

Project Development Phase

Delivery of Sprint - 4

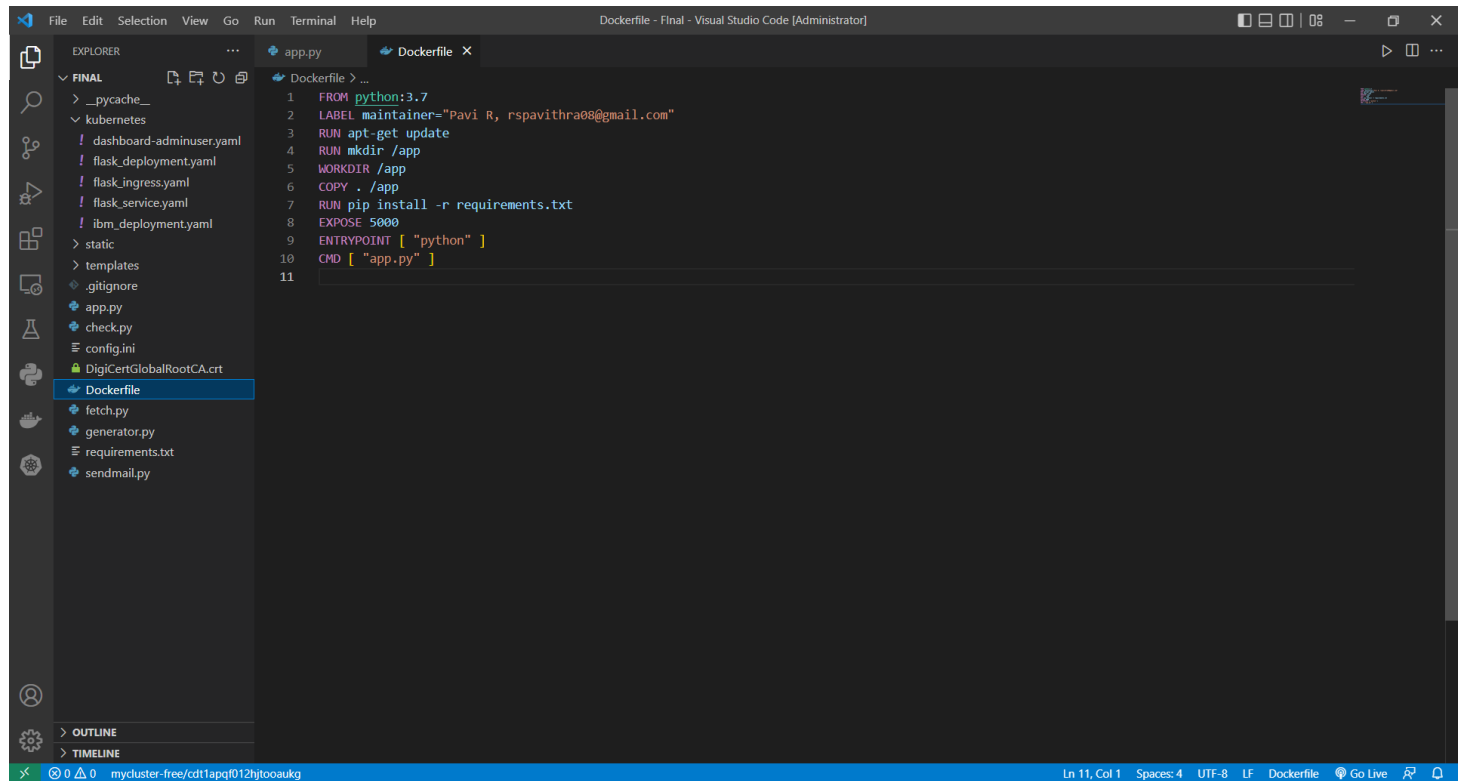
Team ID	PNT2022TMID26969
Project Name	Plasma Donor Application
Sprint	4

