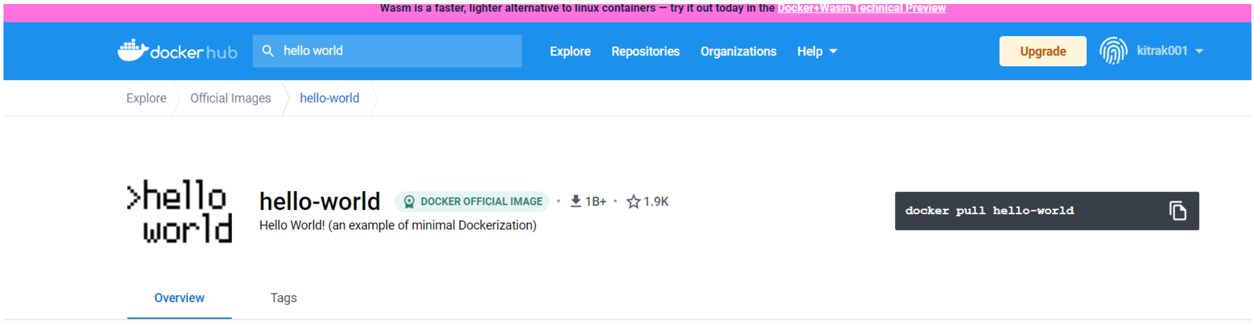
Assignment - 4

Name	Varsini S
Roll No	SSNCE195001122
Date	22 October 2022
Team ID	PNT20222TMID53089
Project Name	Project - Personal Expense Tracker App

1. Pull an Image from docker hub and run it in Docker Playground



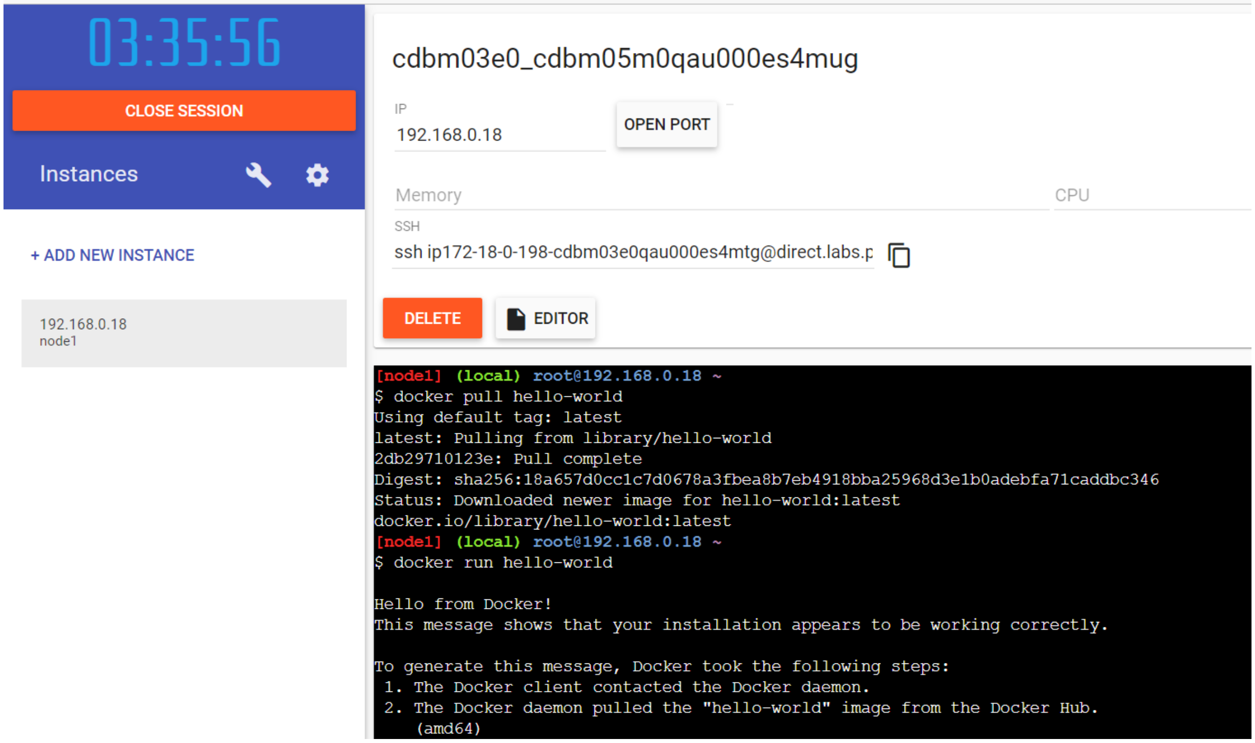
Wasm is a faster, lighter alternative to linux containers — try it out today in the Docker+Wasm Technical Preview

hello-world

Hello World! (an example of minimal Dockerization)

```
docker pull hello-world
```

Pull



cdbm03e0_cdbm05m0qau000es4mug

IP
192.168.0.18

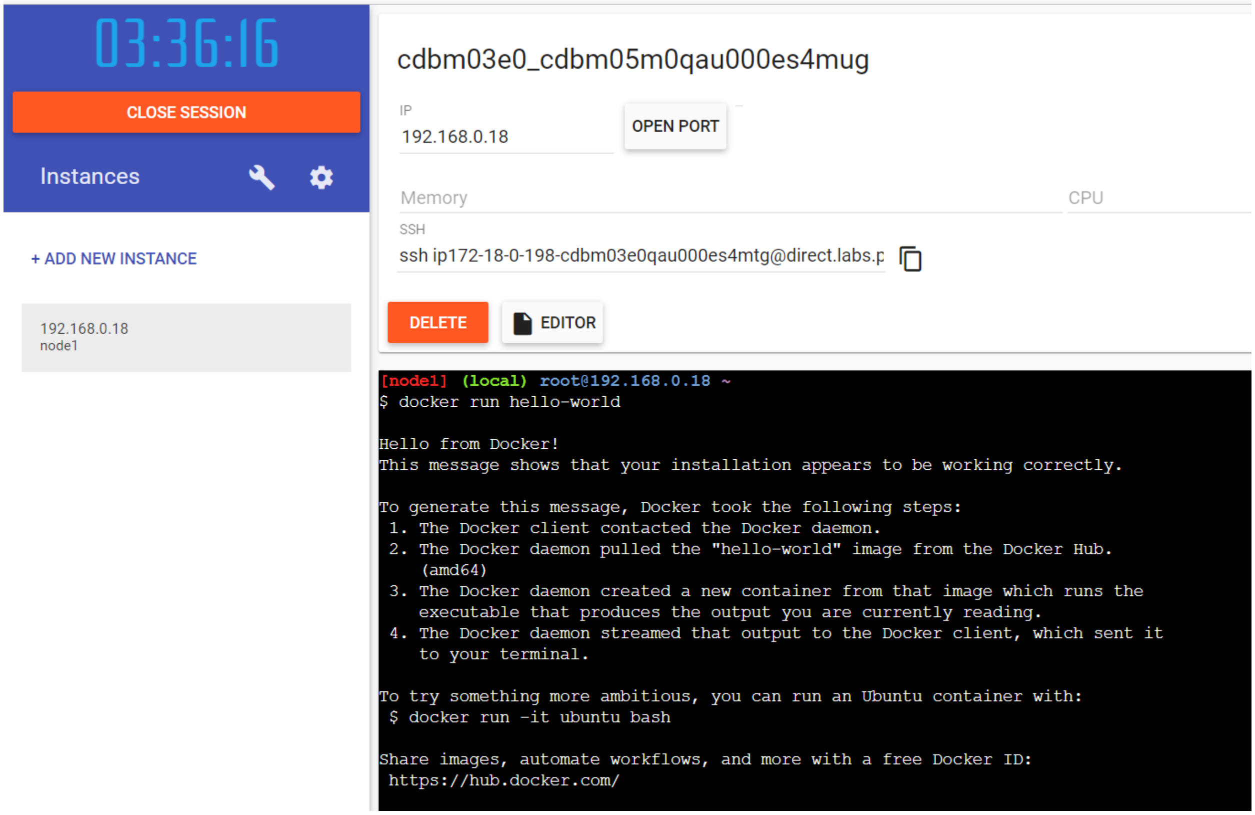
Memory
CPU

SSH
ssh ip172-18-0-198-cdbm03e0qau000es4mtg@direct.labs.p

192.168.0.18
node1

```
[node1] (local) root@192.168.0.18 ~
$ docker pull hello-world
Using default tag: latest
latest: Pulling from library/hello-world
2db29710123e: Pull complete
Digest: sha256:18a657d0cc1c7d0678a3fbea8b7eb4918bba25968d3e1b0adebfa71caddbc346
Status: Downloaded newer image for hello-world:latest
docker.io/library/hello-world:latest
[node1] (local) root@192.168.0.18 ~
$ docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
```

