

## Assignment -4

### Inventory Management System for Retailers – Kubernetes / Docker

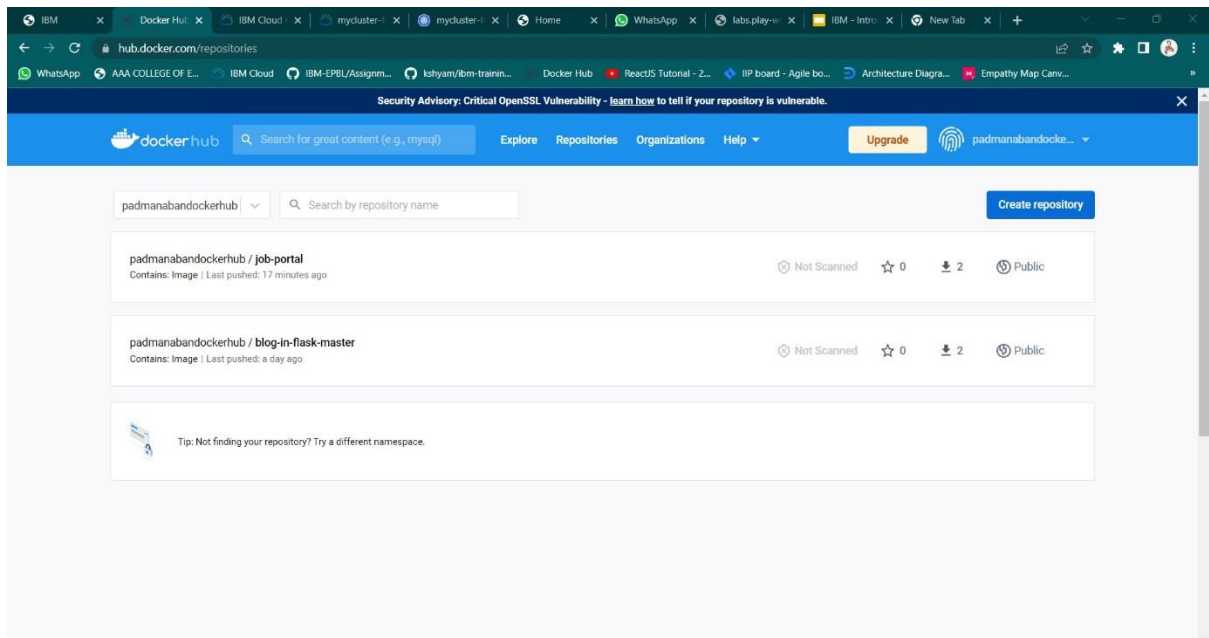
Assignment Date	20 October 2022
Student Name	PADMANABAN P
Student Roll Number	953719104040
Maximum Marks	2 Marks

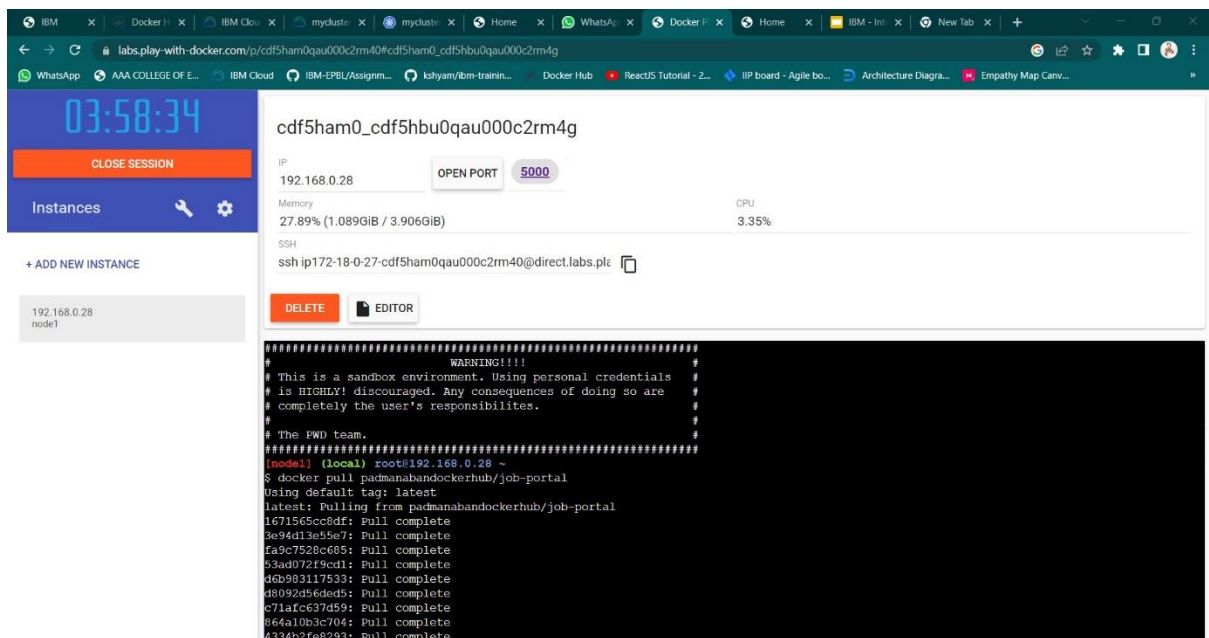
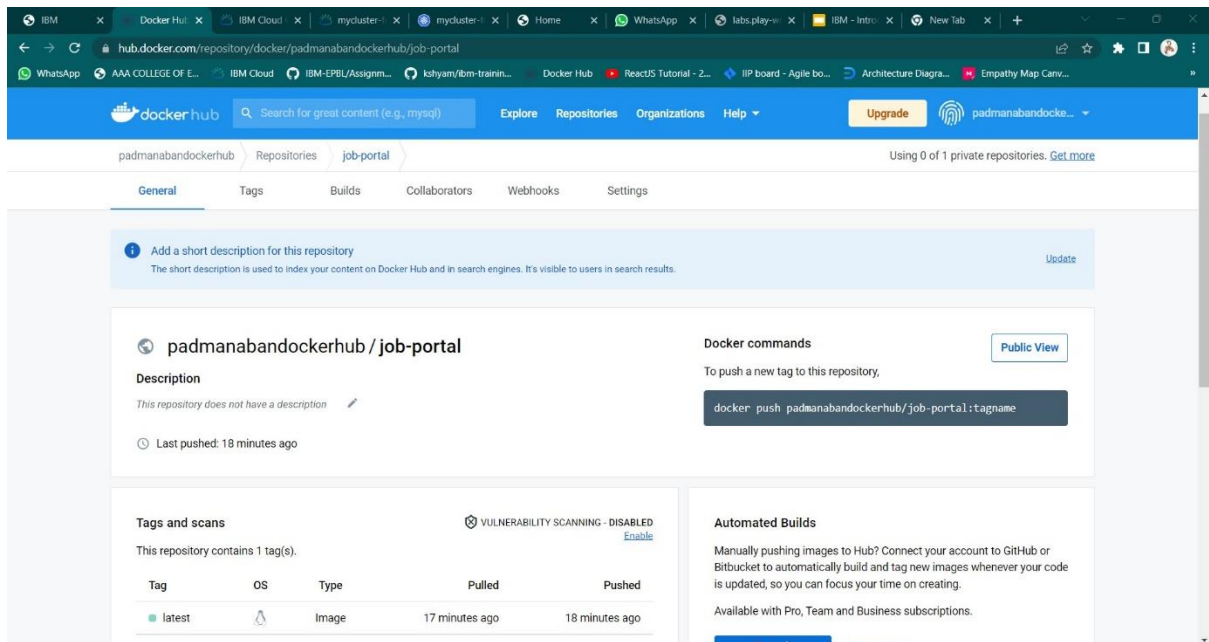
#### Question-1:

1. Pull an Image from docker hub and run it in docker playground.
2. Create a dockerfile for the job portal / flask application and deploy it in Docker desktop application.
3. Create a IBM container registry and push docker image of flask application or job portal app.
4. Create a Kubernetes cluster in IBM cloud and deploy flask application image or job portal image and also expose the same app to run in Nodeport.

**Solution: \*\*All the required files are uploaded in the ASSIGNMENTS/PADMANABAN P (TEAM LEADER)/ASSIGNMENT 4 folder in the Git repo. Please verify it sir/mam.**

**Step 1:** Pull an Image from docker hub and run it in docker playground.





IBM Docker Hub mycluster mycluster Home WhatsApp Docker Home IBM - Intro New Tab

labs.play-with-docker.com/p/cdf5ham0qau000c2rm40/cdf5ham0\_cdf5hbu0qau000c2rm4g

03:58:16 CLOSE SESSION

Instances

+ ADD NEW INSTANCE

192.168.0.28 node1

**cdf5ham0\_cdf5hbu0qau000c2rm4g**

IP: 192.168.0.28 OPEN PORT: 5000

Memory: 27.90% (1.09GiB / 3.906GiB) CPU: 0.52%

SSH: ssh ip172-18-0-27-cdf5ham0qau000c2rm40@direct.labs.pls

DELETE EDITOR


```
4334b2fe8293: Pull complete
8db6eeea35ae: Pull complete
947cbdee23db: Pull complete
923027363cd0: Pull complete
cc27c04a7e9b: Pull complete
Digest: sha256:1e3a2a807606785828c70093effd380382c1bb963abf8662b954b6e79d4b9177
Status: Downloaded newer image for padmanabandockerhub/job-portal:latest
docker.io/padmanabandockerhub/job-portal:latest
[node1] (local) root@192.168.0.28 ~
$ docker run -p 5000:5000 padmanabandockerhub/job-portal
* Serving Flask app 'app'
* Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
* Running on all addresses (0.0.0.0)
* Running on http://127.0.0.1:5000
* Running on http://172.17.0.2:5000
Press CTRL+C to quit
172.18.0.1 - - [30/Oct/2022 10:59:04] "GET / HTTP/1.1" 200 -
172.18.0.1 - - [30/Oct/2022 10:59:04] "GET /static/css/bootstrap.min.css HTTP/1.1" 200 -
172.18.0.1 - - [30/Oct/2022 10:59:04] "GET /static/css/mystyle.css HTTP/1.1" 200 -
172.18.0.1 - - [30/Oct/2022 10:59:04] "GET /static/css/owl.carousel.min.css HTTP/1.1" 200 -
```

IBM Docker Hub mycluster mycluster Home WhatsApp Docker Plus Home IBM - Intro New Tab