TEAM MEMBERS

ROLE	NAME
TEAM LEADER	PAVITHR.R
TEAM MEMBER 1	SHALINI.R
TEAM MEMBER 2	SUWETHA.B
TEAM MEMBER 3	SWATHI.K

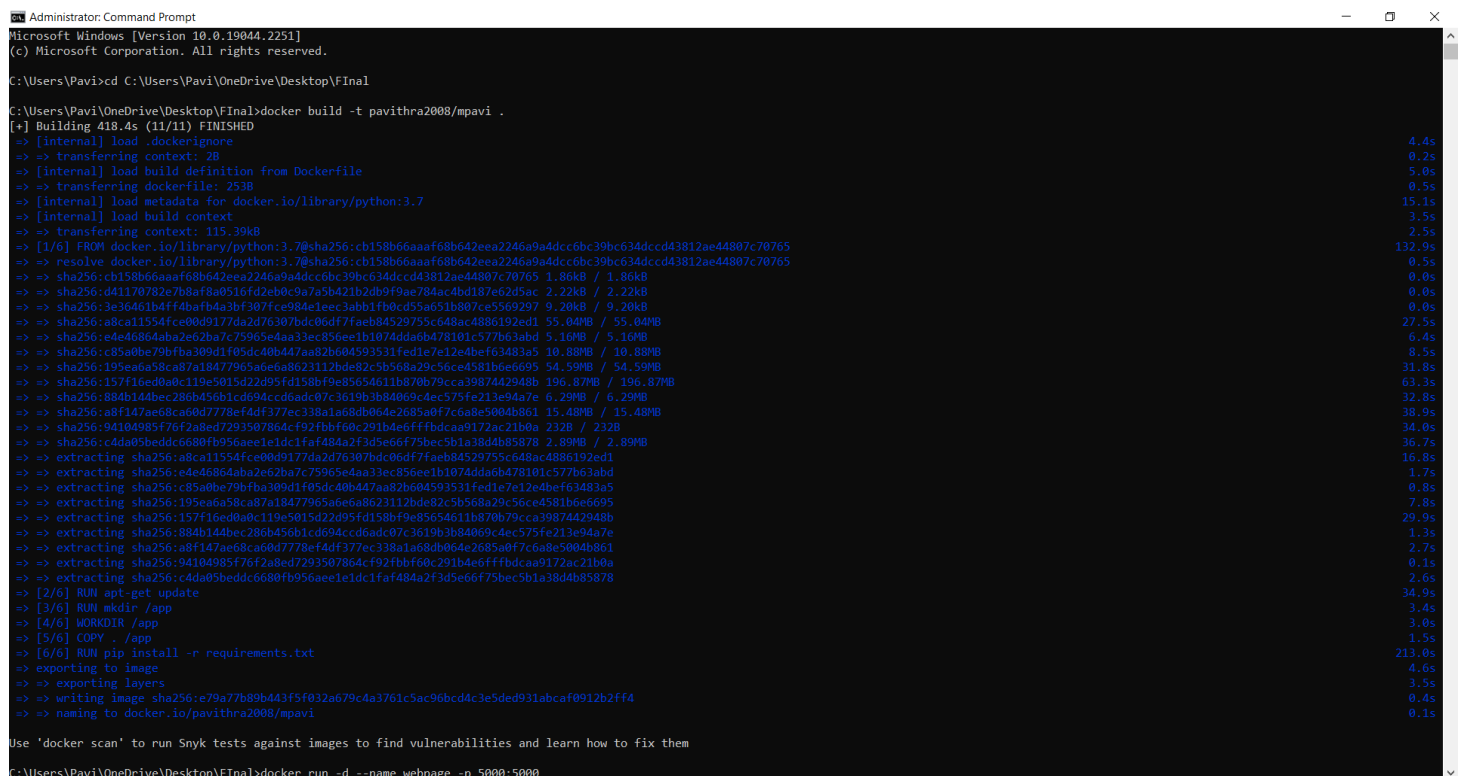
Progress 1

Building the Docker Image using the Docker file for Containerize the application



The screenshot shows the Visual Studio Code editor with a Dockerfile open. The Explorer sidebar on the left shows a project structure with folders like 'FINAL', 'kubernetes', and 'static', and files like 'app.py', 'check.py', 'config.ini', 'requirements.txt', and 'sendmail.py'. The Dockerfile is selected and its content is displayed in the main editor. The Dockerfile contains 11 instructions for building a Python application container.

```
1 FROM python:3.7
2 LABEL maintainer="Pavi R, rspavithra08@gmail.com"
3 RUN apt-get update
4 RUN mkdir /app
5 WORKDIR /app
6 COPY . /app
7 RUN pip install -r requirements.txt
8 EXPOSE 5000
9 ENTRYPOINT [ "python" ]
10 CMD [ "app.py" ]
11
```



The screenshot shows a Windows Command Prompt window titled 'Administrator: Command Prompt'. It displays the output of a Docker build command. The build process starts with loading the Dockerfile and context, then proceeds to build the image. The output shows the progress of each step, including the resolution of dependencies and the extraction of layers. The build is completed successfully, and the resulting image is named 'pavithra2008/mpavi'.