Push



cdbm03e0_cdbm05m0qau000es4mug

IP
192.168.0.18

Memory
CPU

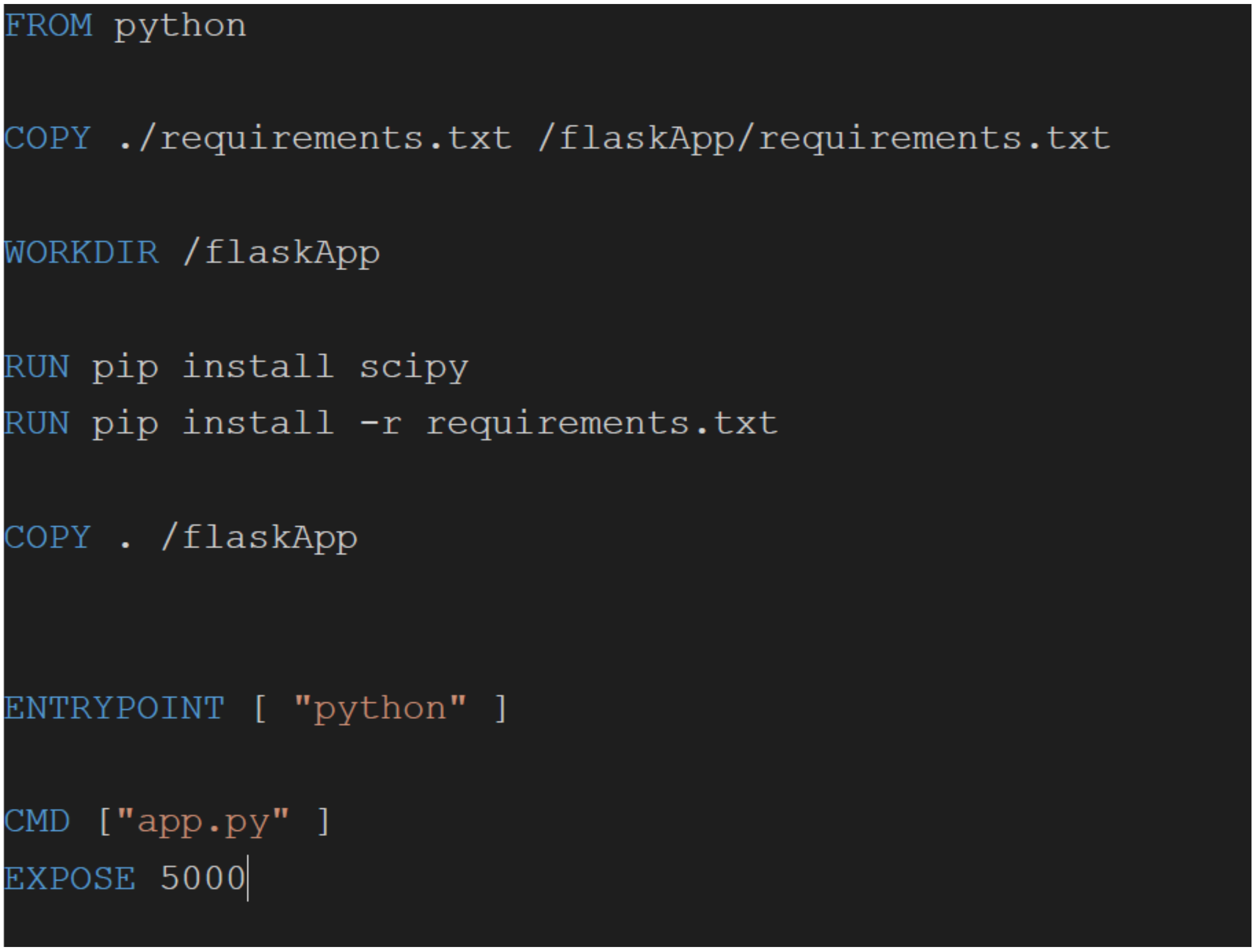
SSH
ssh ip172-18-0-198-cdbm03e0qau000es4mtg@direct.labs.p

192.168.0.18
node1

```
[node1] (local) root@192.168.0.18 ~
$ docker run hello-world

Hello from Docker!
This message shows that your installation appears to be working correctly.

To generate this message, Docker took the following steps:
 1. The Docker client contacted the Docker daemon.
 2. The Docker daemon pulled the "hello-world" image from the Docker Hub.
    (amd64)
 3. The Docker daemon created a new container from that image which runs the
    executable that produces the output you are currently reading.
 4. The Docker daemon streamed that output to the Docker client, which sent it
    to your terminal.

To try something more ambitious, you can run an Ubuntu container with:
 $ docker run -it ubuntu bash

Share images, automate workflows, and more with a free Docker ID:
 https://hub.docker.com/
```

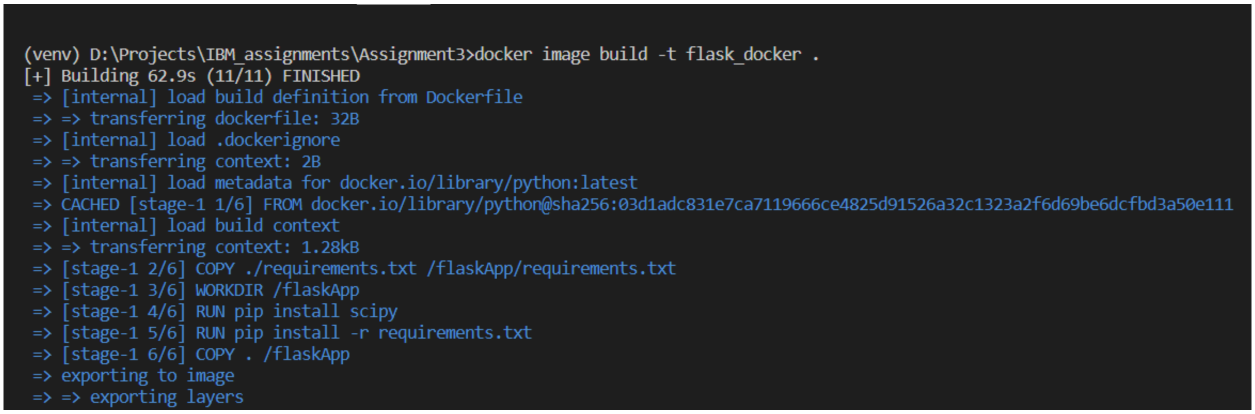
2. Create a docker file for the jobportal application and deploy it in Docker desktop application

Dockerfile

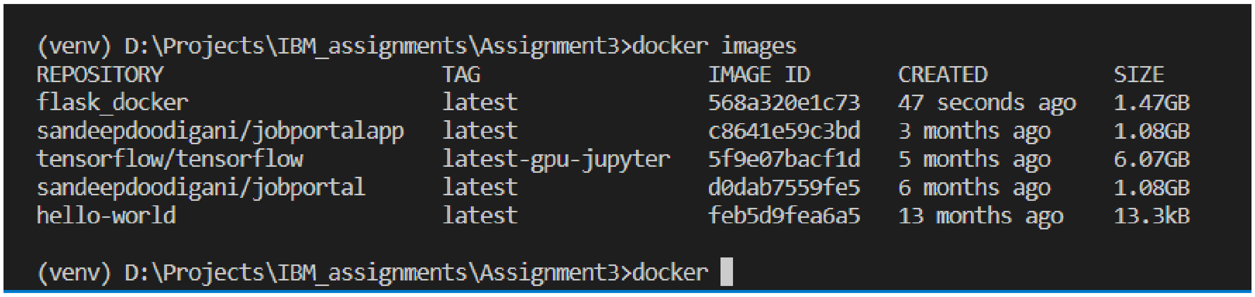


```
FROM python

COPY ./requirements.txt /flaskApp/requirements.txt

WORKDIR /flaskApp

RUN pip install scipy
RUN pip install -r requirements.txt

COPY . /flaskApp


ENTRYPOINT [ "python" ]

CMD ["app.py" ]
EXPOSE 5000
```

