

NAME: KSHITIJ GUPTA

Enrolment Number: 21162101007

Sub: CS

Practical – 4[Batch-71]

mycluster-syd01-u3c.2x4-group2 ● Normal [Add tags](#)

Overview

- Worker nodes
- Worker pools
- Ingress
- DevOps

Worker node status 1 of 1 ● Healthy Details ↓	Add-on status 0 of 0 ● Healthy Details ↓	Master status Normal ● Docs ↗	Ingress status Warning ⚠ ● Details Docs ↗
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Details

Cluster ID <code>cx3cp7vs0jfnd8bg998g</code>	Version <code>1.30.4_1534</code>	Infrastructure Classic	Master location Sydney
Worker zones Sydney 01	Created 8/22/2024, 10:59 AM	Resource group default	Image security enforcement Enable

Worker node health [Worker node details](#)

1 total worker nodes

Critical 0% Warning 0% Normal 100% Pending 0%

Networking

Service endpoint URL: [Redacted]

Ingress subdomain:
mycluster-syd01-u3-325769-3e4769f510db5aa1089354e49621b41-0000.au-syd.contain[Redacted]

Step-1: create the image

The image shows a Windows 10 desktop with a VS Code editor window open. The editor has a dark theme. On the left, the Explorer sidebar shows a file tree for a project named 'PRACTICAL_4'. The file tree includes 'project' (containing 'node_modules'), 'app.js', 'deployment.YAML', 'Dockerfile', 'package-lock.json', 'package.json', and 'service.YAML'. The 'app.js' file is selected. The main editor area shows the content of 'app.js', which contains two lines of JavaScript code:

```
1 var express = require('express');
2 var app = express();
```

 Below the code editor, there are tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL', 'PORTS', and 'COMMENTS'. The 'TERMINAL' tab is active, showing the output of a Docker build command. The terminal output starts with 'PS D:\SEM-7\CS\PR4\PRACTICAL_4> cd project' and 'PS D:\SEM-7\CS\PR4\PRACTICAL_4\project> docker build -t img1_007:1.0 .'. It then shows the progress of the build, including 'Building 73.5s (12/12) FINISHED', and a detailed breakdown of the layers and their sizes. The layers include 'docker:default', 'FROM docker.io/library/node:12-alpine', and several 'RUN' commands for installing dependencies and setting up the application. The terminal output ends with 'COPY package*.json .' and shows the total size of the image as 451B. The Windows taskbar is visible at the bottom, showing the Start button, a search bar, and several pinned applications including File Explorer, Edge, and VS Code. The system tray shows the date and time as 02-09-2024, 09:49.

Docker Desktop Update to latest Search for images, containers, volumes, extensions and more... Ctrl+K kshiti...

Containers Images Volumes Dev Environments BETA Docker Scout Learning center Extensions Add Extensions

Images

Local Hub Artifactory EARLY ACCESS

2.97 GB / 3.78 GB in use 19 Images Last refresh: 3 minutes ago

Search

Name	Tag	Status	Created	Size	Actions
img1_007	1.0	Unused	1 second ago	95.86 MB	
gcr.io/k8s-minikube/kicbase	v0.0.43	In use	5 months ago	1.25 GB	
postgres	latest	In use	6 months ago	431.42 MB	
car	latest	In use	9 months ago	1.12 GB	
<none>	<none>	In use (dangling)	9 months ago	1.12 GB	
<none>	<none>	In use (dangling)	9 months ago	1.12 GB	
<none>	<none>	In use (dangling)	9 months ago	1.12 GB	
<none>	<none>	In use (dangling)	9 months ago	1.12 GB	

Showing 19 items

Engine running RAM 1.93 GB CPU 0.87% Signed in v4.24.2 09:49 02-09-2024

File Edit Selection View Go Run ... Practical_4

EXPLORER

- PRACTICAL_4
 - project
 - node_modules
 - JS app.js
 - deployment.YAML
 - Dockerfile
 - package-lock.json
 - package.json
 - service.YAML
 - OUTLINE
 - TIMELINE

JS app.js

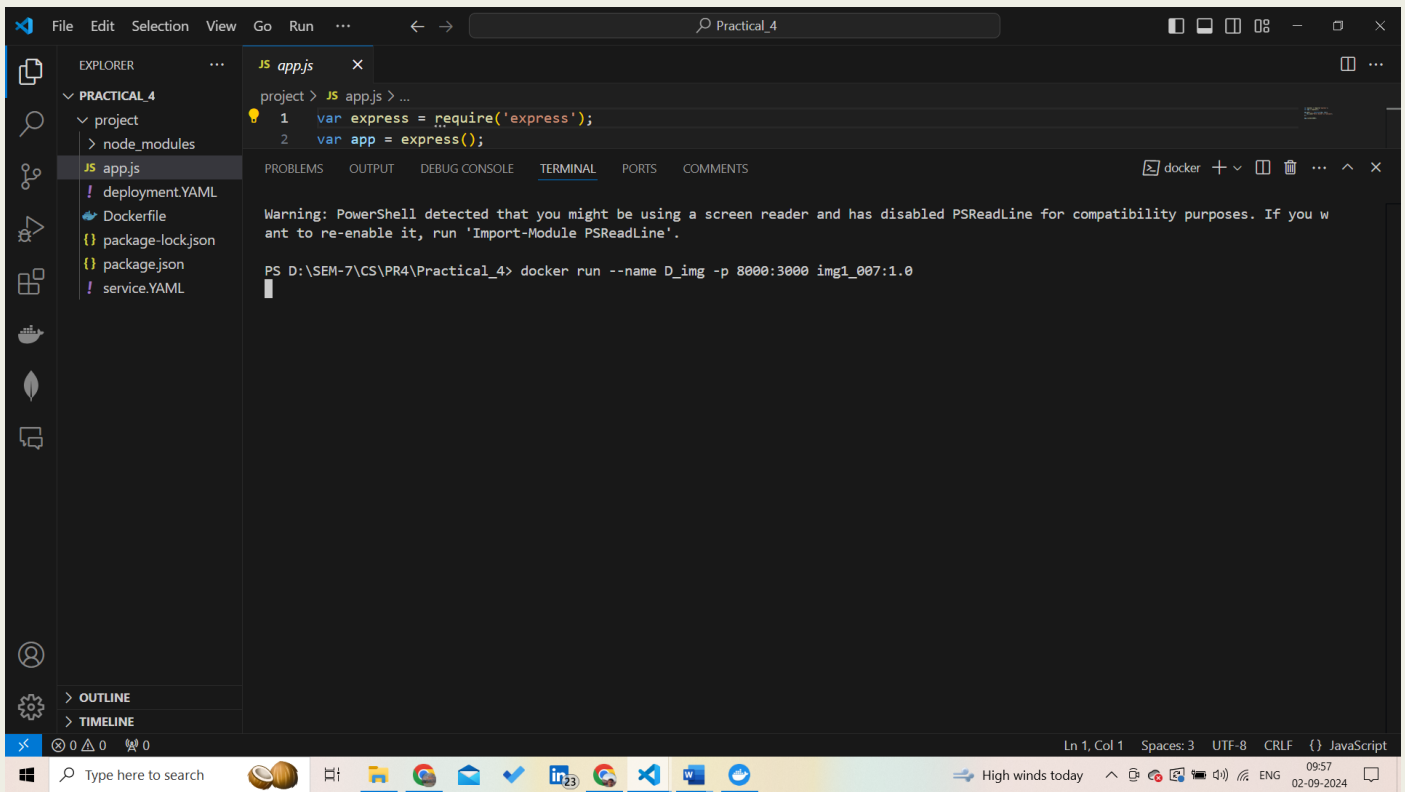
```
1 var express = require('express');
2 var app = express();
```

