

PLASMA DONAR APPLICATION

NALAIYA THIRAN PROJECT REPORT

IBM-Project-14173-1659543653

TEAM ID : PNT2022TMID08318

Submitted by

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in partial fulfillment for the award of the degree

of

BACHELOR OF ENGINEERING

IN

COMPUTER SCIENCE AND ENGINEERING

DHANALAKSHMI SRINIVASAN ENGINEERING COLLEGE

(AUTONOMOUS)

PERAMBALUR-621212

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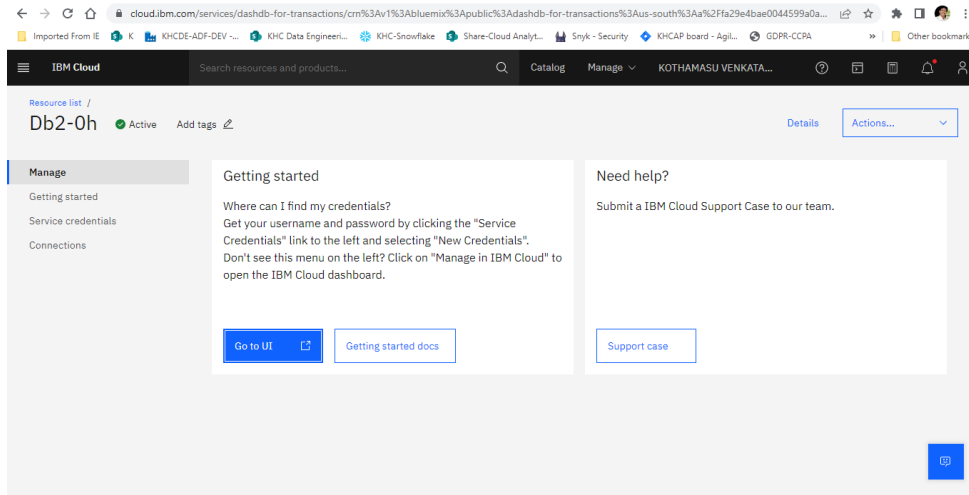
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Installations:

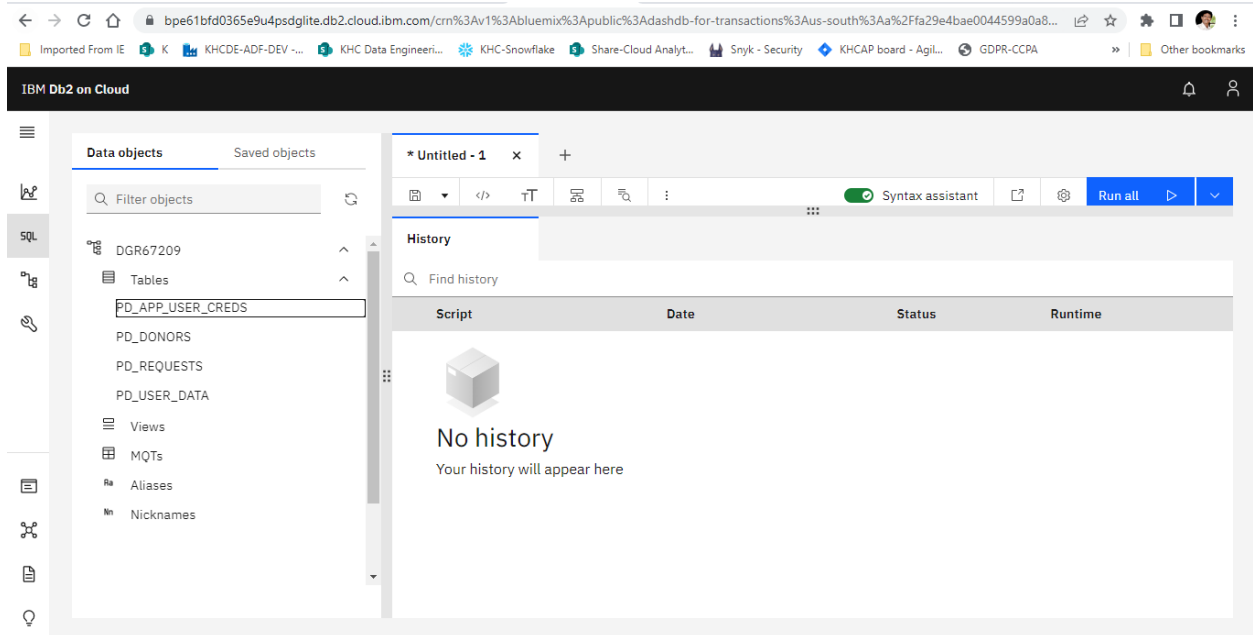
1. Python 3.9
2. Python Packages
 - a. Flask
 - b. ibm_db
 - c. sendgrid
 - d. python-dotenv
3. IBM Cloud CLI
4. IBM Cloud CLI – Extensions
 - a. container-registry
 - b. container-service
5. Kubectl

IBM Cloud Setup & Services:

DB 2 – Database:



DB 2 – Database Tables:



DB2 – Table - **PD_USER_DATA**:

IBM Db2 on Cloud

Data objects | Saved objects

Filter objects

SQL

DGR67209

Tables

PD_APP_USER_CREDS

PD_DONORS

PD_REQUESTS

PD_USER_DATA

Views

MQTs

Aliases

Nicknames

*Untitled - 1

Syntax assistant

Run all

History

Find history

Script

Date

Status

Runtime

No history

Your history will appear here

DB2 – Table - **PD_APP_USER_CREDS**:

IBM Db2 on Cloud

Data objects | Saved objects

Filter objects

SQL

DGR67209

Tables

PD_APP_USER_CREDS

PD_DONORS

PD_REQUESTS

PD_USER_DATA

Views

MQTs

Aliases

Nicknames

*Untitled - 1

Syntax assistant

Run all

History

PD_APP_USER...

Table details

PD_APP_USER_CREDS

7 rows

32.0 KB

Find

Name	Data type	Nullable	Length	Scale
PDAPP_USERNAME	VARCHAR	Y	50	0
PDAPP_PASSWORD	VARCHAR	Y	20	0

DB2 – Table - **PD_DONORS**:

IBM Db2 on Cloud

SQL

Data objects

Filter objects

DGR67209

Tables

PD_APP_USER_CREDS

PD_DONORS

PD_REQUESTS

PD_USER_DATA

Views

MQTs

Aliases

Nicknames

*Untitled - 1

History

PD_DONORS

Table details

PD_DONORS

5 rows

32.0 KB

Find

Name	Data type	Nullable	Length	Scale
PDAPP_USERNAME	VARCHAR	Y	50	0
BLOOD_GROUP_WITH_RH	VARCHAR	Y	50	0
DONATION_SIGNEDUP_DATE	DATE	Y	4	0
LAST_DONATED_DATE	DATE	Y	4	0

DB2 – Table - **PD_REQUESTS**:

IBM Db2 on Cloud

SQL

Data objects

Filter objects

DGR67209

Tables

PD_APP_USER_CREDS

PD_DONORS

PD_REQUESTS

PD_USER_DATA

Views

MQTs

Aliases

Nicknames

*Untitled - 1

History

PD_REQUESTS

Table details

PD_REQUESTS

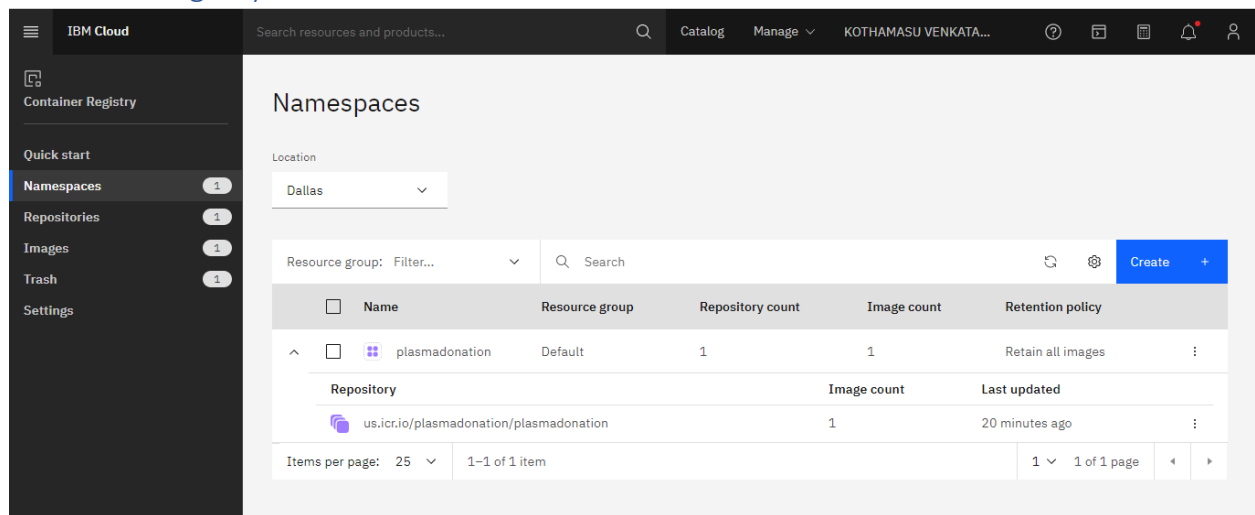
11 rows

32.0 KB

Find

Name	Data type	Nullable	Length	Scale
PDAPP_USERNAME	VARCHAR	Y	50	0
BLOOD_GROUP_WITH_RH	VARCHAR	Y	50	0
REQUESTED_FOR_ADDRESS	VARCHAR	Y	200	0
REQUESTED_DATE	DATE	Y	4	0
REQUEST_STATUS	VARCHAR	Y	6	0

Container Registry:

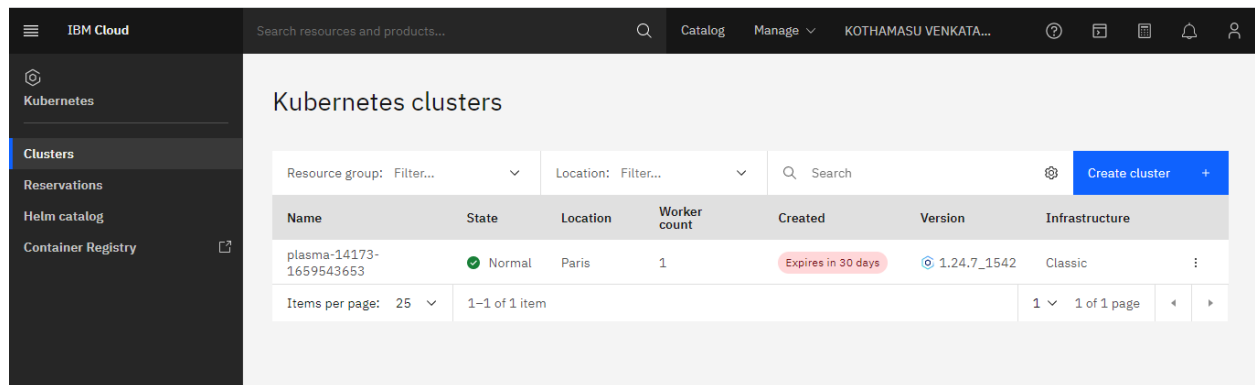


The screenshot shows the IBM Cloud Container Registry interface. The left sidebar contains navigation links: Container Registry, Quick start, Namespaces (1), Repositories (1), Images (1), Trash (1), and Settings. The main content area is titled 'Namespaces' and shows a table of namespaces. The location is set to 'Dallas'. The table has columns for Name, Resource group, Repository count, Image count, and Retention policy. A single namespace 'plasmadonation' is listed with a Default resource group, 1 repository, 1 image, and a retention policy of 'Retain all images'. Below the table, there is a 'Repository' section showing 'us.icr.io/plasmadonation/plasmadonation' with 1 image and updated 20 minutes ago. The bottom of the page shows pagination: 'Items per page: 25', '1-1 of 1 item', and '1 of 1 page'.

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

Repository	Image count	Last updated
us.icr.io/plasmadonation/plasmadonation	1	20 minutes ago

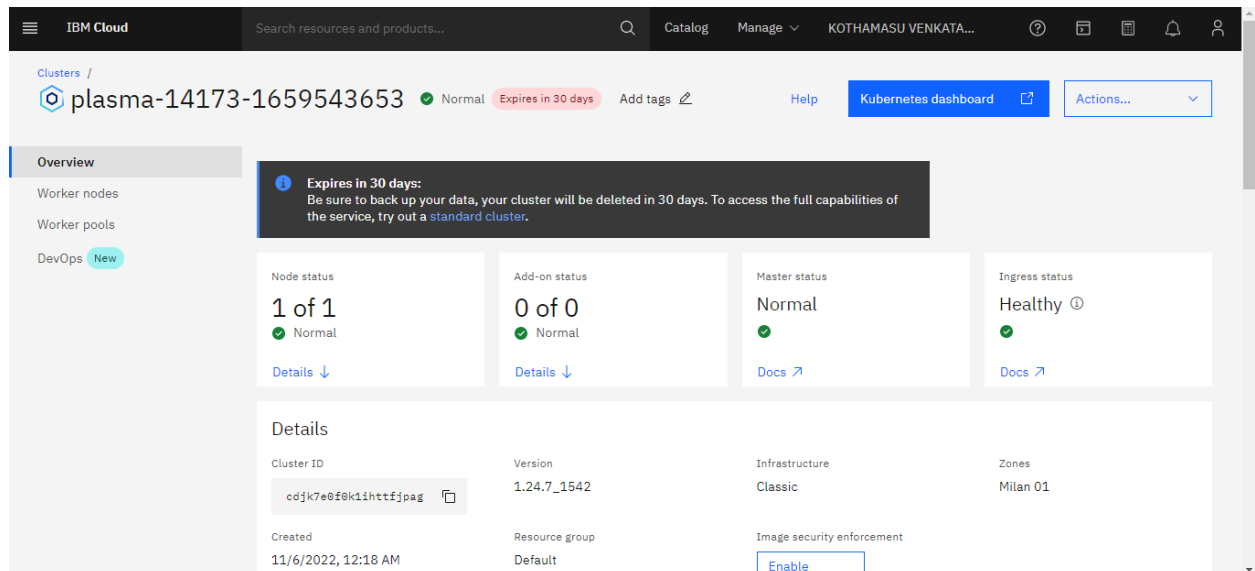
Kubernetes Cluster:



The screenshot shows the IBM Cloud Kubernetes clusters interface. The left sidebar contains navigation links: Kubernetes, Clusters, Reservations, Helm catalog, and Container Registry. The main content area is titled 'Kubernetes clusters' and shows a table of clusters. The table has columns for Name, State, Location, Worker count, Created, Version, and Infrastructure. A single cluster 'plasma-14173-1659543653' is listed with a Normal state, Paris location, 1 worker, and version 1.24.7_1542. The bottom of the page shows pagination: 'Items per page: 25', '1-1 of 1 item', and '1 of 1 page'.

Name	State	Location	Worker count	Created	Version	Infrastructure
plasma-14173-1659543653	Normal	Paris	1	Expires in 30 days	1.24.7_1542	Classic

Cluster Overview:



The screenshot shows the IBM Cloud Kubernetes Cluster Overview page for cluster 'plasma-14173-1659543653'. The page has a sidebar with navigation links: Overview, Worker nodes, Worker pools, and DevOps (New). The main content area shows a warning banner: '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.' Below the banner, there are four status cards: Node status (1 of 1, Normal), Add-on status (0 of 0, Normal), Master status (Normal), and Ingress status (Healthy). The bottom section shows details for the cluster: Cluster ID (cdjk7e8f0k1ihttffpag), Version (1.24.7_1542), Infrastructure (Classic), Zones (Milan 01), Created (11/6/2022, 12:18 AM), Resource group (Default), and Image security enforcement (Enable).

Node status

1 of 1

Normal

Details ↓

Add-on status

0 of 0

Normal

Details ↓

Master status

Normal

Docs ↗

Ingress status

Healthy ⓘ

Docs ↗

Details

Cluster ID	Version	Infrastructure	Zones
cdjk7e8f0k1ihttffpag	1.24.7_1542	Classic	Milan 01
Created	Resource group	Image security enforcement	
11/6/2022, 12:18 AM	Default	Enable	

Worker Nodes:

IBM Cloud

Search resources and products...

Q

Catalog

Manage

KOTHAMASU VENKATA...

?

Clusters /

plasma-14173-1659543653

Normal

Expires in 30 days

Add tags

Help

Kubernetes dashboard

Actions...

Overview

Worker nodes

Worker pools

DevOps New

Pool: Filter...

Q Search

Add +

<input type="checkbox"/>	Name	Status	Worker pool	Zone	Private IP	Public IP	Version
<input type="checkbox"/>	000000ea	Normal	default	Milan 01	10.144.195.234	159.122.186.178	1.24.6_1541
ID kube-cdjK7e0f0k1ihttffpag-plasma14173-default-000000ea							
Status --		Flavor Free - 2 vCPUs 4GB RAM		Private VLAN 2218181		Public VLAN 2218179	

Items per page: 25 1-1 of 1 item 1 1 of 1 page < >

Worker Pools:

IBM Cloud

Search resources and products...

Q

Catalog

Manage

KOTHAMASU VENKATA...

?

Clusters /

plasma-14173-1659543653

Normal

Expires in 30 days

Add tags

Help

Kubernetes dashboard

Actions...