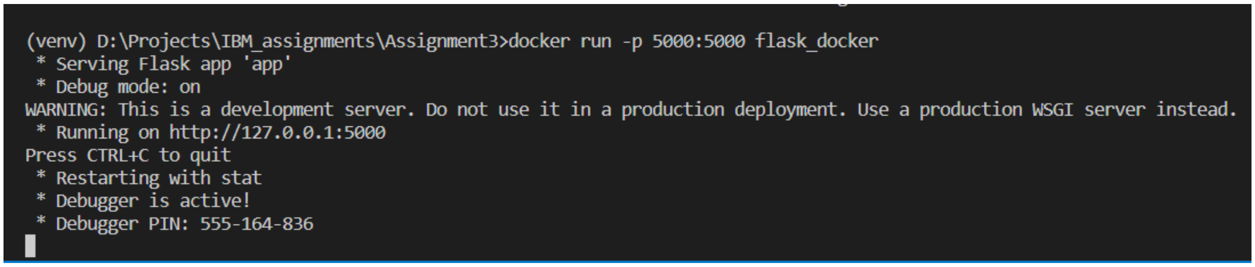
Steps:



```
(venv) D:\Projects\IBM_assignments\Assignment3>docker image build -t flask_docker .
[+] Building 62.9s (11/11) FINISHED
 => [internal] load build definition from Dockerfile
 => => transferring dockerfile: 32B
 => [internal] load .dockerignore
 => => transferring context: 2B
 => [internal] load metadata for docker.io/library/python:latest
 => CACHED [stage-1 1/6] FROM docker.io/library/python@sha256:03d1adc831e7ca7119666ce4825d91526a32c1323a2f6d69be6dcfbd3a50e111
 => [internal] load build context
 => => transferring context: 1.28kB
 => [stage-1 2/6] COPY ./requirements.txt /flaskApp/requirements.txt
 => [stage-1 3/6] WORKDIR /flaskApp
 => [stage-1 4/6] RUN pip install scipy
 => [stage-1 5/6] RUN pip install -r requirements.txt
 => [stage-1 6/6] COPY . /flaskApp
 => exporting to image
 => => exporting layers
```

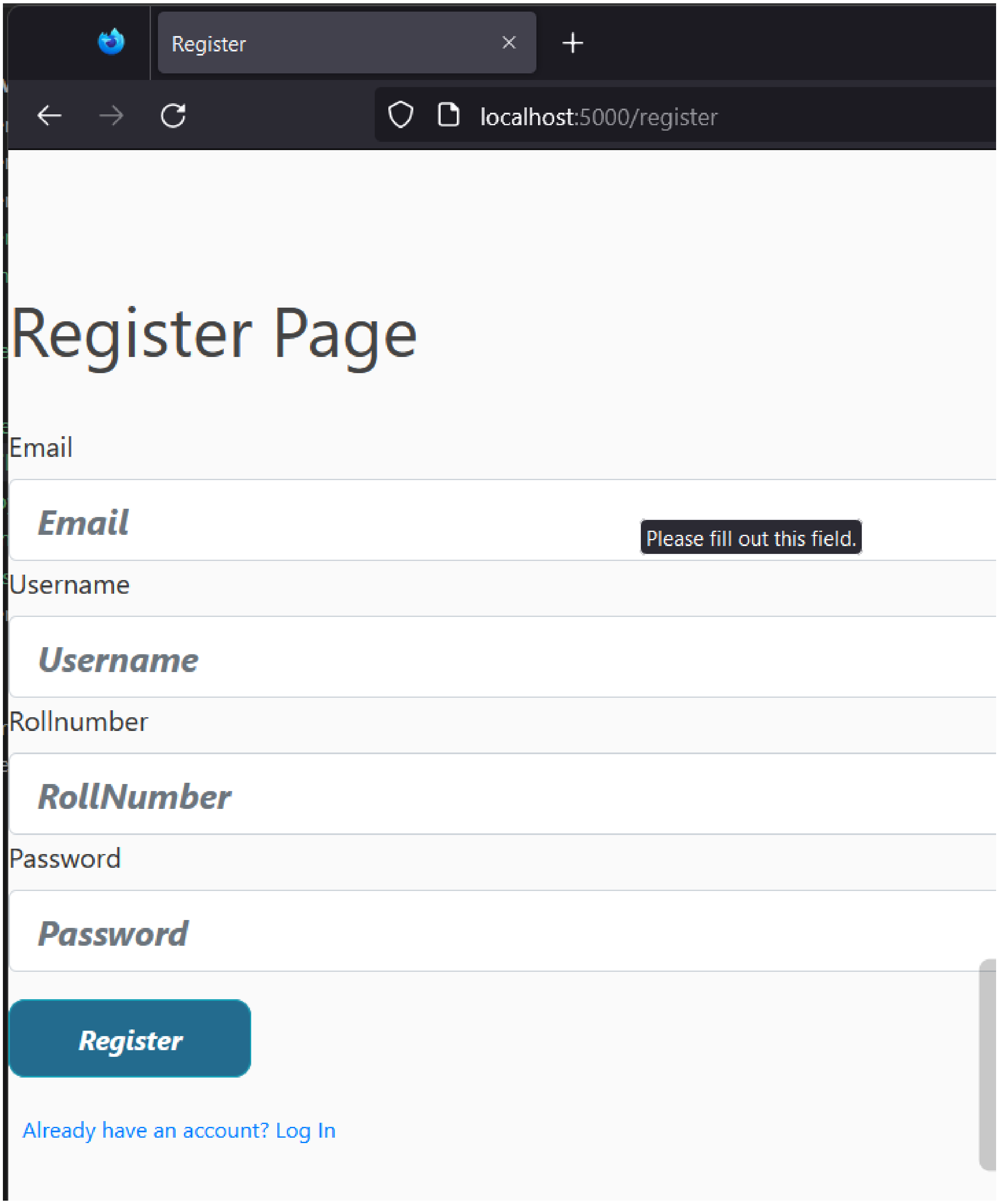


```
(venv) D:\Projects\IBM_assignments\Assignment3>docker images
REPOSITORY                       TAG                  IMAGE ID       CREATED          SIZE
flask_docker                     latest               568a320e1c73   47 seconds ago   1.47GB
sandeepdoodigani/jobportalapp    latest               c8641e59c3bd   3 months ago     1.08GB
tensorflow/tensorflow            latest-gpu-jupyter   5f9e07bacf1d   5 months ago     6.07GB
sandeepdoodigani/jobportal       latest               d0dab7559fe5   6 months ago     1.08GB
hello-world                      latest               feb5d9fea6a5   13 months ago    13.3kB

(venv) D:\Projects\IBM_assignments\Assignment3>docker
```



```
(venv) D:\Projects\IBM_assignments\Assignment3>docker run -p 5000:5000 flask_docker
 * Serving Flask app 'app'
 * 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: 555-164-836
```

Run locally using docker



Register Page

Please fill out this field.