TERMINAL

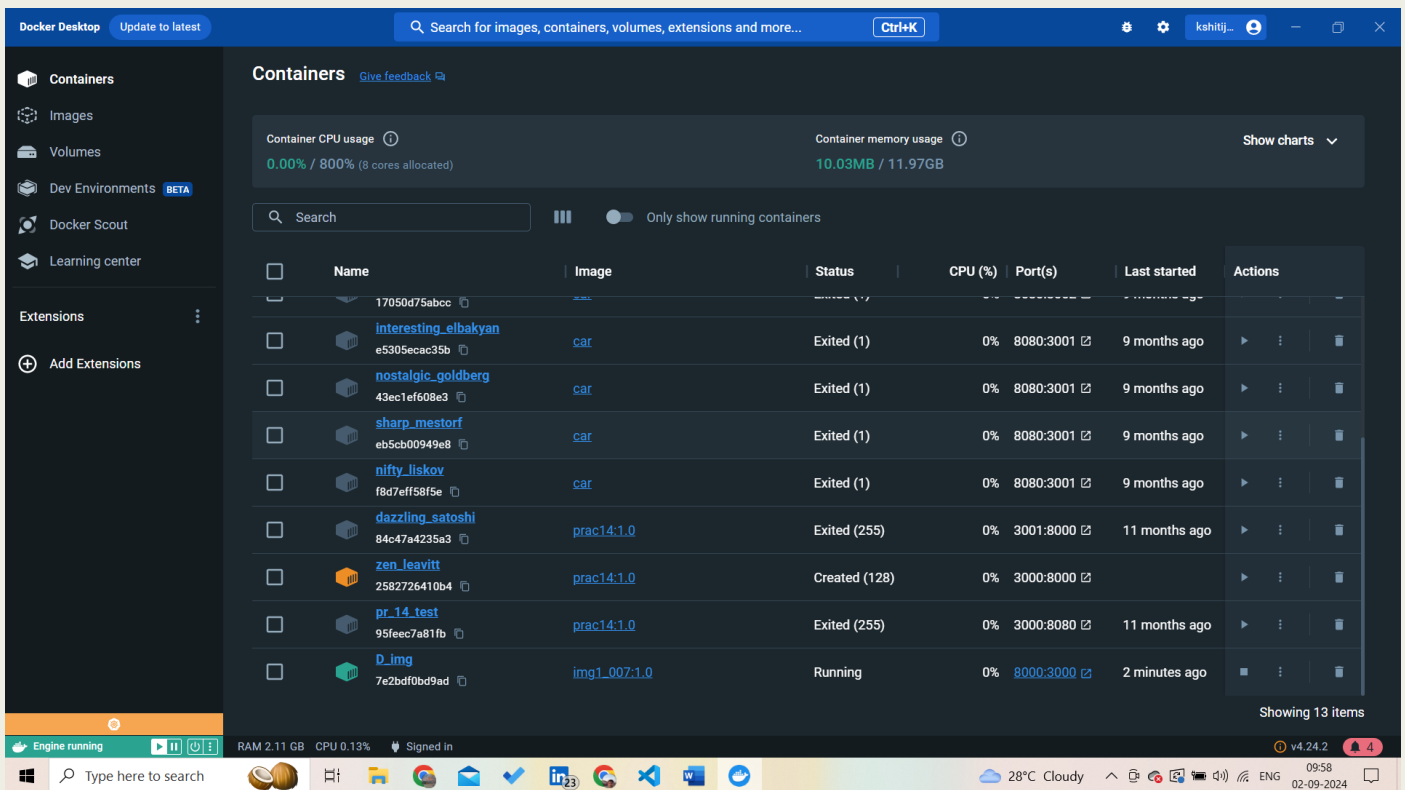
```
PS D:\SEM-7\CS\PR4\Practical_4\project> docker img
docker: 'img' is not a docker command.
See 'docker --help'
PS D:\SEM-7\CS\PR4\Practical_4\project> docker images
REPOSITORY          TAG                 IMAGE ID            CREATED             SIZE
img1_007             1.0                83d79decd86f       2 minutes ago      95.9MB
gcr.io/k8s-minikube/kicbase v0.0.43            619d67e74933       4 months ago       1.26GB
postgres            latest             d60dc4bd84c0       6 months ago       431MB
car                 latest             3451ec0204d6       9 months ago       1.13GB
<none>              <none>            08ff98d671f2       9 months ago       1.13GB
<none>              <none>            e38c7b9cfaf4       9 months ago       1.13GB
<none>              <none>            37a680580150       9 months ago       1.13GB
<none>              <none>            bca7c669a315       9 months ago       1.13GB
kshitiigupta505/pr_14_test latest             8c243906c869       10 months ago      122MB
kshitiigupta505/kshitiigupta505 <none>            8d2702bdff0a       10 months ago      64.5MB
registry.k8s.io/kube-apiserver v1.27.2           c5b13e4f7806       15 months ago      121MB
registry.k8s.io/kube-scheduler v1.27.2           89e70da428d2       15 months ago      58.4MB
registry.k8s.io/kube-controller-manager v1.27.2           ac2b7465ebba       15 months ago      112MB
registry.k8s.io/kube-proxy v1.27.2           b8aa50768fd6       15 months ago      71.1MB
docker/desktop-vpnkit-controller dc331cb22850be0cdd97c84a9cfecaf44a1afb6e 15 months ago      36.2MB
registry.k8s.io/coredns/coredns v1.10.1           ead0a4a53df8       19 months ago      53.6MB
registry.k8s.io/etcd 3.5.7-0           86b6af7dd652       19 months ago      296MB
registry.k8s.io/pause 3.9               e6f181688397       22 months ago      744kB
docker/desktop-storage-provisioner v2.0              99f89471f470       3 years ago         41.9MB
PS D:\SEM-7\CS\PR4\Practical_4\project>
```

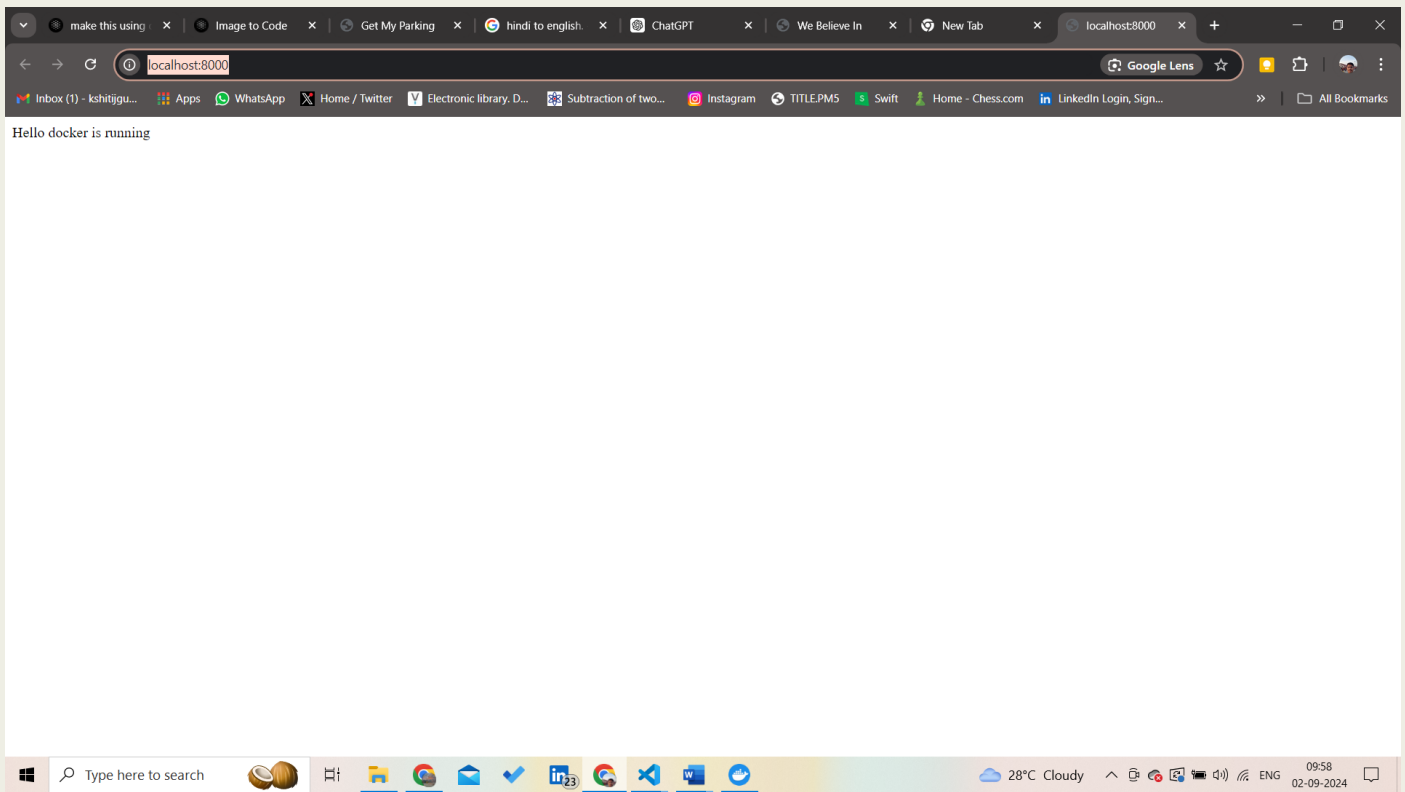
Ln 1, Col 1 Spaces: 3 UTF-8 CRLF {} JavaScript

