Kubernetes Web Controller

A Project-II Report

Submitted in partial fulfillment of requirement of the

Degree of

BACHELOR OF TECHNOLOGY in COMPUTER SCIENCE & ENGINEERING

BY

Deepak Parihari

EN18CS302010

Under the Guidance of

Ms. Bhavana Tiwari(Internal-Medi-Caps Faculty)

Mr. Himanshu Chhabra(External- Industry Person)

Department of Computer Science & Engineering

Faculty of Engineering

MEDI-CAPS UNIVERSITY, INDORE- 453331

JAN- May 2022

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Report Approval

The project work **"Kubernetes Web Controller "** is hereby approved as a creditable study of an engineering/computer application subject carried out and presented in a manner satisfactory to warrant its acceptance as prerequisite for the Degree for which it has been submitted.

It is to be understood that by this approval the undersigned do not endorse or approved any statement made, opinion expressed, or conclusion drawn there in; but approve the "Project Report" only for the purpose for which it has been submitted.

Internal Examiner

Name: Ms. Bhavana Tiwari

Designation: Medi-Caps Faculty

Affiliation

External Examiner

Name: Mr. Himanshu Chhabra

Designation : Service Delivery Manager

Affiliation : SDM at To The New Pvt Ltd

Declaration

I/We hereby declare that the project entitled **"Kubernetes Web Controller"** submitted in partial fulfillment for the award of the degree of Bachelor of Technology in **'DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING'** completed under the supervision of Ms. Bhavna Tiwari, Medi-Caps Faculty and Department of Computer Science & Engineering, Faculty of Engineering, Medi-Caps University Indore, is an authentic work.

Further, I/we declare that the content of this Project work, in full or in parts, have neither been taken from any other source nor have been submitted to any other Institute or University for the award of any degree or diploma.

Deepak Parihari

Date- 11/04/2022

Certificate

I/We, **Ms.Bhavana Tiwari** certify that the project entitled **"Kubernetes Web Controller"** submitted in partial fulfillment for the award of the degree of Bachelor of Technology by **Deepak Parihari** is the record carried out by him/them under my/our guidance and that the work has not formed the basis of award of any other degree elsewhere.

_____ _____

Ms. Bhavana Tiwari

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Medi-Caps University, Indore

Mr. Himanshu Chhabra

Office Manager

To The New Pvt. Ltd

_____

Dr. Pramod S. Nair

Head of the Department

Computer Science & Engineering

Medi-Caps University, Indore

Offer Letter of the Project work-II/Internship

Deepak Parihari
Flat-201-A, Sankeshwar Apartment,
Silcion City, Indore,
Madhya Pradesh - 452012

February 8, 2022

Training Letter

We are pleased to inform you that you have been selected for an integrated program of training & employment at TO THE NEW Private Limited, employment being subject to successful completion of post training assessment.

For the first Six (6) months you would be a part of our training program. During this period, you will be designated as a **Trainee** and will receive a stipend of **INR 15,100 per month**.

Your training period is from **February 8, 2022** to **August 8, 2022**. Please note that the training is only for a fixed period of Six (6) months and does not entitle you for an employment with TO THE NEW Private Limited.

Training would be a combination of hands-on experience and regular mentoring. Details and scope of the project will be provided to you on the first day of training. On completion of the training, you will be issued a certificate by the Organization.

This training period with our Company will entail dealing with important and sensitive information, records and such other matters of the company. Therefore, you will be required to sign a "Non Disclosure Agreement" of our company on the first day of training.

Either party may terminate Service by giving Fifteen (15) days' notice or stipend in lieu thereof, subject to the Company accepting stipend in lieu of notice. However, in the event of you committing any criminal offense or indulging in activities which amount to moral turpitude or acting against the interest of the Company, you shall be liable to be dismissed forthright after getting an opportunity of being heard, without any further notice.

Further, the Company may terminate the training, without prior notice or payment in lieu of notice for serious misconduct in accordance with relevant laws or any material breach of the guidelines or policy thereof.

Upon termination of your employment for any reason, the Company will be entitled to deduct any amounts you owe to the Company or any of the Group Companies from amounts owed to you.

No stipend or incentives shall be payable after the effective date of termination. Upon termination of the training for whatever reason, you shall return all the Company and client information and data (including copies thereof) in your possession and also hand over all the official assets and property in your custody.

For TO THE NEW Private Limited,

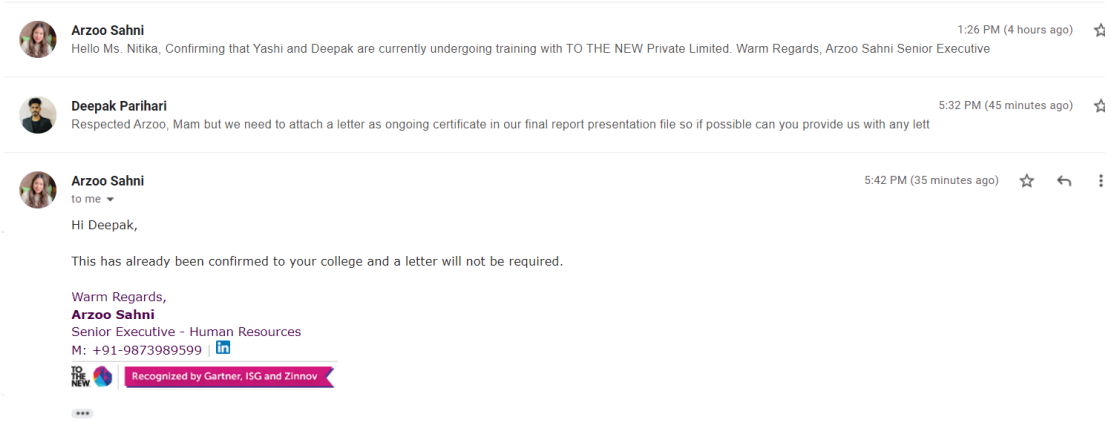
Kirti Sharma

Kirti Sharma
Assistant Vice President - Human Resources

I hereby voluntarily accept the above offer along with the total terms & conditions.

Name: Deepak parihari
Signature:
Date: Feb 08 2022 12:17 IST

Internship Continuation Letter



Arzoo Sahni 1:26 PM (4 hours ago)
Hello Ms. Nitika, Confirming that Yashi and Deepak are currently undergoing training with TO THE NEW Private Limited. Warm Regards, Arzoo Sahni Senior Executive

Deepak Parihari 5:32 PM (45 minutes ago)
Respected Arzoo, Mam but we need to attach a letter as ongoing certificate in our final report presentation file so if possible can you provide us with any lett

Arzoo Sahni 5:42 PM (35 minutes ago)
to me

Hi Deepak,

This has already been confirmed to your college and a letter will not be required.

Warm Regards,
Arzoo Sahni
Senior Executive - Human Resources
M: +91-9873989599 |

Recognized by Gartner, ISG and Zinnov

Acknowledgements

I would like to express my deepest gratitude to Honorable Chancellor, **Shri R C Mittal,** who has provided me with every facility to successfully carry out this project, and my profound indebtedness to **Prof. (Dr.) Dileep K Patnayak,** Vice Chancellor, Medi-Caps University, whose unfailing support and enthusiasm has always boosted up my morale. I also thank **Prof. (Dr.) D K Panda,** Pro Vice Chancellor, **Dr. Suresh Jain,** Dean Faculty of Engineering, Medi-Caps University, for giving me a chance to work on this project. I would also like to thank my Head of the Department **Dr. Pramod S. Nair** for his continuous encouragement for betterment of the project.

I express my heartfelt gratitude to my **External Guide, Mr. Rahul Kumar, To The New Pvt. Ltd.** as well as to my **Internal Guide, Ms. Bhavana Tiwari**, Medi-Caps faculty, Department of Computer Science & Engineering, MU without whose continuous help and support, this project would ever have reached to the completion.

I would also like to thank to my team at Indus Valley Partners and my mentor Mr. Satyendra Singh who extended their kind support and help towards the completion of this project. I appreciate the cooperation that everyone displayed under such strenuous conditions, making the workflow simple and easy. I am glad that I have a team like you.

It is their help and support, due to which we became able to complete the design and technical report. Without their support this report would not have been possible.

Deepak Parihari
B.Tech. IV Year
Department of Computer Science & Engineering
Faculty of Engineering
Medi-Caps University, Indore

Abstract

TO THE NEW is a digital technology company providing digital transformation and product engineering services to ISVs, Consumer Internet, and large enterprises across the globe. We design & build digital platforms and products with Cloud and Data at the focal point by working on cutting-edge technologies.We have been growing at a CAGR of more than 60% in the last 5 years and we attribute it to our people. We have been achieving the Great Place to WorkTM recognition every year, with 2021 marking our 6th win in a row, only a testament to our focus on employees.