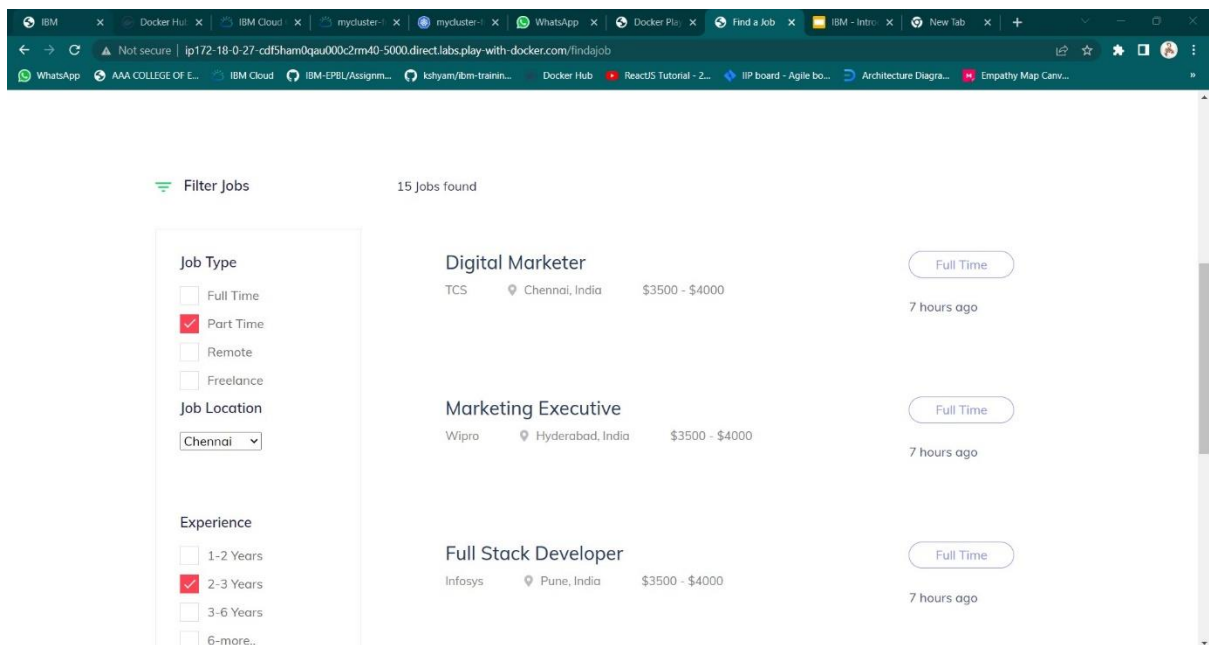
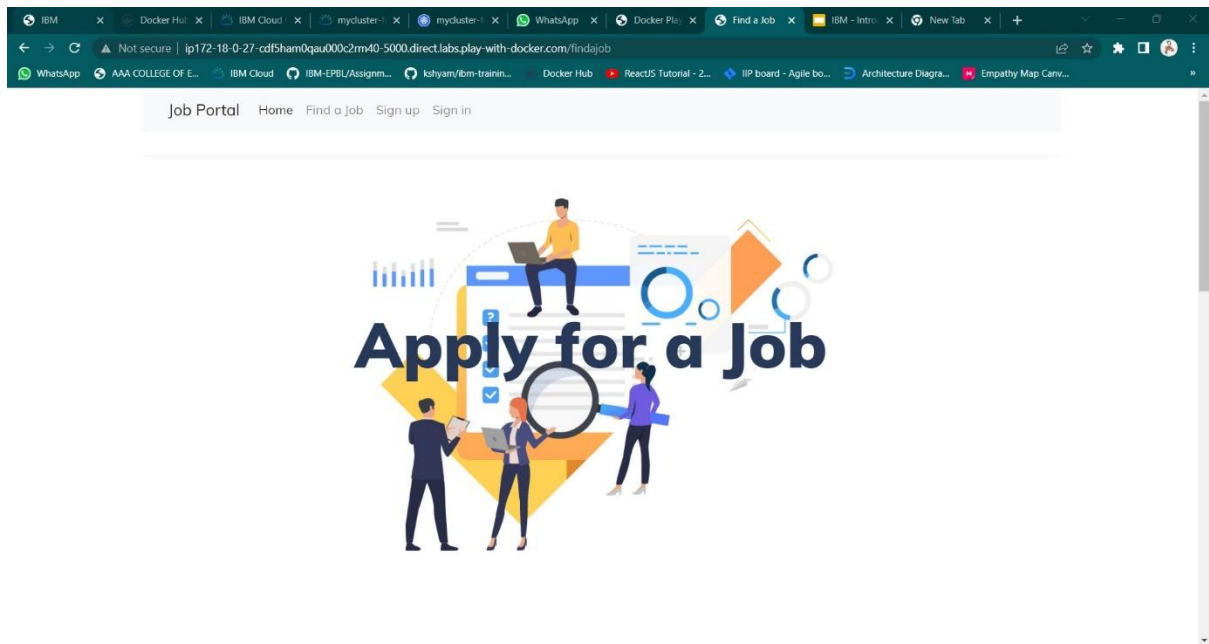
Not secure | ip172-18-0-27-cdf5ham0qau000c2rm40-5000.direct.labs.play-with-docker.com

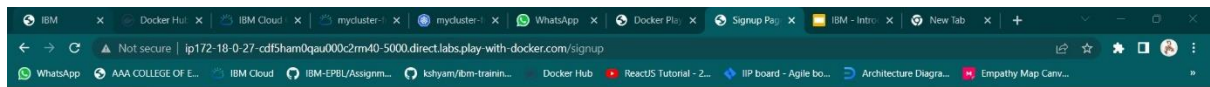
WhatsApp AAA COLLEGE OF E... IBM Cloud IBM-EPBL/Assignm... kshyam/ibm-train... Docker Hub ReactJS Tutorial - 2... IIP board - Agile bo... Architecture Diagram... Empathy Map Canv...