Already have an account? Log In

3. Create a IBM container registry and deploy helloworld app or jobportal app

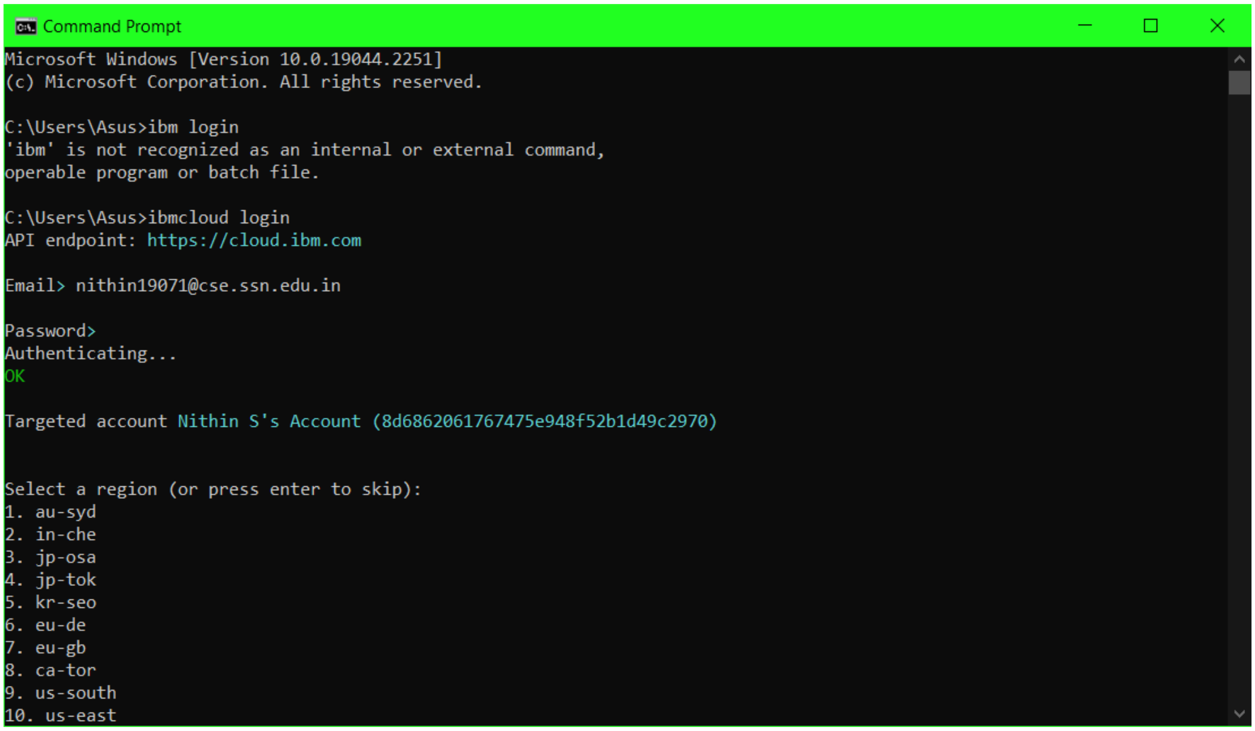
a. Log into IBM cloud

b. Create a container registry

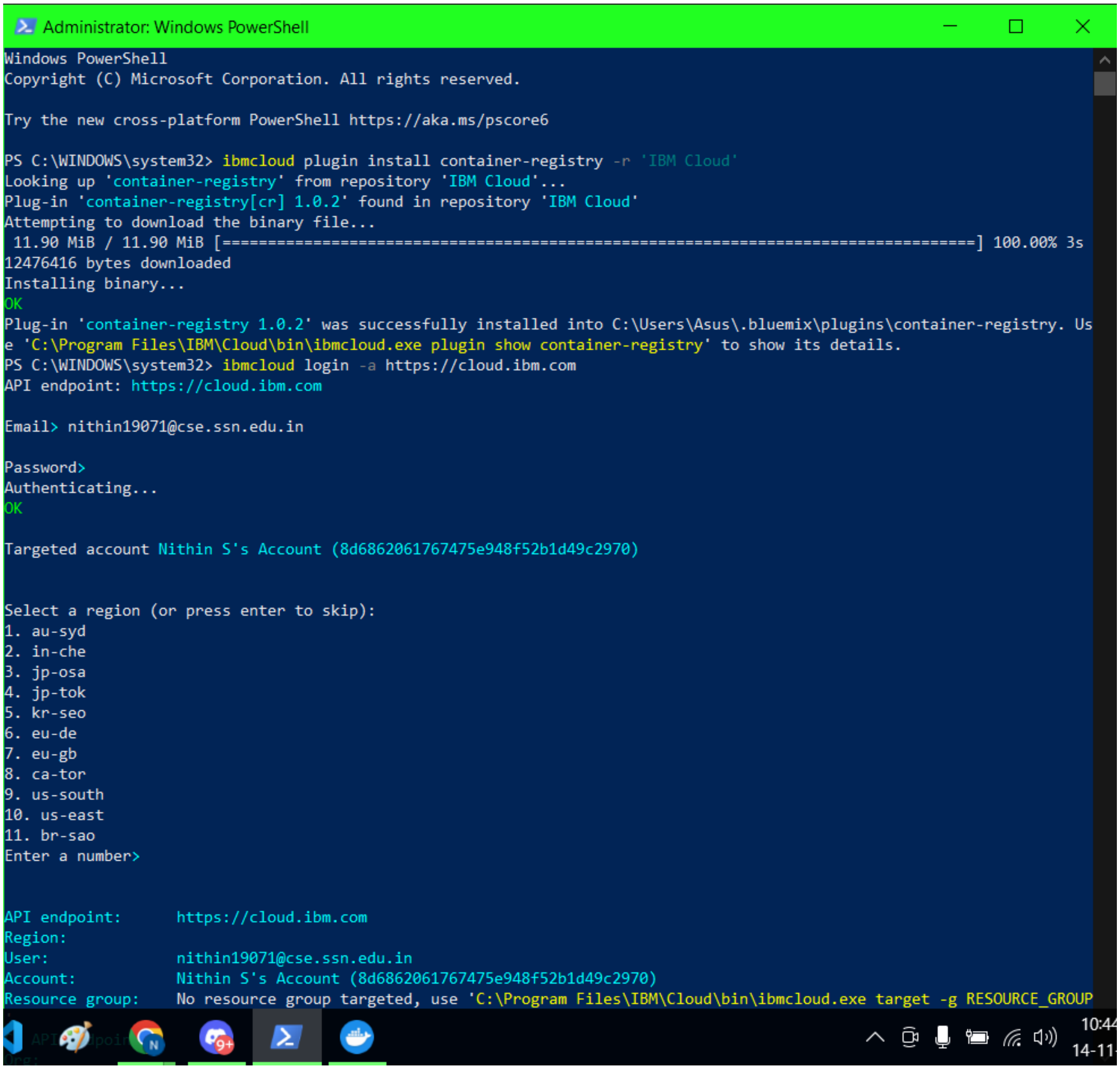
c. Using IBM Cloud CLI, install the container registry plugin in our system

d. Push our docker image into the created container registry using docker push

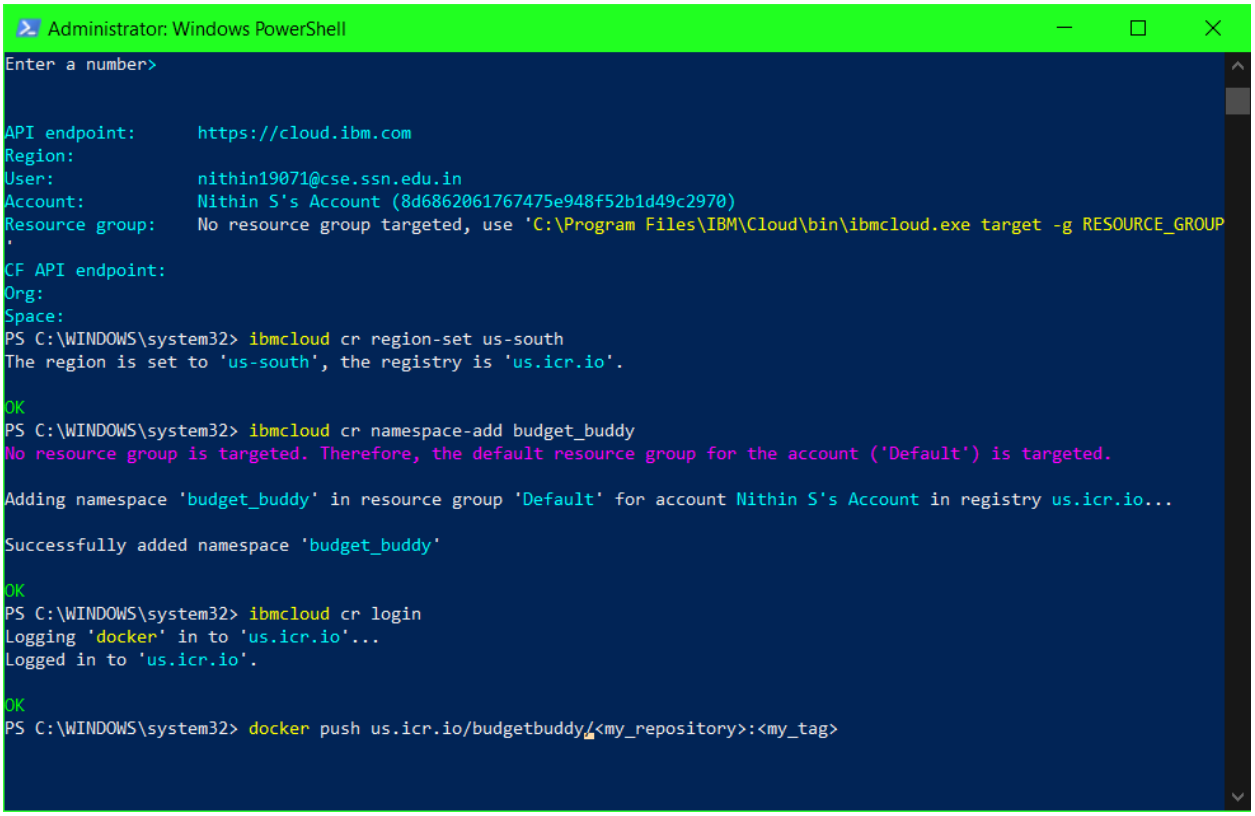
e. So, our job portal app is deployed in the IBM container registry



