 2 vCPUs 4GB RAM
Private VLAN
2218181
Public VLAN
2218179
Items per page: 25
1–1 of 1 item
1
1 of 1 page
25°C
Partly sunny
Search
ENG
IN
08:10
18-11-2022