Kubernetes Web Controller

It’s a tedious task for KUBERNETES admin to constantly monitor and sit on the workstation 24hrs, we need something remote, to manage containerized Applications.

So, here we have made a WEB PORTAL for KUBERNETES software where if a person doesn’t know anything about kubernetes how it works and everything then he can just come here and fix the issues and get their container and application deployed in the real world.
Integrate Kubernetes commands that can be run through webUI created by users.

created a webUI page such that using normal English conversation your all commands can run in background.
Example - when we write 'run deployment using httpd image' then it runs a complete deployment command in the backend.

Table of Contents

List of Figures & Screenshots

Abbreviations

Figures	Description
HTML	Hypertext Markup Language
CSS	Cascading Style Sheets
JS	JavaScript
Python	Python programming Langanuge
Python-CGI	Comman gateway inferface
Kubernetes	Container Management Tool
RHEL 8	Base OS (RedHat Enterprise Linux 8)
Minikube	K8s Cluster
DevOps	Development and operations

Chapter-1

1.1 INTRODUCTION

Organization Description

TO THE NEW is a digital technology company providing digital transformation and product engineering services to ISVs, Consumer Internet, and large enterprises across the globe. We design & build digital platforms and products with Cloud and Data at the focal point by working on cutting-edge technologies. They are Premium **AWS service Provider** with over 50+ clients in the bucket like **Nykaa, Tatasky, Indigo, Dataflow, etc.**

We started with a bunch of passionate techies in **2008**, and now have grown into a family of 2000+ Newers, spread across our four locations - New Delhi, Dubai, Sydney, and NYC, catering to over 200 customers worldwide.In 2008, when the entire world was staring at one of the biggest depressions, we came into being. Our birth in the toughest of the times helped us in two ways - first, we had to be very cutting-edge with a clear differentiating factor, and second, we had to have very strong values and culture to attract and retain top-notch talent.

We started working with internet product companies and **ISVs** who used to engage us for our engineering strength, agility (read Scrum!), and nimbleness. Within a span of a few years, we got a chance to work with many product companies (some of them from Silicon Valley). This gave us a very good experience of the digital ecosystem and how great products are designed and developed which are meant for global audiences. All this while, we kept investing in new-age technologies, including Cloud and Data.

During the journey, we won many awards, set-up various Practices, set-up offices outside India and won customers across 25+ countries. We have been growing at a CAGR of more than **60%** in the last **5 years** and we attribute it to our people. We have been achieving the Great Place to WorkTM recognition every year, with 2021 marking our 6th win in a row, only a testament to our focus on employees.

SERVICES TTN PROVIDES

TO THE NEW leverages its deep expertise in Cloud to help clients across the globe in their different stages of Cloud journey including consulting, migration, 24x7 managed services, DevOps, and cost optimization.

Save 5-15% on your AWS spends with our in-house Cloud Spend Optimization Solution, Cloudkeeper

No hidden costs. Instant cost saving.

We have **10+ years** of experience on **AWS Cloud,** with 80+ AWS certified Architects and 300+ AWS accredited Engineers. TO THE NEW is an "**AWS Premier Consulting Partner**", which is the highest tier of AWS partnership with certified competencies.

We have end to end **OTT solutions provider** with expertise on all platforms & devices & eliminating multi vendors hassles. with a full suite of OTT solutions & services portfolio, TO THE NEW provides a bouquet of services to the Media & Entertainment sector and OTT companies helping them with engineering and effective management of media operations.

Our **Data & Analytics** services help you make smarter business decisions to drive competitive advantage for your business. We help you drive insights from real-time as well as historical data to make your digital platforms more effective. We offer you full-scale Data Consulting, Data Engineering, Analysis & Dashboarding services to help you make the right decision for your business, faster.

Customers today are looking for personalized and tailored experiences across the touchpoints and most organizations battle to do it right. With a team of 100+ Customer Experience specialists, we offer end-to-end solutions to enhance the customer journey for your business with a personalized and consistent user experience using **Adobe and Drupal**.

We also leverage our deep expertise to help create easily customizable, secure and intuitive e-commerce platforms for both **B2B** as well as **B2C** players, helping provide omnichannel experiences to our customers

We create RoI driven strategies keeping in mind the end goal of our customers, whether it is building brand awareness or creating a robust funnel by leveraging the best-in-class marketing tools & technologies. We collaborate with our customers for a range of services that includes Creative & Design, Social Media Marketing, SEO, Media Planning & Buying, Digital Analytics and **Marketing Automation.**

Kubernetes Web Controller

Integrated Kubernetes commands that can be run through webUI created by users.
created a webUI page such that using normal English conversation your all commands can run in background. and shows output on the screen UI so it would be easy if someone doesnt knows kubernetes and containerization technology he can handle almost everything form the Web UI only.

It is an open-source system for automating deployment, scaling, and management of containerized applications.it ensures no-downtime and manages applications Example - when we write 'run deployment using httpd image' then it runs a complete deployment command in the backend.

Feature necessary -

- It can launch pods with specific names given by the user.
- Run deployment using the image and name given by the user.
- Expose services on a given user input port number.
- Scale the replica according to user need.
- Delete the complete environment created.
- Delete specific resources given by the user.
- Extra features related to k8s (Optional)

webUI based menu display so that users can get to know what your webapp can do.

KEY FEATURES

Automated Rollouts and Rollbacks

Kubernetes progressively rolls out changes to your application or its configuration, while monitoring application health to ensure it doesn't kill all your instances at the same time. If something goes wrong, Kubernetes will rollback the change for you. Take advantage of a growing ecosystem of deployment solutions.

Self-Healing

Restarts containers that fail, replaces and reschedules containers when nodes die, kills containers that don't respond to your user-defined health check, and doesn't advertise them to clients until they are ready to serve.

Service Discovery and Load Balancing

Expose the services according to the user need. No need to modify your application to use an unfamiliar service discovery mechanism. Kubernetes gives Pods their own IP addresses and a single DNS name for a set of Pods, and can load-balance across them.

Secret and Configuration Management

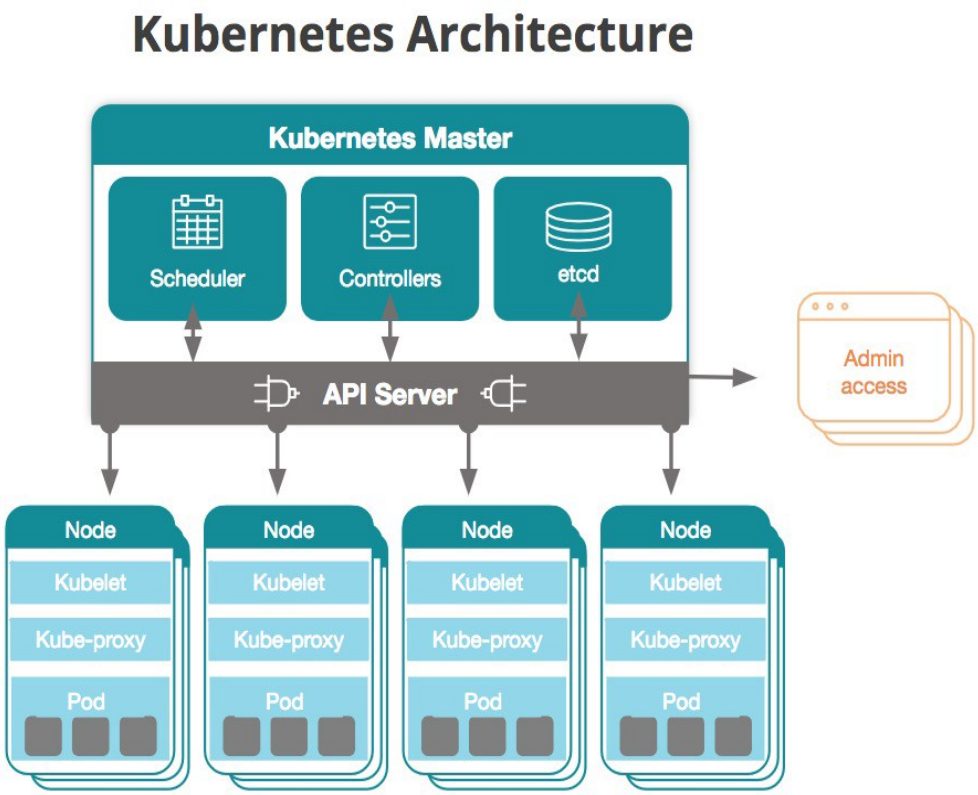
Deploy and update secrets and application configuration without rebuilding your image and without exposing secrets in your stack configuration.