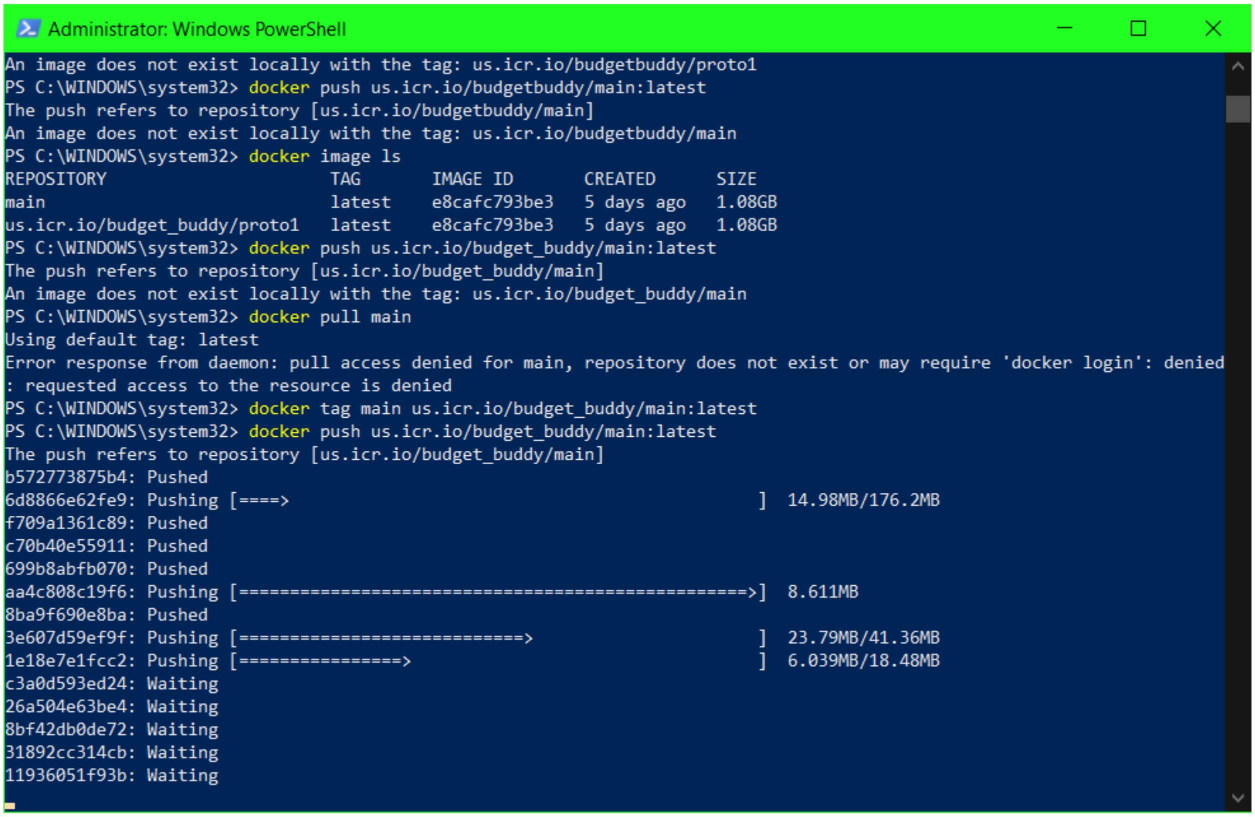
```
Microsoft Windows [Version 10.0.19044.2251]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Asus>ibm login
'ibm' is not recognized as an internal or external command,
operable program or batch file.

C:\Users\Asus>ibmcloud login
API endpoint: https://cloud.ibm.com

Email> nithin19071@cse.ssn.edu.in

Password>
Authenticating...
OK

Targeted account Nithin S's Account (8d6862061767475e948f52b1d49c2970)


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



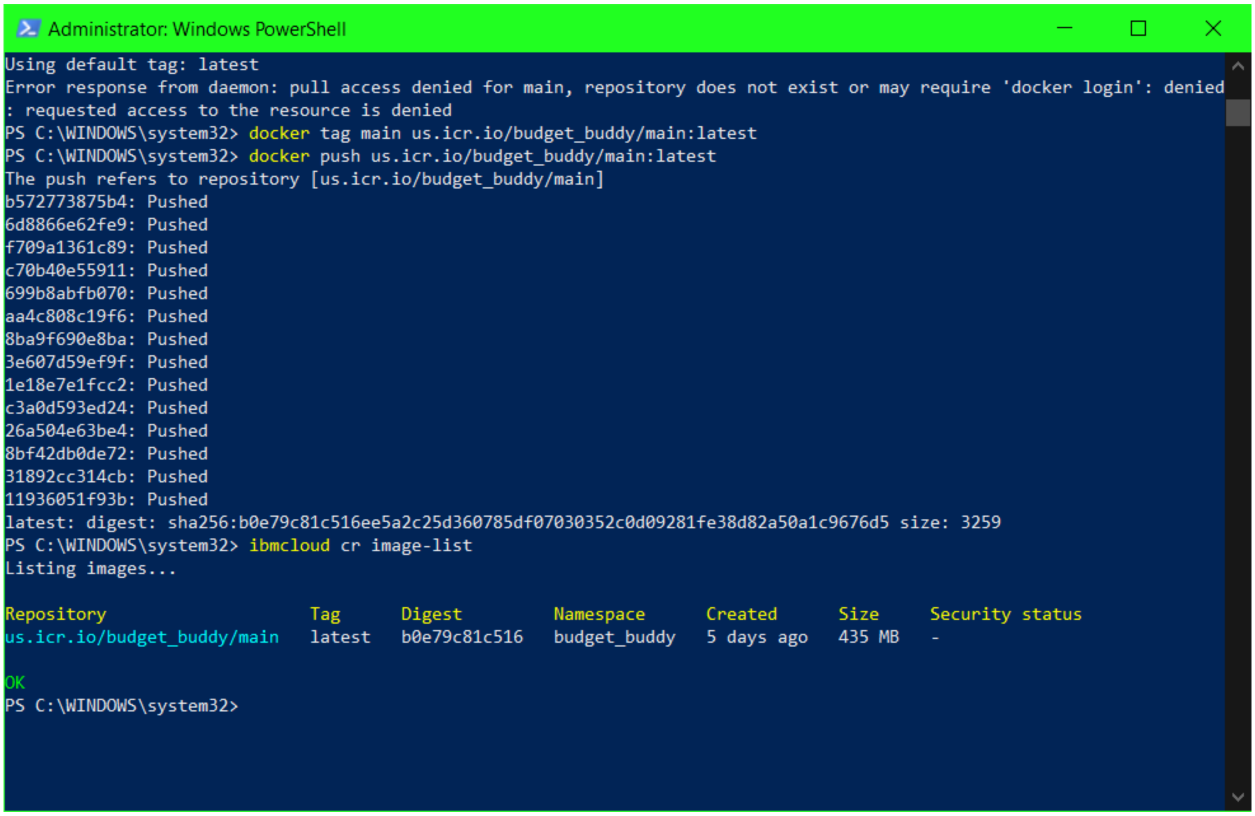
```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\WINDOWS\system32> ibmcloud plugin install container-registry -r 'IBM Cloud'
Looking up 'container-registry' from repository 'IBM Cloud'...
Plug-in 'container-registry[cr] 1.0.2' found in repository 'IBM Cloud'
Attempting to download the binary file...
 11.90 MiB / 11.90 MiB [=================================================================================] 100.00% 3s
12476416 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.0.2' was successfully installed into C:\Users\Asus\.bluemix\plugins\container-registry. Us
e 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe plugin show container-registry' to show its details.
PS C:\WINDOWS\system32> ibmcloud login -a https://cloud.ibm.com
API endpoint: https://cloud.ibm.com

Email> nithin19071@cse.ssn.edu.in

Password>
Authenticating...
OK

Targeted account Nithin S's Account (8d6862061767475e948f52b1d49c2970)