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

C:\Users\Pavi>cd C:\Users\Pavi\OneDrive\Desktop\Final

C:\Users\Pavi\OneDrive\Desktop\Final>docker build -t pavithra2008/mpavi .
[*] Building 418.4s (11/11) FINISHED
=> [internal] load .dockerignore
=> transferring context: 2B
=> [internal] load build definition from Dockerfile
=> transferring dockerfile: 253B
=> [internal] load metadata for docker.io/library/python:3.7
=> [internal] load build context
=> transferring context: 115.39kB
=> [1/6] FROM docker.io/library/python:3.7@sha256:cb158b6aaaf68b642eea2246a9a4dccc6bc30bc634dccc43812ae44807c70765
=> resolve docker.io/library/python:3.7@sha256:cb158b6aaaf68b642eea2246a9a4dccc6bc30bc634dccc43812ae44807c70765
=> sha256:cb158b6aaaf68b642eea2246a9a4dccc6bc30bc634dccc43812ae44807c70765 1.86kB / 1.86kB
=> sha256:d41170782e7b8af8a0516fd2eb0c9a7a5b421b2db9f9ae784ac4bd187e62d5ac 2.22kB / 2.22kB
=> sha256:3e36461b44f4bafba3bf307fce984e1e3c3abb1fb0cd55a651b807ce5569297 2.20kB / 2.20kB
=> sha256:a8ca11554fce00d9177da2d76307bdc06df7faeb84529755c648ac4886192ed1 55.04MB / 55.04MB
=> sha256:e4e46864aba2e62ba7c75965e4aa33ec856ee1b1074dda6b478101c577b63abd 5.16MB / 5.16MB
=> sha256:c85a0be79bfa309d1f05dc40b447aa82b604593531fed1e7e12e4bef63483a5 10.88MB / 10.88MB
=> sha256:195ea6a58ca87a18477965a6e6a8623112bde82c5b568a29c56ce4581b6e6695 54.59MB / 54.59MB
=> sha256:157f16ed080c119e5015d22d95fd158bf9e85654611b870b79cca3987442948b 196.87MB / 196.87MB
=> sha256:884b144bec286b456b1cd694ccd6ad07c3619b3b84069c4ec575fe213e94a7e 6.29MB / 6.29MB
=> sha256:a8f147ae68ca60d7778ef4df377ec338a1a68db064e2685a0f7c6a8e5004b861 15.48MB / 15.48MB
=> sha256:94104985f76f2a8ed7293507864cf92fbbf60c291b4e6fffbdc9a9172ac21b0a 232B / 232B
=> sha256:c4da05beddc680fb956ae1e1dc1faf484a2f3d5e66f75bec5b1a38d4b85878 2.89MB / 2.89MB
=> extracting sha256:a8ca11554fce00d9177da2d76307bdc06df7faeb84529755c648ac4886192ed1
=> extracting sha256:e4e46864aba2e62ba7c75965e4aa33ec856ee1b1074dda6b478101c577b63abd
=> extracting sha256:c85a0be79bfa309d1f05dc40b447aa82b604593531fed1e7e12e4bef63483a5
=> extracting sha256:195ea6a58ca87a18477965a6e6a8623112bde82c5b568a29c56ce4581b6e6695
=> extracting sha256:157f16ed080c119e5015d22d95fd158bf9e85654611b870b79cca3987442948b
=> extracting sha256:884b144bec286b456b1cd694ccd6ad07c3619b3b84069c4ec575fe213e94a7e
=> extracting sha256:a8f147ae68ca60d7778ef4df377ec338a1a68db064e2685a0f7c6a8e5004b861
=> extracting sha256:94104985f76f2a8ed7293507864cf92fbbf60c291b4e6fffbdc9a9172ac21b0a
=> extracting sha256:c4da05beddc680fb956ae1e1dc1faf484a2f3d5e66f75bec5b1a38d4b85878
=> [2/6] RUN apt-get update
=> [3/6] RUN mkdir /app
=> [4/6] WORKDIR /app
=> [5/6] COPY . /app
=> [6/6] RUN pip install -r requirements.txt
=> exporting to image
=> exporting layers
=> writing image sha256:e79a77b89b443f5f032a679c4a3761c5ac96bcd4c3e5ded931abcaf0912b2ff4
=> naming to docker.io/pavithra2008/mpavi

Use 'docker scan' to run Snyk tests against images to find vulnerabilities and learn how to fix them