Overview

Worker nodes

Worker pools

DevOps New

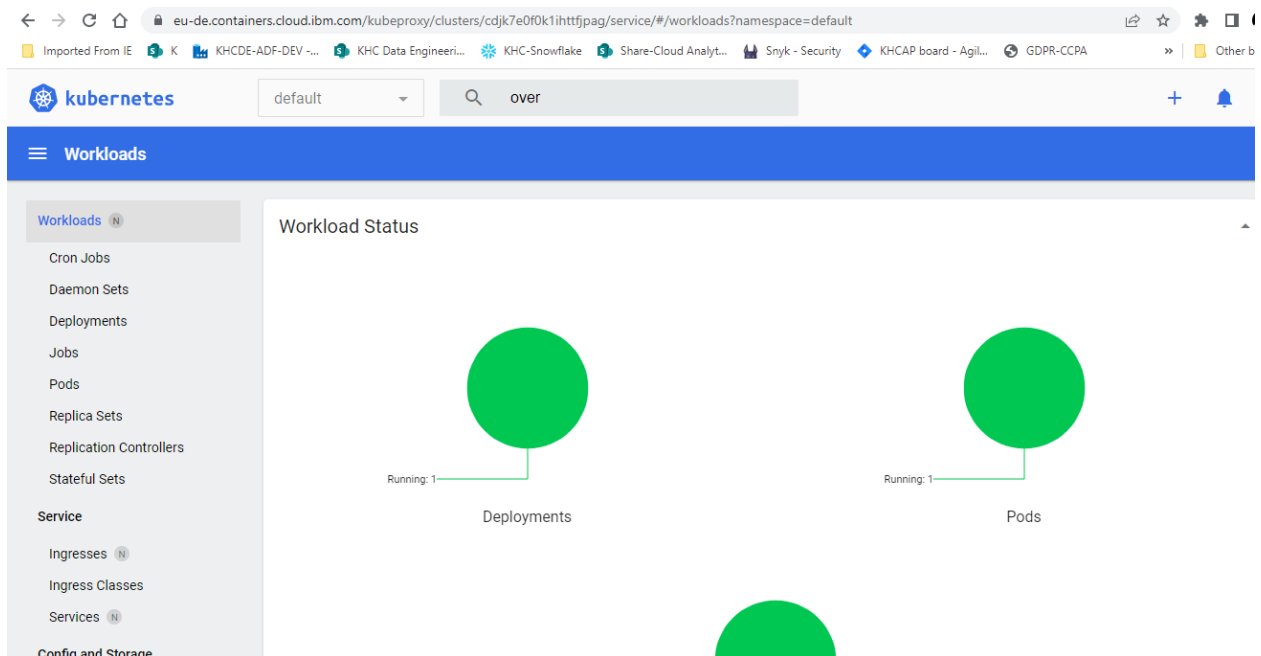
Q Search

Add +

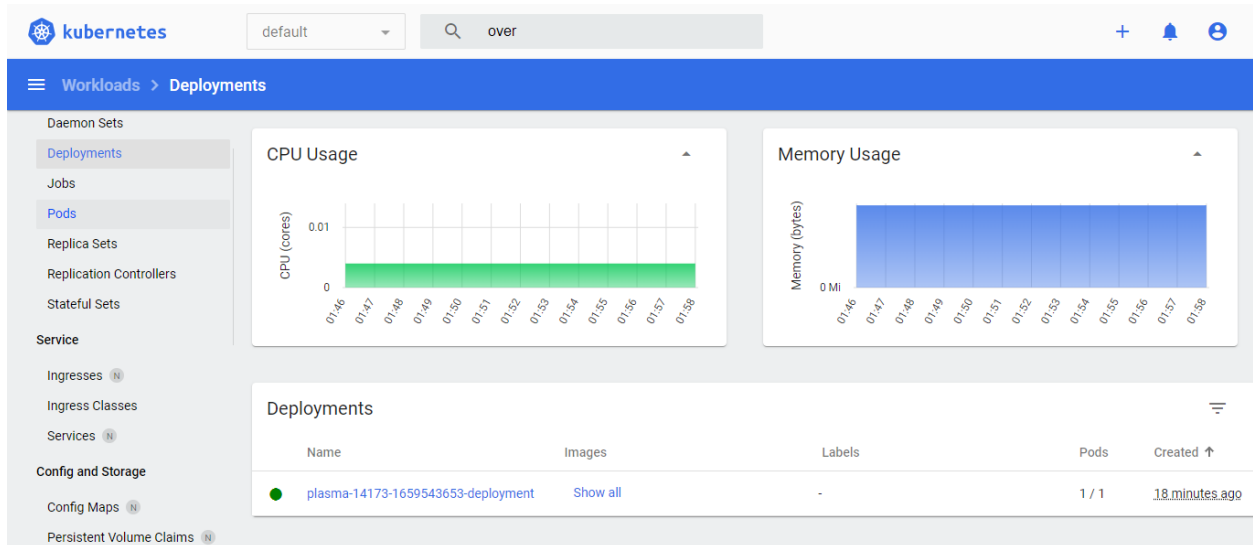
	Name	Zones	Status	Workers per zone	Actual / Declared workers	Flavor
<input type="checkbox"/>	default	Milan 01	Active	1	1 / 1	Free - 2 vCPUs 4GB RAM
ID cdjK7e0f0k1ihttffpag-1a41364					Boot volume encryption Unknown	Operating system Ubuntu 18
Labels 🔗						

Items per page: 25 1-1 of 1 item 1 1 of 1 page < >


Kubernetes Dashboard:




Deployment:






Service:

 **kubernetes**

default

 over

Service > Services

Daemon Sets

Deployments

Jobs


Pods

Replica Sets


Replication Controllers

Stateful Sets


Service


Ingresses 

Ingress Classes




Services 

Config and Storage

Config Maps 

Persistent Volume Claims 

Services

Name	Labels	Type	Cluster IP	Internal Endpoints	External Endpoints	Created 
 plasma-14173-1659543653-service	-	NodePort	172.21.33.184	plasma-14173-1659543653-service:5000 TCP plasma-14173-1659543653-service:30000 TCP	-	19 minutes ago
 kubernetes	Show all	ClusterIP	172.21.0.1	kubernetes:443 TCP kubernetes:0 TCP	-	an hour ago

Web App:

Landing Page:



Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

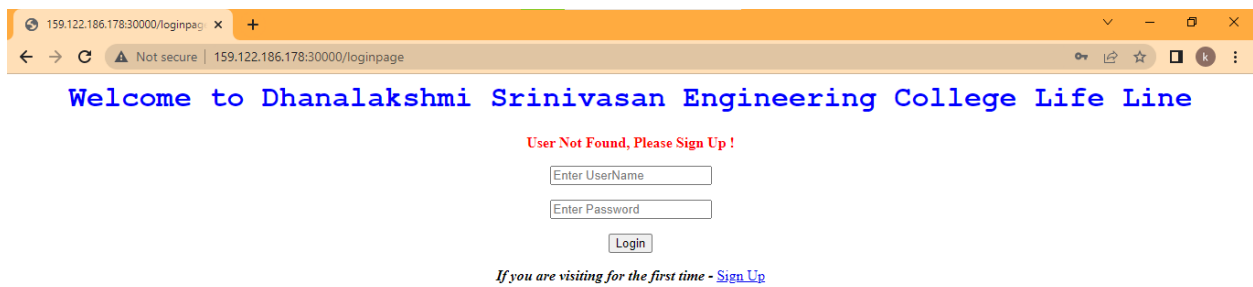
Enter UserName

Enter Password

Login

If you are visiting for the first time - [Sign Up](#)

User Validation:



Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

User Not Found, Please Sign Up !

Enter UserName

Enter Password

Login

If you are visiting for the first time - [Sign Up](#)

User Password Validation:



Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

Logged in Failed, re-try with correct password !

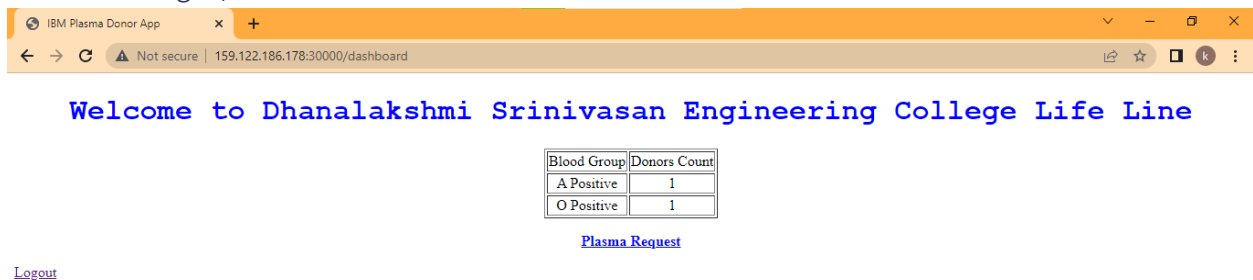
Enter UserName

Enter Password

Login

If you are visiting for the first time - [Sign Up](#)

Successful Login / Dashboard:



Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

Blood Group	Donors Count
A Positive	1
O Positive	1

[Plasma Request](#)

[Logout](#)

User Registration:

IBM Plasma Donor App

Not secure | 159.122.186.178:30000/registration

Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

Sai

.....

kothamasuvenkataratnasai@

4204094029

Chennai

Date of Birth: 06/22/2001

Uninfected

O Positive

Yes

Last Donation Date: 09/20/2020

Register

User Successful Registration:

159.122.186.178:30000/registration

Not secure | 159.122.186.178:30000/registration

Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

You have successfully registered !

Enter UserName

Enter Password

Login

If you are visiting for the first time - [Sign Up](#)

User Registration – Age Validation:

IBM Plasma Donor App

Not secure | 159.122.186.178:30000/registration

Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

Kamal

.....

kamal@gmail.com

2423402523

Chennai

Date of Birth: 04/23/2016

Infected

O Positive

Yes

Last Donation Date: 02/03/2022

Register

159.122.186.178:30000/registrati x +

Not secure | 159.122.186.178:30000/registration

Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

must be an have age greater than 16 to register into the Plasma Donation App !

Enter UserName

Enter Password

Login

If you are visiting for the first time - [Sign Up](#)

User Registration – Duplicate Registration:

159.122.186.178:30000/registrati x +

Not secure | 159.122.186.178:30000/registration

Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

Account already exists, please go ahead and login!

Enter UserName

Enter Password

Login

If you are visiting for the first time - [Sign Up](#)

Plasma Request Form:

IBM Plasma Donor App x +

Not secure | 159.122.186.178:30000/plasmarequestform

Welcome to Dhanalakshmi Srinivasan Engineering College Life Line

Choose your blood group ▼

Enter Your Address

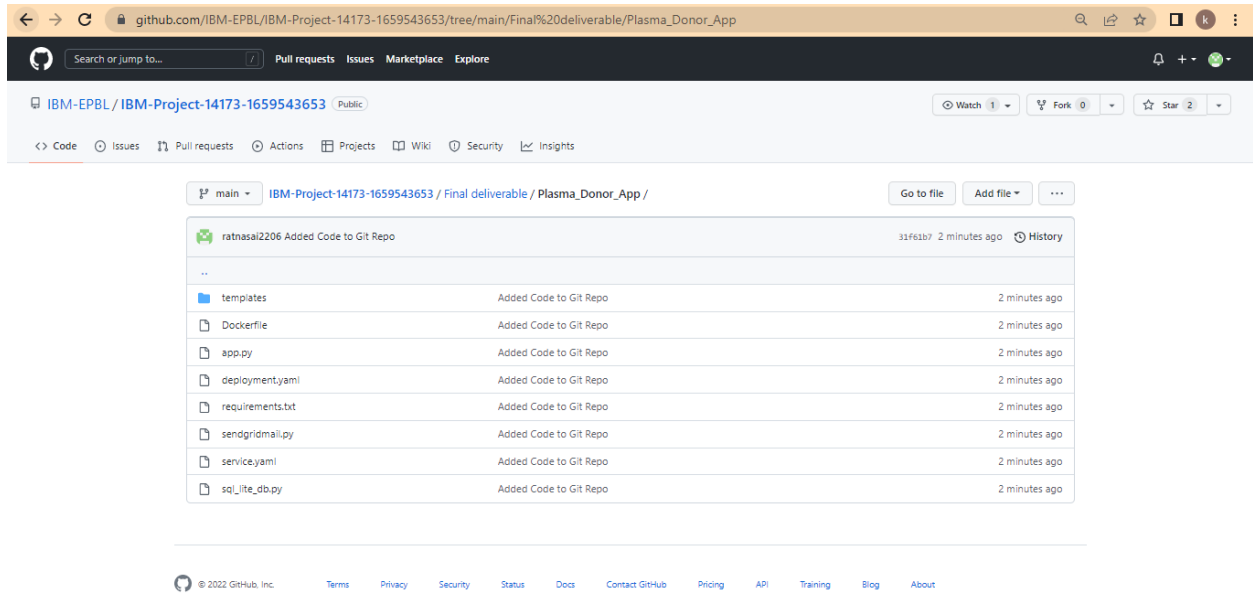
Place the Request

[Logout](#)