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


API endpoint:      https://cloud.ibm.com
Region:
User:              nithin19071@cse.ssn.edu.in
Account:           Nithin S's Account (8d6862061767475e948f52b1d49c2970)
Resource group:    No resource group targeted, use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe target -g RESOURCE_GROUP
```



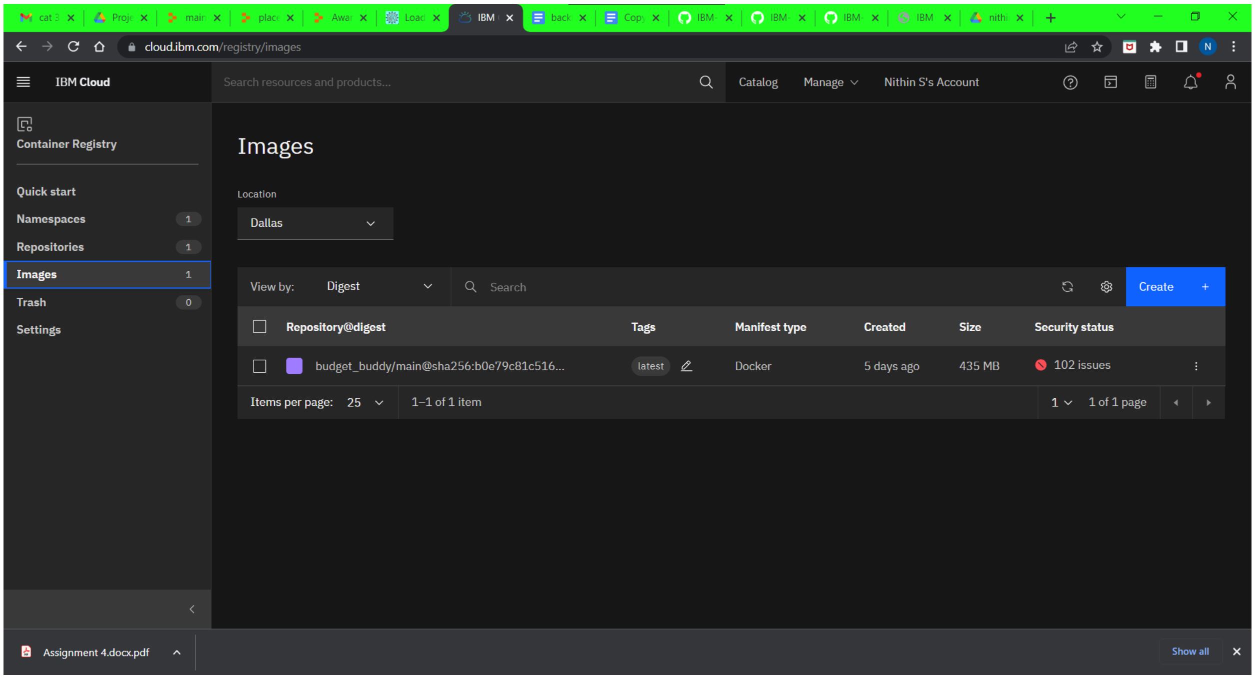
```
Enter a number>


API endpoint:      https://cloud.ibm.com
Region:
User:              nithin19071@cse.ssn.edu.in
Account:           Nithin S's Account (8d6862061767475e948f52b1d49c2970)
Resource group:    No resource group targeted, use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe target -g RESOURCE_GROUP
'

CF API endpoint:
Org:
Space:
PS C:\WINDOWS\system32> ibmcloud cr region-set us-south
The region is set to 'us-south', the registry is 'us.icr.io'.

OK
PS C:\WINDOWS\system32> ibmcloud cr namespace-add budget_buddy
No resource group is targeted. Therefore, the default resource group for the account ('Default') is targeted.

Adding namespace 'budget_buddy' in resource group 'Default' for account Nithin S's Account in registry us.icr.io...

Successfully added namespace 'budget_buddy'

OK
PS C:\WINDOWS\system32> ibmcloud cr login
Logging 'docker' in to 'us.icr.io'...
Logged in to 'us.icr.io'.

OK
PS C:\WINDOWS\system32> docker push us.icr.io/budgetbuddy/<my_repository>:<my_tag>
```



```
An image does not exist locally with the tag: us.icr.io/budgetbuddy/proto1
PS C:\WINDOWS\system32> docker push us.icr.io/budgetbuddy/main:latest
The push refers to repository [us.icr.io/budgetbuddy/main]
An image does not exist locally with the tag: us.icr.io/budgetbuddy/main
PS C:\WINDOWS\system32> docker image ls
REPOSITORY                      TAG       IMAGE ID       CREATED      SIZE
main                            latest    e8cafc793be3   5 days ago   1.08GB
us.icr.io/budget_buddy/proto1   latest    e8cafc793be3   5 days ago   1.08GB
PS C:\WINDOWS\system32> docker push us.icr.io/budget_buddy/main:latest
The push refers to repository [us.icr.io/budget_buddy/main]
An image does not exist locally with the tag: us.icr.io/budget_buddy/main
PS C:\WINDOWS\system32> docker pull main
Using default tag: latest
Error response from daemon: pull access denied for main, repository does not exist or may require 'docker login': denied
: requested access to the resource is denied
PS C:\WINDOWS\system32> docker tag main us.icr.io/budget_buddy/main:latest
PS C:\WINDOWS\system32> docker push us.icr.io/budget_buddy/main:latest
The push refers to repository [us.icr.io/budget_buddy/main]
b572773875b4: Pushed
6d8866e62fe9: Pushing [====>                                             ]  14.98MB/176.2MB
f709a1361c89: Pushed
c70b40e55911: Pushed
699b8abfb070: Pushed
aa4c808c19f6: Pushing [=================================================>]  8.611MB
8ba9f690e8ba: Pushed
3e607d59ef9f: Pushing [============================>                     ]  23.79MB/41.36MB
1e18e7e1fcc2: Pushing [================>                                 ]  6.039MB/18.48MB
c3a0d593ed24: Waiting
26a504e63be4: Waiting
8bf42db0de72: Waiting
31892cc314cb: Waiting
11936051f93b: Waiting
```



```
Using default tag: latest
Error response from daemon: pull access denied for main, repository does not exist or may require 'docker login': denied
: requested access to the resource is denied
PS C:\WINDOWS\system32> docker tag main us.icr.io/budget_buddy/main:latest
PS C:\WINDOWS\system32> docker push us.icr.io/budget_buddy/main:latest
The push refers to repository [us.icr.io/budget_buddy/main]
b572773875b4: Pushed
6d8866e62fe9: Pushed
f709a1361c89: Pushed
c70b40e55911: Pushed
699b8abfb070: Pushed
aa4c808c19f6: Pushed
8ba9f690e8ba: Pushed
3e607d59ef9f: Pushed
1e18e7e1fcc2: Pushed
c3a0d593ed24: Pushed
26a504e63be4: Pushed
8bf42db0de72: Pushed
31892cc314cb: Pushed
11936051f93b: Pushed
latest: digest: sha256:b0e79c81c516ee5a2c25d360785df07030352c0d09281fe38d82a50a1c9676d5 size: 3259
PS C:\WINDOWS\system32> ibmcloud cr image-list
Listing images...

Repository                   Tag      Digest         Namespace      Created      Size     Security status
us.icr.io/budget_buddy/main  latest   b0e79c81c516   budget_buddy   5 days ago   435 MB   -

