Ganpat University | Institute of Computer Technology
॥ विद्यया समाजोत्कर्षः ॥

Name: Tushar Panchal

En.No: 21162101014

Sub: CS (Cloud Security)

Branch: CBA

Batch:71

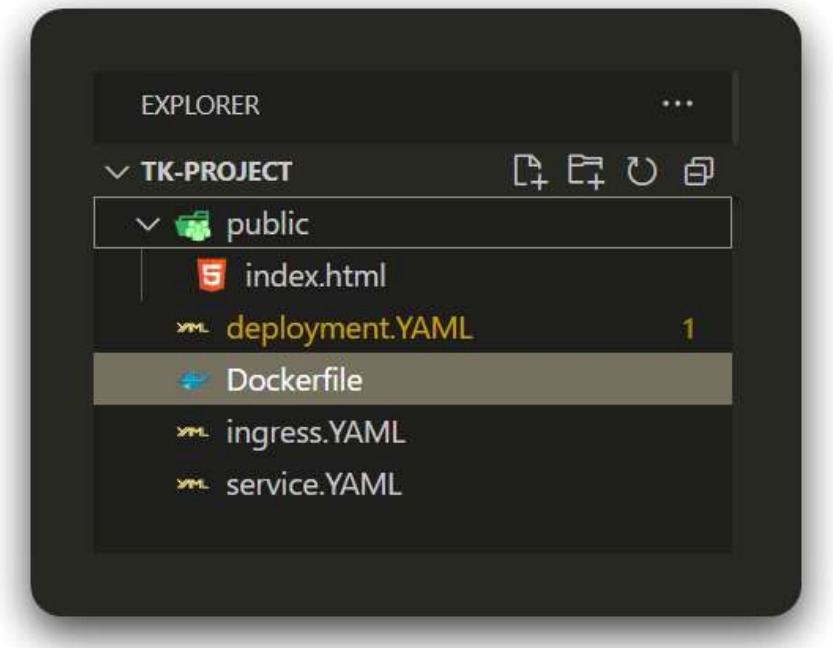
----------PRACTICAL 04----------

❖ Scenario :

Create docker container for deploying on containerized platform. Here you need to build Node js Web Application on Docker Containers and will run the it using Kubernetes Service on IBM Cloud

» Create Dockerfile for node project.

Here, project contains public folder with html file to be hosted using express module, whose structure looks like :