C:\Users\Pavi\OneDrive\Desktop\Final>docker run -d --name webpage -p 5000:5000
```

```
Administrator: Command Prompt

C:\Users\Pavi\OneDrive\Desktop\Final>docker push pavithra2008/mpavi:latest
The push refers to repository [docker.io/pavithra2008/mpavi]
bb770a1f851c: Pushed
c984ae963d43: Pushed
5f70bf18a086: Pushed
5ffe63e75b35: Pushed
1f853a2284db: Pushed
3fc2b0ae9ac3: Mounted from library/python
3c3040e02d68: Mounted from library/python
1a7a6da7a330: Mounted from library/python
e6e9854ca999: Mounted from library/python
397a239a053b: Mounted from library/python
89c3244a87b2: Mounted from library/python
80231db1194c: Mounted from library/python
f1c1f2298584: Mounted from library/python
ccba29d69370: Mounted from library/python
latest: digest: sha256:03672184cab6ed3d45035dd3e4229ab31022ecd08a7e51c17cf68ddea1513645 size: 3264

C:\Users\Pavi\OneDrive\Desktop\Final>ibmcloud plugin install container-registry
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% 1s
12476416 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.0.2' was successfully installed into C:\Users\Pavi\bluemix\plugins\container-registry. Use 'ibmcloud plugin show container-registry' to show its details.

C:\Users\Pavi\OneDrive\Desktop\Final>ibmcloud login
API endpoint: https://cloud.ibm.com
Region: jp-tok

Email> 310819104058@smartinternz.com

Password>
Authenticating...
OK
Targeted account PAVITHRA R's Account (ecc9630d6bab4d23b7e39fa2e2b028cb)

API endpoint: https://cloud.ibm.com
Region: jp-tok
User: 310819104058@smartinternz.com
Account: PAVITHRA R's Account (ecc9630d6bab4d23b7e39fa2e2b028cb)
Resource group: No resource group targeted, use 'ibmcloud target -g RESOURCE_GROUP'
CF API endpoint:
Org:
Auth:
```

```
Administrator: Command Prompt

OK
Plug-in 'container-service 1.0.459' was successfully installed into C:\Users\Pavi\bluemix\plugins\container-service. Use 'ibmcloud plugin show container-service' to show its details.

C:\Users\Pavi\OneDrive\Desktop\Final>ibmcloud ks cluster config --cluster cdtlapqf012hjtooaug
OK
The configuration for cdtlapqf012hjtooaug was downloaded successfully.

Added context for cdtlapqf012hjtooaug 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.

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl config current-context
myCluster-free/cdtlapqf012hjtooaug

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl apply -f kubernetes/ibm_deployment.yaml
deployment.apps/flask-app created

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl apply -f kubernetes/flask_service.yaml
service/flask-app-service created

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl apply -f kubernetes/flask_ingress.yaml
ingress.networking.k8s.io/flask-app-ingress created

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl get ing
NAME          CLASS  HOSTS  ADDRESS  PORTS  AGE
flask-app-ingress  <none>  *      <none>    80      23s

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl get svc
NAME          TYPE          CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
flask-app-service  ClusterIP     172.21.17.158  <none>        5000/TCP  53s
kubernetes        ClusterIP     172.21.0.1    <none>        443/TCP   5h27m

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl get nodes -o wide
NAME          STATUS    ROLES    AGE    VERSION    INTERNAL-IP  EXTERNAL-IP  OS-IMAGE             KERNEL-VERSION  CONTAINER-RUNTIME
10.144.222.182 Ready     <none>    5h20m  v1.24.7+IKS  10.144.222.182  159.122.186.47  Ubuntu 18.04.6 LTS   4.15.0-194-generic  containerd://1.6.8

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl expose deployment flask-app --type=NodePort --name=flask-app
service/flask-app exposed

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl expose deployment flask-app --type=NodePort --name=testingpage1
service/testingpage1 exposed