OK
PS C:\WINDOWS\system32>
```



Images

Location: Dallas

View by: Digest

☐ Repository@digest	Tags	Manifest type	Created	Size	Security status
☐ budget_buddy/main@sha256:b0e79c81c516...	latest	Docker	5 days ago	435 MB	102 issues

Items per page: 25 1–1 of 1 item 1 1 of 1 page

4. Create a Kubernetes cluster in IBM cloud and deploy helloworld image or jobportal image and also expose the same app to run in nodeport

a. Log into IBM cloud

b. Create a kubernete

c. Using IBM Cloud CLI, install the ks plugin in our system

d. Create a cluster in the kubernetes

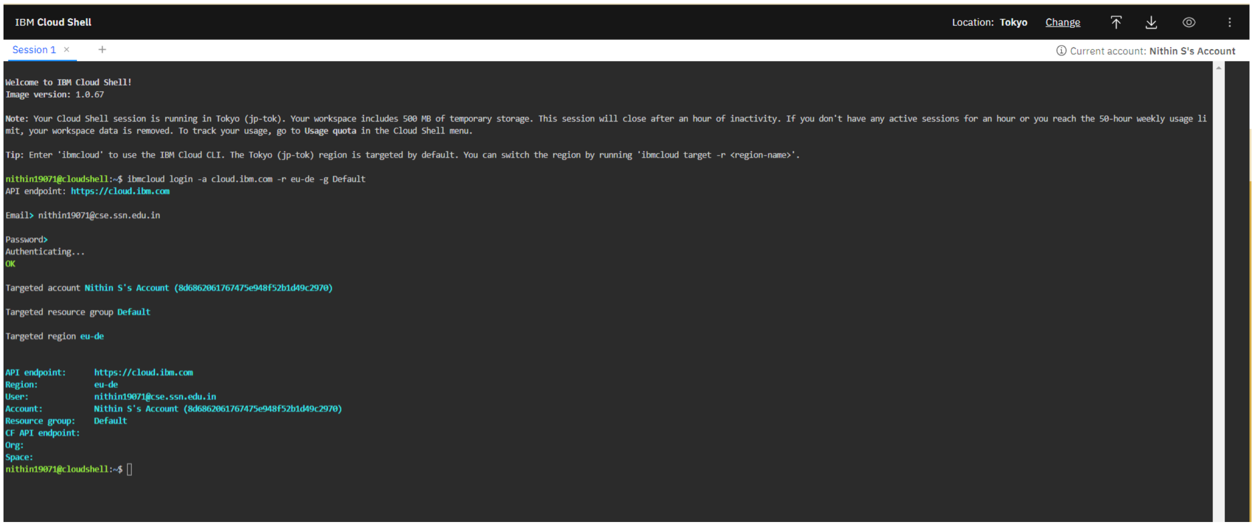
e. Now, go to the kubernetes dashboard where we need to create a service based on a

yml file (given below)

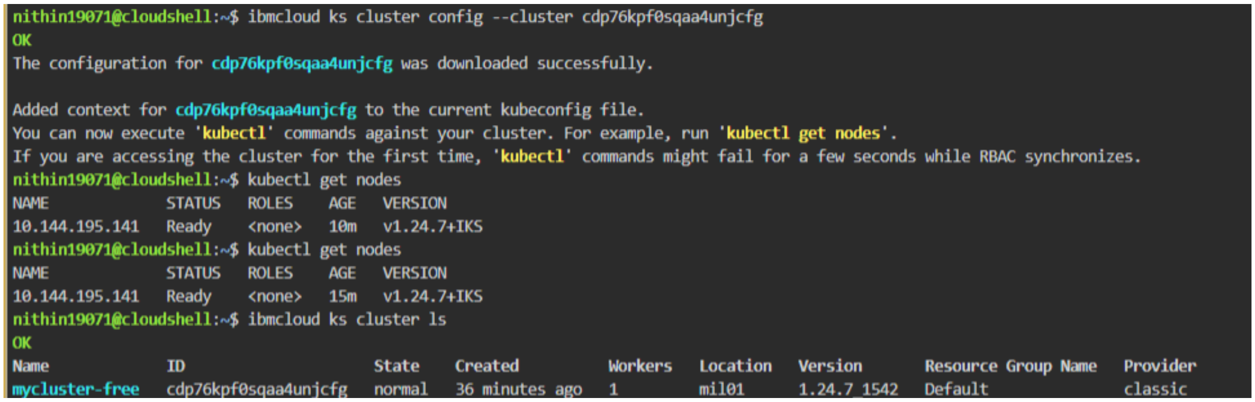
f. In that file, we have to mention which image we are going to use and the app name

g. Take the public IP address and Nodeport since we exposed the flask app in nodeport

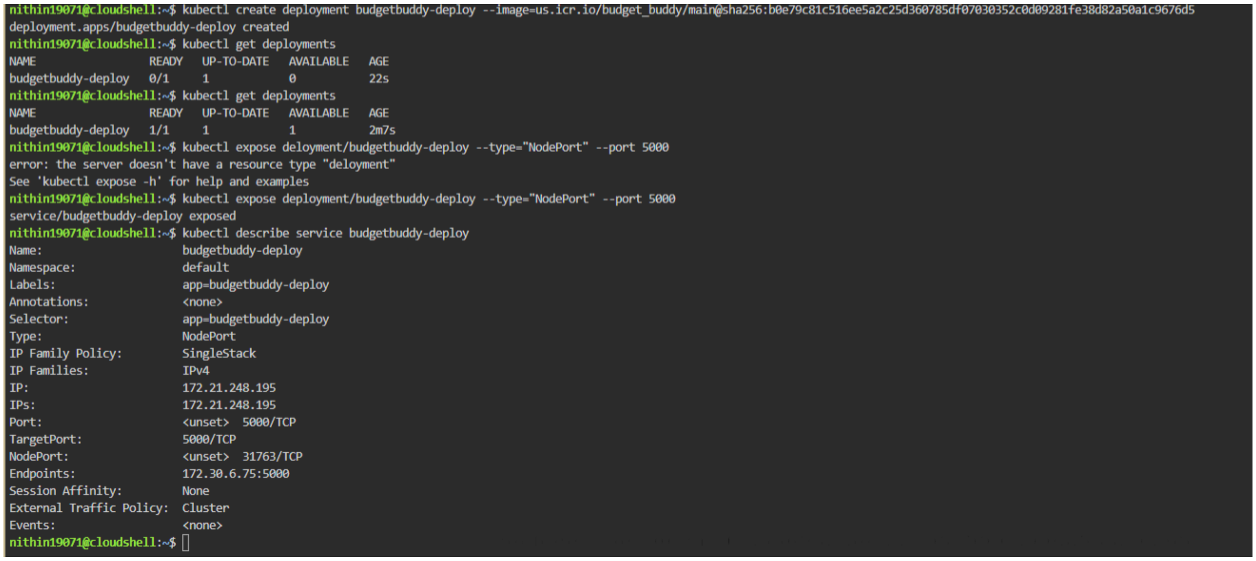
h. Finally, we got the url address where our flask app is hosted



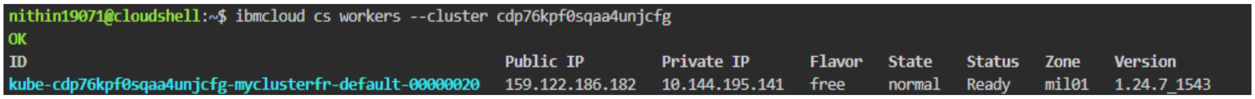
```
Welcome to IBM Cloud Shell!
Image version: 1.0.67

Note: Your Cloud Shell session is running in Tokyo (jp-tok). Your workspace includes 500 MB of temporary storage. This session will close after an hour of inactivity. If you don't have any active sessions for an hour or you reach the 50-hour weekly usage li
mit, your workspace data is removed. To track your usage, go to Usage quota in the Cloud Shell menu.

Tip: Enter 'ibmcloud' to use the IBM Cloud CLI. The Tokyo (jp-tok) region is targeted by default. You can switch the region by running 'ibmcloud target -r <region-name>'.

nithin19071@cloudshell:~$ ibmcloud login -a cloud.ibm.com -r eu-de -g Default
API endpoint: https://cloud.ibm.com

Email> nithin19071@cse.ssn.edu.in

Password>
Authenticating...
OK

Targeted account Nithin S's Account (8d6862061767475e948f52b1d49c2970)