Batch Execution

In addition to services, Kubernetes can manage your batch and CI workloads, replacing containers that fail, if desired.

Horizontal Scaling

Scale your application up and down with a simple command, with a UI, or automatically based on CPU usage. it is different form vertical scaling where you have to increase the adding additional resources to a system so that it meets demand.



Containerization Technology

Containerization is the packaging together of software code with all it's necessary components like libraries, frameworks, and other dependencies so that they are isolated in their own **container** by packaging up an application in a container that can be moved across platforms and infrastructures, that application can be used wherever you move it because it has everything it needs to run successfully within it.

Container orchestration automates the deployment, management, scaling, and networking of containers. Enterprises that need to deploy and manage hundreds or thousands of Linux® containers and hosts can benefit from container orchestration.

As **docker** enters the game(container as a service), now the applications can de deploy within seconds overcloud using docker, etc. Almost every IT companies are using container technology to deploy their applications.It has advantages like isolation, security, scalability & elasticity. Large companies deploy 100 containers and to manage all of these we require some platform or software that can manage all these containers and deployment then **Kubernetes** is launched. and make it easier to manage.

1.2 PROJECT OBJECTIVE

It's a tedious task for KUBERNETES admin to constantly monitor and sit on the workstation 24hrs, we need something remote, to manage containerized Applications.

So, here we have made a WEB PORTAL for KUBERNETES software where if a person doesn't know anything about kubernetes how it works and everything then he can just come here and fix the issues and get their container and application deployed in the real world.

1.3 PROJECT OVERVIEW

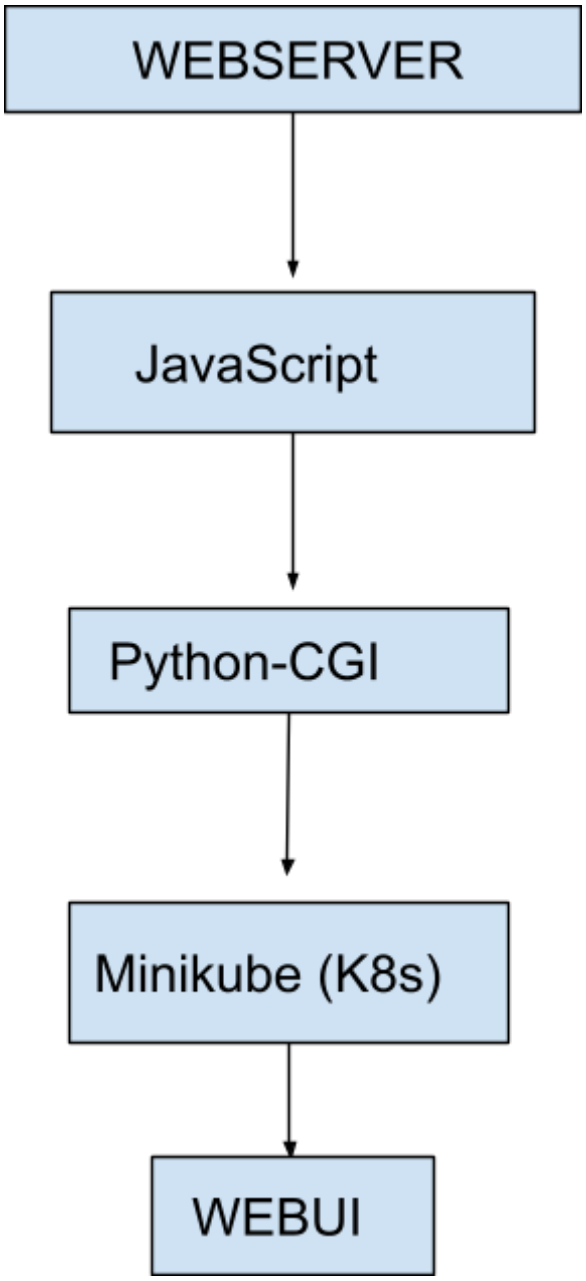
The central concept of the application is to allow the users to run the Kubernetes commands through webUI created by users.
We created a webUI page such that using normal English conversation your all commands can run in background and shows output on the screen UI so it would be easy if someone doesnt knows kubernetes and containerization technology he can handle almost everything form the Web UI only.The python-CGI connects with backend kubernetes Minikube and Frontend code of HTML, CSS, JS and shows the output on to the screen with the details you can also verified them on the linux server machine where K8s is running.

1.4 Project Scope

This system can be implemented to any education institute , organization or individuals purpose for maintaining their server easily.

1.5 Project Structure

The system after careful analysis has been identified to be presented with the following structure. the input goes from the webUI routes to javascript and frontend code connected to python CGI and it goes to connection with K8s cluster minikube and gets output from there and presents us on the webUI page as follows.


WEBSERVER
JavaScript
Python-CGI
Minikube (K8s)
WEBUI

Chapter-2

System Analysis

System analysis is the process of gathering and interpreting facts, diagnosing problems and using the information to recommend improvements on the system. System analysis is a problem solving activity that requires intensive communication between the system users and system developers. System analysis or study is an important phase of any system development process. The system is viewed as a whole, the inputs are identified and the system is subjected to close study to identify the problem areas. The solutions are given as a proposal. The proposal is reviewed on user request and suitable changes are made. This loop ends as soon as the user is satisfied with the proposal.

2.1 Existing System

In Existing System, some existing technologies used some features which are paid , so this software is designed in such a way that it works without using paid features , thats why it does not have some features but it can be configured later if required.

2.2 Procedure Adopted

2.2.1 Methodology Used

This method helps in automation as well as mobility to the Containerization Technology was developed by Solomen Hykes.

Containerization allows developers to create and deploy applications faster and more securely. With traditional methods, code is developed in specific computing environment which, when transferred to a new location, often results in bugs and errors.

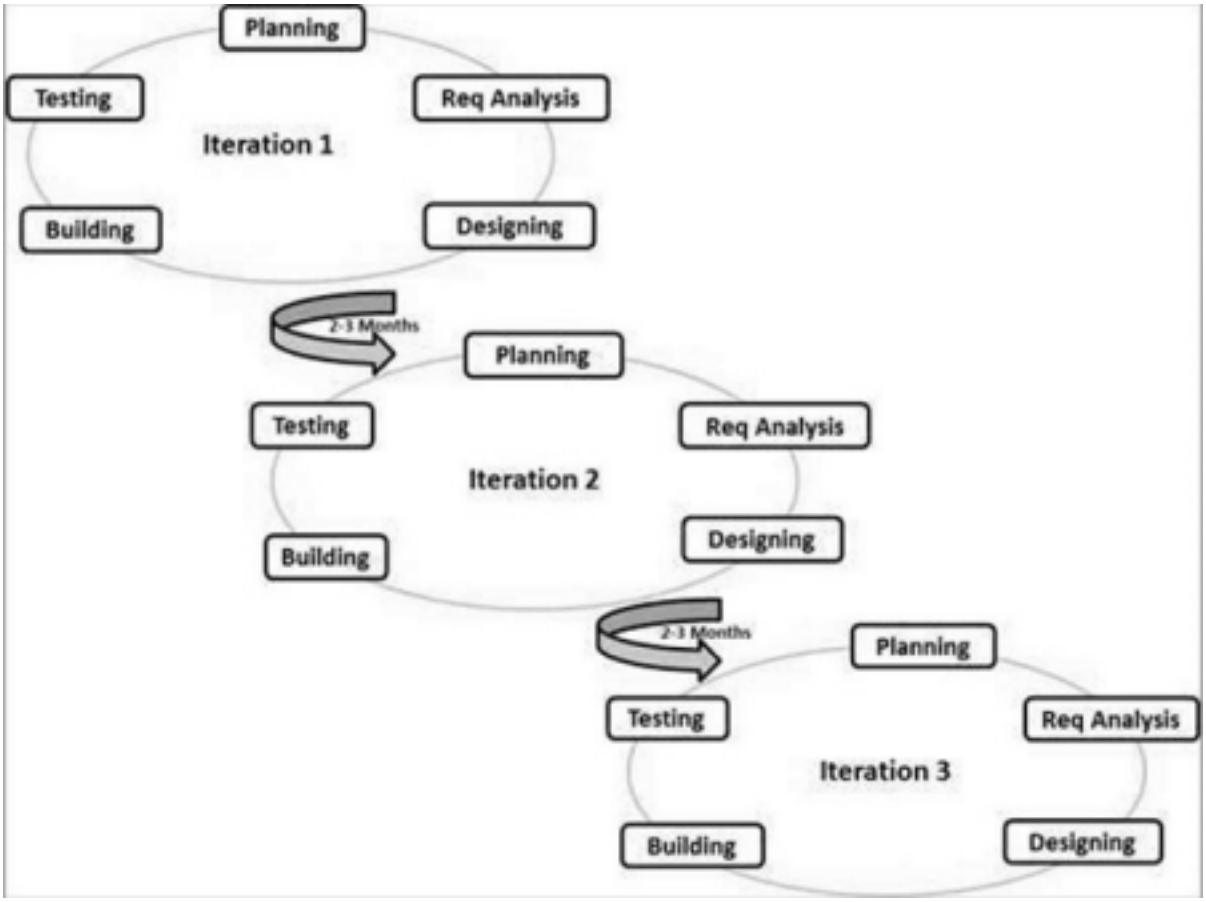
A software is developed with several different techniques and methodologies. It requires tools, models, and other external elements to achieve successful completion.Agile model is one such development technique that allows small scale software development effortlessly.