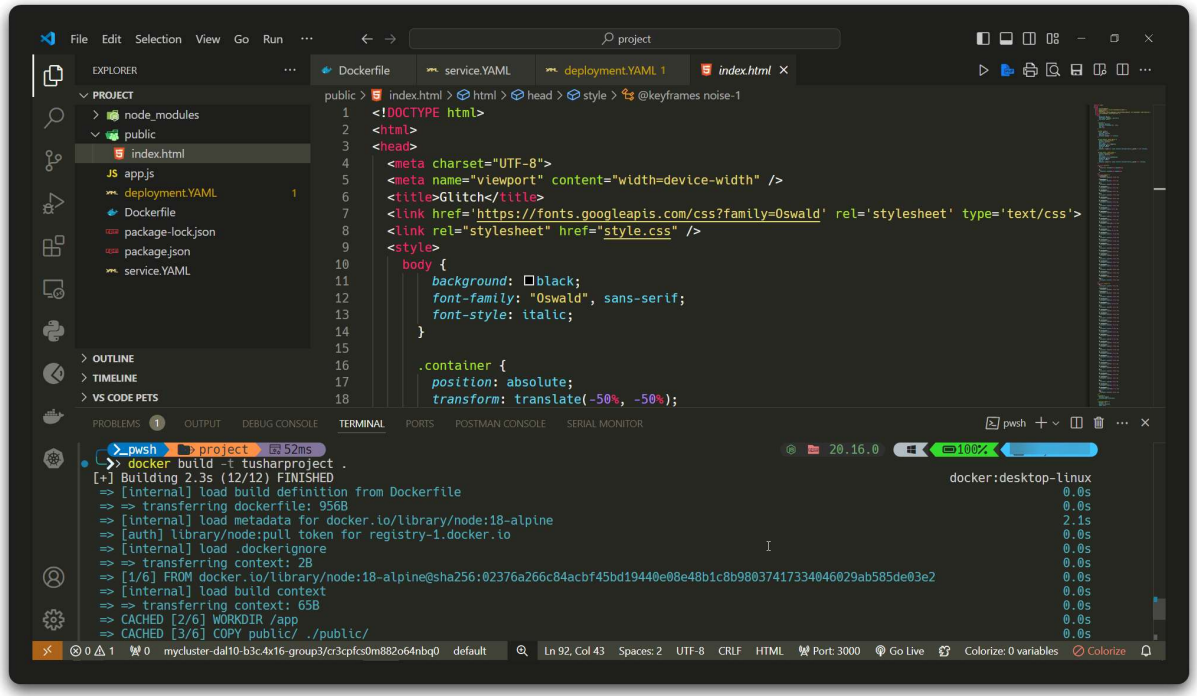


Dockerfile :

```
# Use a lightweight Node.js image as the base image
FROM node:18-alpine

# Set the working directory inside the container
WORKDIR /app

# Copy only the necessary files to the container
COPY public/ ./public/

# Create a minimal package.json for the express server
RUN echo '{ "name": "tk-html", "version": "1.0.0", "main": "app.js",
"dependencies": { "express": "^4.18.2" } }' > package.json

# Install only production dependencies (so it will be quick)
RUN npm install

# Create the app.js file to serve the static content
RUN echo "const express = require('express'); const path =
require('path'); const app = express();
app.use(express.static(path.join(__dirname, 'public'))); const port =
3000; app.listen(port, () => { console.log('Server running on
http://localhost:' + port); });" > app.js

# Expose port 3000
EXPOSE 3000

# Define the command to run the application
CMD ["node", "app.js"]
```

» Build docker image in local system.

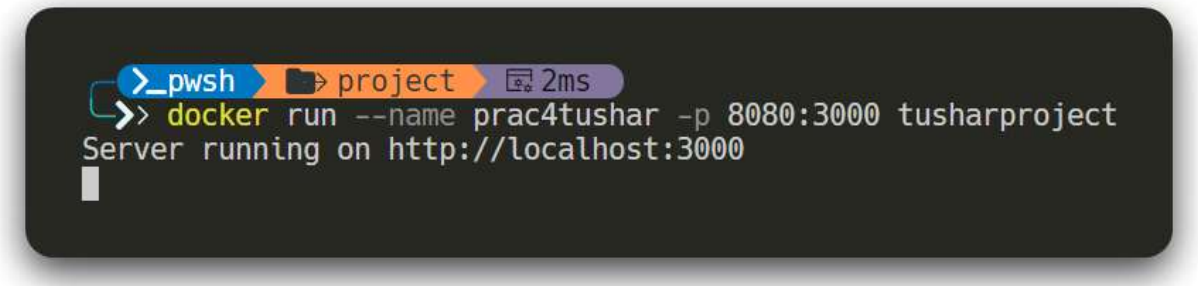
Command : `docker build -t tusharproject .`



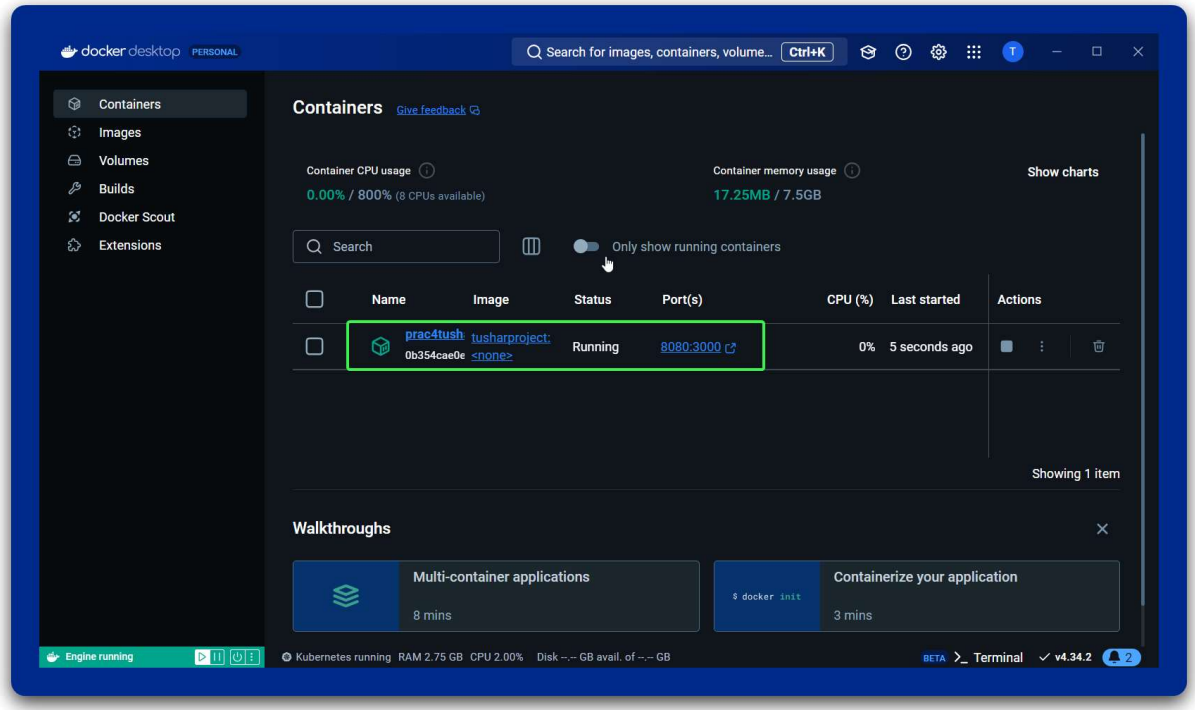
» Now run it on port .