Job Portal Home Find a Job Sign up Sign in



Find the most exciting startup jobs

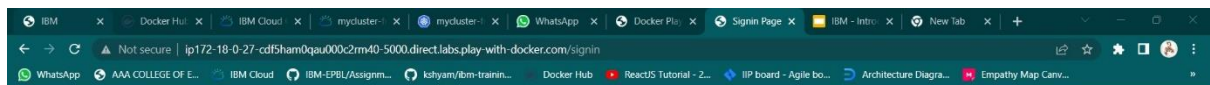




Job Portal Home Find a Job Sign up Sign in


Already have an Account?  
**Signin**

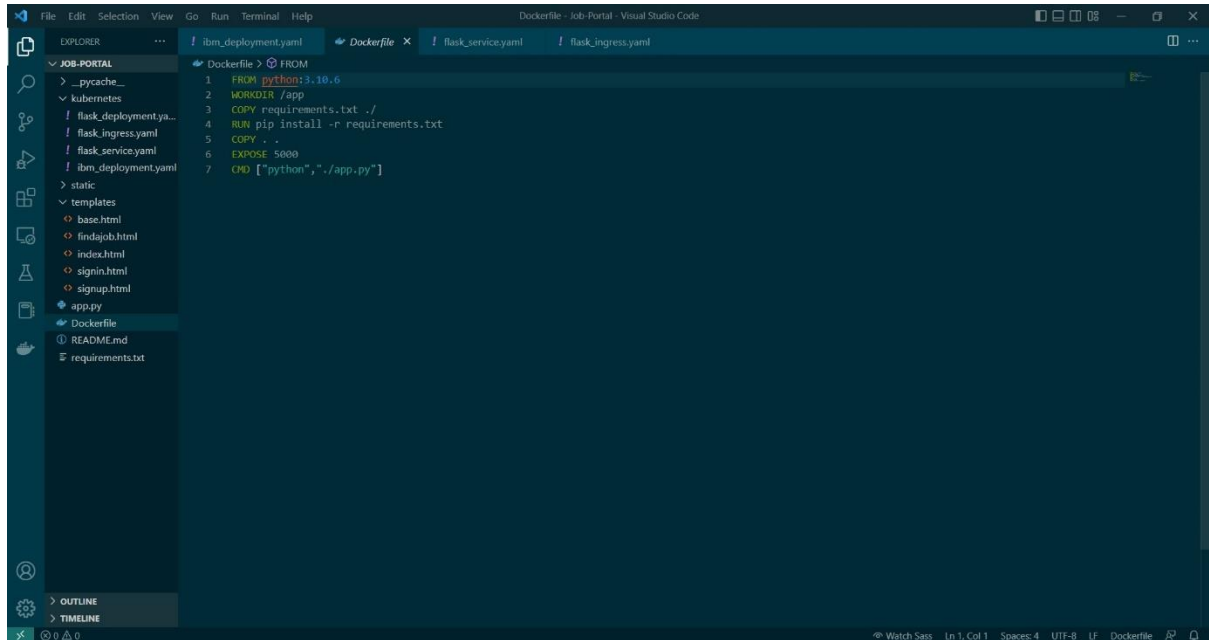


Job Portal Home Find a Job Sign up Sign in


Don't have an Account?  
**SignUp**

**Step 2:** Create a dockerfile for the job portal / flask application and deploy it in Docker desktop application.



The screenshot shows the Visual Studio Code editor with a Dockerfile open. The file explorer on the left shows a project named 'JOB-PORTAL' with various files including 'flask\_deployment.yaml', 'flask\_ingress.yaml', 'flask\_service.yaml', 'ibm\_deployment.yaml', 'static', 'templates', 'base.html', 'findajob.html', 'index.html', 'signin.html', 'signup.html', 'app.py', 'Dockerfile', 'README.md', and 'requirements.txt'. The Dockerfile content is as follows:

```
1 FROM python:3.10.6
2 WORKDIR /app
3 COPY requirements.txt ./
4 RUN pip install -r requirements.txt
5 COPY . .
6 EXPOSE 5000
7 CMD ["python", "-u", "app.py"]
```

Docker Desktop

Upgrade plan

Containers

Images

Volumes

Dev Environments

Extensions

Add Extensions

Upgrade plan

Images on disk

Last refresh: 2 days ago

19 Images

3.59 GB total size

2.13 GB / 3.59 GB in use

Clean up

Images

Give feedback

LOCAL

REMOTE REPOSITORIES

hubproxy.docker.intern...	kubernetes-v1.25.2...	09d7e1dbc2c4	about 1 month ago	363.32 MB
job-portal	latest	356c3b9de6dc	9 minutes ago	936.19 MB
jp.icr.io/padmanaban/bl...	latest	964c2a10d21b	1 day ago	932.42 MB
jp.icr.io/padmanaban/Jo...	latest	356c3b9de6dc	9 minutes ago	936.19 MB
k8s.gcr.io/coredns	v1.9.3	5185b96f0bec	5 months ago	48.8 MB
k8s.gcr.io/etcd	3.5.4-0	a8a176a5d5d6	5 months ago	299.52 MB
k8s.gcr.io/kube-apiserver	v1.25.2	97801f839490	about 1 month ago	127.73 MB
k8s.gcr.io/kube-controll...	v1.25.2	dbfceb93c69b	about 1 month ago	117.1 MB
k8s.gcr.io/kube-proxy	v1.25.2	1c7d8c51823b	about 1 month ago	61.69 MB
k8s.gcr.io/kube-scheduler	v1.25.2	ca0ea1ee3cfd	about 1 month ago	50.58 MB
k8s.gcr.io/kubelet	v1.25.2	4873874r0Ref	5 months ago	711.18 MB

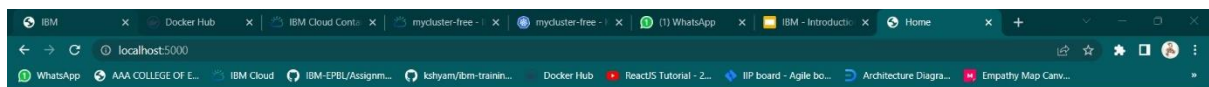
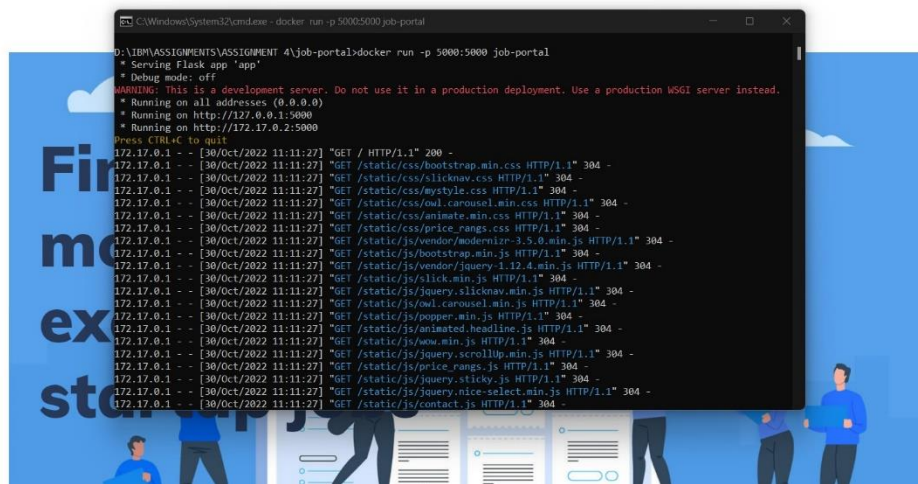
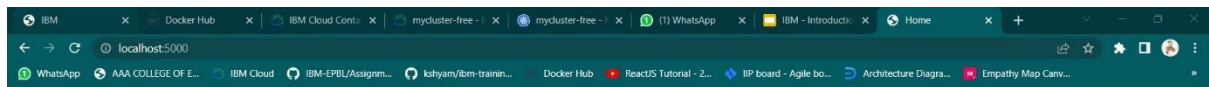
RAM 3.51 GB