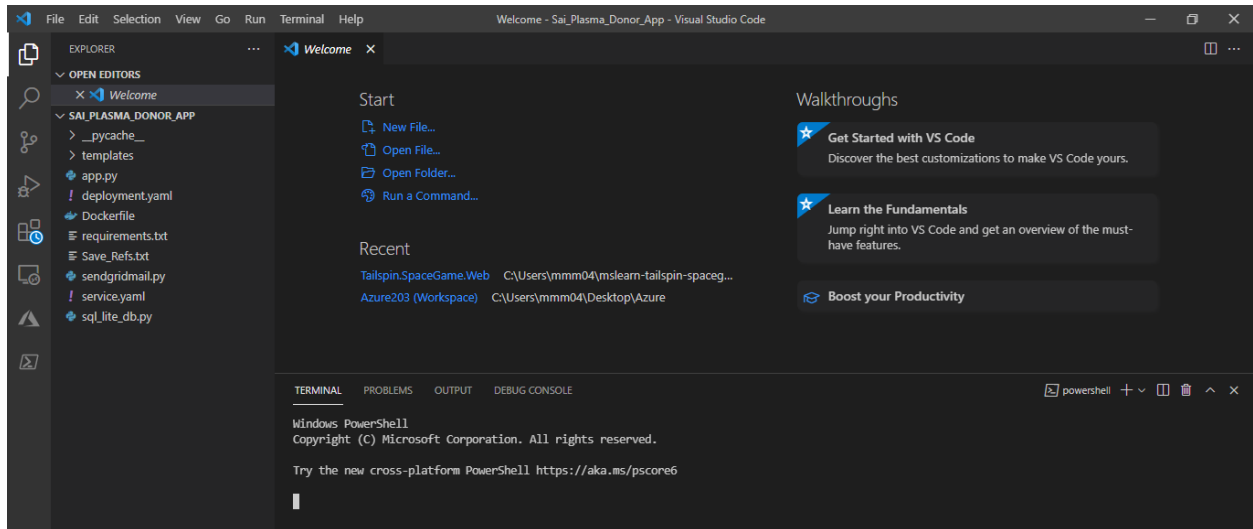
[Go back to Dashboard](#)

Code:

Git Repo:



Entire Code Folder:



Folder and Files in Code Folder:

Folder Name	File Name	Usage
templates	*.*	Templates folder stores the HTML files used by Flask
templates	\templates\dashboard.html	Dashboard page to list the Donors availability
templates	\templates\landingpage.html	Default Page for the App, Login & Sign-Up Page
templates	\templates\plasmarequest.html	Plasma Requestion form
templates	\templates\register.html	User Sign Up Form
\	app.py	Key Code File with the Flask to run the application

\	requirements.txt	Requirements for Python Package
\	sendgridmail.py	Send Grid Python Script for Sending Emails
\	sql_lite_db.py	For DB & Tables Creation
\	Dockerfile	Docker file for Container Image Creation, which provides the Environment and Code for running the Web Application
\	deployment.yaml	Deployment YAML to push the Container Image to the Kubernetes – A deployment is responsible for keeping a set of pods running
\	service.yaml	Service YAML to push the Container Image to the Kubernetes - A service is responsible for enabling network access to a set of pods

Each Code File:

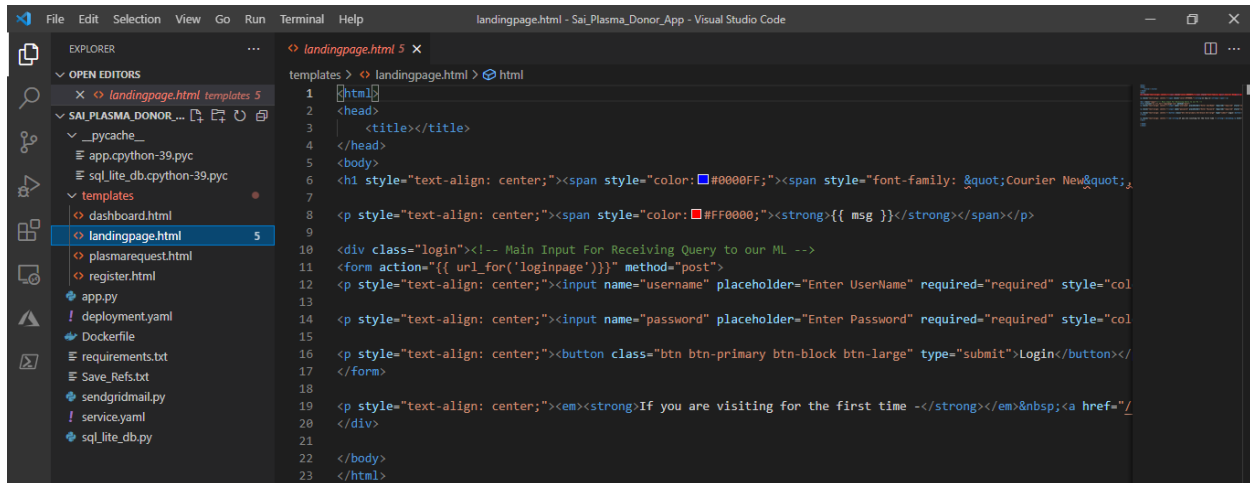
\templates\dashboard.html:

```

1  <!DOCTYPE html>
2  <html><!--From https://codepen.io/frytyler/pen/Egdtg-->
3  <head>
4    <meta charset="UTF-8" />
5    <title>IBM Plasma Donor App</title>
6    <link href="https://fonts.googleapis.com/css?family=Pacifico" rel="stylesheet" type="text/css" />
7    <link href="https://fonts.googleapis.com/css?family=Arimo" rel="stylesheet" type="text/css" />
8    <link href="https://fonts.googleapis.com/css?family=Hind:300" rel="stylesheet" type="text/css" />
9    <link href="https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300" rel="stylesheet" type="text/css" />
10   <link href="{{ url_for('static', filename='style.css') }}" rel="stylesheet" />
11   <style type="text/css">.login{
12     top: 20%;
13   }
14   </style>
15 </head>
16 <body>
17   <div class="header">
18     <h1 style="text-align: center;"><span style="color: #0000FF;"><span style="font-family: 'Courier New">
19   </div>
20
21   <table align="center" border="1">
22     <thead>
23       <tr>
24         <td style="text-align: center;">Blood Group</td>
25         <td style="text-align: center;">Donors Count</td>
26       </tr>
27     </thead>
28     {% for row in rows %}
29       <tr>
30         <td style="text-align: center;">{{row["blood_group_With_RH"]}}</td>
31         <td style="text-align: center;">{{row["Donors_cnt"]}}</td>
32       </tr>
33     {% endfor %}

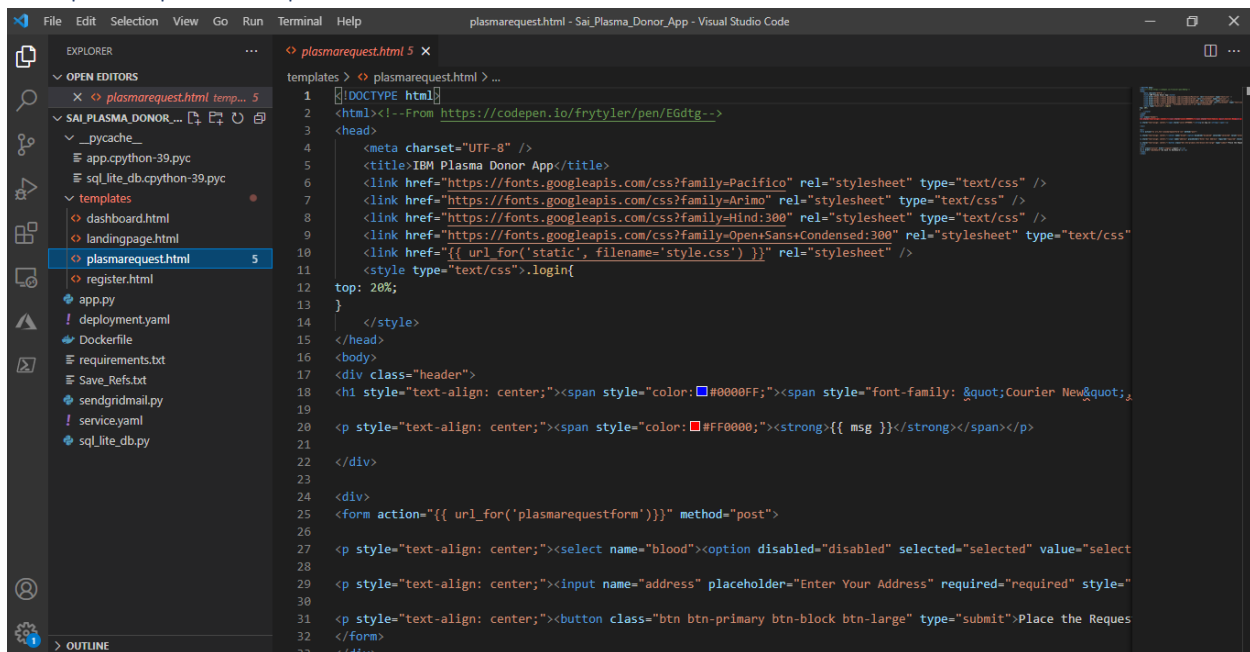
```