Commands :

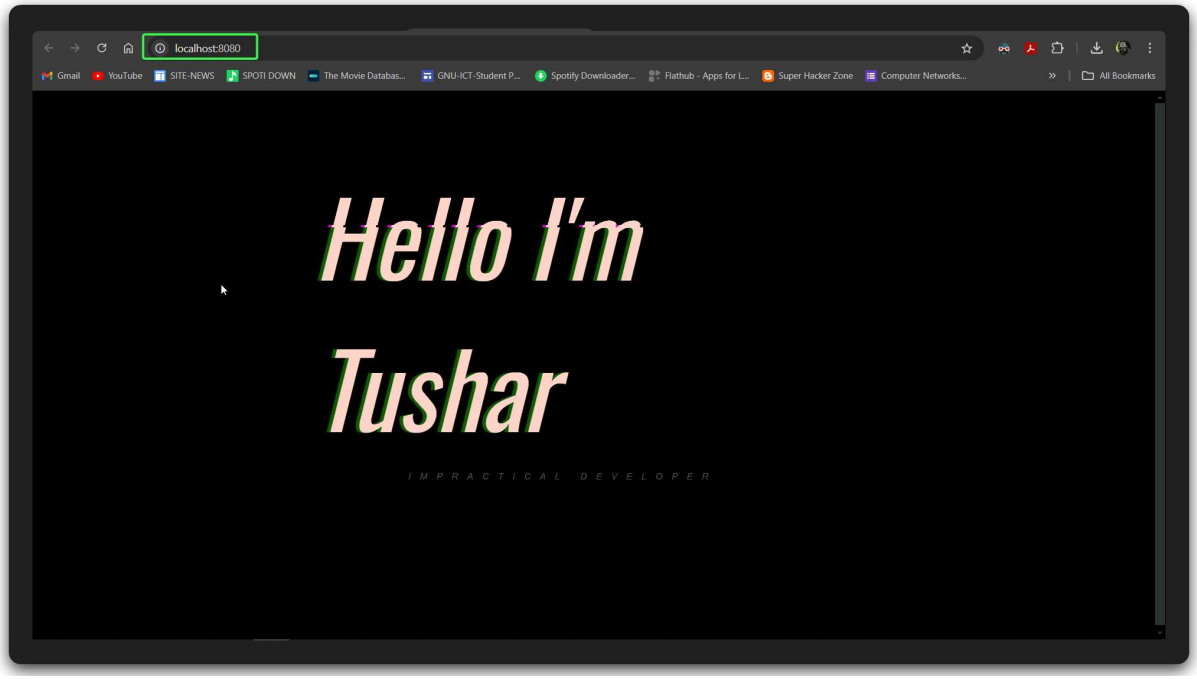
```
docker run --name prac4tushar -p 8080:3000 tusharproject
```