CPU 4.51%

Connected to Hub

v4.13.0





**Step 3:** Create a IBM container registry and push docker image of flask application or job portal app.

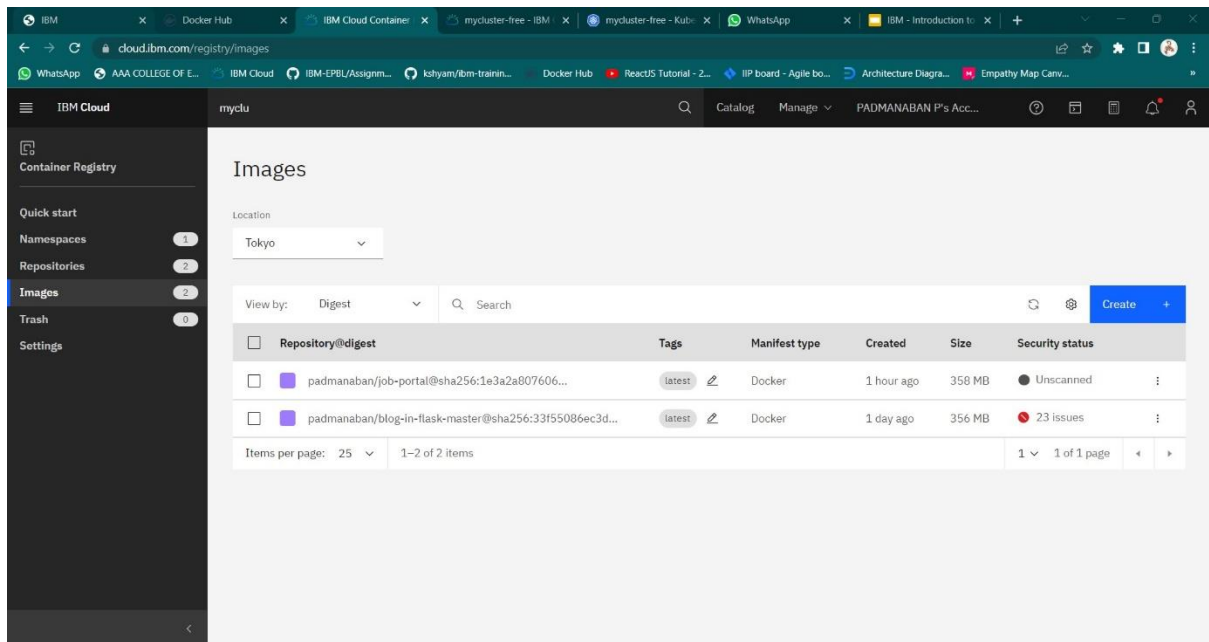
The screenshot shows the IBM Cloud Container Registry interface. The left sidebar contains a 'Container Registry' section with a 'Quick start' menu. The 'Namespaces' menu item is selected and highlighted in blue. The main content area is titled 'Namespaces' and shows a table with one namespace named 'padmanaban'. The table columns are Name, Resource group, Repository count, Image count, and Retention policy. The 'padmanaban' namespace has a resource group of 'Default', 2 repositories, 2 images, and a retention policy of 'Retain all images'. A 'Create' button is visible in the top right corner of the table area.

Name	Resource group	Repository count	Image count	Retention policy
padmanaban	Default	2	2	Retain all images

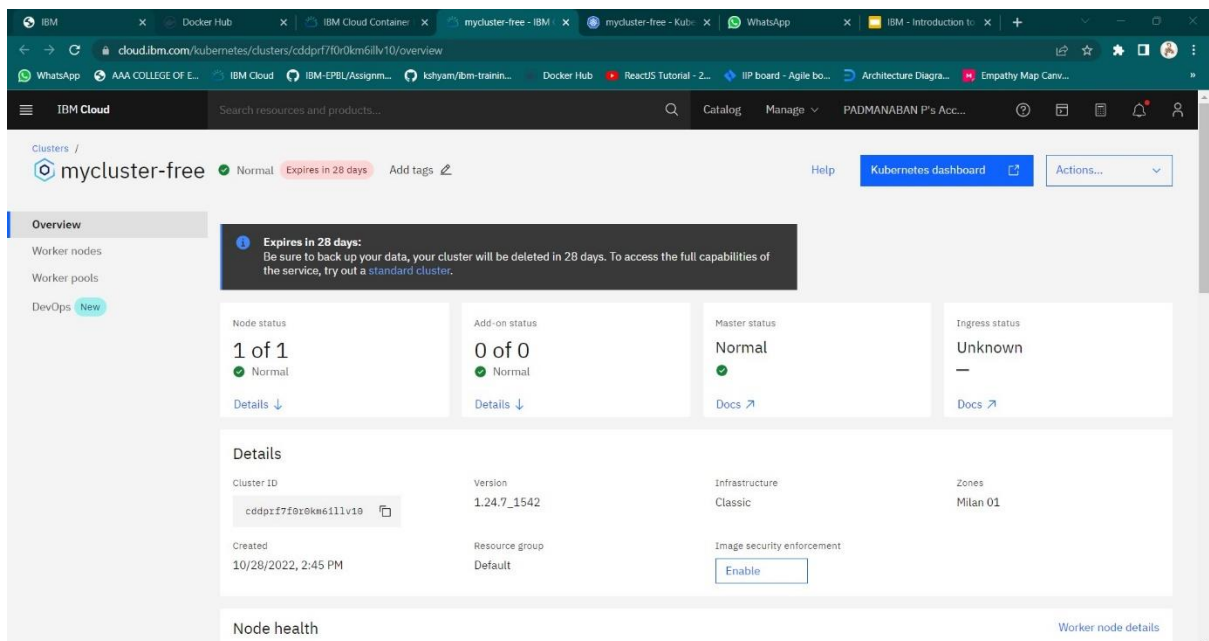
The screenshot shows the IBM Cloud Container Registry interface, specifically the 'Repositories' page. The left sidebar is the same as the previous screenshot, but the 'Repositories' menu item is selected and highlighted in blue. The main content area is titled 'Repositories' and shows a table with two repositories: 'job-portal' and 'blog-in-flask-master'. The table columns are Name, Image count, Namespace, and Last updated. The 'job-portal' repository has an image count of 1, namespace of 'padmanaban', and was updated 1 hour ago. The 'blog-in-flask-master' repository has an image count of 1, namespace of 'padmanaban', and was updated 1 day ago. A 'Create' button is visible in the top right corner of the table area.