\templates\landingpage.html



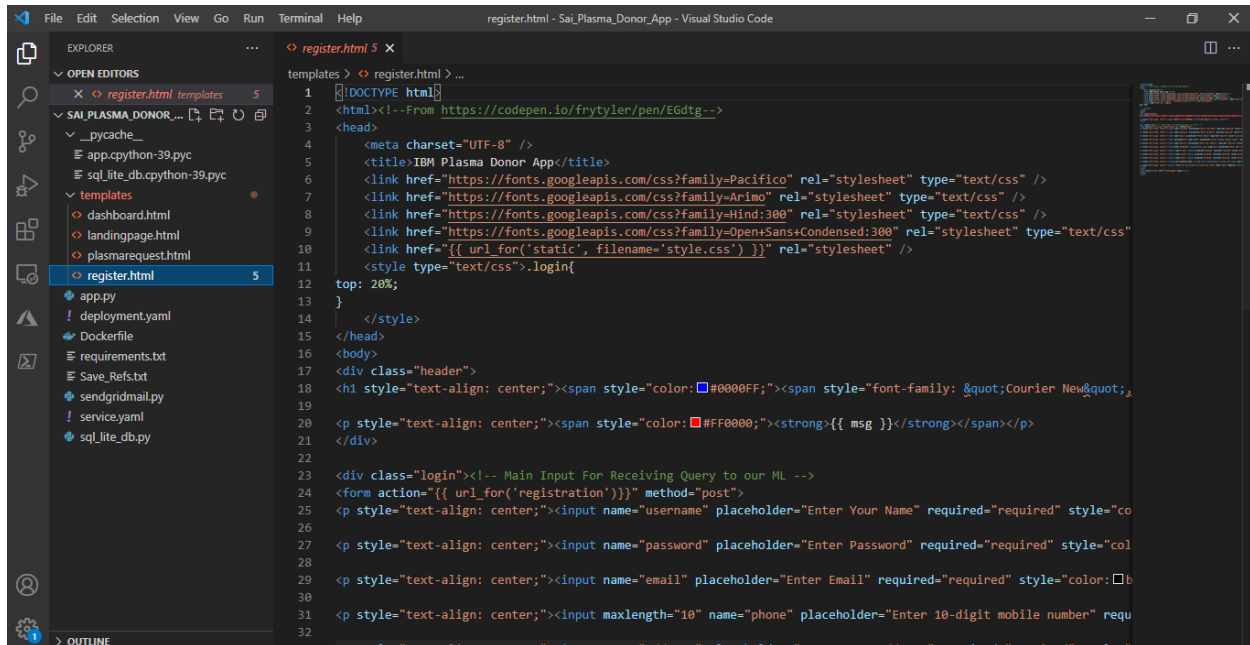
```
1 <html>
2 <head>
3   <title></title>
4 </head>
5 <body>
6   <h1 style="text-align: center;"><span style="color: #0000FF;"><span style="font-family: &quot;Courier New&quot;;
7
8   <p style="text-align: center;"><span style="color: #FF0000;"><strong>{{ msg }}</strong></span></p>
9
10  <div class="login"><!-- Main Input For Receiving Query to our ML -->
11    <form action="{{ url_for('loginpage')}}" method="post">
12      <p style="text-align: center;"><input name="username" placeholder="Enter UserName" required="required" style="col
13
14      <p style="text-align: center;"><input name="password" placeholder="Enter Password" required="required" style="col
15
16      <p style="text-align: center;"><button class="btn btn-primary btn-block btn-large" type="submit">Login</button></
17    </form>
18
19    <p style="text-align: center;"><em><strong>If you are visiting for the first time -</strong></em>&nbsp;<a href="/_
20  </div>
21
22 </body>
23 </html>
```

\templates\plasmarequest.html



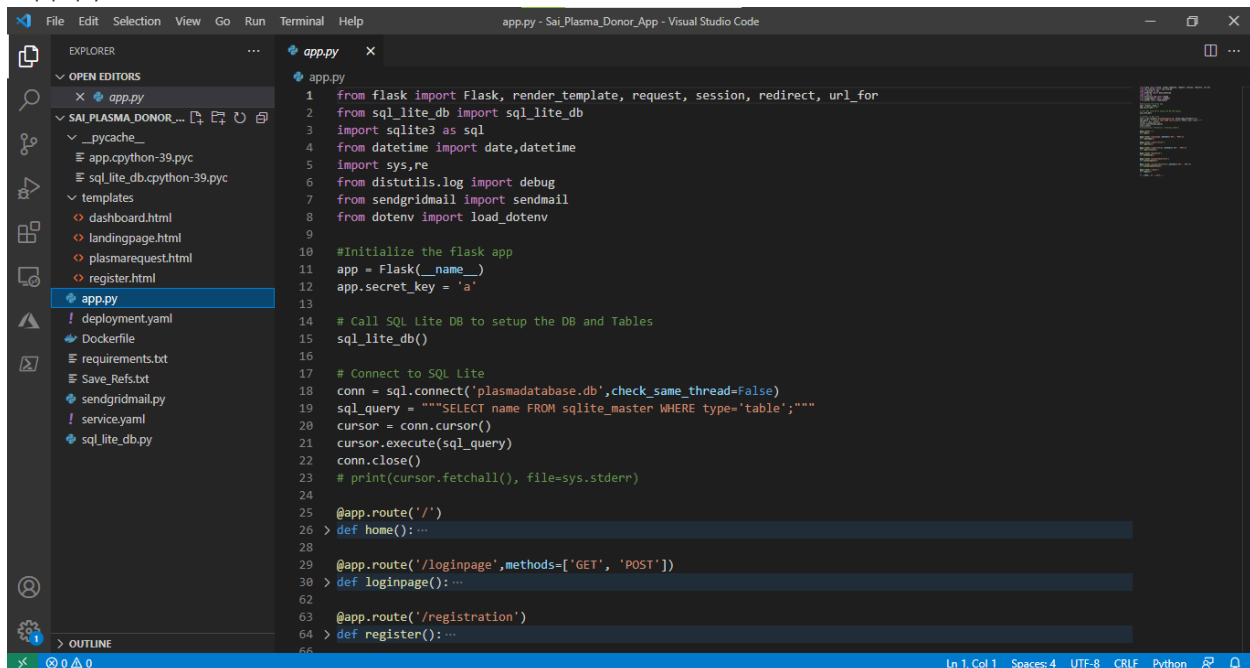
```
1 <!DOCTYPE html>
2 <html><!-- From https://codepen.io/frytyler/pen/Egdtg -->
3 <head>
4   <meta charset="UTF-8" />
5   <title>IBM Plasma Donor App</title>
6   <link href="https://fonts.googleapis.com/css?family=Pacifico" rel="stylesheet" type="text/css" />
7   <link href="https://fonts.googleapis.com/css?family=Arimo" rel="stylesheet" type="text/css" />
8   <link href="https://fonts.googleapis.com/css?family=Hind:300" rel="stylesheet" type="text/css" />
9   <link href="https://fonts.googleapis.com/css?family=Open+Sans+Condensed:300" rel="stylesheet" type="text/css" />
10  <link href="{{ url_for('static', filename='style.css') }}" rel="stylesheet" />
11  <style type="text/css">.login{
12    top: 20%;
13  }
14  </style>
15 </head>
16 <body>
17   <div class="header">
18     <h1 style="text-align: center;"><span style="color: #0000FF;"><span style="font-family: &quot;Courier New&quot;;
19
20     <p style="text-align: center;"><span style="color: #FF0000;"><strong>{{ msg }}</strong></span></p>
21
22   </div>
23
24   <div>
25     <form action="{{ url_for('plasmarequestform')}}" method="post">
26
27     <p style="text-align: center;"><select name="blood"><option disabled="disabled" selected="selected" value="select
28
29     <p style="text-align: center;"><input name="address" placeholder="Enter Your Address" required="required" style="
30
31     <p style="text-align: center;"><button class="btn btn-primary btn-block btn-large" type="submit">Place the Reques
32   </form>
33 </div>
```

\templates\register.html



```
1 <!DOCTYPE html>
2 <html><!--From https://codepen.io/frytyler/pen/EGdtg-->
3 <head>
4   <meta charset="UTF-8" />
5   <title>IBM Plasma Donor App</title>
6   <link href="https://fonts.googleapis.com/css?family=Pacifico" rel="stylesheet" type="text/css" />
7   <link href="https://fonts.googleapis.com/css?family=Arimo" rel="stylesheet" type="text/css" />
8   <link href="https://fonts.googleapis.com/css?family=Hind:300" rel="stylesheet" type="text/css" />
9   <link href="https://fonts.googleapis.com/css?family=Open+Sans:Condensed:300" rel="stylesheet" type="text/css" />
10  <link href="{{ url_for('static', filename='style.css') }}" rel="stylesheet" />
11  <style type="text/css">.login{
12    top: 20%;
13  }
14  </style>
15 </head>
16 <body>
17   <div class="header">
18     <h1 style="text-align: center;"><span style="color: #0000FF;"><span style="font-family: &quot;Courier New&quot;;
19   </div>
20   <p style="text-align: center;"><span style="color: #FF0000;"><strong>{{ msg }}</strong></span></p>
21   </div>
22
23   <div class="login"><!-- Main Input For Receiving Query to our ML -->
24     <form action="{{ url_for('registration') }}" method="post">
25       <p style="text-align: center;"><input name="username" placeholder="Enter Your Name" required="required" style="co
26
27       <p style="text-align: center;"><input name="password" placeholder="Enter Password" required="required" style="col
28
29       <p style="text-align: center;"><input name="email" placeholder="Enter Email" required="required" style="color: #b
30
31       <p style="text-align: center;"><input maxlength="10" name="phone" placeholder="Enter 10-digit mobile number" requ
32
33   </div>
34   <div class="login"><!-- Main Input For Receiving Query to our ML -->
35     <form action="{{ url_for('registration') }}" method="post">
36       <p style="text-align: center;"><input name="address" placeholder="Enter Your Address" required="required" style="
37
38       <p style="text-align: center;"><input name="password" placeholder="Enter Password" required="required" style="col
39
40       <p style="text-align: center;"><input name="email" placeholder="Enter Email" required="required" style="color: #b
41
42       <p style="text-align: center;"><input maxlength="10" name="phone" placeholder="Enter 10-digit mobile number" requ
43
44   </div>
45   <div class="login"><!-- Main Input For Receiving Query to our ML -->
46     <form action="{{ url_for('registration') }}" method="post">
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107    </div>
108  </div>
109 </body>
110 </html>
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\app.py



```
1 from flask import Flask, render_template, request, session, redirect, url_for
2 from sql_lite_db import sql_lite_db
3 import sqlite3 as sql
4 from datetime import date, datetime
5 import sys, re
6 from distutils.log import debug
7 from sendgridmail import sendmail
8 from dotenv import load_dotenv
9
10 #Initialize the flask app
11 app = Flask(__name__)
12 app.secret_key = 'a'
13
14 # Call SQL Lite DB to setup the DB and Tables
15 sql_lite_db()
16
17 # Connect to SQL Lite
18 conn = sql.connect('plasmadatabase.db', check_same_thread=False)
19 sql_query = """SELECT name FROM sqlite_master WHERE type='table';"""
20 cursor = conn.cursor()
21 cursor.execute(sql_query)
22 conn.close()
23 # print(cursor.fetchall(), file=sys.stderr)
24
25 @app.route('/')
26 > def home(): ...
27
28
29 @app.route('/loginpage', methods=['GET', 'POST'])
30 > def loginpage(): ...
31
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35 @app.route('/registration')
36 > def register(): ...
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```

```
25 @app.route('/')
26 > def home(): ...
28
29 @app.route('/loginpage',methods=['GET', 'POST'])
30 > def loginpage(): ...
62
63 @app.route('/registration')
64 > def register(): ...
66
67 @app.route('/registration',methods=['GET', 'POST'])
68 > def registration(): ...
119
120 @app.route('/dashboard')
121 > def dashboard(): ...
135
136 @app.route('/plasmarequestform')
137 > def plasmarequest(): ...
139
140 @app.route('/plasmarequestform',methods=['GET', 'POST'])
141 > def plasmarequestform(): ...
159
160 @app.route('/logout')
161 > def logout(): ...
166
167 > if __name__ == '__main__': ...
```