Here container is created



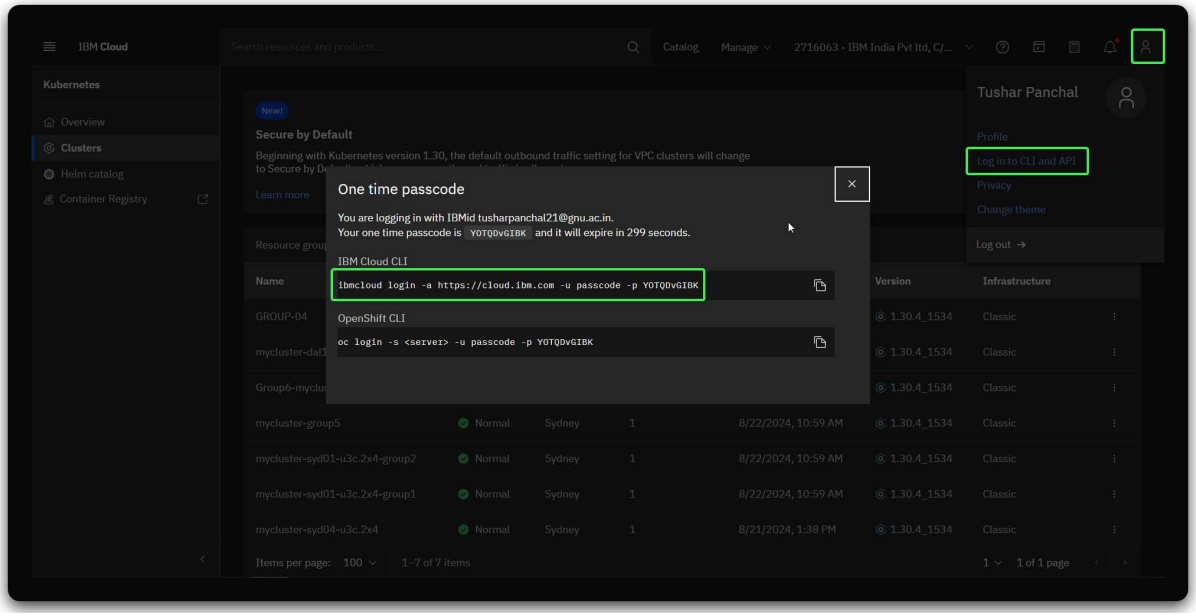
Go to localhost:8080

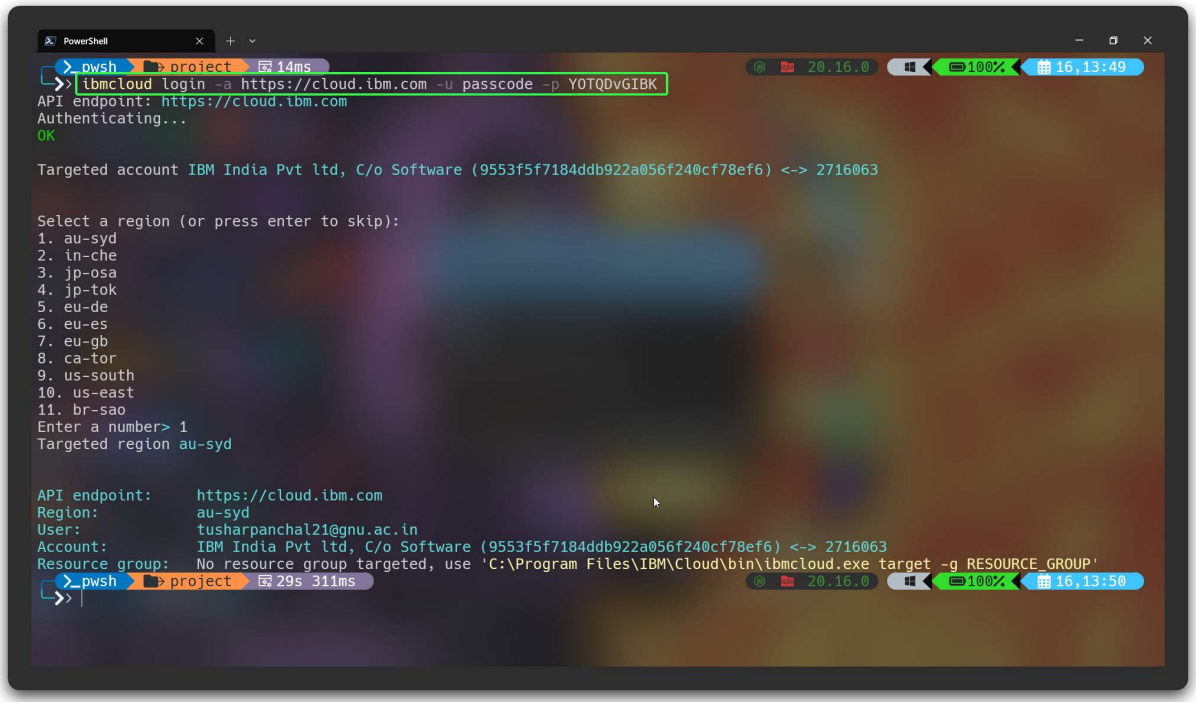


Now run command from your ibm cloud for IBMcloud CLI :

Commands :

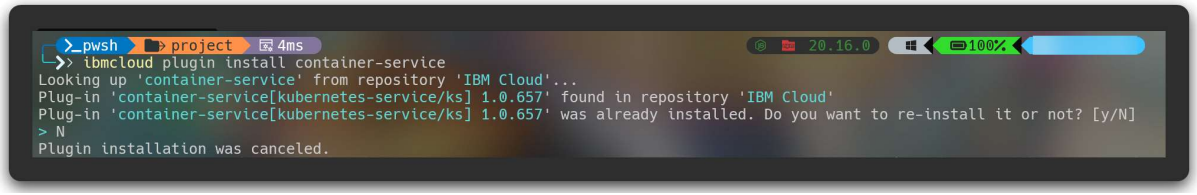
```
ibmcloud login -a https://cloud.ibm.com -u passcode -p YOTQDvGIBK
```