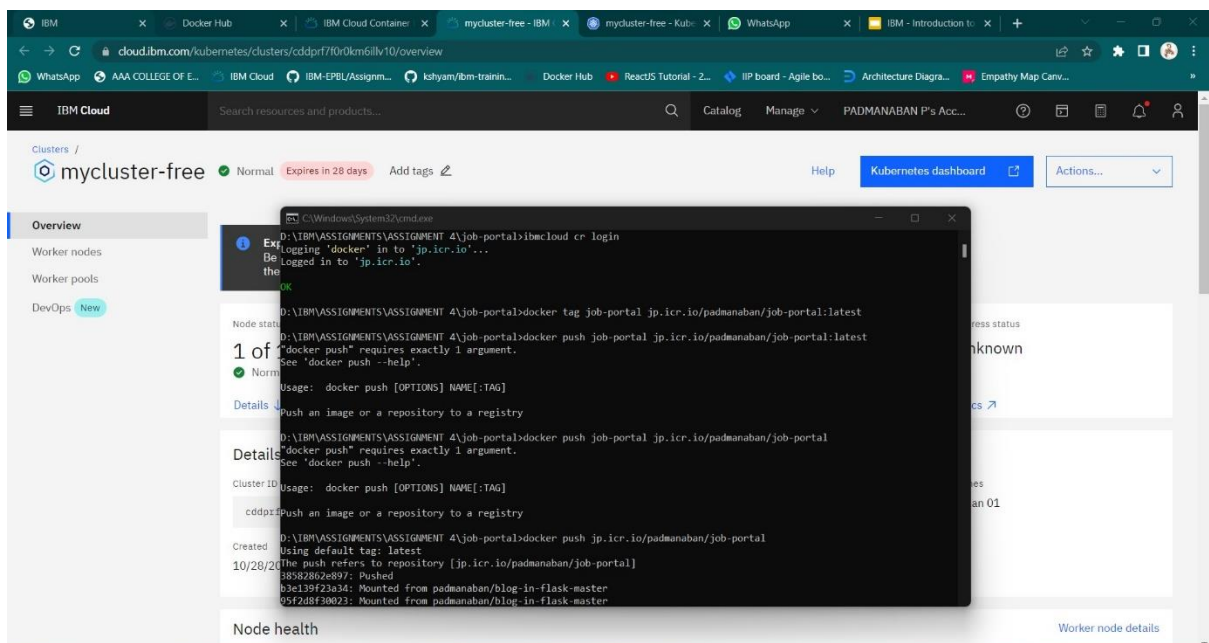
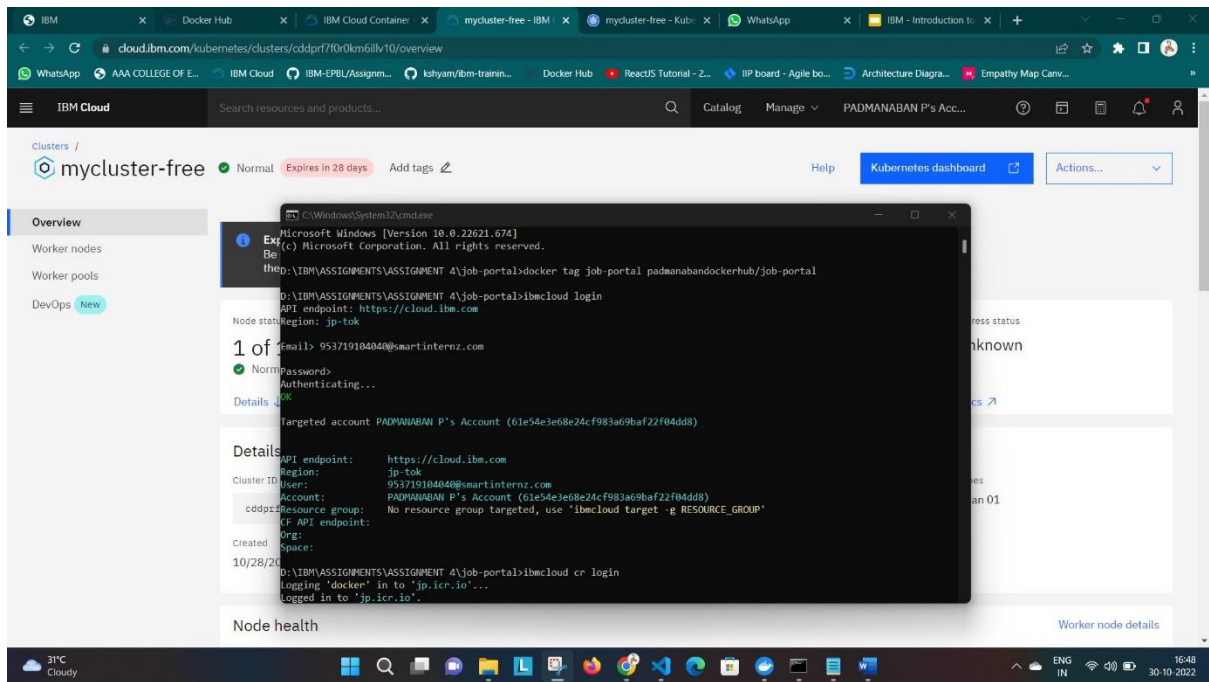
Name	Image count	Namespace	Last updated
job-portal [p.icr.io/padmanaban/job-portal]	1	padmanaban	1 hour ago
blog-in-flask-master [p.icr.io/padmanaban/blog-in-flask-master]	1	padmanaban	1 day ago





**Step 4:** Create a Kubernetes cluster in IBM cloud and deploy flask application image or job portal image and also expose the same app to run in Nodeport.