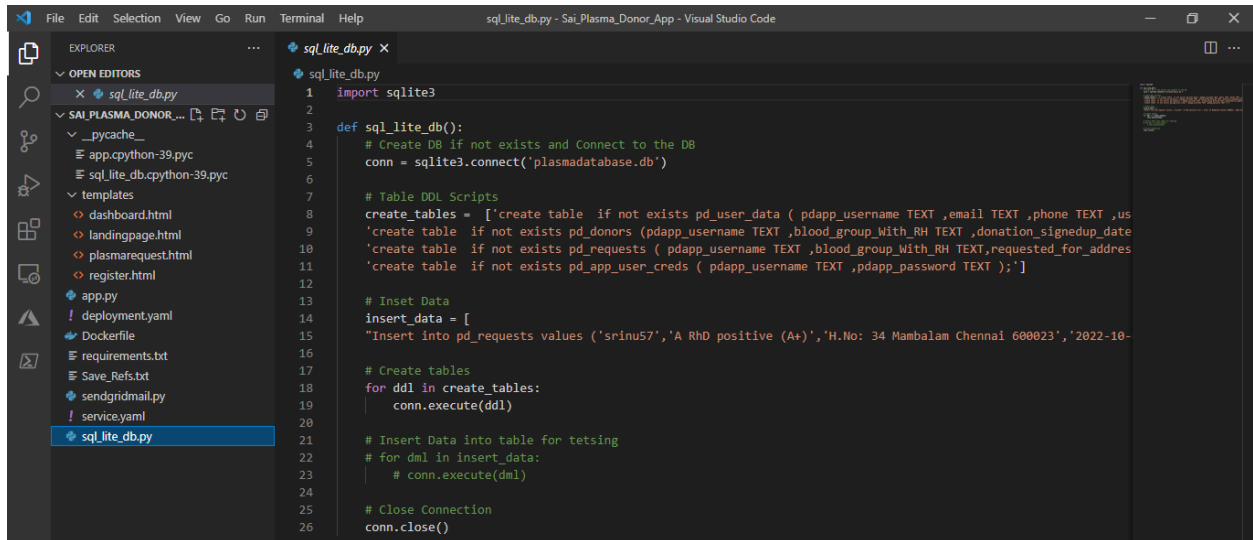
requirements.txt

```
1 Flask
2 ibm_db
3 sendgrid
4 python-dotenv
```

sendgridmail.py

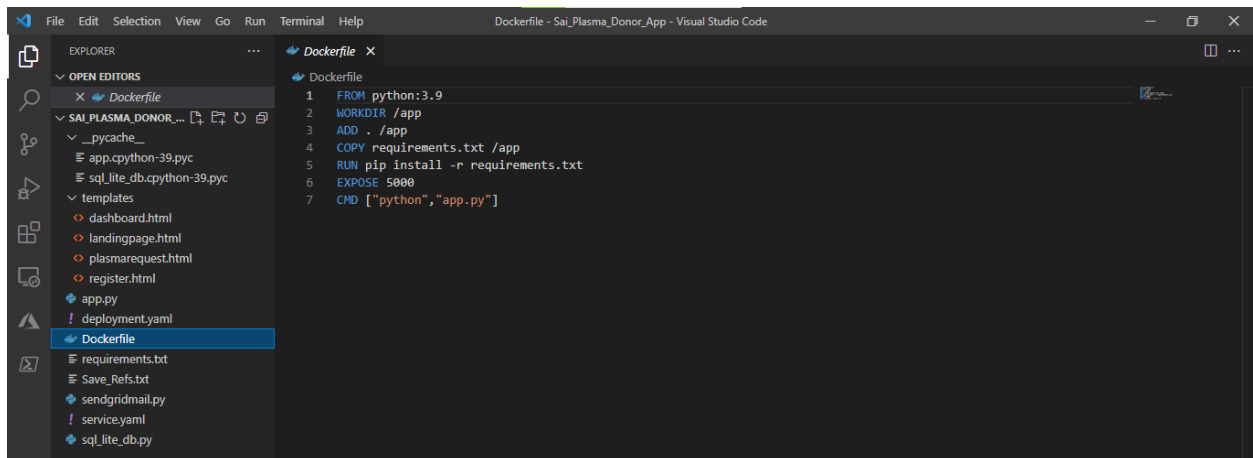
```
1 # using SendGrid's Python Library
2 # https://github.com/sendgrid/sendgrid-python
3 import os
4 from dotenv import load_dotenv
5
6 load_dotenv()
7 from sendgrid import SendGridAPIClient
8 from sendgrid.helpers.mail import Mail
9
10 def sendmail(usermail,subject,content):
11     message = Mail(from_email="kothamasuvenkataratnasai@gmail.com",to_emails=usermail,subject=subject,html_content=content)
12     try:
13         sg = SendGridAPIClient(os.getenv('SENDGRID_API_KEY'))
14         response = sg.send(message)
15         print(response.status_code)
16         print(response.body)
17         print(response.headers)
18     except Exception as e:
19         print(e.message)
```

\sql_lite_db.py



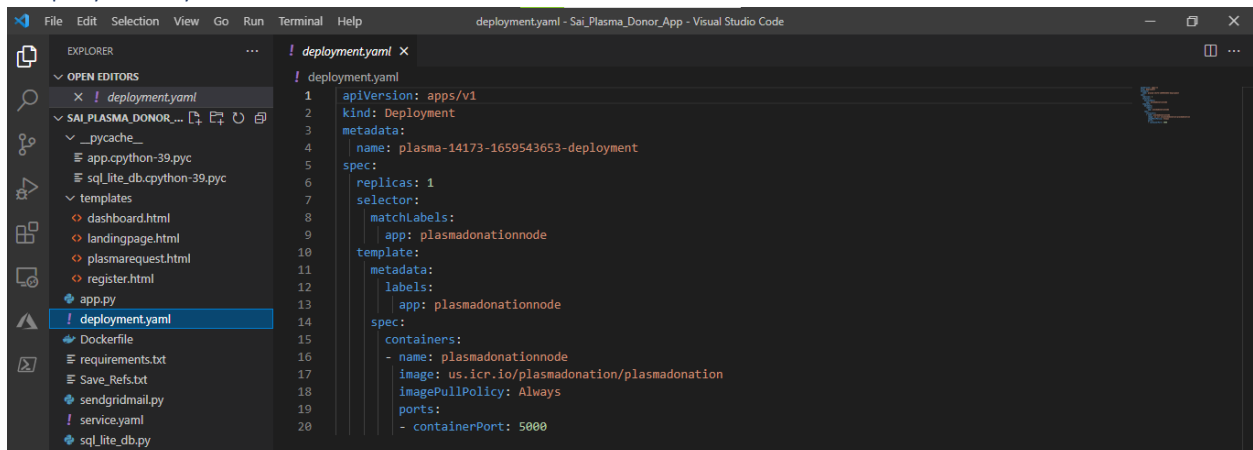
```
1 import sqlite3
2
3 def sql_lite_db():
4     # Create DB if not exists and Connect to the DB
5     conn = sqlite3.connect('plasmadatabase.db')
6
7     # Table DDL Scripts
8     create_tables = ['create table if not exists pd_user_data ( pdapp_username TEXT ,email TEXT ,phone TEXT ,us
9     'create table if not exists pd_donors (pdapp_username TEXT ,blood_group_With_RH TEXT ,donation_signedup_date
10    'create table if not exists pd_requests ( pdapp_username TEXT ,blood_group_With_RH TEXT ,requested_for_addr
11    'create table if not exists pd_app_user_creds ( pdapp_username TEXT ,pdapp_password TEXT );']
12
13    # Inset Data
14    insert_data = [
15        "Insert into pd_requests values ('srinu57','A RhD positive (A+)','H.No: 34 Mambalam Chennai 600023','2022-10-
16
17    # Create tables
18    for ddl in create_tables:
19        conn.execute(ddl)
20
21    # Insert Data into table for tetsing
22    for dml in insert_data:
23        # conn.execute(dml)
24
25    # Close Connection
26    conn.close()
```

\Dockerfile



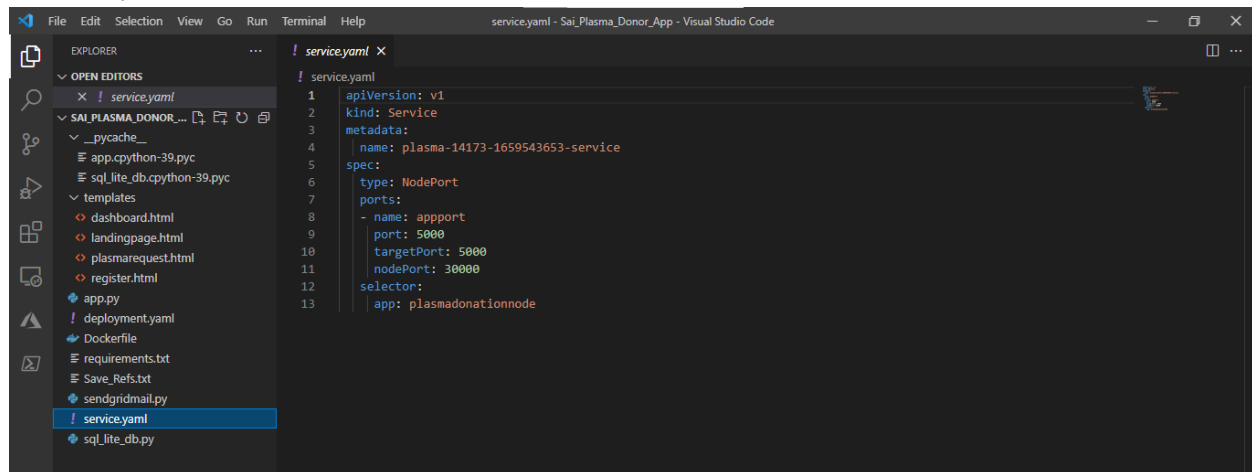
```
1 FROM python:3.9
2 WORKDIR /app
3 ADD . /app
4 COPY requirements.txt /app
5 RUN pip install -r requirements.txt
6 EXPOSE 5000
7 CMD ["python","app.py"]
```