Step-2: create the container and deploy it

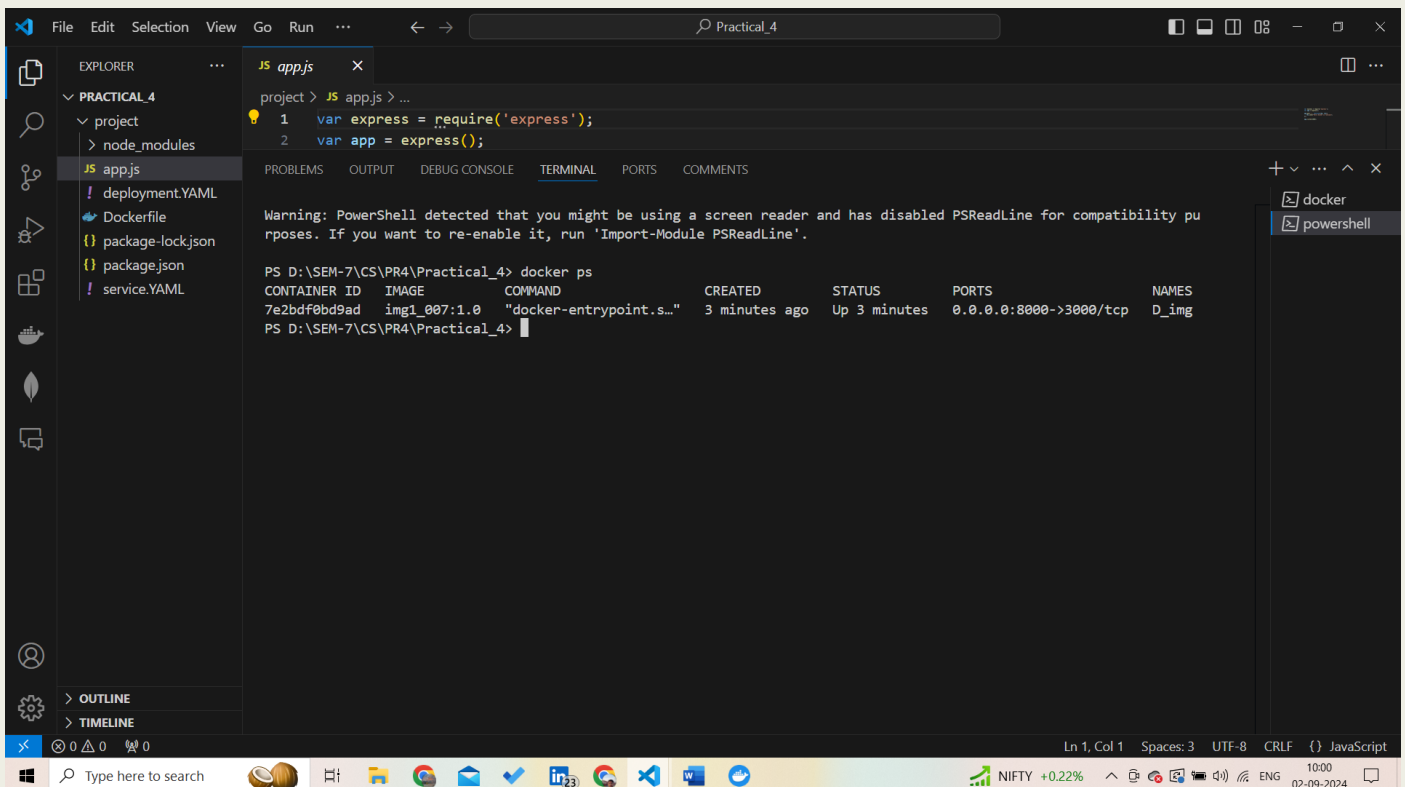


Verify using Docker: `docker run --name D_img -p 8000:3000 img1_007:1.0`

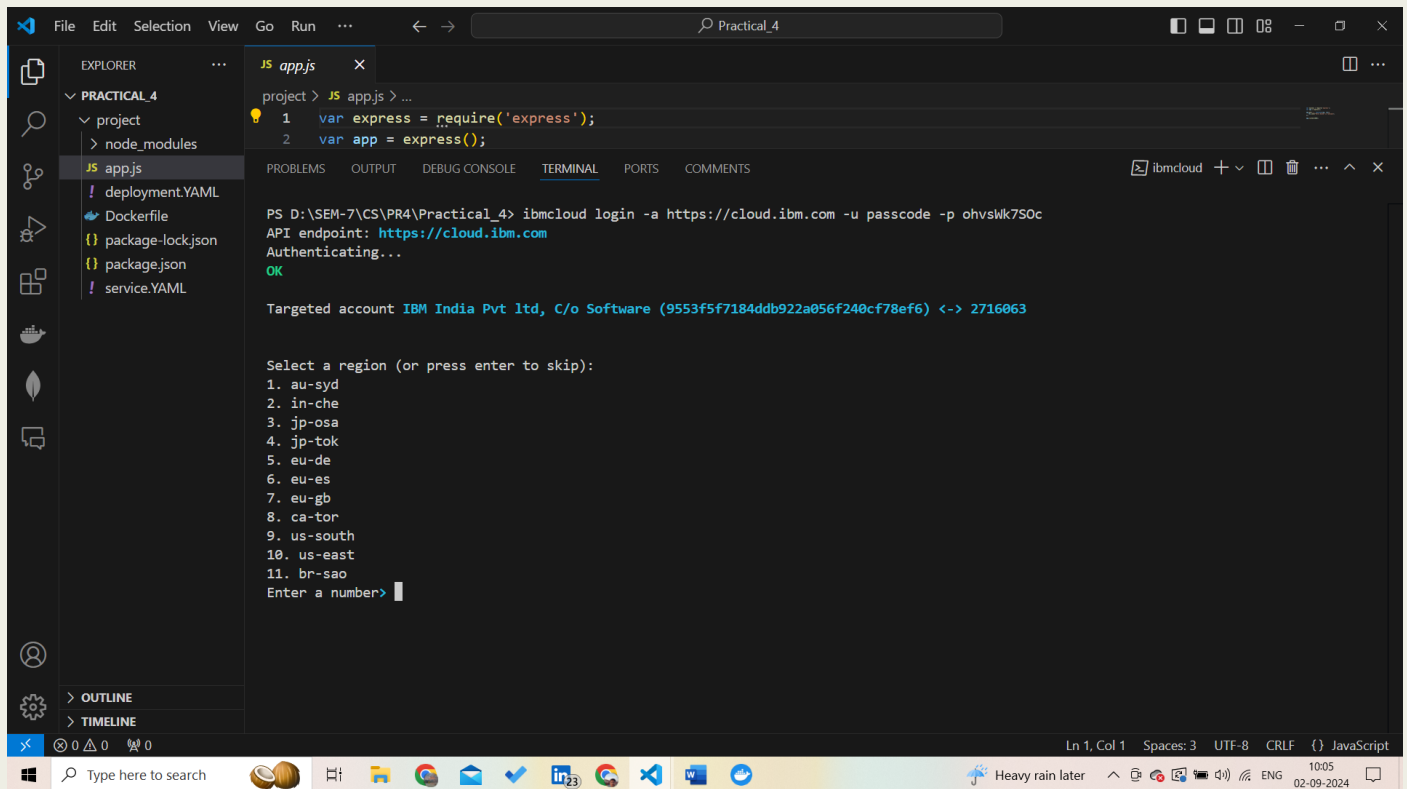




Cheak list of container:



Step-3: login through cli



```
project > JS app.js > ...
1  var express = require('express');
2  var app = express();

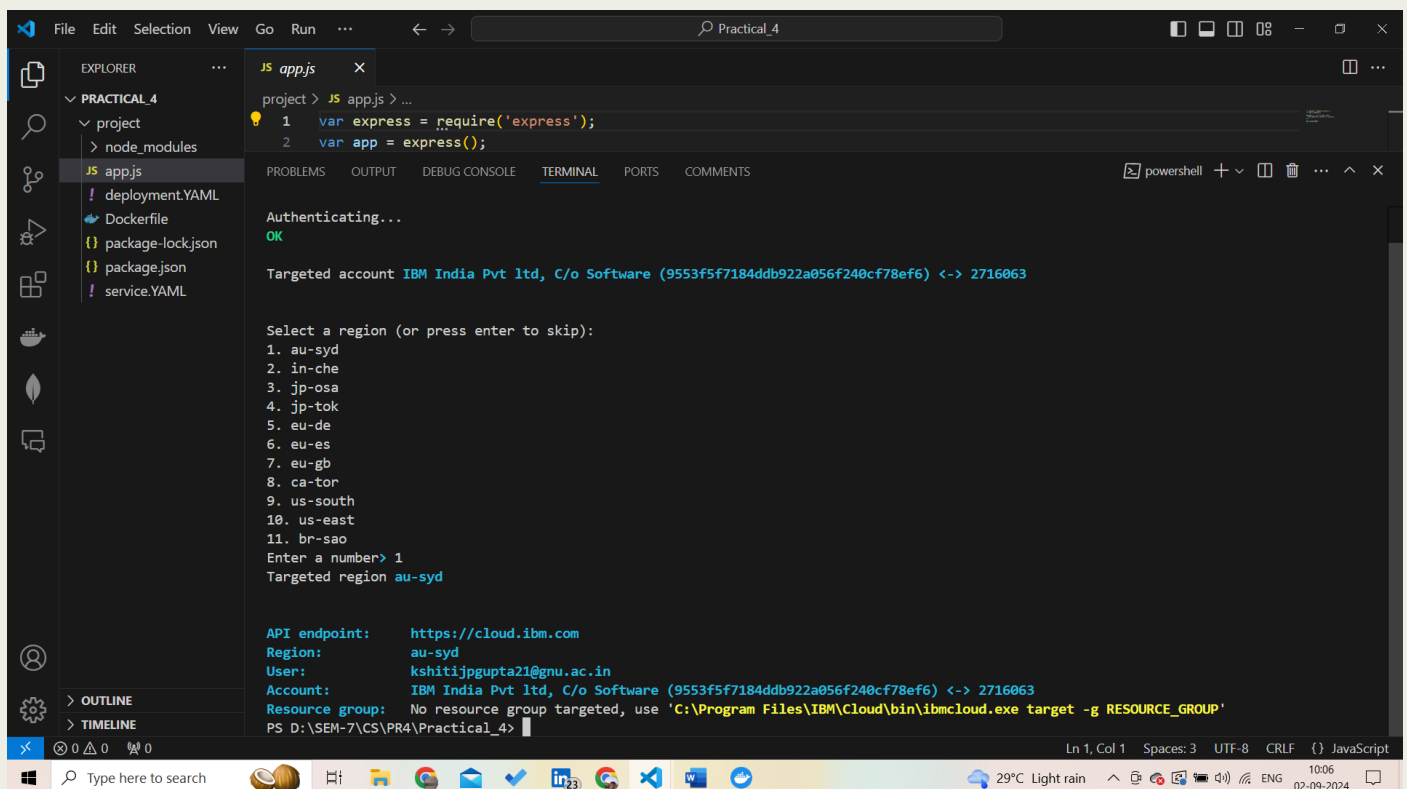
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
ibmcloud + - x

PS D:\SEM-7\CS\PR4\Practical_4> ibmcloud login -a https://cloud.ibm.com -u passcode -p ohvswk750c
API endpoint: https://cloud.ibm.com
Authenticating...
OK

Targeted account IBM India Pvt ltd, C/o Software (9553f5f7184ddb922a056f240cf78ef6) <-> 2716063

Select a region (or press enter to skip):
1. au-syd
2. in-che
3. jp-osa
4. jp-tok
5. eu-de
6. eu-es
7. eu-gb
8. ca-tor
9. us-south
10. us-east
11. br-sao
Enter a number> 
```

Select the region:



```
project > JS app.js > ...
1  var express = require('express');
2  var app = express();

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS COMMENTS
powershell + - x

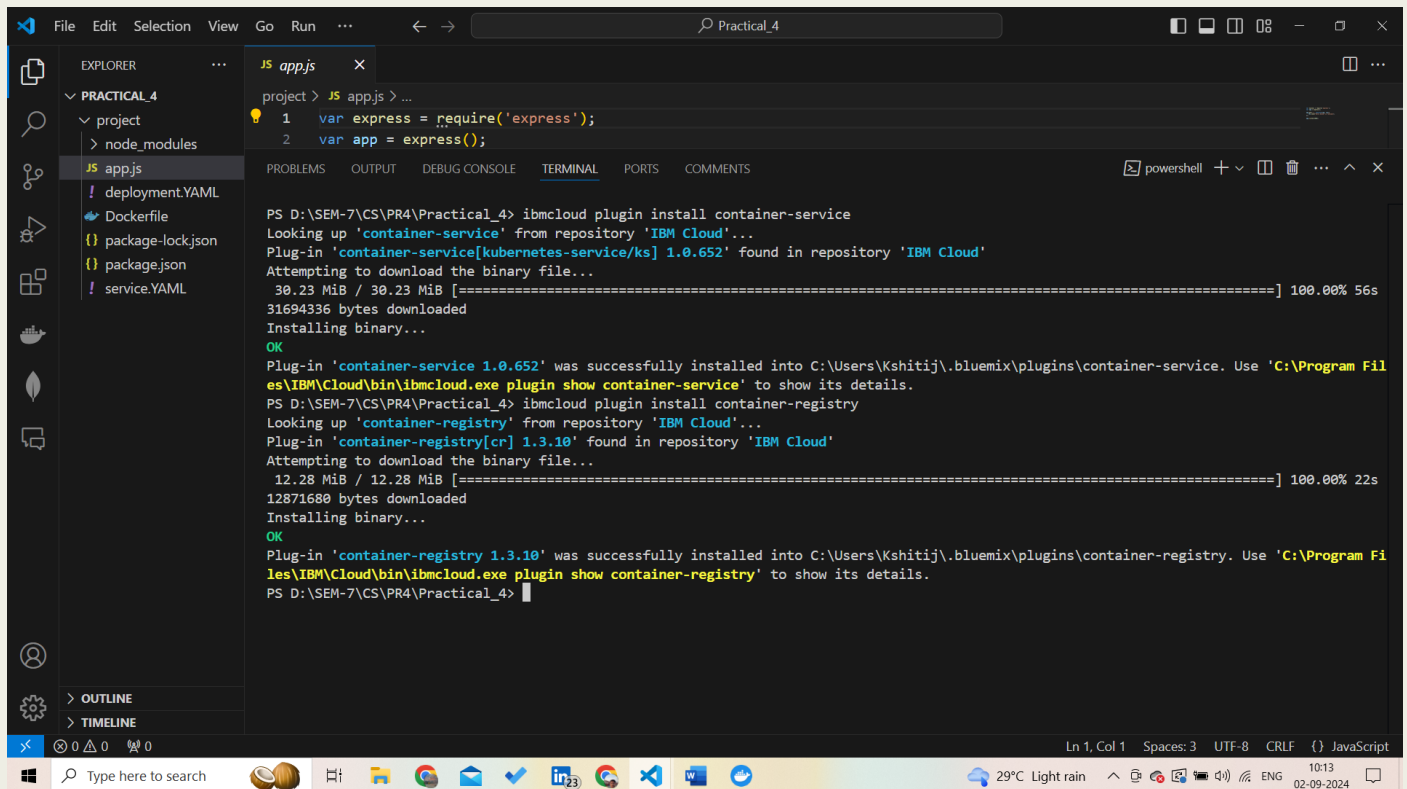
Authenticating...
OK

Targeted account IBM India Pvt ltd, C/o Software (9553f5f7184ddb922a056f240cf78ef6) <-> 2716063

Select a region (or press enter to skip):
1. au-syd
2. in-che
3. jp-osa
4. jp-tok
5. eu-de
6. eu-es
7. eu-gb
8. ca-tor
9. us-south
10. us-east
11. br-sao
Enter a number> 1
Targeted region au-syd

API endpoint: https://cloud.ibm.com
Region: au-syd
User: kshitijpgupta21@gnu.ac.in
Account: IBM India Pvt ltd, C/o Software (9553f5f7184ddb922a056f240cf78ef6) <-> 2716063
Resource group: No resource group targeted, use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe target -g RESOURCE_GROUP'
PS D:\SEM-7\CS\PR4\Practical_4> 
```

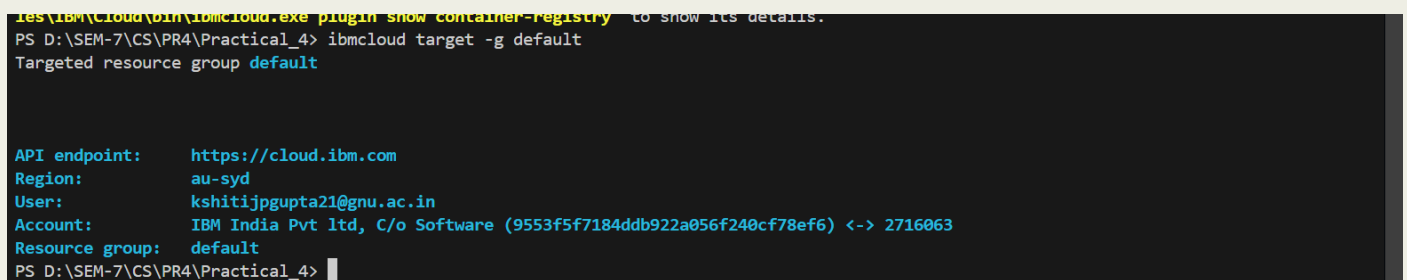
Install some required plugins for work with container registry and kubernetes service:



```
project > JS app.js > ...
1 var express = require('express');
2 var app = express();

PS D:\SEM-7\CS\PR4\Practical_4> ibmcloud plugin install container-service
Looking up 'container-service' from repository 'IBM Cloud'...
Plug-in 'container-service[kubernetes-service/ks] 1.0.652' found in repository 'IBM Cloud'
Attempting to download the binary file...
30.23 MiB / 30.23 MiB [=====] 100.00% 56s
31694336 bytes downloaded
Installing binary...
OK
Plug-in 'container-service 1.0.652' was successfully installed into C:\Users\Kshitij\.bluemix\plugins\container-service. Use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe plugin show container-service' to show its details.
PS D:\SEM-7\CS\PR4\Practical_4> ibmcloud plugin install container-registry
Looking up 'container-registry' from repository 'IBM Cloud'...
Plug-in 'container-registry[cr] 1.3.10' found in repository 'IBM Cloud'
Attempting to download the binary file...
12.28 MiB / 12.28 MiB [=====] 100.00% 22s
12871680 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.3.10' was successfully installed into C:\Users\Kshitij\.bluemix\plugins\container-registry. Use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe plugin show container-registry' to show its details.
PS D:\SEM-7\CS\PR4\Practical_4>
```