2.2.2 Agile SDLC model

Agile model believes that every project needs to be handled differently and the existing methods need to be tailored to best suit the project requirements. In Agile, the tasks are divided to time boxes (small time frames) to deliver specific features for a release.

Iterative approach is taken and working software build is delivered after each iteration. Each build is incremental in terms of features; the final build holds all the features required by the customer.

Here is a graphical illustration of the Agile Model −



Agile uses an **adaptive approach** where there is no detailed planning and there is clarity on future tasks only in respect of what features need to be developed. There is feature driven development and the team adapts to the changing product requirements dynamically. The product is tested very frequently, through the release iterations, minimizing the risk of any major failures in future.

Chapter-3

SYSTEM DESIGN

System design is the solution for the creation of a new system. This phase focuses on the detailed implementation of the feasible system. It emphasizes translating design. Specifications to performance specification. System design has two phases of development

- Logical design
- Physical design

During the logical design phase the analyst describes inputs (sources), outputs(destinations), databases (data sores) and procedures (data flows) all in a format that meets the user requirements. The analyst also specifies the needs of the user at a level that virtually determines the information flow in and out of the system and the data resources. Here the logical design is done through data flow diagrams and database design. The physical
design is followed by physical design or coding. Physical design produces the working system by defining the design specifications, which specify exactly what the candidate system must do. The programmers write the necessary programs that accept input from the user, perform necessary processing on accepted data and produce the required report on a hard copy or display it on the screen.

3.1 INPUT AND OUTPUT DESIGN:

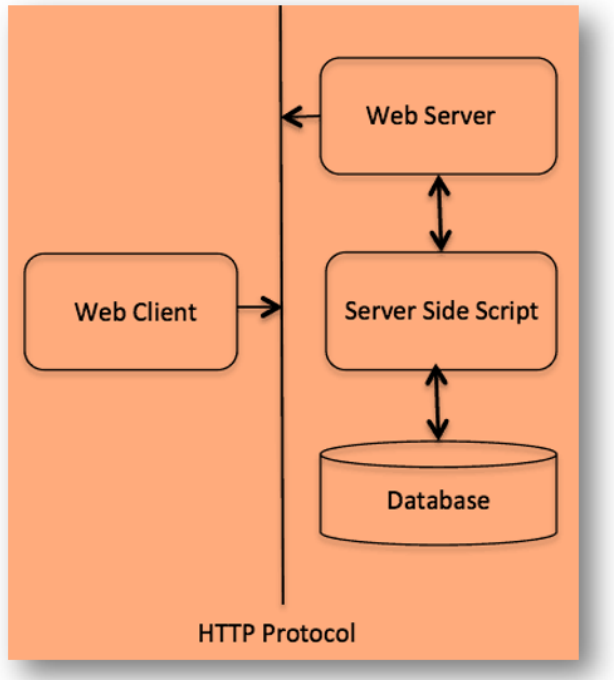
3.1.1 INPUT DESIGN:

Input design is the link that ties the information system into the world of its users. The input design involves determining the inputs, validating the data, minimizing the data entry and providing a multi-user facility. Inaccurate inputs are the most common cause of errors in data processing. Errors entered by the data entry operators can be controlled by input design. The user-originated inputs are converted to a computer based format in the input design. Input data are collected and organized into groups of similar data. Once identified, the appropriate input media are selected for processing. All the input data are validated and if any data violates any conditions, the user is warned by a message. If the data satisfies all the conditions, it is transferred to the appropriate tables in the database. In this project the user details are to be entered at the time of registration. A page is designed for this purpose which is user friendly and easy to use. The design is done such that users get appropriate messages when exceptions occur.

Python CGI

CGI stands for Common Gateway Interface in Python which is a set of standards that explains how information or data is exchanged between the web server and a routine script.This interface is used by web servers to route information requests supplied by a browser or we can say that CGI is customary for external gateway programs to interface with information servers such as HTTP servers.

A CGI script is invoked by an HTTP server, usually to course user input which is submitted through an HTML <FORM> or an <ISINDEX> element.Whenever we click on a hyperlink to browse a particular web page or URL, our browser interacts with the HTTP web server and asks for the same URL (or filename). Web Server then parses the URL and looks for the same filename. If that file is found, then that file is sent back to the browser, otherwise, an error message is sent indicating that we are demanding the wrong file. Web browser takes the response from a web server and displays it, then whether it is the received file from the webserver or an error message. But, conversely, it is possible to set up the HTTP server so that whenever a specific file is requested, then that file is not sent back, but instead, it is executed as a program, and whatever that program output is, that is sent back to our browser for display. This same function is called the **Common Gateway Interface (or CGI)** and the programs which are executed are called CGI scripts. In python, these CGI programs are Python Script.



3.1.2 OUTPUT DESIGN:

Computer output is the most important and direct source of information to the user. Output design is a very important phase since the output needs to be in an efficient manner. Efficient and intelligible output design improves the system relationship with the user and helps in decision making. Allowing the user to view the sample screen is important because the user is the ultimate judge of the quality of output. The output module of this system is the selected notifications.

DevOps is the combination of cultural philosophies, practices, and tools that increases an organization's ability to deliver applications and services at high velocity: evolving and improving products at a faster pace than organizations using traditional software development and infrastructure management processes.

3.1 HTML, CSS, JAVASCRIPT

HTML provides the basic structure of sites, which is enhanced and modified by other technologies like CSS and JavaScript. CSS is used to control presentation, formatting, and layout. JavaScript is used to control the behavior of different element.

3.2 KUBERNETES

Kubernetes also known as K8s was launched by one of the developer from google (Jeo Beda), is an open-source system for automating deployment, scaling, and management of containerized applications.it ensures no-downtime and manages applications. To create container you need to create a pod. the pod can run multiple containers at the same time.

It groups containers that make up an application into logical units for easy management and discovery. Kubernetes builds upon **15 years** of experience of running production workloads at Google, combined with best-of-breed ideas and practices from the community**.**

Are you thinking that we can launch the container itself why we need a **pod**? well, A container is an existing entity, which refers to a specific thing. That specific thing might be a Docker container, but it might also be a rkt container or a **virtual machine (VM)** managed by Virtlet. Each of these has different requirements**.**

Kubernetes needs additional information for container management, such as a restart policy, Instead of overloading the existing “thing” with additional properties, Kubernetes architects have decided to use a new entity, the Pod, that logically contains (wraps) one or more containers that should be managed as a single entity.

3.3 MINIKUBE

Like kind , Minikube is a tool that **lets you run Kubernetes locally**. minikube runs a single-node Kubernetes cluster on your personal computer (including Windows, macOS and Linux PCs) so that you can try out Kubernetes, or for daily development work.All you need is Docker (or similarly compatible) container or a Virtual Machine environment, and Kubernetes is a single command away: minikube start.

3.4 APACHE HTTPD WEBSERVER

This is the most popular web server in the world developed by the Apache Software Foundation. Apache web server is an open source software and can be installed on almost all operating systems including Linux, UNIX, Windows, FreeBSD, Mac OS X and more. About 60% of the web server machines run the Apache Web Server.