C:\Users\Pavi\OneDrive\Desktop\Final>kubectl get svc
NAME          TYPE          CLUSTER-IP  EXTERNAL-IP  PORT(S)  AGE
flask-app      NodePort      172.21.35.223  <none>        5000:31233/TCP  70s
flask-app-service  ClusterIP     172.21.17.158  <none>        5000/TCP       3m31s
kubernetes      ClusterIP     172.21.0.1    <none>        443/TCP       5h30m
testingpage1     NodePort      172.21.42.193  <none>        5000:32519/TCP  15s
```

Progress 2

Uploading the Image to the IBM Container registry.

Resource list - IBM Cloudmycluster-free - Kubernetes DashXbox New Tabcloud.ibm.com/resourcesGmailYouTubeMapstech mahindra hr in...IBM CloudSearch resources and products...CatalogManagePAVITHRA R's Account

Resource list

Create resource +

Name	Group	Location	Product	Status	Tags
Filter by name or IP address...Filter by group or org...Filter...Filter...Filter...Filter...					
Compute (0)					
Containers (2)					
mycluster-free	Default	Frankfurt	Kubernetes Service	Normal	
shalini	Default	Tokyo	Container Registry		
Networking (0)					
Storage (1+)					
AI / Machine Learning (1+)					
Analytics (0)					
Blockchain (0)					