Targeted resource group Default

Targeted region eu-de


API endpoint:      https://cloud.ibm.com
Region:            eu-de
User:              nithin19071@cse.ssn.edu.in
Account:           Nithin S's Account (8d6862061767475e948f52b1d49c2970)
Resource group:    Default
CF API endpoint:
Org:
Space:
nithin19071@cloudshell:~$
```



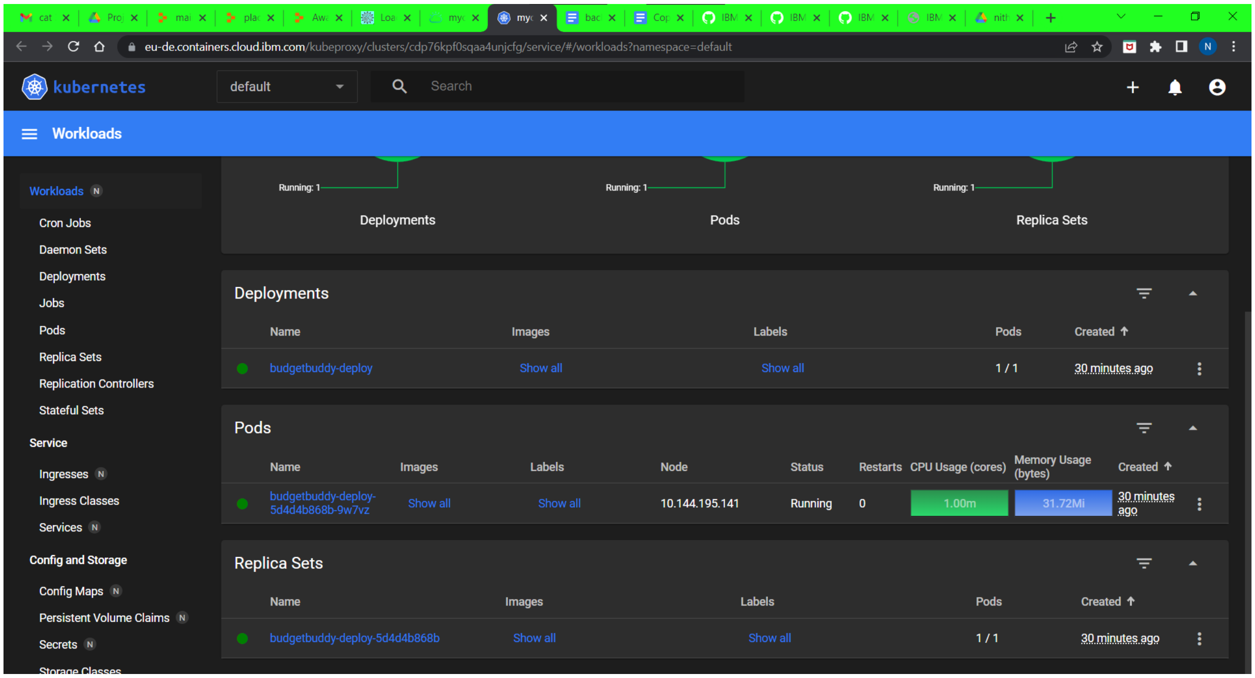
```
nithin19071@cloudshell:~$ ibmcloud ks cluster config --cluster cdp76kpf0sqaa4unjcfg
OK
The configuration for cdp76kpf0sqaa4unjcfg was downloaded successfully.

Added context for cdp76kpf0sqaa4unjcfg to the current kubeconfig file.
You can now execute 'kubectl' commands against your cluster. For example, run 'kubectl get nodes'.
If you are accessing the cluster for the first time, 'kubectl' commands might fail for a few seconds while RBAC synchronizes.
nithin19071@cloudshell:~$ kubectl get nodes
NAME             STATUS   ROLES    AGE   VERSION
10.144.195.141   Ready    <none>   10m   v1.24.7+IKS
nithin19071@cloudshell:~$ kubectl get nodes
NAME             STATUS   ROLES    AGE   VERSION
10.144.195.141   Ready    <none>   15m   v1.24.7+IKS
nithin19071@cloudshell:~$ ibmcloud ks cluster ls
OK
Name             ID                     State    Created          Workers   Location   Version        Resource Group Name   Provider
mycluster-free   cdp76kpf0sqaa4unjcfg   normal   36 minutes ago   1         mil01      1.24.7_1542    Default               classic
```



```
nithin19071@cloudshell:~$ kubectl create deployment budgetbuddy-deploy --image=us.icr.io/budget_buddy/main@sha256:b0e79c81c516ee5a2c25d360785df07030352c0d09281fe38d82a50a1c9676d5
deployment.apps/budgetbuddy-deploy created
nithin19071@cloudshell:~$ kubectl get deployments
NAME                 READY   UP-TO-DATE   AVAILABLE   AGE
budgetbuddy-deploy   0/1     1            0           22s
nithin19071@cloudshell:~$ kubectl get deployments
NAME                 READY   UP-TO-DATE   AVAILABLE   AGE
budgetbuddy-deploy   1/1     1            1           2m7s
nithin19071@cloudshell:~$ kubectl expose deloyment/budgetbuddy-deploy --type="NodePort" --port 5000
error: the server doesn't have a resource type "deloyment"
See 'kubectl expose -h' for help and examples
nithin19071@cloudshell:~$ kubectl expose deployment/budgetbuddy-deploy --type="NodePort" --port 5000
service/budgetbuddy-deploy exposed
nithin19071@cloudshell:~$ kubectl describe service budgetbuddy-deploy
Name:                     budgetbuddy-deploy
Namespace:                default
Labels:                   app=budgetbuddy-deploy
Annotations:              <none>
Selector:                 app=budgetbuddy-deploy
Type:                     NodePort
IP Family Policy:         SingleStack
IP Families:              IPv4
IP:                       172.21.248.195
IPs:                      172.21.248.195
Port:                     <unset>  5000/TCP
TargetPort:               5000/TCP
NodePort:                 <unset>  31763/TCP
Endpoints:                172.30.6.75:5000
Session Affinity:         None
External Traffic Policy:  Cluster
Events:                   <none>
nithin19071@cloudshell:~$
```



```
nithin19071@cloudshell:~$ ibmcloud cs workers --cluster cdp76kpf0sqaa4unjcfg
OK
ID                                                     Public IP         Private IP       Flavor   State    Status   Zone    Version
kube-cdp76kpf0sqaa4unjcfg-myclusterfr-default-00000020   159.122.186.182   10.144.195.141   free     normal   Ready    mil01   1.24.7_1543
```



Deployments

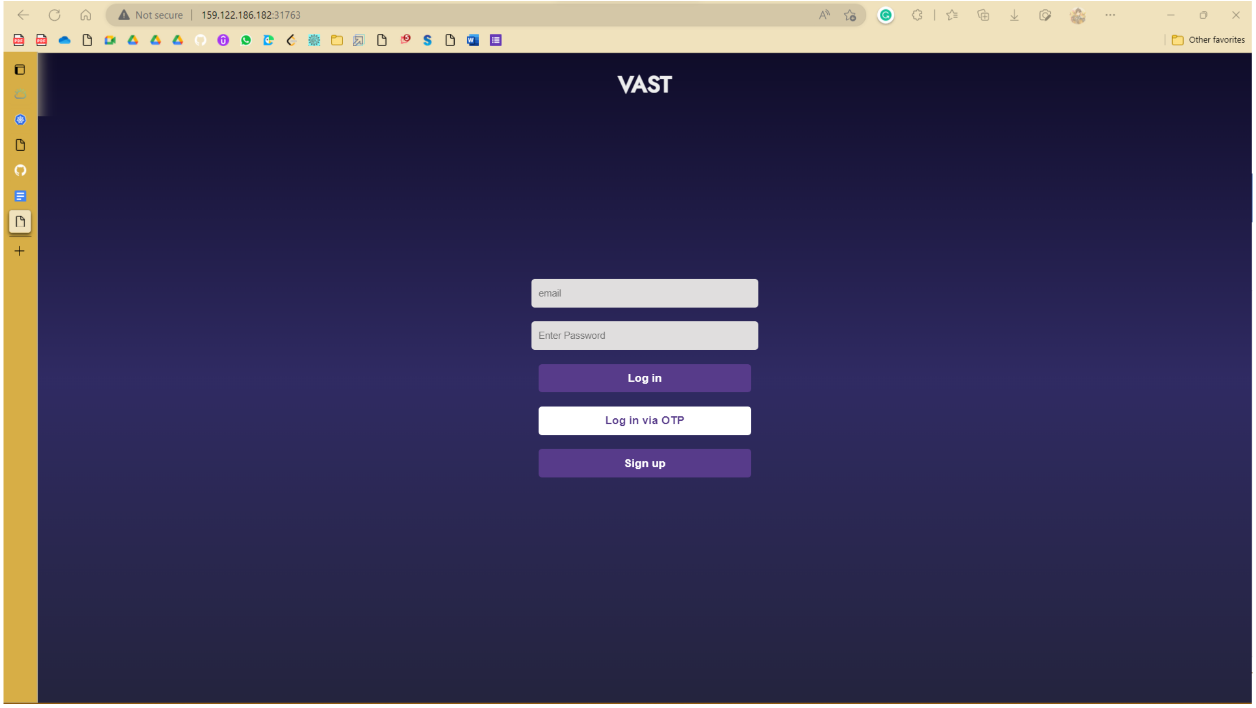
	Name	Images	Labels	Pods	Created ↑
●	budgetbuddy-deploy	Show all	Show all	1 / 1	30 minutes ago

Pods

	Name	Images	Labels	Node	Status	Restarts	CPU Usage (cores)	Memory Usage (bytes)	Created ↑
●	budgetbuddy-deploy-5d4d4b868b-9w7vz	Show all	Show all	10.144.195.141	Running	0	1.00m	31.72Mi	30 minutes ago

Replica Sets

	Name	Images	Labels	Pods	Created ↑
●	budgetbuddy-deploy-5d4d4b868b	Show all	Show all	1 / 1	30 minutes ago



Not secure | 159.122.186.182:31763
Other favorites
VAST
email
Enter Password
Log in
Log in via OTP
Sign up