3.5 Hardware Requirements

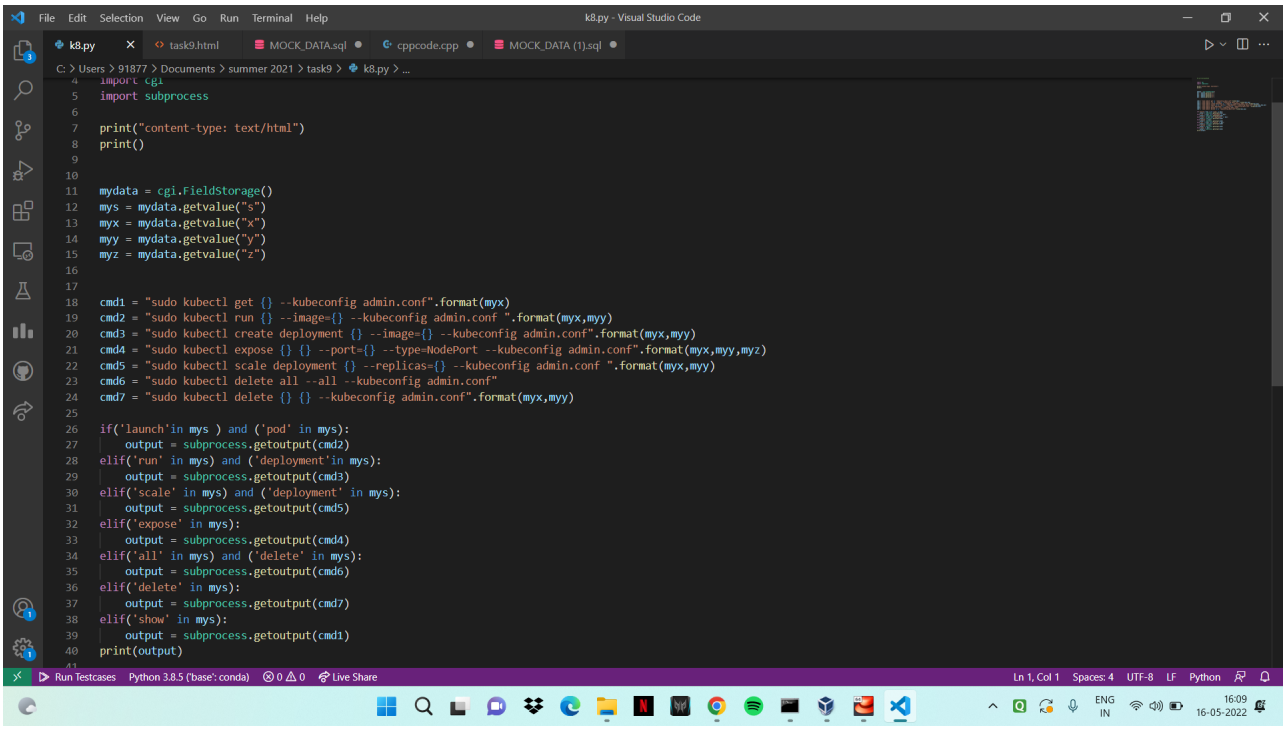
Item	**Requirement**
Processor	Pentium IV 1.8 GHz and Above
CPU Cores	Minimum: 2 cores Recommended: 8 cores
RAM	Minimum: 2GB Recommended: 8GB

3.6 Software Requirements

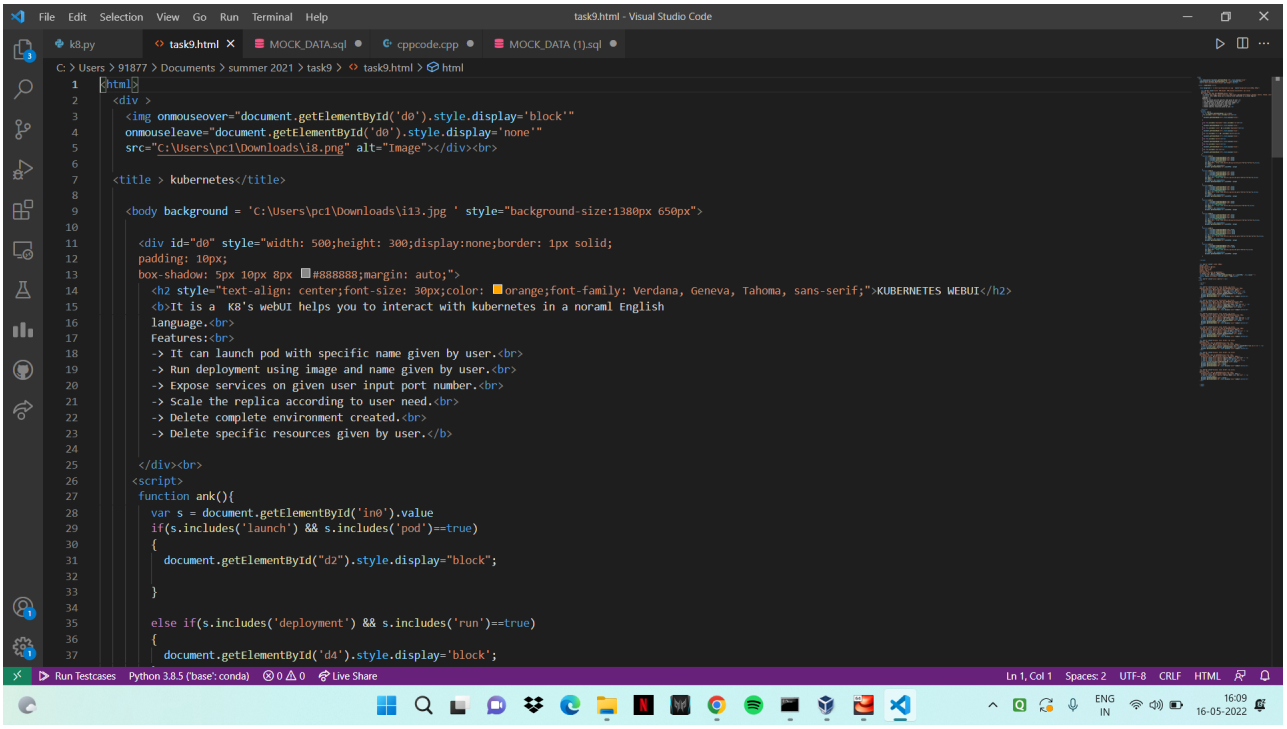
1	RHEL 8 (RedHat Enterprise Linux 8)
2	Httpd Webserver
3	Python CGI
4	Kubernetes
5	Minikube
6	HTML, CSS, JavaScript
7	Virtual Box VM