Set Target:

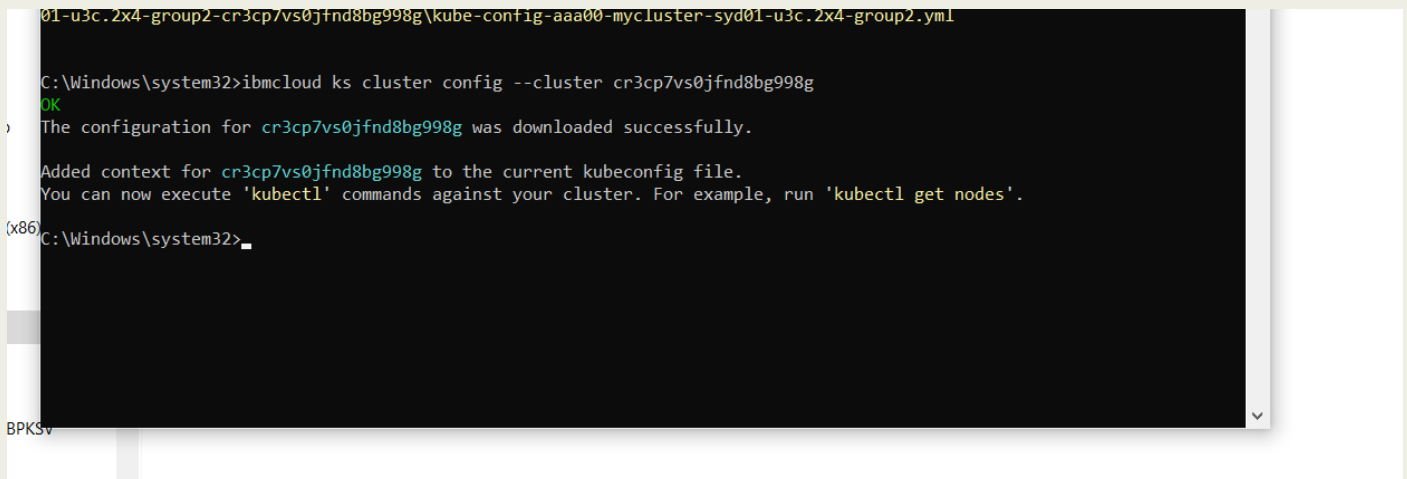


```
PS D:\SEM-7\CS\PR4\Practical_4> ibmcloud target -g default
Targeted resource group default

API endpoint: https://cloud.ibm.com
Region: au-syd
User: kshitijpgupta21@gnu.ac.in
Account: IBM India Pvt ltd, C/o Software (9553f5f7184ddb922a056f240cf78ef6) <-> 2716063
Resource group: default
PS D:\SEM-7\CS\PR4\Practical_4>
```

Download kubernetes cluster configuration (for this we need cluster ID), WE get once create service on cloud

Command: `ibmcloud ks cluster config --cluster c_id`



```
01-u3c.2x4-group2-cr3cp/vs0jfdnd8bg998g\kube-config-aaa00-mycluster-syd01-u3c.2x4-group2.yml

C:\Windows\system32>ibmcloud ks cluster config --cluster cr3cp7vs0jfdnd8bg998g
OK
The configuration for cr3cp7vs0jfdnd8bg998g was downloaded successfully.

Added context for cr3cp7vs0jfdnd8bg998g to the current kubeconfig file.
You can now execute 'kubectl' commands against your cluster. For example, run 'kubectl get nodes'.

C:\Windows\system32>
```

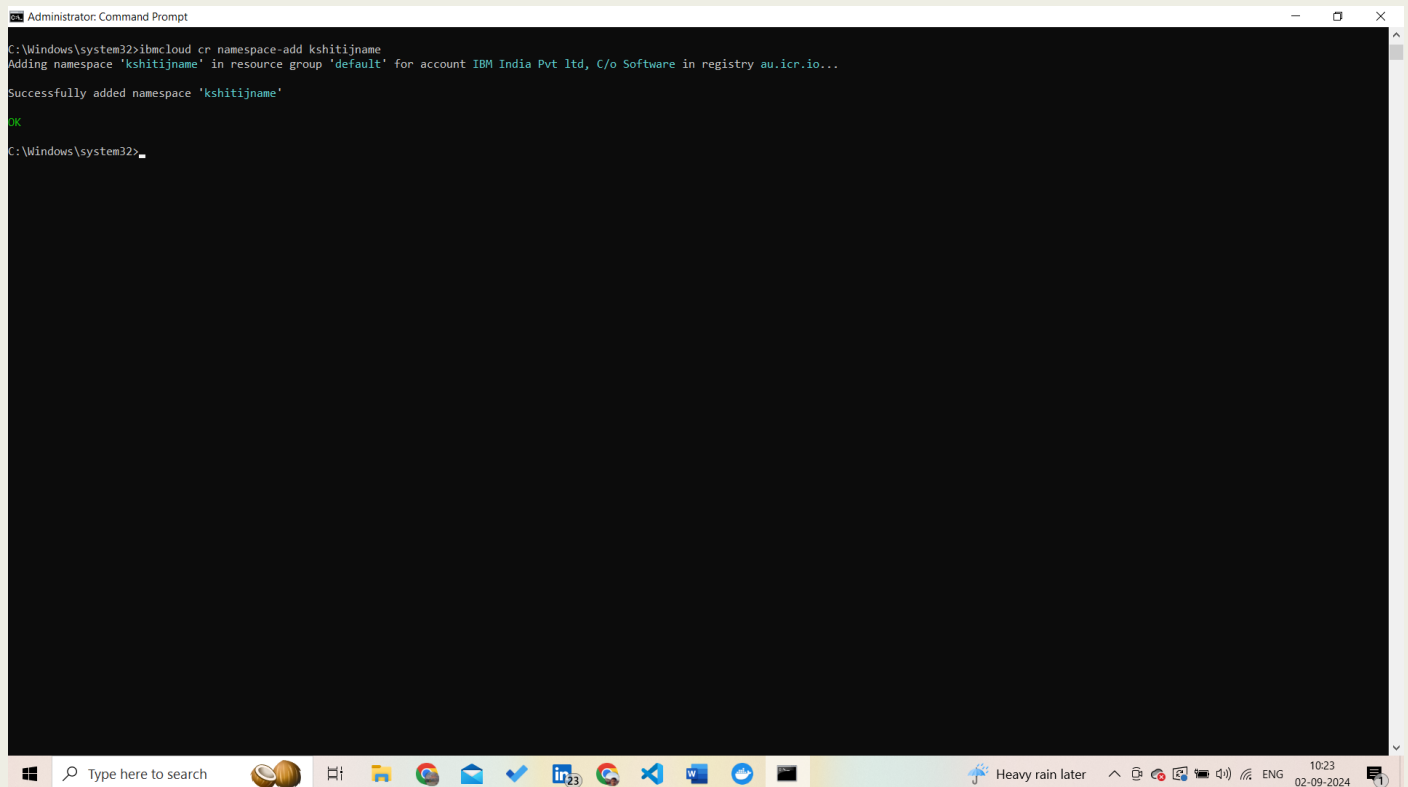
Run command to check configuration of cluster with which we are going to work:

Command: kubectl config current-context

```
C:\Windows\system32>kubectl config current-context
mycluster-syd01-u3c.2x4-group2/cr3cp7vs0jfd8bg998g
C:\Windows\system32>
```

create namespace in container registry run the command(to register container):

command: ibmcloud cr namespace-add kshitijname

A screenshot of a Windows Command Prompt window titled "Administrator: Command Prompt". The window shows the command "C:\Windows\system32>ibmcloud cr namespace-add kshitijname" being entered. The output of the command is displayed: "Adding namespace 'kshitijname' in resource group 'default' for account IBM India Pvt ltd, C/o Software in registry au.icr.io..." followed by "Successfully added namespace 'kshitijname'" and a green "OK" message. The prompt then returns to "C:\Windows\system32>". The Windows taskbar is visible at the bottom, showing the search bar, task view button, and several application icons including File Explorer, Google Chrome, and Microsoft Word. The system tray on the right shows the date and time as "10:23 02-09-2024" and the language as "ENG".

```
Administrator: Command Prompt
C:\Windows\system32>ibmcloud cr namespace-add kshitijname
Adding namespace 'kshitijname' in resource group 'default' for account IBM India Pvt ltd, C/o Software in registry au.icr.io...
Successfully added namespace 'kshitijname'
OK
C:\Windows\system32>
```

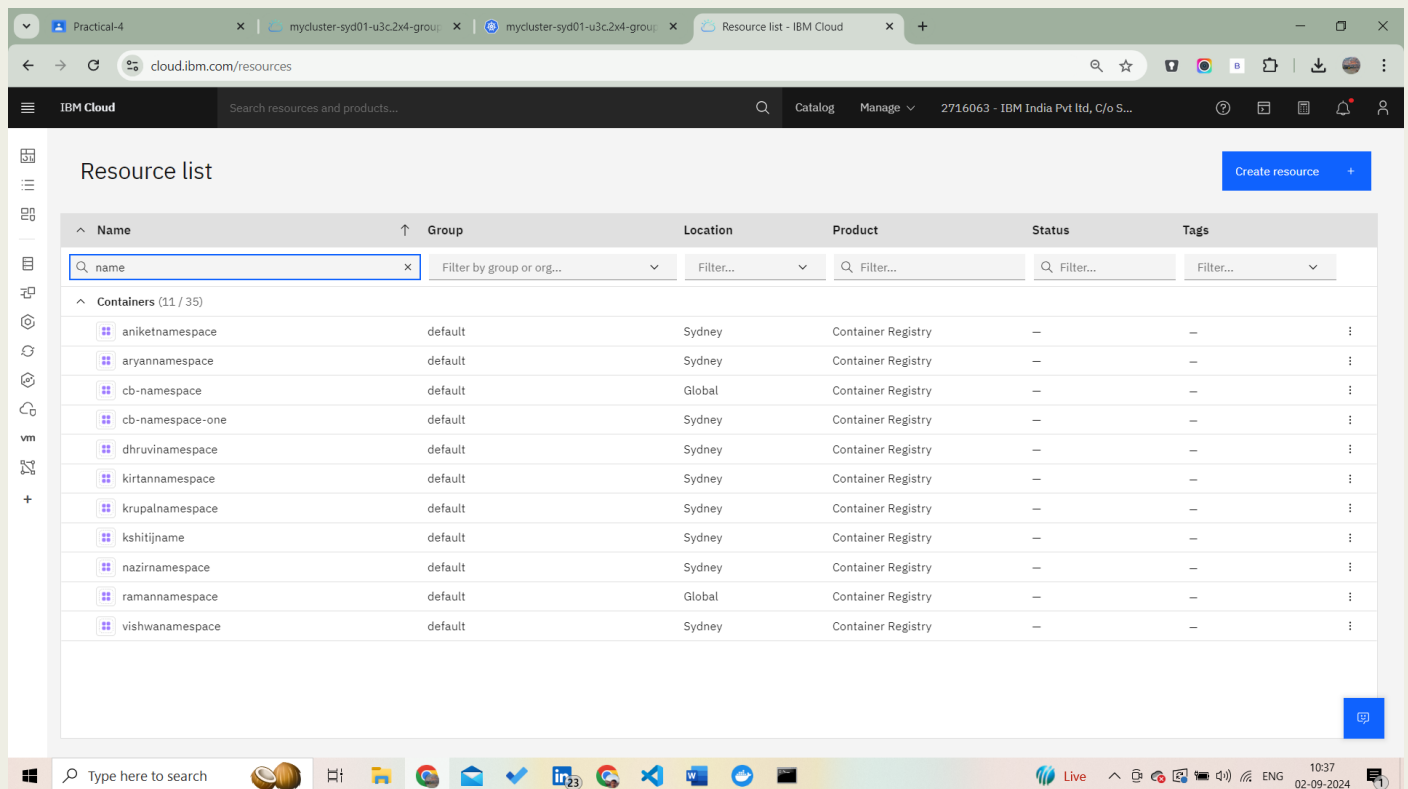
Login into name space:

```
C:\Windows\system32>ibmcloud cr login
Logging 'docker' in to 'au.icr.io'...
Logged in to 'au.icr.io'.

OK

C:\Windows\system32>
```

Cheak the name space:



The screenshot shows the IBM Cloud console interface. The browser address bar displays 'cloud.ibm.com/resources'. The page title is 'Resource list'. A sidebar on the left contains navigation icons. The main content area features a table with columns: Name, Group, Location, Product, Status, and Tags. The 'Name' column has a search filter 'name' applied. The table lists 11 container namespaces under the 'Containers' category. The namespaces are: aniketnamespace, aryannamespace, cb-namespace, cb-namespace-one, dhruvinamespace, kirtannamespace, krupalnamespace, kshitijname, nazirnamespace, ramannamespace, and vishwanamespace. All namespaces are in the 'default' group, located in 'Sydney' or 'Global', and are 'Container Registry' products with a status of '—'.

Name	Group	Location	Product	Status	Tags
Containers (11 / 35)					
aniketnamespace	default	Sydney	Container Registry	—	—
aryannamespace	default	Sydney	Container Registry	—	—
cb-namespace	default	Global	Container Registry	—	—
cb-namespace-one	default	Sydney	Container Registry	—	—
dhruvinamespace	default	Sydney	Container Registry	—	—
kirtannamespace	default	Sydney	Container Registry	—	—
krupalnamespace	default	Sydney	Container Registry	—	—
kshitijname	default	Sydney	Container Registry	—	—
nazirnamespace	default	Sydney	Container Registry	—	—
ramannamespace	default	Global	Container Registry	—	—
vishwanamespace	default	Sydney	Container Registry	—	—

Cheak the image:


```
C:\Windows\system32>docker images
```

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
img1_007	1.0	83d79dec86f	49 minutes ago	95.9MB
gcr.io/k8s-minikube/kicbase	v0.0.43	619d67e74933	4 months ago	1.26GB
postgres	latest	d60dc4bd84c0	6 months ago	431MB
car	latest	3451ec0204d6	9 months ago	1.13GB
<none>	<none>	08ff98d671f2	9 months ago	1.13GB
<none>	<none>	e38c7b9cfaf4	9 months ago	1.13GB
<none>	<none>	37a608500150	9 months ago	1.13GB
<none>	<none>	bca7c669a315	9 months ago	1.13GB
kshitiigupta505/pr_14_test	latest	8c243906c869	10 months ago	122MB
kshitiigupta505/kshitiigupta505	<none>	8d2702bdf0a	10 months ago	64.5MB
hubproxy.docker.internal:5555/docker/desktop-kubernetes	kubernetes-v1.27.2-cni-v1.2.0-critools-v1.27.0-cri-dockerd-v0.3.2-1-debian	c763812a4530	15 months ago	418MB
registry.k8s.io/kube-apiserver	v1.27.2	c5b13e4f7806	15 months ago	121MB
registry.k8s.io/kube-scheduler	v1.27.2	89e70da428d2	15 months ago	58.4MB
registry.k8s.io/kube-controller-manager	v1.27.2	ac2b7465ebba	15 months ago	112MB
registry.k8s.io/kube-proxy	v1.27.2	b8aa50768fd6	15 months ago	71.1MB
docker/desktop-vpnkit-controller	dc31cb22850be0cdd97c84a9cfecaf44a1afb6e	556098075b3d	15 months ago	36.2MB
registry.k8s.io/coredns/coredns	v1.10.1	ead0a4a53df8	19 months ago	53.6MB
registry.k8s.io/etcd	3.5.7-0	86b6af7dd652	19 months ago	296MB
registry.k8s.io/pause	3.9	e6f181688397	22 months ago	744kB
docker/desktop-storage-provisioner	v2.0	99f89471f470	3 years ago	41.9MB

```
C:\Windows\system32>
```

Tag the image:

docker tag img1_007:1.0 au.icr.io/kshitiiname/new_img_007:1.0

```
C:\Windows\system32>docker tag img1_007:1.0 au.icr.io/kshitiiname/new_img_007:1.0
```

```
C:\Windows\system32>
```