IBM Cloud Container mycluster-free Normal Expires in 28 days Add tags

Overview

Worker nodes

Worker pools

DevOps New

Node status

1 of 10

Details

Node health

```
D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>docker push jp.icr.io/padmanaban/job-portal
Using default tag: latest
The push refers to repository [jp.icr.io/padmanaban/job-portal]
b3e139f23a34: Mounted from padmanaban/blog-in-flask-master
99f28f28023: Mounted from padmanaban/blog-in-flask-master
3e41fdb667ac: Mounted from padmanaban/blog-in-flask-master
bfc1deb8136e: Mounted from padmanaban/blog-in-flask-master
1f123186824c: Mounted from padmanaban/blog-in-flask-master
3d6eb1152931: Mounted from padmanaban/blog-in-flask-master
190796c6cf301: Mounted from padmanaban/blog-in-flask-master
54ach5a6fa0b: Mounted from padmanaban/blog-in-flask-master
8d51c618126f: Mounted from padmanaban/blog-in-flask-master
9ff0e4d46744: Mounted from padmanaban/blog-in-flask-master
89d1d4705a1: Mounted from padmanaban/blog-in-flask-master
655ed1b7a428: Mounted from padmanaban/blog-in-flask-master
latest: digest: sha256:1e3a2a807606785828c70093effd380382c1bb963abf8662b954b6e79d4b9177 size: 3054

D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>kubectl config current-context mycluster-free/cddprf7f0r0km6illv10

D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>kubectl apply -f kubernetess/ibm_deployment.yaml
deployment.apps/job-portal created

D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>

D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>kubectl apply -f kubernetess/flask_service.yaml
service/flask-app-service configured

D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>kubectl apply -f kubernetess/flask_ingress.yaml
ingress.networking.k8s.io/flask-app-ingress unchanged
```

IBM Cloud Container mycluster-free Normal Expires in 28 days Add tags

Overview

Worker nodes

Worker pools

DevOps New

Node status

1 of 10

Details

Node health

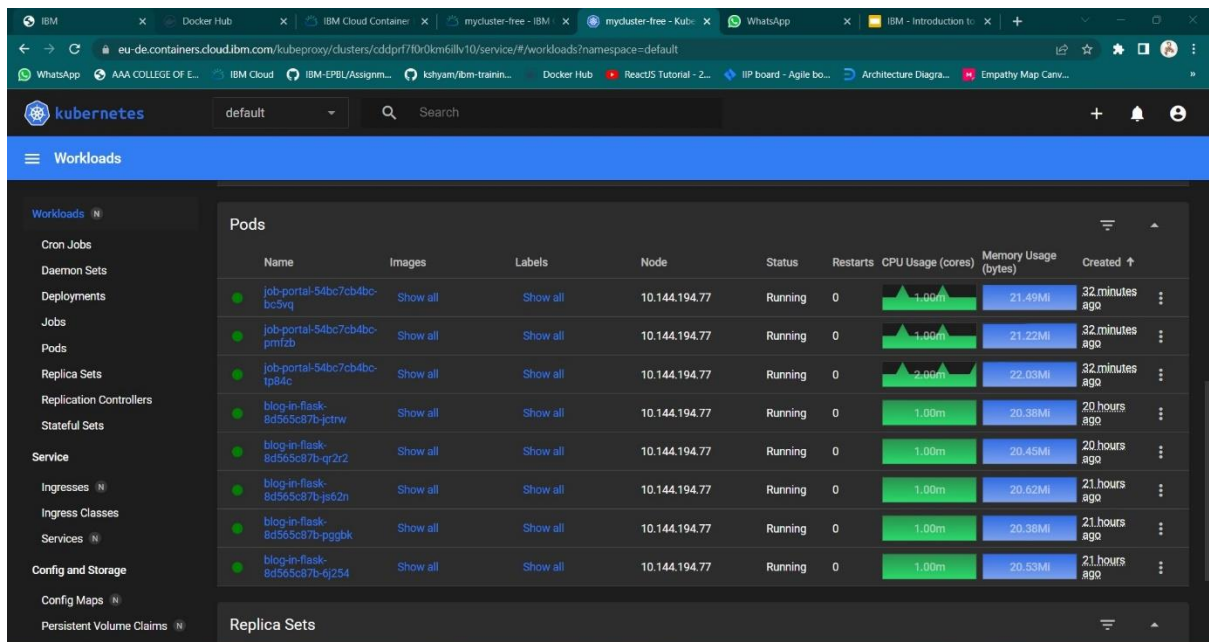
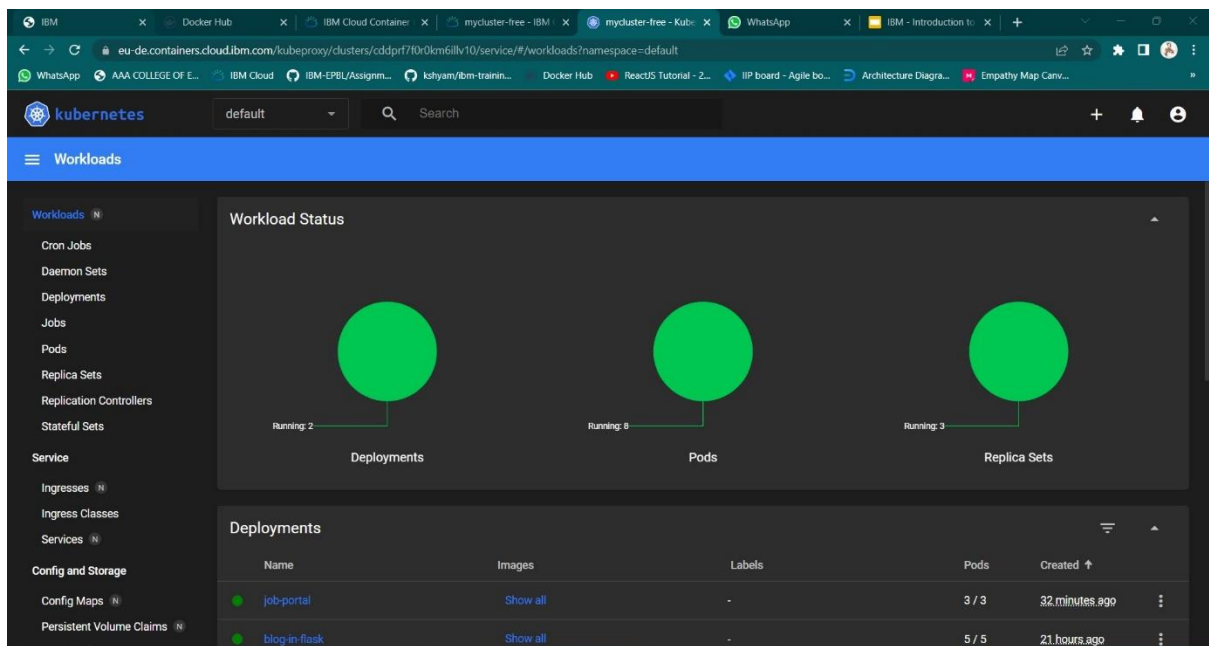
```
D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>kubectl apply -f kubernetess/ibm_deployment.yaml
deployment.apps/job-portal created

D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>

D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>kubectl apply -f kubernetess/flask_service.yaml
service/flask-app-service configured

D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>kubectl apply -f kubernetess/flask_ingress.yaml
ingress.networking.k8s.io/flask-app-ingress unchanged

D:\IBM\ASSIGNMENTS\ASSIGNMENT 4\job-portal>kubectl describe svc flask-app-service
Name: flask-app-service
Namespace: default
Labels: <none>
Annotations: <none>
Selector: app=job-portal
Type: NodePort
IP Family Policy: SingleStack
IP Families: IPv4
IP: 172.17.0.139
Ports:
  Port: 5000/TCP
  TargetPort: 5000/TCP
  NodePort: 30496/TCP
Endpoints: 172.30.6.80:5000,172.30.6.87:5000,172.30.6.88:5000
Session Affinity: None
External Traffic Policy: Cluster
Events: <none>
```