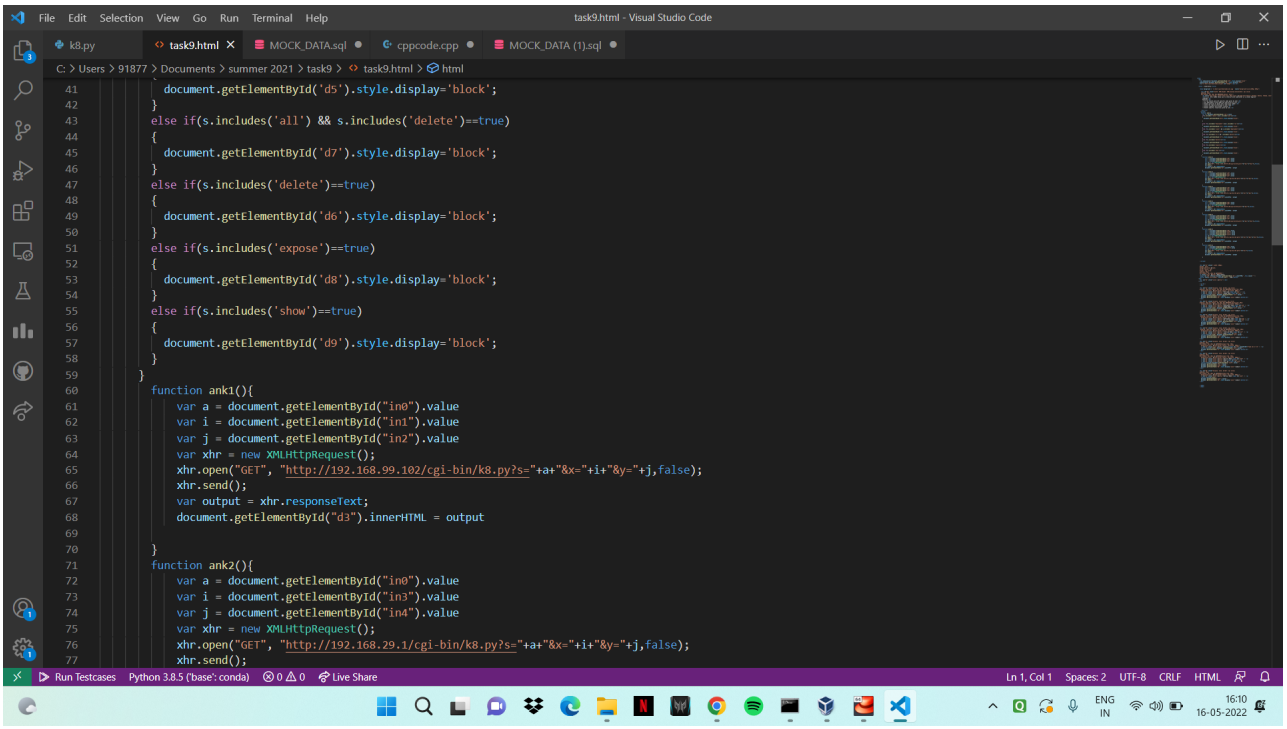
3.7 Screenshots

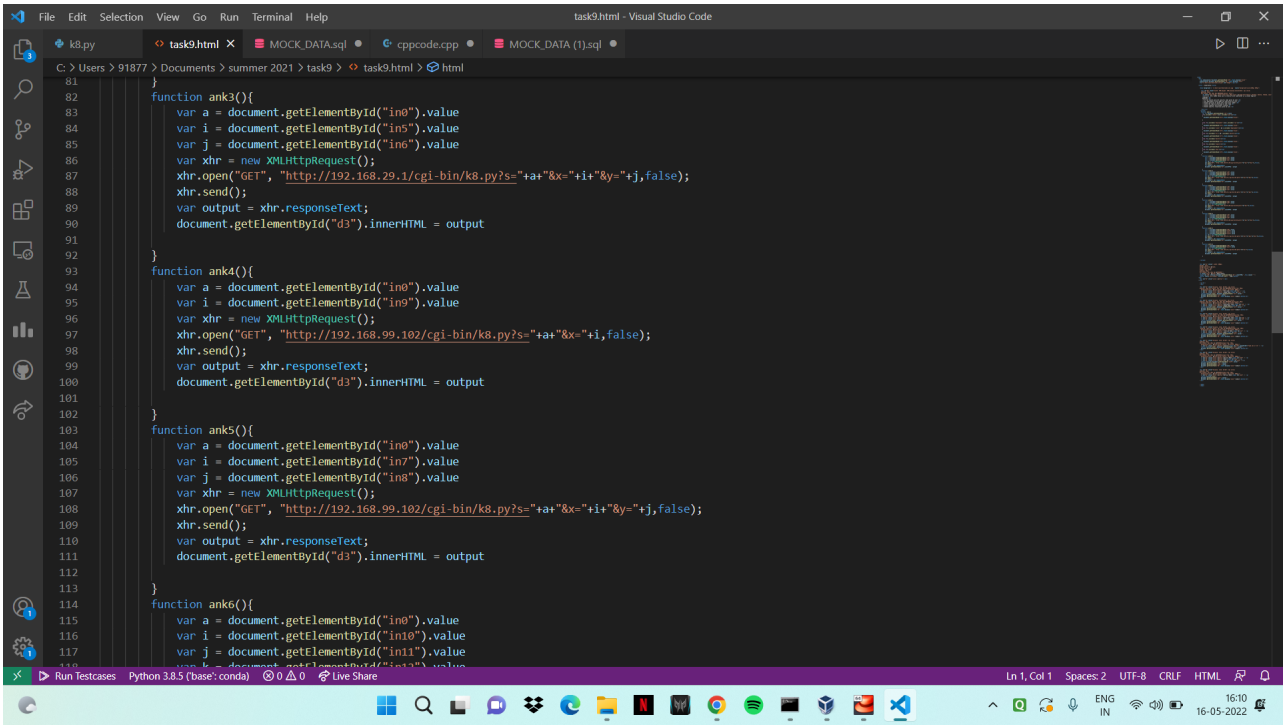
3.7.1 Python CGI

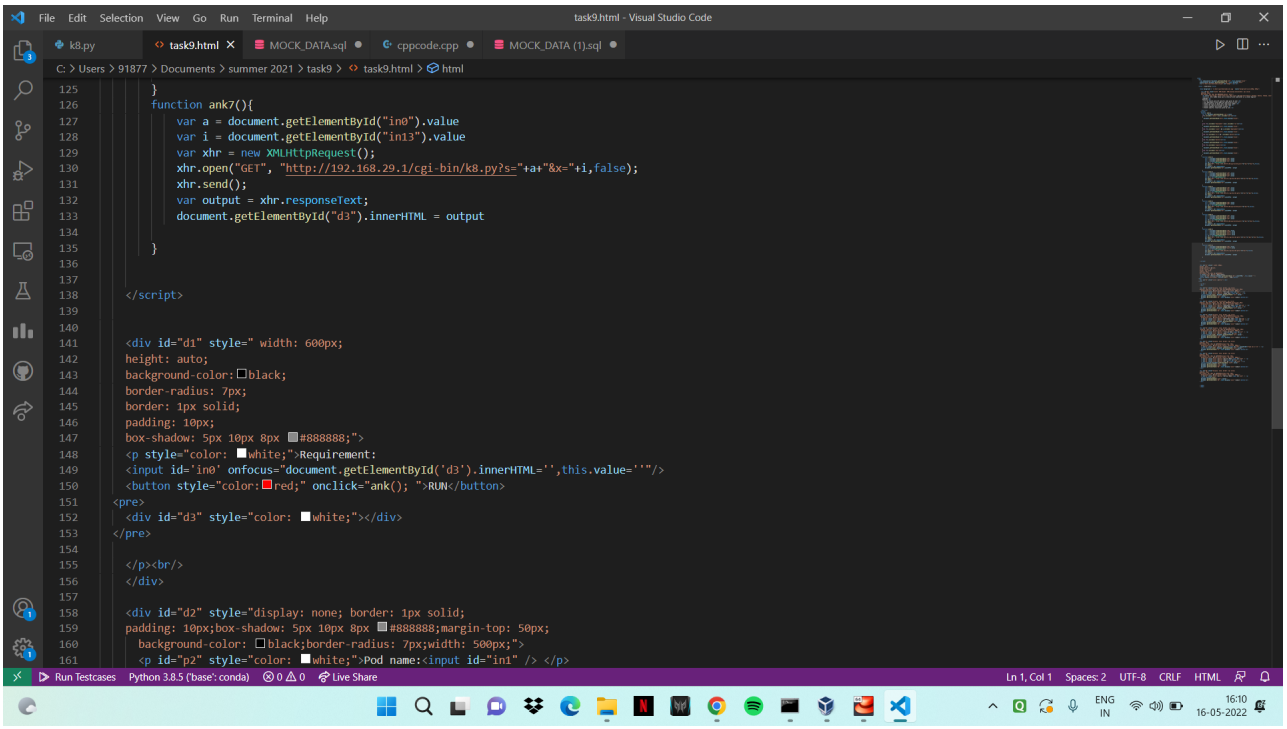


3.7.2 HTML and CSS and JavaScript



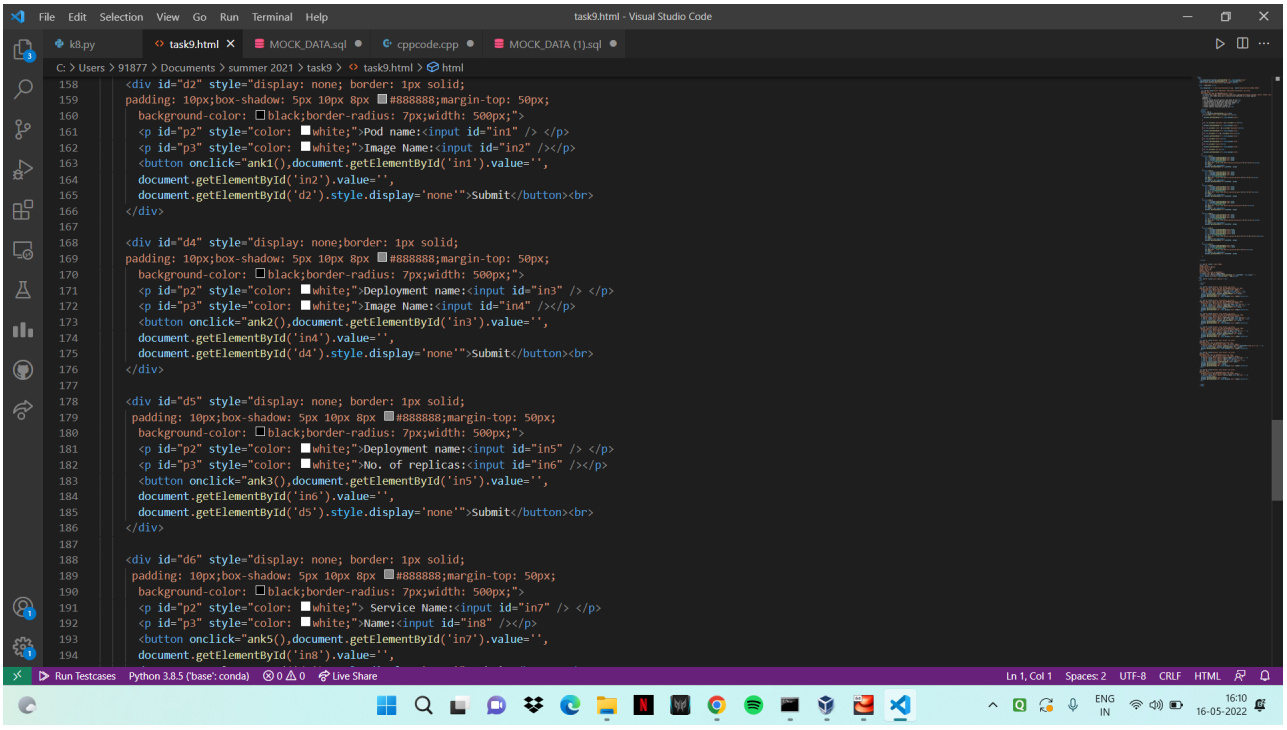

File Edit Selection View Go Run Terminal Help
task9.html - Visual Studio Code
k8.py
task9.html
MOCK_DATA.sql
cppcode.cpp
MOCK_DATA (1).sql
C: > Users > 91877 > Documents > summer 2021 > task9 > task9.html > html
document.getElementById('d5').style.display='block';
}
else if(s.includes('all') && s.includes('delete')==true)
{
document.getElementById('d7').style.display='block';
}
else if(s.includes('delete')==true)
{
document.getElementById('d6').style.display='block';
}
else if(s.includes('expose')==true)
{
document.getElementById('d8').style.display='block';
}
else if(s.includes('show')==true)
{
document.getElementById('d9').style.display='block';
}
}
function ank1(){
var a = document.getElementById("in0").value
var i = document.getElementById("in1").value
var j = document.getElementById("in2").value
var xhr = new XMLHttpRequest();
xhr.open("GET", "http://192.168.99.102/cgi-bin/k8.py?s="+a+"&x="+i+"&y="+j,false);
xhr.send();
var output = xhr.responseText;
document.getElementById("d3").innerHTML = output
}
function ank2(){
var a = document.getElementById("in0").value
var i = document.getElementById("in3").value
var j = document.getElementById("in4").value
var xhr = new XMLHttpRequest();
xhr.open("GET", "http://192.168.29.1/cgi-bin/k8.py?s="+a+"&x="+i+"&y="+j,false);
xhr.send();
Run Testcases Python 3.8.5 ('base': conda) Live Share
Ln 1, Col 1 Spaces: 2 UTF-8 CRLF HTML
ENG IN 16:10 16-05-2022


File Edit Selection View Go Run Terminal Help
task9.html - Visual Studio Code
k8.py
task9.html
MOCK_DATA.sql
cppcode.cpp
MOCK_DATA (1).sql
C: > Users > 91877 > Documents > summer 2021 > task9 > task9.html > html
}
function ank3(){
var a = document.getElementById("in0").value
var i = document.getElementById("in5").value
var j = document.getElementById("in6").value
var xhr = new XMLHttpRequest();
xhr.open("GET", "http://192.168.29.1/cgi-bin/k8.py?s="+a+"&x="+i+"&y="+j,false);
xhr.send();
var output = xhr.responseText;