Push the image:

docker tag img1_007:1.0 au.icr.io/kshitiiname/new_img_007:1.0

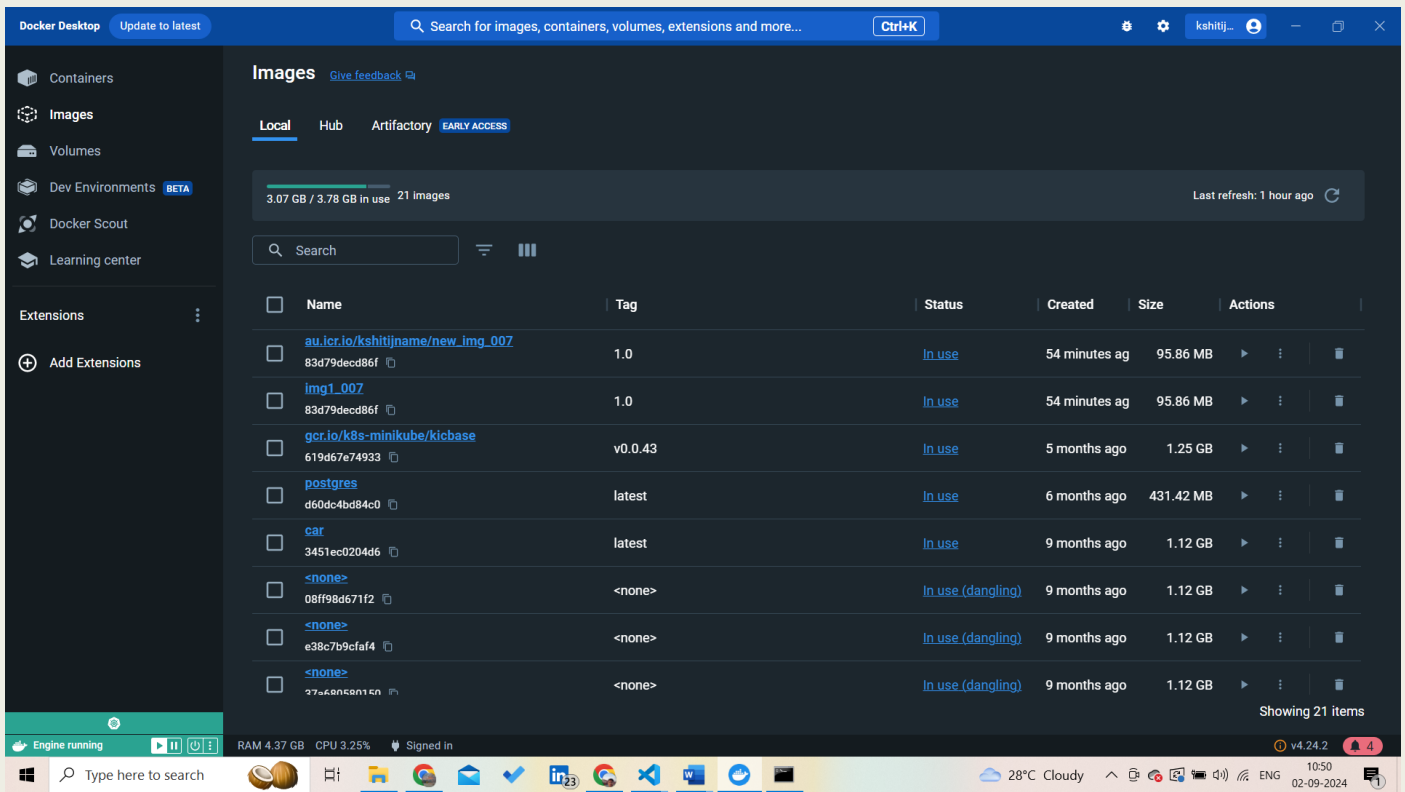
```
C:\Windows\system32>docker tag img1_007:1.0 au.icr.io/kshitiiname/new_img_007:1.0
```

```
C:\Windows\system32>docker push au.icr.io/kshitiiname/new_img_007:1.0
```

The push refers to repository [au.icr.io/kshitiiname/new_img_007]

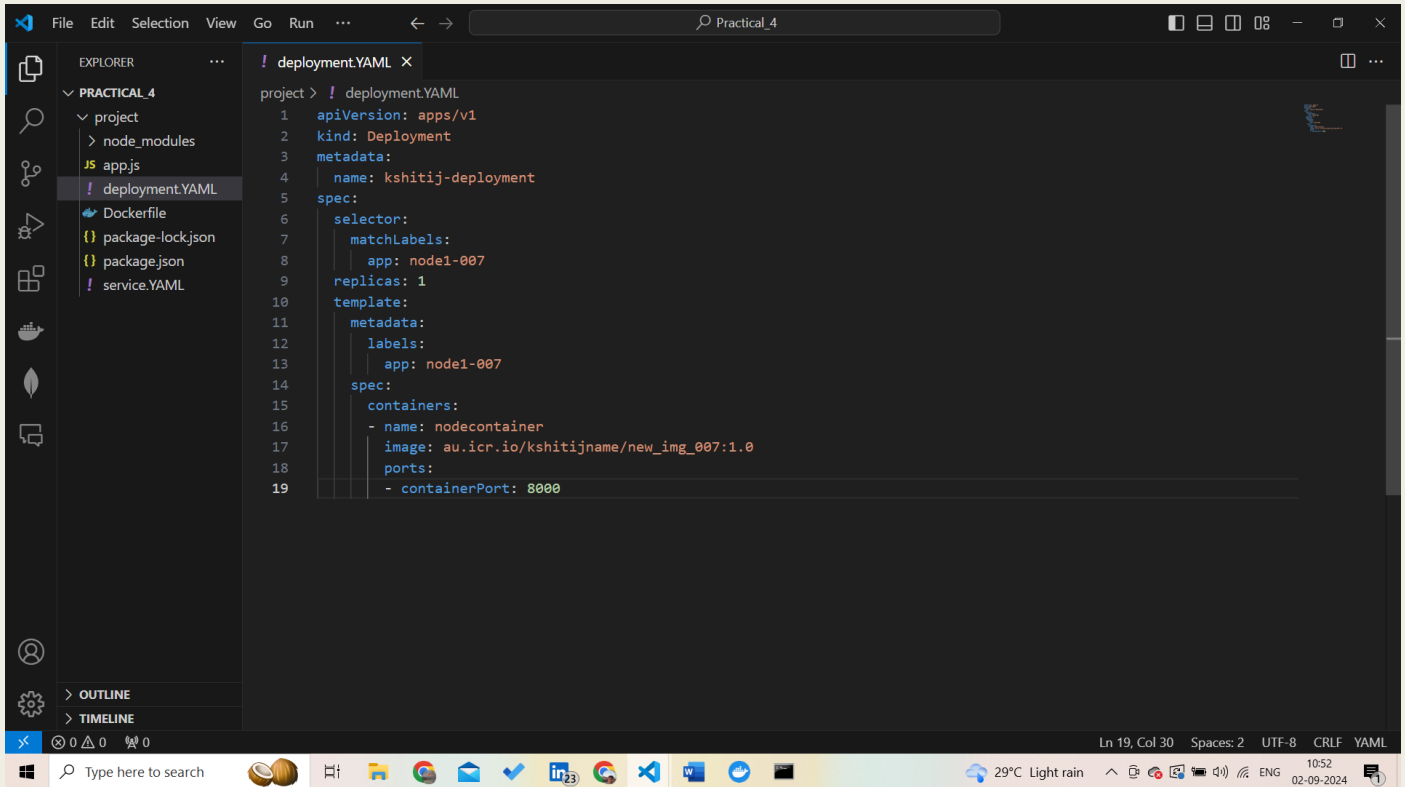
```
b26ee3f5e79b: Pushed
0c47c0547373: Pushed
a6f91ae66130: Pushed
5f70bf18a086: Pushed
5e99137ac49d: Pushed
7f30cde3f699: Pushed
fe810f5902cc: Pushed
dfd8c046c602: Pushed
4fc242d58285: Pushed
1.0: digest: sha256:2785c65b1da16253f5bbef226d32fcbb57dd0769e97f8729e97b9ce304108603 size: 2200
```

```
C:\Windows\system32>
```