\deployment.yaml



```
1 apiVersion: apps/v1
2 kind: Deployment
3 metadata:
4   name: plasma-14173-1659543653-deployment
5 spec:
6   replicas: 1
7   selector:
8     matchLabels:
9       app: plasmadonationnode
10  template:
11    metadata:
12      labels:
13        app: plasmadonationnode
14    spec:
15      containers:
16      - name: plasmadonationnode
17        image: us.icr.io/plasmadonation/plasmadonation
18        imagePullPolicy: Always
19        ports:
20        - containerPort: 5000
```

\service.yaml



The screenshot shows the Visual Studio Code interface with the `service.yaml` file open in the editor. The Explorer sidebar on the left shows the project structure, including files like `app.py`, `deployment.yaml`, `Dockerfile`, `requirements.txt`, `Save_Refs.txt`, `sendgridmail.py`, `service.yaml` (selected), and `sql_lite_db.py`. The editor displays the following YAML content:

```
1 apiVersion: v1
2 kind: Service
3 metadata:
4   name: plasma-14173-1659543653-service
5 spec:
6   type: NodePort
7   ports:
8     - name: appport
9       port: 5000
10       targetPort: 5000
11       nodePort: 30000
12   selector:
13     app: plasmadonationnode
```

Commands:

Git:

Add Code to Repo:

```
ratnasai@DESKTOP-BIBS72I MINGW64 ~/desktop/IBM-Project-14173-1659543653 (main)
$ git add -A
```

Check the Status to Validate the Changes:

```
ratnasai@DESKTOP-BIBS72I MINGW64 ~/desktop/IBM-Project-14173-1659543653 (main)
$ git status
On branch main
Your branch is up to date with 'origin/main'.
```

Changes to be committed:

```
(use "git restore --staged <file>..." to unstage)
new file:   Final deliverable/Plasma_Donor_App/Dockerfile
new file:   Final deliverable/Plasma_Donor_App/app.py
new file:   Final deliverable/Plasma_Donor_App/deployment.yaml
new file:   Final deliverable/Plasma_Donor_App/requirements.txt
new file:   Final deliverable/Plasma_Donor_App/sendgridmail.py
new file:   Final deliverable/Plasma_Donor_App/service.yaml
new file:   Final deliverable/Plasma_Donor_App/sql_lite_db.py
new file:   Final deliverable/Plasma_Donor_App/templates/dashboard.html
new file:   Final deliverable/Plasma_Donor_App/templates/landingpage.html
new file:   Final deliverable/Plasma_Donor_App/templates/plasmarequest.html
new file:   Final deliverable/Plasma_Donor_App/templates/register.html
```

Add Commit with Message

```
ratnasai@DESKTOP-BIBS72I MINGW64 ~/desktop/IBM-Project-14173-1659543653 (main)
$ git commit -m "Added Code to Git Repo"
[main 31f61b7] Added Code to Git Repo
11 files changed, 407 insertions(+)
create mode 100644 Final deliverable/Plasma_Donor_App/Dockerfile
create mode 100644 Final deliverable/Plasma_Donor_App/app.py
create mode 100644 Final deliverable/Plasma_Donor_App/deployment.yaml
create mode 100644 Final deliverable/Plasma_Donor_App/requirements.txt
create mode 100644 Final deliverable/Plasma_Donor_App/sendgridmail.py
create mode 100644 Final deliverable/Plasma_Donor_App/service.yaml
create mode 100644 Final deliverable/Plasma_Donor_App/sql_lite_db.py
create mode 100644 Final deliverable/Plasma_Donor_App/templates/dashboard.html
create mode 100644 Final deliverable/Plasma_Donor_App/templates/landingpage.html
create mode 100644 Final deliverable/Plasma_Donor_App/templates/plasmarequest.html
create mode 100644 Final deliverable/Plasma_Donor_App/templates/register.html
```

Push Code from local to Remote (GitHub.com)

```
ratnasai@DESKTOP-BIBS72I MINGW64 ~/desktop/IBM-Project-14173-1659543653 (main)
$ git push origin main
Enumerating objects: 20, done.
Counting objects: 100% (20/20), done.
Delta compression using up to 2 threads
Compressing objects: 100% (16/16), done.
Writing objects: 100% (18/18), 6.67 KiB | 1.11 MiB/s, done.
Total 18 (delta 5), reused 0 (delta 0), pack-reused 0
remote: Resolving deltas: 100% (5/5), completed with 1 local object.
To https://github.com/IBM-EPBL/IBM-Project-14173-1659543653.git
   0394569..f3057fa  main -> main
```

Docker & Container Registry:

Docker:

Docker build:

```
$ docker build -t plasmadonation .
```

Sending build context to Docker daemon 45.57kB

Step 1/7 : FROM python:3.9

---> ab0d2f900193

Step 2/7 : WORKDIR /app

---> Using cache

---> a03b16aa12ff

Step 3/7 : ADD . /app

---> 56ba053e6159

Step 4/7 : COPY requirements.txt /app

---> cf06d9a1d4c4

Step 5/7 : RUN pip install -r requirements.txt

---> Running in c9618b0c2a9e

Collecting Flask

Downloading Flask-2.2.2-py3-none-any.whl (101 kB)

101.5/101.5 KB 2.9 MB/s eta 0:00:00

Collecting ibm_db

Downloading ibm_db-3.1.3.tar.gz (1.4 MB)

1.4/1.4 MB 2.0 MB/s eta 0:00:00

Installing build dependencies: started

Installing build dependencies: finished with status 'done'

Getting requirements to build wheel: started

Getting requirements to build wheel: finished with status 'done'

Installing backend dependencies: started

Installing backend dependencies: finished with status 'done'

Preparing metadata (pyproject.toml): started

Preparing metadata (pyproject.toml): finished with status 'done'

Collecting sendgrid

Downloading sendgrid-6.9.7-py3-none-any.whl (101 kB)

101.1/101.1 KB 2.5 MB/s eta 0:00:00

Collecting python-dotenv

Downloading python_dotenv-0.21.0-py3-none-any.whl (18 kB)

Collecting click>=8.0

Downloading click-8.1.3-py3-none-any.whl (96 kB)

96.6/96.6 KB 5.9 MB/s eta 0:00:00

Collecting importlib-metadata>=3.6.0

Downloading importlib_metadata-5.0.0-py3-none-any.whl (21 kB)

Collecting Werkzeug>=2.2.2

Downloading Werkzeug-2.2.2-py3-none-any.whl (232 kB)

232.7/232.7 KB 2.4 MB/s eta 0:00:00

Collecting itsdangerous>=2.0

Downloading itsdangerous-2.1.2-py3-none-any.whl (15 kB)

Collecting Jinja2>=3.0

Downloading Jinja2-3.1.2-py3-none-any.whl (133 kB)

133.1/133.1 KB 3.4 MB/s eta 0:00:00

Collecting starkbank-ecdsa>=2.0.1

Downloading starkbank-ecdsa-2.2.0.tar.gz (14 kB)

Preparing metadata (setup.py): started

Preparing metadata (setup.py): finished with status 'done'

Collecting python-http-client>=3.2.1

Downloading python_http_client-3.3.7-py3-none-any.whl (8.4 kB)

Collecting zipp>=0.5

Downloading zipp-3.10.0-py3-none-any.whl (6.2 kB)

Collecting MarkupSafe>=2.0

Downloading MarkupSafe-2.1.1-cp39-cp39-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (25 kB)

Building wheels for collected packages: ibm_db, starkbank-ecdsa

Building wheel for ibm_db (pyproject.toml): started

Building wheel for ibm_db (pyproject.toml): finished with status 'done'

Created wheel for ibm_db: filename=ibm_db-3.1.3-cp39-cp39-linux_x86_64.whl size=41499651 sha256=c6421d6bbda0f3b87144f0d493a8ed10150c64ef9a4500ec664b19aeb8093ac

Stored in directory:

/root/.cache/pip/wheels/3d/6e/19/64e70ce3dde2ccda5c9b35bd6a313a39e46f6af0222c75cc5f

Building wheel for starkbank-ecdsa (setup.py): started

Building wheel for starkbank-ecdsa (setup.py): finished with status 'done'

Created wheel for starkbank-ecdsa: filename=starkbank_ecdsa-2.2.0-py3-none-any.whl size=15986 sha256=7866bb8cd33b5354dc5c7d9659887b991be3c77730708cc6694e9ab3631f1c80

Stored in directory:

/root/.cache/pip/wheels/ff/e0/b9/210b1c0209f93792f212d6e61553624523e49aac6cf284151f

Successfully built ibm_db starkbank-ecdsa

Installing collected packages: starkbank-ecdsa, ibm_db, zipp, python-http-client, python-dotenv, MarkupSafe, itsdangerous, click, Werkzeug, sendgrid, Jinja2, importlib-metadata, Flask

Successfully installed Flask-2.2.2 Jinja2-3.1.2 MarkupSafe-2.1.1 Werkzeug-2.2.2 click-8.1.3 ibm_db-3.1.3 importlib-metadata-5.0.0 itsdangerous-2.1.2 python-dotenv-0.21.0 python-http-client-3.3.7 sendgrid-6.9.7 starkbank-ecdsa-2.2.0 zipp-3.10.0

WARNING: Running pip as the 'root' user can result in broken permissions and conflicting behaviour with the system package manager. It is recommended to use a virtual environment instead: <https://pip.pypa.io/warnings/venv>

WARNING: You are using pip version 22.0.4; however, version 22.3.1 is available.

You should consider upgrading via the '/usr/local/bin/python -m pip install --upgrade pip' command.

Removing intermediate container c9618b0c2a9e

---> 32f2f82e0e21

Step 6/7 : EXPOSE 5000

---> Running in a33d08a5d85a

Removing intermediate container a33d08a5d85a

---> bfb591489549

Step 7/7 : CMD ["python","app.py"]

---> Running in 6363c1614c47

Removing intermediate container 6363c1614c47

---> 2bdf31a28da2

Successfully built 2bdf31a28da2

Successfully tagged plasmadonation:latest

SECURITY WARNING: You are building a Docker image from Windows against a non-Windows Docker host. All files and directories added to build context will have '-rwxr-xr-x' permissions. It is recommended to double check and reset permissions for sensitive files and directories.