document.getElementById("d3").innerHTML = output
}
function ank4(){
var a = document.getElementById("in0").value
var i = document.getElementById("in9").value
var xhr = new XMLHttpRequest();
xhr.open("GET", "http://192.168.99.102/cgi-bin/k8.py?s="+a+"&x="+i,false);
xhr.send();
var output = xhr.responseText;
document.getElementById("d3").innerHTML = output
}
function ank5(){
var a = document.getElementById("in0").value
var i = document.getElementById("in7").value
var j = document.getElementById("in8").value
var xhr = new XMLHttpRequest();
xhr.open("GET", "http://192.168.99.102/cgi-bin/k8.py?s="+a+"&x="+i+"&y="+j,false);
xhr.send();
var output = xhr.responseText;
document.getElementById("d3").innerHTML = output
}
function ank6(){
var a = document.getElementById("in0").value
var i = document.getElementById("in10").value
var j = document.getElementById("in11").value
Run Testcases Python 3.8.5 ('base': conda) Live Share
Ln 1, Col 1 Spaces: 2 UTF-8 CRLF HTML
ENG IN 16:10 16-05-2022


File Edit Selection View Go Run Terminal Help
task9.html - Visual Studio Code
k8.py
task9.html
MOCK_DATA.sql
cppcode.cpp
MOCK_DATA (1).sql
C: > Users > 91877 > Documents > summer 2021 > task9 > task9.html > html
}
function ank7(){
var a = document.getElementById("in0").value
var i = document.getElementById("in13").value
var xhr = new XMLHttpRequest();
xhr.open("GET", "http://192.168.29.1/cgi-bin/k8.py?s="+a+"&x="+i,false);
xhr.send();
var output = xhr.responseText;
document.getElementById("d3").innerHTML = output
}
</script>
<div id="d1" style=" width: 600px;
height: auto;
background-color:black;
border-radius: 7px;
border: 1px solid;
padding: 10px;
box-shadow: 5px 10px 8px #888888;">
Requirement:
<input id='in0' onfocus="document.getElementById('d3').innerHTML='',this.value=''"/>
<button style="color:red;" onclick="ank(); ">RUN</button>
<pre>

</pre>

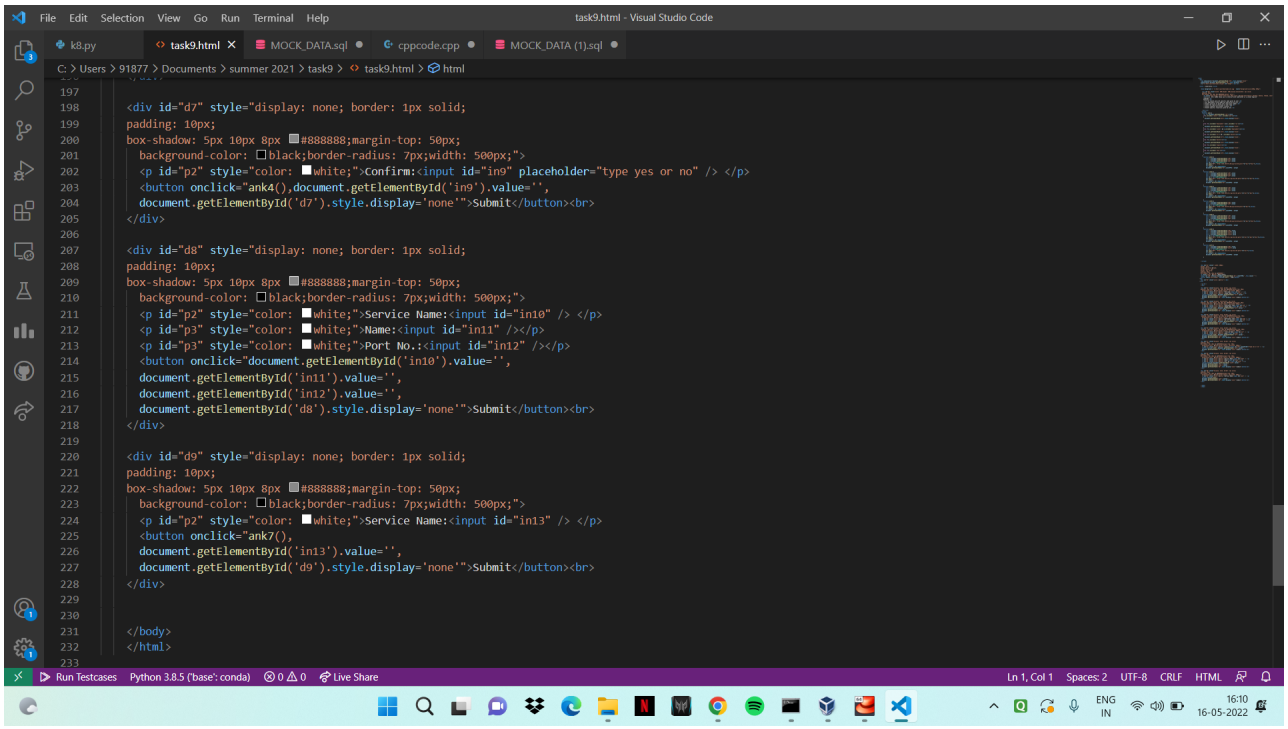
<div id="d2" style="display: none; border: 1px solid;
padding: 10px;box-shadow: 5px 10px 8px #888888;margin-top: 50px;
background-color: black;border-radius: 7px;width: 500px;">
Pod name:<input id="in1" />
Run Testcases
Python 3.8.5 ('base': conda)
Live Share
Ln 1, Col 1
Spaces: 2
UTF-8
CRLF
HTML
ENG
IN
16:10
16-05-2022