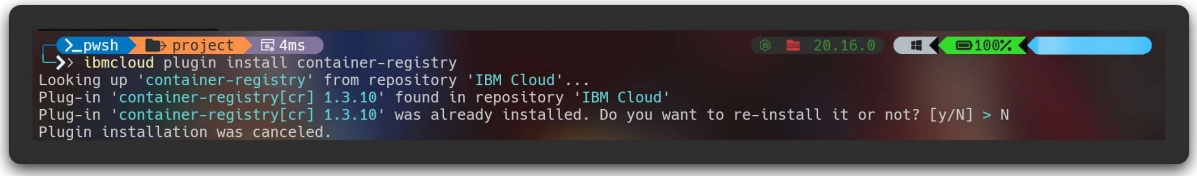
Now install container service

Command : `ibmcloud plugin install container-service`



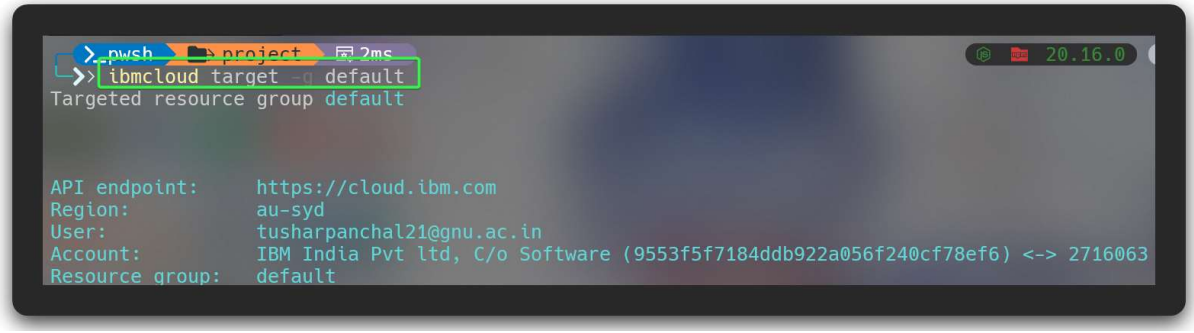
Now install container-registry

Command : `ibmcloud plugin install container-registry`

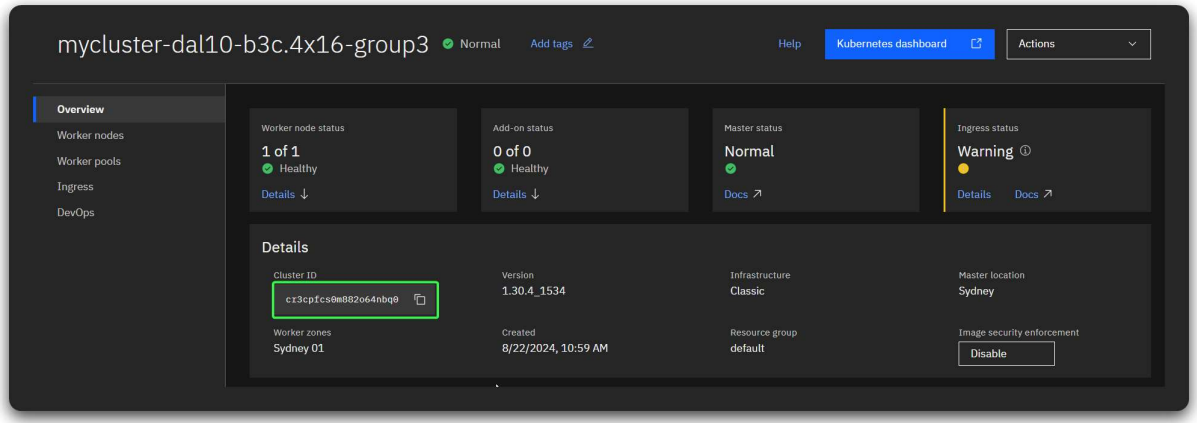


Now we have to target resource group as default

Command: `ibmcloud target -g default`



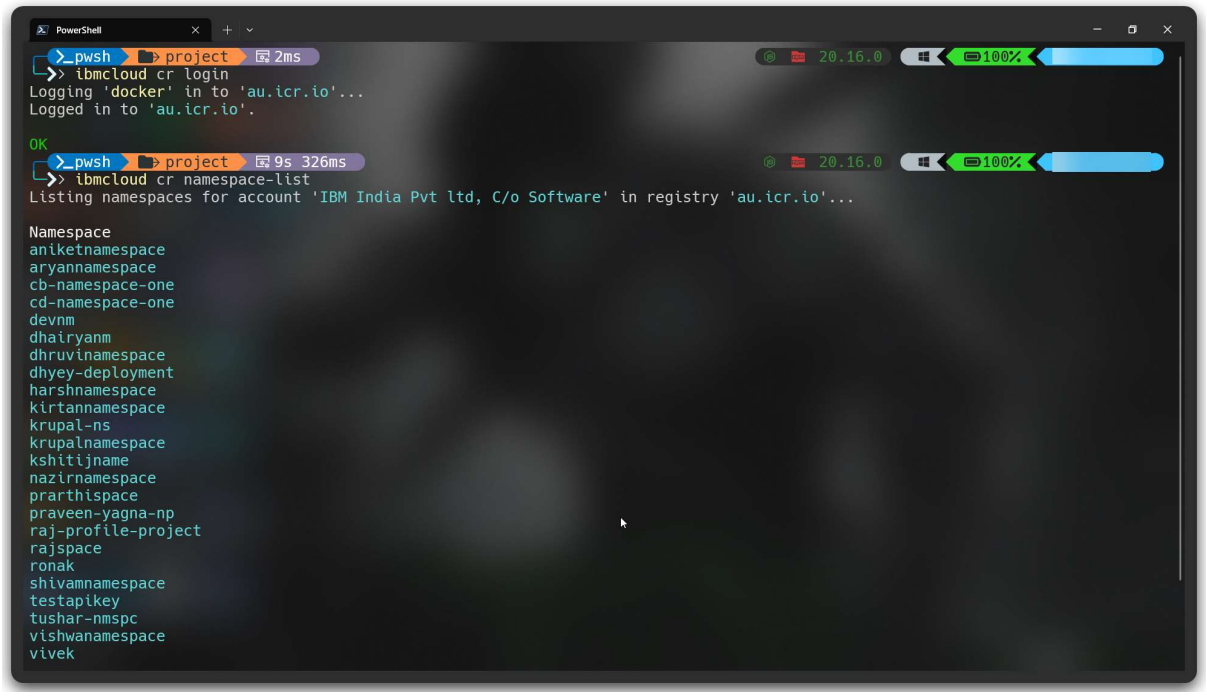
Now go to Kubernetes cluster & copy cluster ID :