Databases (1+)					
Developer tools (0)					

IBM Cloud Container Registry - IBM Cloudcloud.ibm.com/registry/namespaces?id=shalini®ion=ap-northGmailYouTubeMapstech mahindra hr in...IBM CloudSearch resources and products...CatalogManagePAVITHRA R's Account

Container Registry

Quick startNamespacesRepositoriesImagesTrashSettings

Namespaces

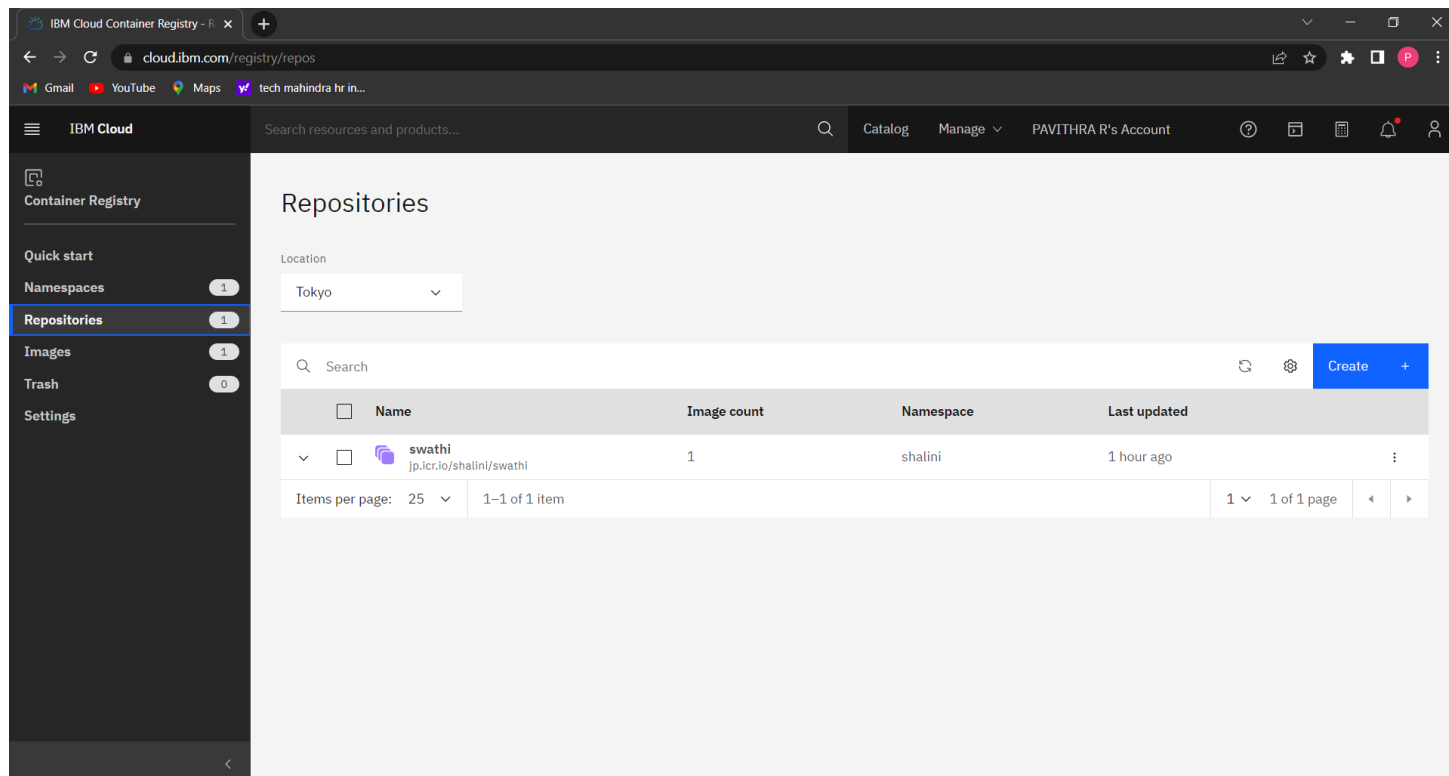
LocationTokyo

Viewing filtered namespacesA filter is applied so that only the namespace shalini is included in the table.Show all namespaces

Resource group: Filter...SearchCreate +

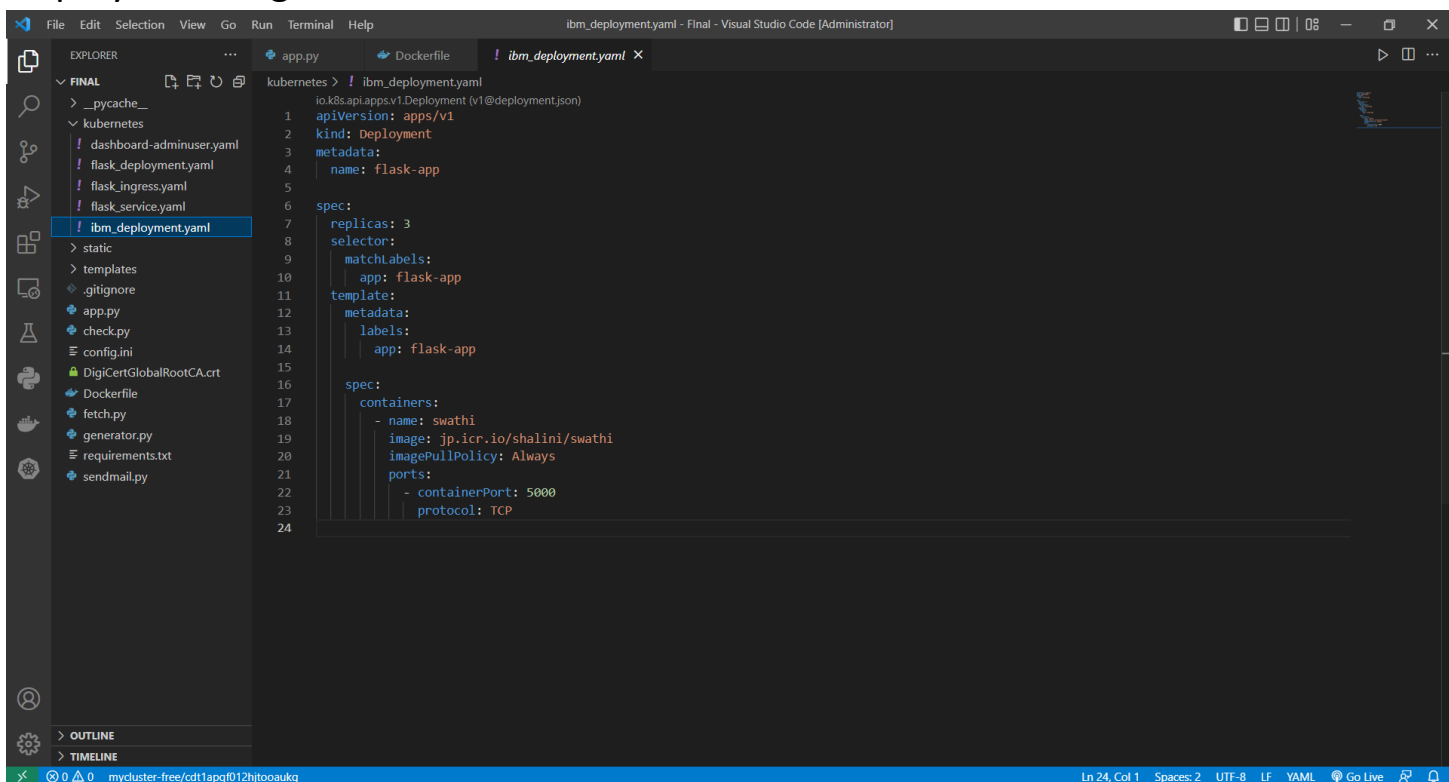
Name	Resource group	Repository count	Image count	Retention policy
shalini	Default	1	1	Retain all images

Items per page: 251-1 of 1 item11 of 1 page



Progress 3

Deploy the image in Kubernetes cluster.



Visual Studio Code interface showing the file explorer on the left with a project structure including files like `app.py`, `check.py`, `config.ini`, `Dockerfile`, `fetch.py`, `generator.py`, `requirements.txt`, and `sendmail.py`. The main editor displays the `flask_service.yaml` file with the following content:

```
kubernetes > ! flask_service.yaml > {} spec > {} selector > app
1 io.k8s.api.core.v1.Service (v1@service.json)
2 apiVersion: v1
3 kind: Service
4 metadata:
5   name: flask-app-service
6 spec:
7   type: ClusterIP
8   ports:
9     - port: 5000
10   selector:
11     app: flask-app
```

mycluster-free - IBM Cloud

cloud.ibm.com/kubernetes/clusters/cdt1apqf012hjtooukg/overview

IBM Cloud Search resources and products... Catalog Manage PAVITHRA R's Account

Clusters / mycluster-free Normal Expires in 30 days Add tags

Overview

Worker nodes

Worker pools

DevOps New

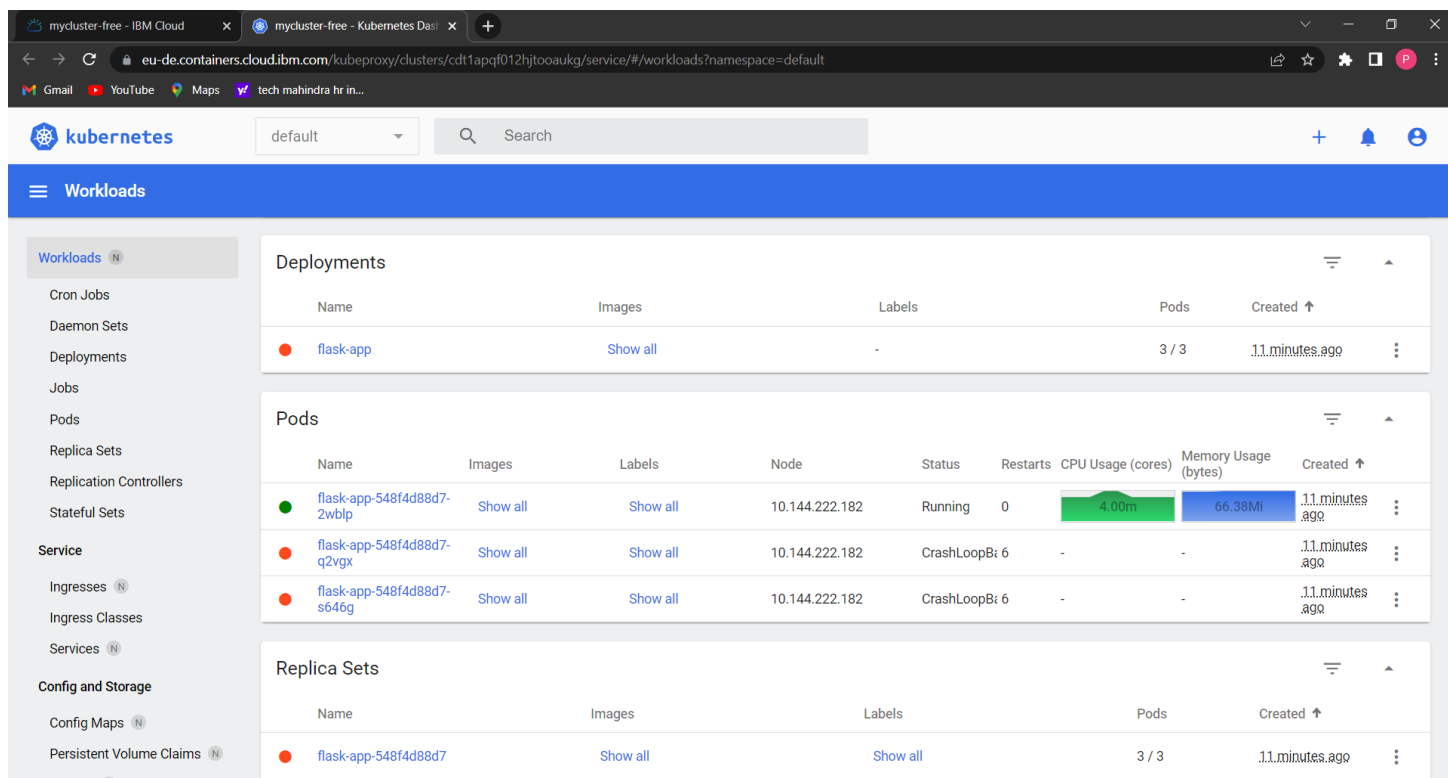
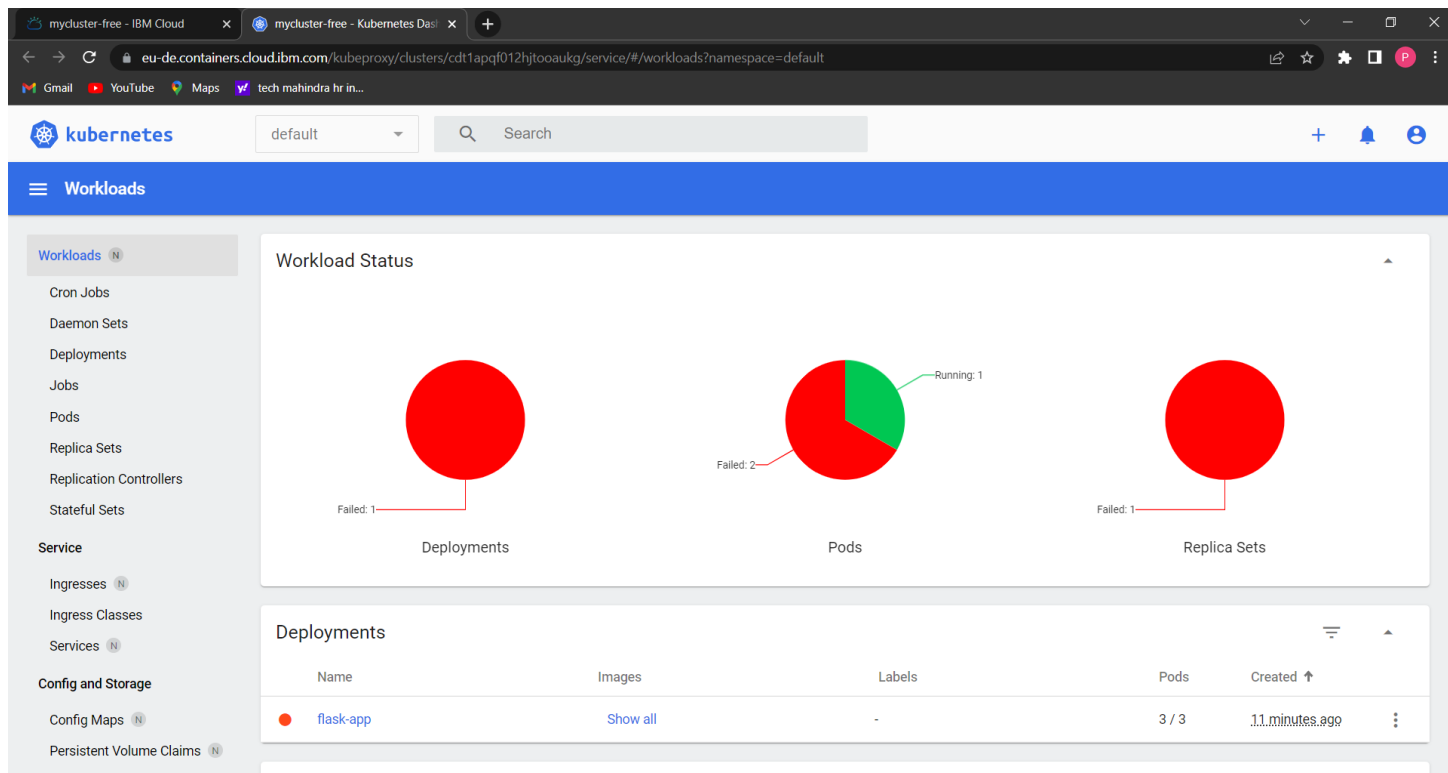
Expires in 30 days:
Be sure to back up your data, your cluster will be deleted in 30 days. To access the full capabilities of the service, try out a [standard cluster](#).

<p>Node status</p> <p>1 of 1</p> <p>Normal</p> <p>Details ↓</p>	<p>Add-on status</p> <p>0 of 0</p> <p>Normal</p> <p>Details ↓</p>	<p>Master status</p> <p>Normal</p> <p>✓</p> <p>Docs ↗</p>	<p>Ingress status</p> <p>Healthy ⓘ</p> <p>✓</p> <p>Docs ↗</p>
---	---	---	---

Details

Cluster ID	Version	Infrastructure	Zones
cdt1apqf012hjtooukg	1.24.8_1544	Classic	Milan 01
Created	Resource group	Image security enforcement	
11/20/2022, 5:24 PM	Default	Enable	

Node health [Worker node details](#)



--- Completed Sprint – 4 ---