IBM Cloud Container Service (Kubernetes) Workloads page. The page displays a list of workloads in the default namespace, including Deployments, Jobs, Pods, Replica Sets, and Stateful Sets. The table shows details such as Name, IP Address, Status, Replicas, CPU/Memory usage, and Age.

Name	IP Address	Status	Replicas	CPU	Memory	Age
job-portal-54bc7cb4bc-tp84c	10.144.194.77	Running	0	2.00m	22.03Mi	32 minutes ago
blog-in-flask-8d565c87b-jctnw	10.144.194.77	Running	0	1.00m	20.38Mi	20 hours ago
blog-in-flask-8d565c87b-q2r2	10.144.194.77	Running	0	1.00m	20.45Mi	20 hours ago
blog-in-flask-8d565c87b-js62n	10.144.194.77	Running	0	1.00m	20.62Mi	21 hours ago
blog-in-flask-8d565c87b-pggjk	10.144.194.77	Running	0	1.00m	20.38Mi	21 hours ago
blog-in-flask-8d565c87b-6j254	10.144.194.77	Running	0	1.00m	20.53Mi	21 hours ago

The page also includes a sidebar with navigation links for Workloads, Cron Jobs, Daemon Sets, Deployments, Jobs, Pods, Replica Sets, Stateful Sets, Service, Ingresses, Ingress Classes, Services, Config and Storage, Config Maps, and Persistent Volume Claims.

Job Portal landing page. The page features a navigation bar with links for Job Portal, Home, Find a Job, Sign up, and Sign in. The main content area displays a large illustration with the text "Find the most exciting startup jobs" and a magnifying glass over a "JOB" button. The illustration shows several people working on laptops and tablets, suggesting a collaborative and dynamic work environment.



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Filter Jobs 15 Jobs found

**Job Type**

- ☐ Full Time
- ☒ Part Time
- ☐ Remote
- ☐ Freelance

**Job Location**

Chennai

**Experience**

- ☐ 1-2 Years
- ☒ 2-3 Years
- ☐ 3-6 Years
- ☐ 6-more..

**Digital Marketer**

TCS Chennai, India \$3500 - \$4000

Full Time

7 hours ago

**Marketing Executive**

Wipro Hyderabad, India \$3500 - \$4000

Full Time

7 hours ago

**Full Stack Developer**

Infosys Pune, India \$3500 - \$4000

Full Time

7 hours ago

IBM x Docker Hub x IBM Cloud Cont... x myduster-free - x myduster-free - x WhatsApp x IBM - Introduc... x Find a Job x

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6-more..

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- ☐ Last 3 days
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**UI/UX Designer**

Cnetworq Bangalore, India \$3500 - \$4000

Full Time

7 hours ago

**Program Analyst Trainee**

CTS Coimbatore, India \$3500 - \$4000

Full Time

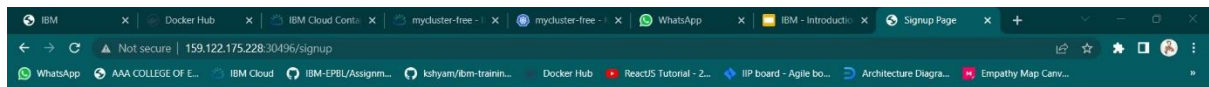
7 hours ago

**Data Analyst**

Delloite New Delhi, India \$3500 - \$4000

Full Time

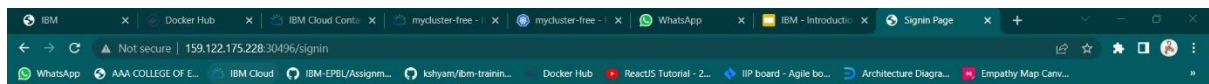
7 hours ago



Job Portal Home Find a Job Sign up Sign in

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Already have an Account?  
**SignIn**



Job Portal Home Find a Job Sign up Sign in

---

Don't have an Account?  
**SignUp**

View the deployed Job-portal flask application by clicking the below link:

<http://159.122.175.228:30496/>