Now log in to IBMcloud and see namespace lists:

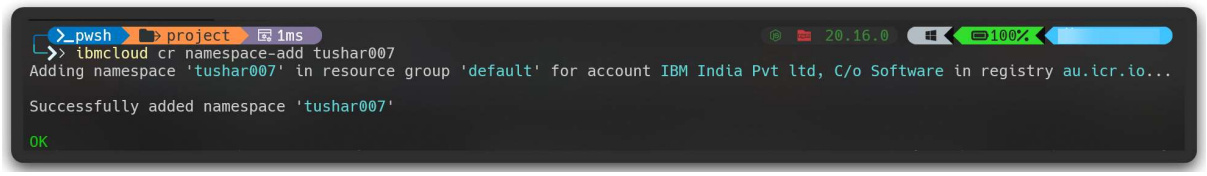
Command : `ibmcloud cr login`

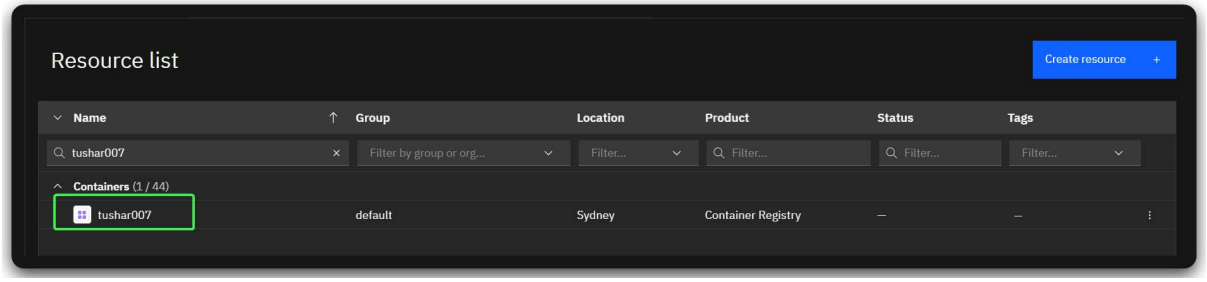
Command : `ibmcloud cr namespace-list`



Now we add our namespace to list :