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

Docker Images:

\$ docker images

REPOSITORY	TAG	IMAGE ID	CREATED	SIZE
plasmadonation	latest	7df0a7eac614	About a minute ago	1.09GB
python	3.9	ab0d2f900193	11 days ago	915MB

Docker Run (Detached Mode):

\$ docker run -d -p 5000:5000 plasmadonation:latest

7e86122b4701f40ff0741a9d6584329083119879783f760cbc02dea7e550fcab

Docker local containers:

\$ docker container ls

CONTAINER ID	IMAGE	COMMAND	CREATED	STATUS	PORTS
7e86122b4701	plasmadonation:latest	"python app.py"	About a minute ago	Up	About a minute
0.0.0.0:5000->5000/tcp competent_hugle					

Delete the Local Container

\$ docker kill 7e86122b4701

7e86122b4701

IBM Cloud Container Registry:

IBM Cloud Login (ibmcloud cli):

\$ ibmcloud login

API endpoint: https://cloud.ibm.com

Region: us-south

Email> kothamasuvenkataratnasai@gmail.com

Password>

Authenticating...

OK

Targeted account KOTHAMASU VENKATA RATNA SAI's Account (fa29e4bae0044599a0a816aa5d4720d7)

API endpoint: https://cloud.ibm.com

Region: us-south

User: kothamasuvenkataratnasai@gmail.com

Account: KOTHAMASU VENKATA RATNA SAI's Account (fa29e4bae0044599a0a816aa5d4720d7)

Resource group: No resource group targeted, use 'C:\Program Files\IBM\Cloud\bin\ibmcloud.exe target -g RESOURCE_GROUP'

CF API endpoint:

Org:

Space:

IBM Cloud Registry Login & Set Client as Docker (ibmcloud cli):

\$ ibmcloud cr login --client docker

Logging 'docker' in to 'us.icr.io'...

Logged in to 'us.icr.io'.

OK

IBM Cloud Registry NameSpace (ibmcloud cli):

\$ ibmcloud cr namespace-assign

OK

IBM Cloud Registry NameSpace List:

\$ ibmcloud cr namespace-list

Listing namespaces for account 'KOTHAMASU VENKATA RATNA SAI's Account' in registry 'us.icr.io'...

Namespace

plasmadonation

IBM Cloud Registry Add Docker tag:

```
$ docker tag plasmaappdocker:latest us.icr.io/plasmadonation/plasmaappdocker:latest
```

IBM Cloud Registry Add Docker tag:

```
$ docker tag plasmaappdocker:latest us.icr.io/plasmadonation/plasmaappdocker:latest
```

IBM Cloud Registry Push Image to Cloud:

```
$ docker push us.icr.io/plasmadonation/plasmadonation:latest
```

The push refers to repository [us.icr.io/plasmadonation/plasmadonation]

f24e84e8aba1: Pushed

84dcd59995e7: Pushed

6749a6446e3a: Pushed

733c9e138ffe: Mounted from plasmadonation/plasmaappdocker

98c01aa6c3e4: Mounted from plasmadonation/plasmaappdocker

782cce4c7b7f: Mounted from plasmadonation/plasmaappdocker

dde9ab8bf12a: Mounted from plasmadonation/plasmaappdocker

6b183c62e3d7: Mounted from plasmadonation/plasmaappdocker

882fd36bfd35: Mounted from plasmadonation/plasmaappdocker

d1dec9917839: Mounted from plasmadonation/plasmaappdocker

d38adf39e1dd: Mounted from plasmadonation/plasmaappdocker

4ed121b04368: Mounted from plasmadonation/plasmaappdocker

d9d07d703dd5: Mounted from plasmadonation/plasmaappdocker

latest: digest: sha256:9b38b5e59ca8f0596f1e5cb57a16a94a6961dcb18bbd685f890ca577c4b0e96f size: 3052

IBM Cloud Registry List Images:

```
$ ibmcloud cr image-list
```

Listing images...

Repository	Tag	Digest	Namespace	Created	Size	Security status
us.icr.io/plasmadonation/plasmadonation	latest	9b38b5e59ca8	plasmadonation	1 hour ago	441 MB	-

OK

Kubernetes:

List Clusters:

```
$ ibmcloud ks cluster ls
```

OK

Name	ID	State	Created	Workers	Location	Version	Resource Group
Name	Provider						
plasma-14173-1659543653	cdjk7e0f0k1ihttjpag	deploying	17 seconds ago	1			mil01
1.24.7_1542	Default	classic					

Set Context:

```
$ kubectl config current-context
```

nsaz203kubercluster

Set the Kubeconfig for export:

```
$ export KUBECONFIG=$(mktemp)
```

Export the Kubernetes Config:

```
$ ibmcloud ks cluster config -c plasma-14173-1659543653
```

OK

The configuration for plasma-14173-1659543653 was downloaded successfully.

Added context for plasma-14173-1659543653 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.

Echo & Cat and see the Config:

```
$ echo $KUBECONFIG
```

/tmp/tmp.uK5in6M7uU

```
$ cat $KUBECONFIG
```

apiVersion: v1

clusters:

- cluster:

certificate-authority: C:\Users\mmm04\.bluemix\plugins\container-service\clusters\plasma-14173-1659543653-cdjk7e0f0k1ihttjpag\ca-aaa00-plasma-14173-1659543653.pem

Get Nodes:

```
$ kubectl get nodes
```

NAME	STATUS	ROLES	AGE	VERSION
10.144.195.234	Ready	<none>	5m45s	v1.24.6+IKS

Create Deployment:

```
$ kubectl create -f deployment.yaml
```

deployment.apps/plasma-14173-1659543653-deployment created

Get Deployment:

```
$ kubectl get deployment
```

NAME	READY	UP-TO-DATE	AVAILABLE	AGE
plasma-14173-1659543653-deployment	1/1	1	1	13m

Describe Deployment:

```
$ kubectl describe deployments plasma-14173-1659543653-deployment
```

Name: plasma-14173-1659543653-deployment

Namespace: default

CreationTimestamp: Sun, 06 Nov 2022 00:41:08 -0500

Labels: <none>

Annotations: deployment.kubernetes.io/revision: 1

Selector: app=plasmadonationnode

Replicas: 1 desired | 1 updated | 1 total | 1 available | 0 unavailable

StrategyType: RollingUpdate

MinReadySeconds: 0

RollingUpdateStrategy: 25% max unavailable, 25% max surge

Pod Template:

Labels: app=plasmadonationnode

Containers:

plasmadonationnode:

Image: us.icr.io/plasmadonation/plasmaappdocker

Port: 5000/TCP

Host Port: 0/TCP

Environment: <none>

Mounts: <none>

Volumes: <none>

Conditions:

Type	Status	Reason
------	--------	--------

----	-----	-----
------	-------	-------

Available	True	MinimumReplicasAvailable
-----------	------	--------------------------

Progressing	True	NewReplicaSetAvailable
-------------	------	------------------------

OldReplicaSets: <none>

NewReplicaSet: plasma-14173-1659543653-deployment-d9767b59c (1/1 replicas created)

Events:

Type	Reason	Age	From	Message
------	--------	-----	------	---------

----	-----	----	----	-----
------	-------	------	------	-------

Normal	ScalingReplicaSet	14m	deployment-controller	Scaled up replica set plasma-14173-1659543653-deployment-d9767b59c to 1
--------	-------------------	-----	-----------------------	---

Get Pods:

\$ kubectl get pods

NAME	READY	STATUS	RESTARTS	AGE
plasma-14173-1659543653-deployment-d9767b59c-fhlkc	1/1	Running	0	55s

Create Service:

\$ kubectl create -f service.yaml

service/plasma-14173-1659543653-service created

Get Service:

\$ kubectl get services

NAME	TYPE	CLUSTER-IP	EXTERNAL-IP	PORT(S)	AGE
kubernetes	ClusterIP	172.21.0.1	<none>	443/TCP	156m
plasma-14173-1659543653-service	NodePort	172.21.33.184	<none>	5000:30000/TCP	78m

Describe Service:

\$ kubectl describe services plasma-14173-1659543653-deployment

Name: plasma-14173-1659543653-deployment

Namespace: default

Labels: <none>

Annotations: <none>

Selector: app=plasmadonationnode

Type: ClusterIP

IP: 172.21.11.226

Port: <unset> 5000/TCP

TargetPort: 5000/TCP

Endpoints: 172.30.85.75:5000

Session Affinity: None

Events: <none>

[Get Replica Sets:](#)

\$ kubectl get replicaset

NAME	DESIRED	CURRENT	READY	AGE
plasma-14173-1659543653-deployment-d9767b59c	1	1	1	15m

[Describe Replica Sets:](#)

\$ kubectl describe replicaset

Name: plasma-14173-1659543653-deployment-d9767b59c

Namespace: default

Selector: app=plasmadonationnode,pod-template-hash=d9767b59c

Labels: app=plasmadonationnode
pod-template-hash=d9767b59c

Annotations: deployment.kubernetes.io/desired-replicas: 1

deployment.kubernetes.io/max-replicas: 2

deployment.kubernetes.io/revision: 1

Controlled By: Deployment/plasma-14173-1659543653-deployment

Replicas: 1 current / 1 desired

Pods Status: 1 Running / 0 Waiting / 0 Succeeded / 0 Failed

Pod Template:

Labels: app=plasmadonationnode

pod-template-hash=d9767b59c

Containers:

plasmadonationnode:

Image: us.icr.io/plasmadonation/plasmaappdocker

Port: 5000/TCP

Host Port: 0/TCP

Environment: <none>

Mounts: <none>

Volumes: <none>

Events:

Type	Reason	Age	From	Message
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Normal	SuccessfulCreate	15m	replicaset-controller	Created pod: plasma-14173-1659543653-deployment-d9767b59c-fhlkc
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[Check the Ingress Health:](#)

```
$ ibmcloud ks ingress status -c plasma-14173-1659543653
```

OK

Ingress Status: healthy

Message: Ingress is not supported for free clusters

References:

1. <https://www.html.am/html-editors/online-html-editor.cfm> - Online HTML Editor for ease of creating HTML Pages
2. <https://suedbroecker.net/2019/03/05/how-to-deploy-a-container-to-the-ibm-cloud-kubernetes-service/>
3. https://cloud.ibm.com/docs/Registry?topic=Registry-registry_setup_cli_namespace
4. <https://cloud.ibm.com/docs/Registry?topic=Registry-getting-startedd>
5. <https://www.ibm.com/blogs/cloud-archive/2019/04/kubernetes-deployments-get-started-fast/>
6. https://cloud.ibm.com/docs/cli/reference/ibmcloud_cli/get_started.html#getting-started
7. <https://kubernetes.io/docs/tasks/tools/>
8. <https://cloud.ibm.com/docs/cli?topic=cli-plugin-ins>