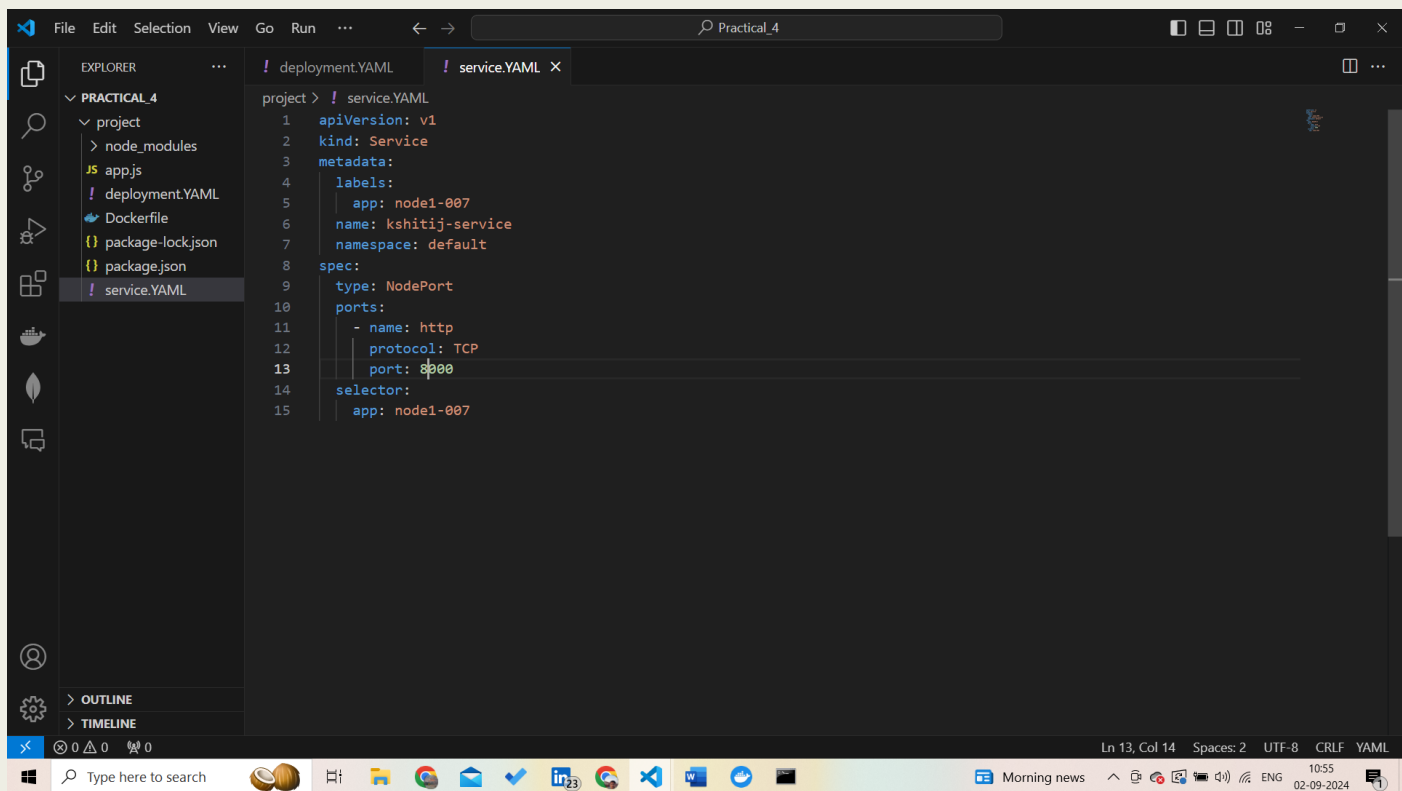


Time to Deployment:

Configure the deployment.yaml:



Service.yaml:

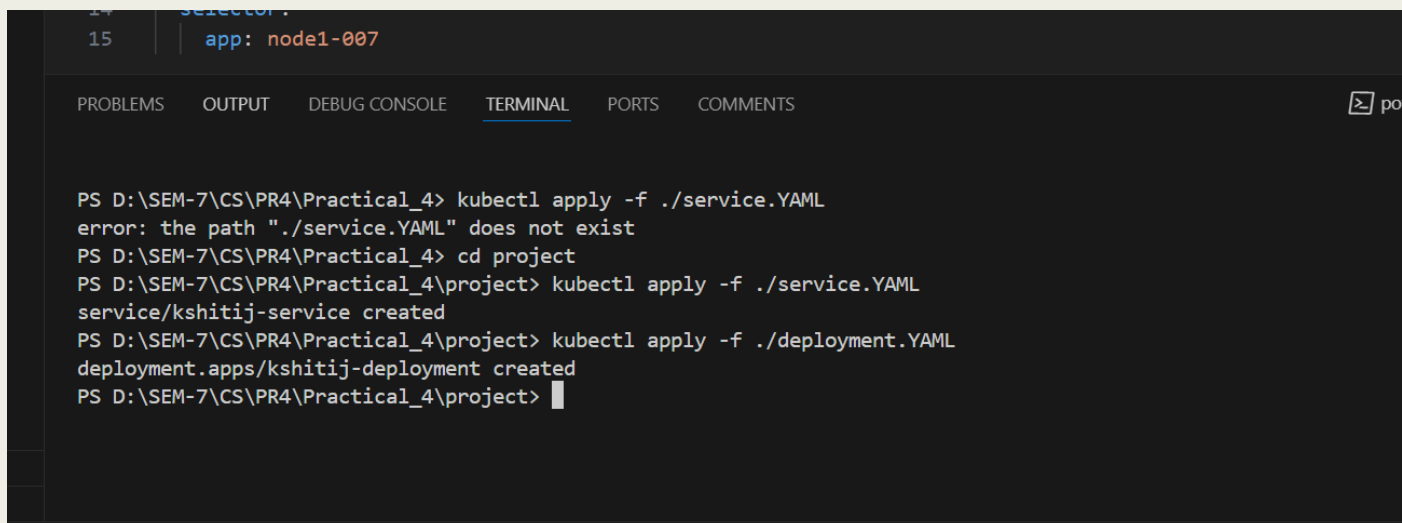


The screenshot shows the Visual Studio Code editor with the 'service.YAML' file open. The file content is as follows:

```
1  apiVersion: v1
2  kind: Service
3  metadata:
4    labels:
5      app: node1-007
6    name: kshitij-service
7    namespace: default
8  spec:
9    type: NodePort
10   ports:
11     - name: http
12       protocol: TCP
13       port: 8000
14   selector:
15     app: node1-007
```

The Explorer sidebar on the left shows the project structure with files like 'app.js', 'deployment.YAML', 'Dockerfile', 'package-lock.json', and 'package.json'. The status bar at the bottom indicates the current line and column (Ln 13, Col 14) and the file encoding (UTF-8, CRLF).

Run command to check deployments:



The screenshot shows the terminal window with the following commands and output:

```
PS D:\SEM-7\CS\PR4\Practical_4> kubectl apply -f ./service.YAML
error: the path "./service.YAML" does not exist
PS D:\SEM-7\CS\PR4\Practical_4> cd project
PS D:\SEM-7\CS\PR4\Practical_4\project> kubectl apply -f ./service.YAML
service/kshitij-service created
PS D:\SEM-7\CS\PR4\Practical_4\project> kubectl apply -f ./deployment.YAML
deployment.apps/kshitij-deployment created
PS D:\SEM-7\CS\PR4\Practical_4\project>
```

The terminal window also shows tabs for 'PROBLEMS', 'OUTPUT', 'DEBUG CONSOLE', 'TERMINAL', 'PORTS', and 'COMMENTS'.

Cheak the deployment:

Practical-4

mycluster-syd01-u3c2x4-group

mycluster-syd01-u3c2x4-group

Resource list - IBM Cloud

au-syd.containers.cloud.ibm.com/kubeproxy/clusters/cr3cp7vs0jfd8bg998g/service/#/workloads?namespace=default

kubernetes

default

Search

Workloads

Workloads

Cron Jobs

Daemon Sets

Deployments

Jobs

Pods

Replica Sets

Replication Controllers

Stateful Sets

Service

Ingresses

Ingress Classes

Services

Config and Storage

Config Maps

Persistent Volume Claims

Secrets

Deployments

Pods

Replica Sets

Deployments

Name	Images	Labels	Pods	Created
kshiti-j-deployment	Show all	-	1 / 1	58.seconds.ago
raj-deployment	Show all	-	1 / 1	4.minutes.ago
gnuprathi-deploy	Show all	-	1 / 1	11.minutes.ago

Pods

Name	Images	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created
kshiti-j-deployment-dc48bd5c-v9fht	Show all	Show all	10.210.8.251	Running	0	21.00m	10.54Mi	58.seconds.ago
raj-deployment-b8d557b94-b79kl	Show all	Show all	10.210.8.251	CrashLoopBack-off	4	-	-	2.minutes.ago
raj-deployment-9455f47cf-8gtk4	Show all	Show all	10.210.8.251	ImagePullBack-off	0	-	-	4.minutes.ago
gnuprathi-deploy-	Show all	Show all	10.210.8.251	Running	0	0.00m	10.54Mi	11.minutes.ago

Type here to search

Heavier rain soon

10:58

02-09-2024

Deployments

Name	Images	Labels	Pods	Created
kshiti-j-deployment	au.icr.io/kshiti-j-name/new_img_007:1.0 Show less	-	1 / 1	1.minute.ago

Pods

Name	Images	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created
kshiti-j-deployment-dc48bd5c-v9fht	Show all	Show all	10.210.8.251	Running	0	0.00m	10.54Mi	2.minutes.ago