Command : `ibmcloud cr namespace-add Tushar`

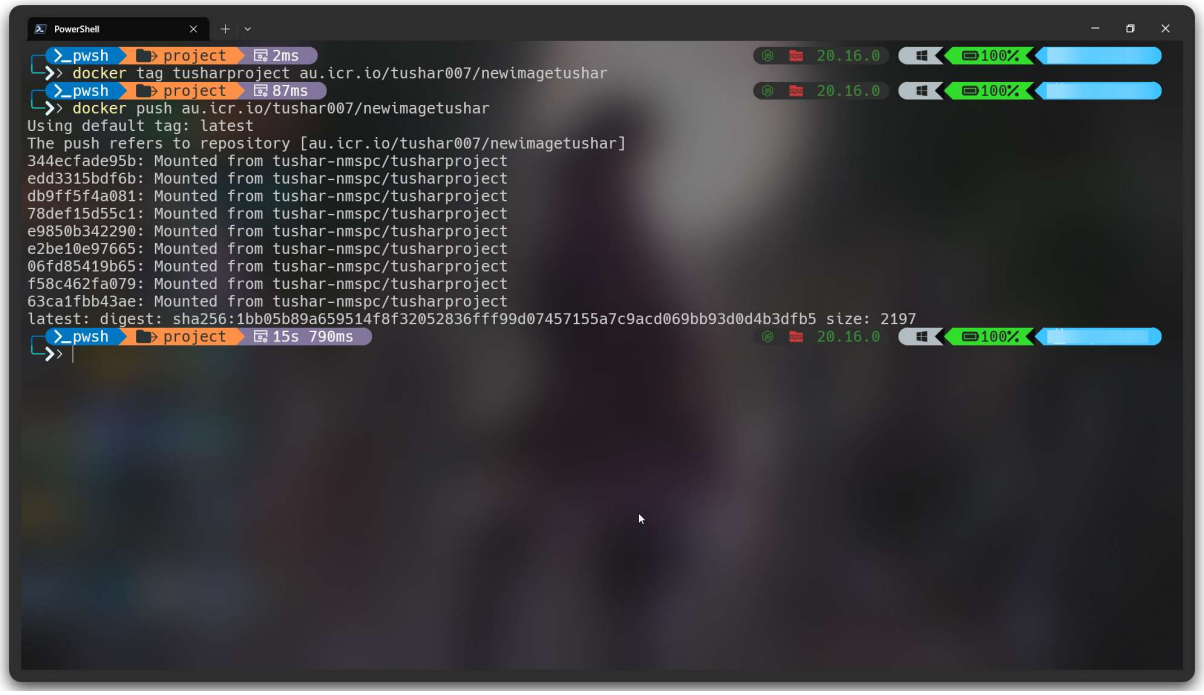




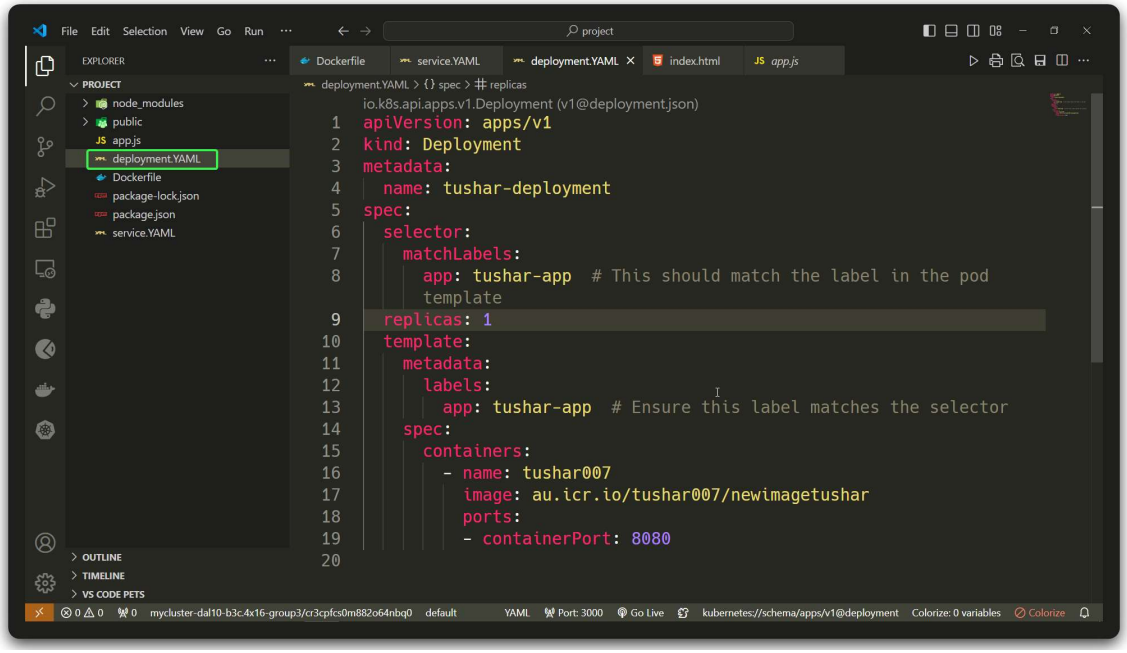
Now tag the docker Image with name space and give it a name then push

Commands :

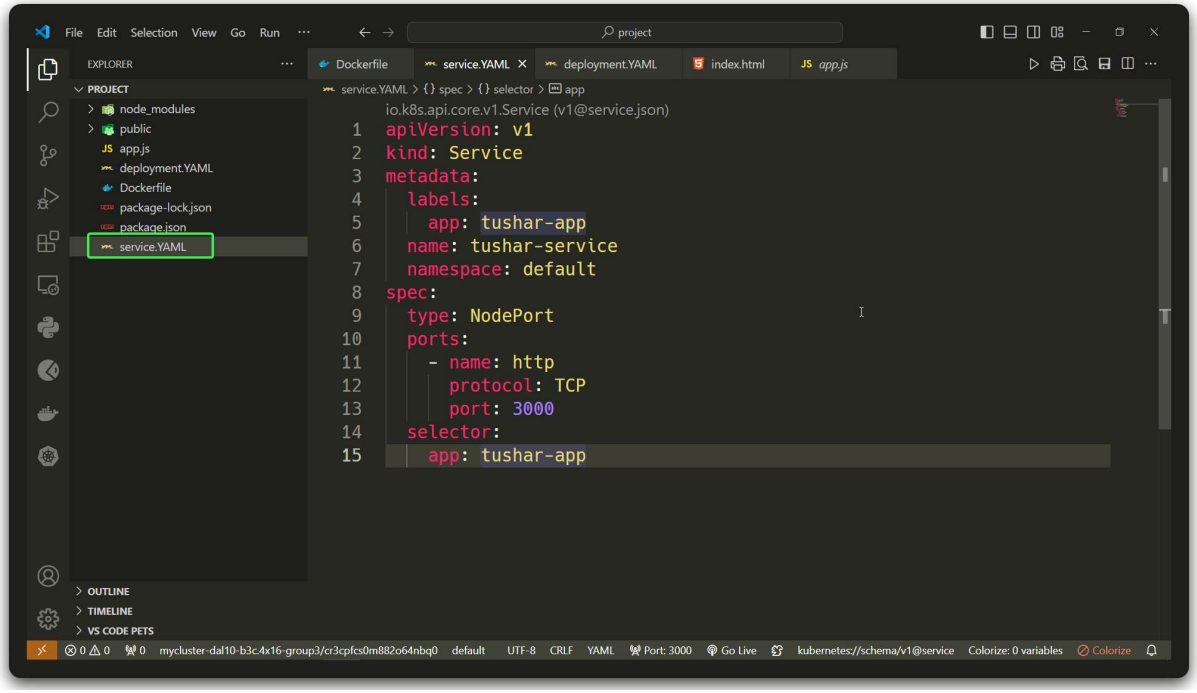
```
docker tag tusharproject au.icr.io/tushar/newimagetushar
docker push au.icr.io/tushar/newimagetushar
```



Now open files in vs code and make changes Change name of : deploy name , app: , image , name



Also change in service.yaml, Change of name : app, service name



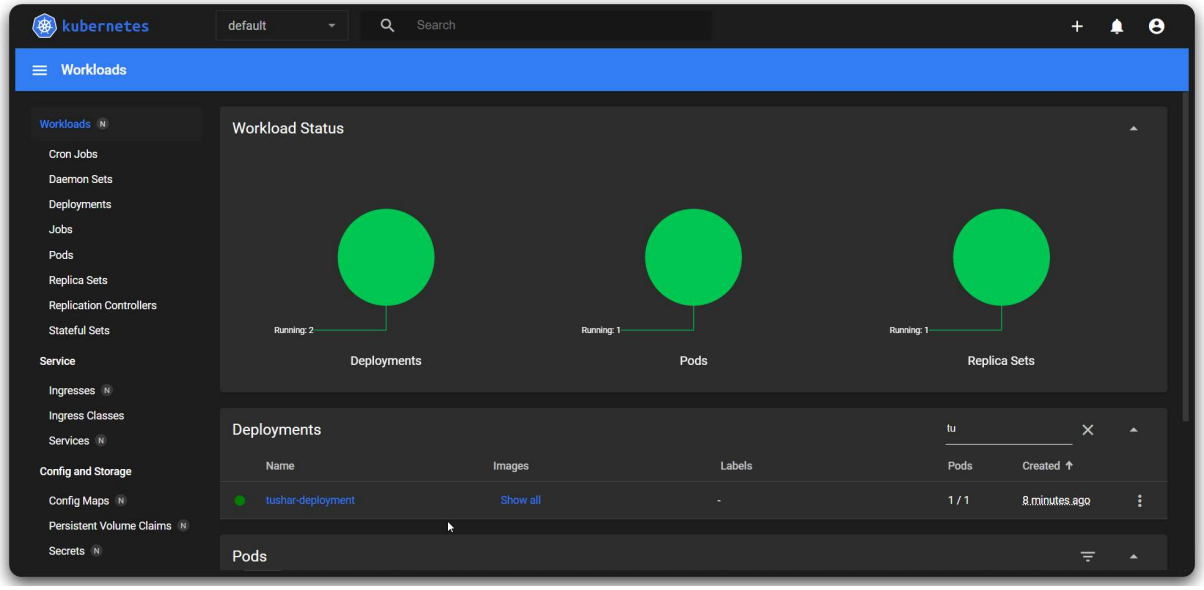
Now run command to deploy

Commands :

```
kubectl apply -f deployment.yaml
```


```
Kubectl apply -f service.yaml
```

As we can see in below screenshot that its deployed

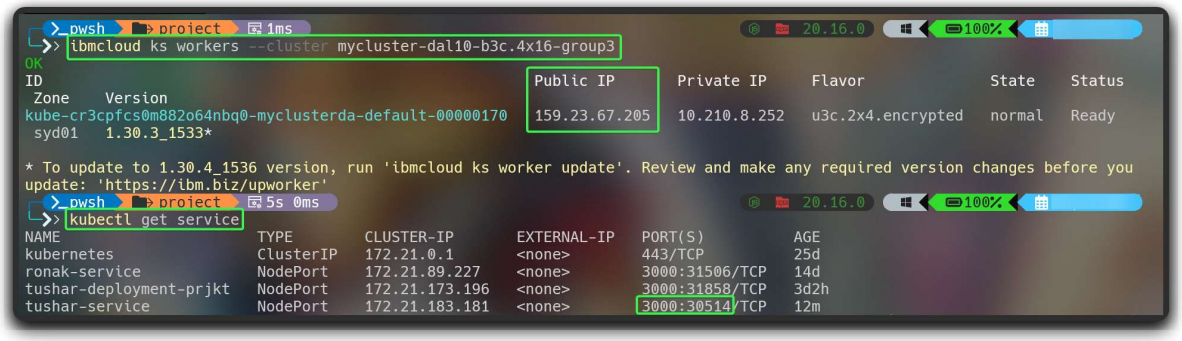


Now run this command to get public ID and port number

Command :

```
ibmcloud ks workers --cluster mycluster-dal10-b3c.4x16-group3
```

```
kubectl get service
```



Now take public id and copy to new tab and take port 159.23.67.205: 30514