File Edit Selection View Go Run Terminal Help
task9.html - Visual Studio Code
k8.py
task9.html
MOCK_DATA.sql
cppcode.cpp
MOCK_DATA (1).sql
C: > Users > 91877 > Documents > summer 2021 > task9 > task9.html > html
<div id="d2" style="display: none; border: 1px solid;
padding: 10px;box-shadow: 5px 10px 8px #888888;margin-top: 50px;
background-color: black;border-radius: 7px;width: 500px;">
Pod name:<input id="in1" />
Image Name:<input id="in2" />
<button onclick="ank1(),document.getElementById('in1').value='',
document.getElementById('in2').value='',
document.getElementById('d2').style.display='none'">Submit</button>

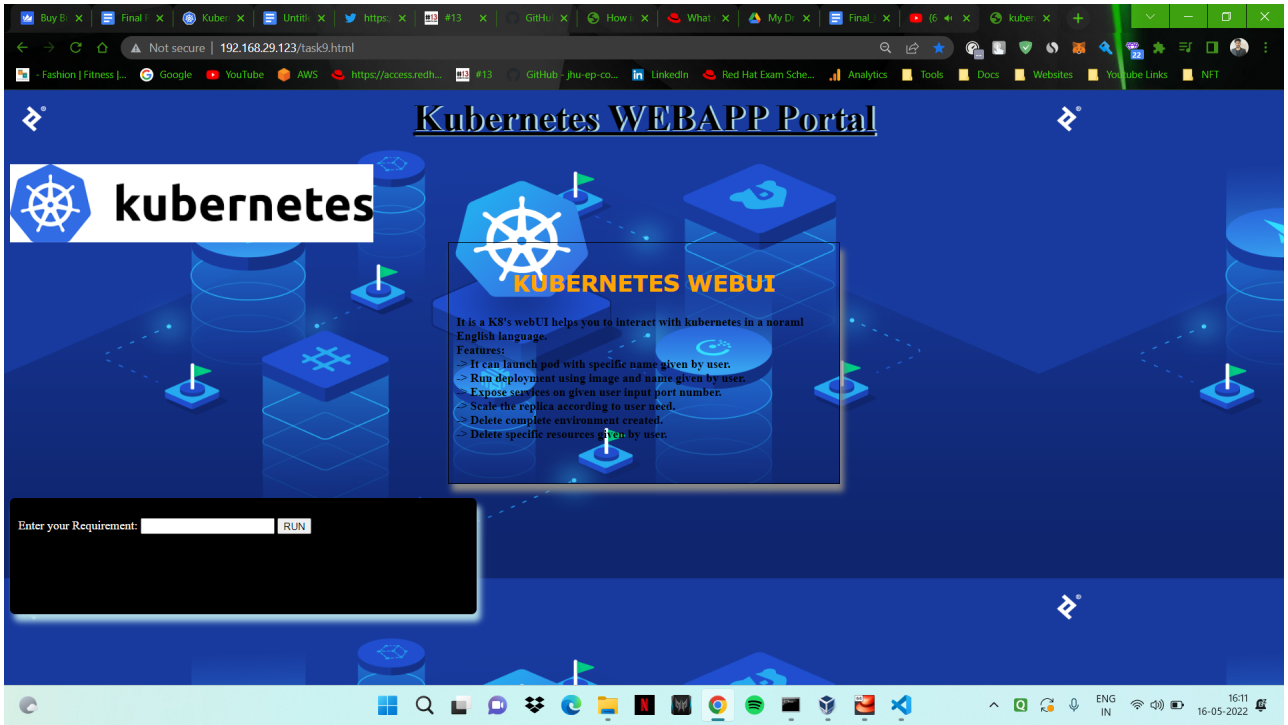
<div id="d4" style="display: none;border: 1px solid;
padding: 10px;box-shadow: 5px 10px 8px #888888;margin-top: 50px;
background-color: black;border-radius: 7px;width: 500px;">
Deployment name:<input id="in3" />
Image Name:<input id="in4" />
<button onclick="ank2(),document.getElementById('in3').value='',
document.getElementById('in4').value='',
document.getElementById('d4').style.display='none'">Submit</button>

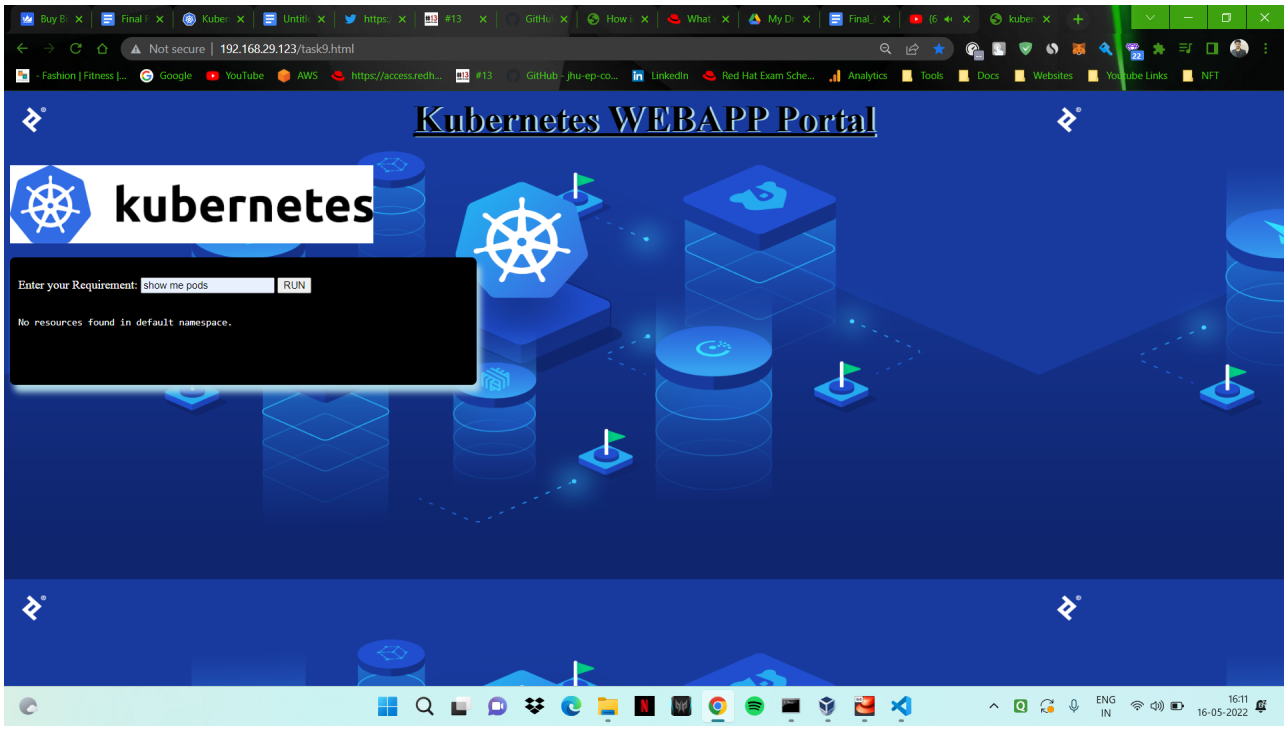
<div id="d5" style="display: none; border: 1px solid;
padding: 10px;box-shadow: 5px 10px 8px #888888;margin-top: 50px;
background-color: black;border-radius: 7px;width: 500px;">
Deployment name:<input id="in5" />
No. of replicas:<input id="in6" />
<button onclick="ank3(),document.getElementById('in5').value='',
document.getElementById('in6').value='',
document.getElementById('d5').style.display='none'">Submit</button>

<div id="d6" style="display: none; border: 1px solid;
padding: 10px;box-shadow: 5px 10px 8px #888888;margin-top: 50px;
background-color: black;border-radius: 7px;width: 500px;">
 Service Name:<input id="in7" />
Name:<input id="in8" />
<button onclick="ank5(),document.getElementById('in7').value='',
document.getElementById('in8').value='',
Run Testcases
Python 3.8.5 ('base': conda)
Live Share
Ln 1, Col 1
Spaces: 2
UTF-8
CRLF
HTML
ENG
IN
16:10
16-05-2022

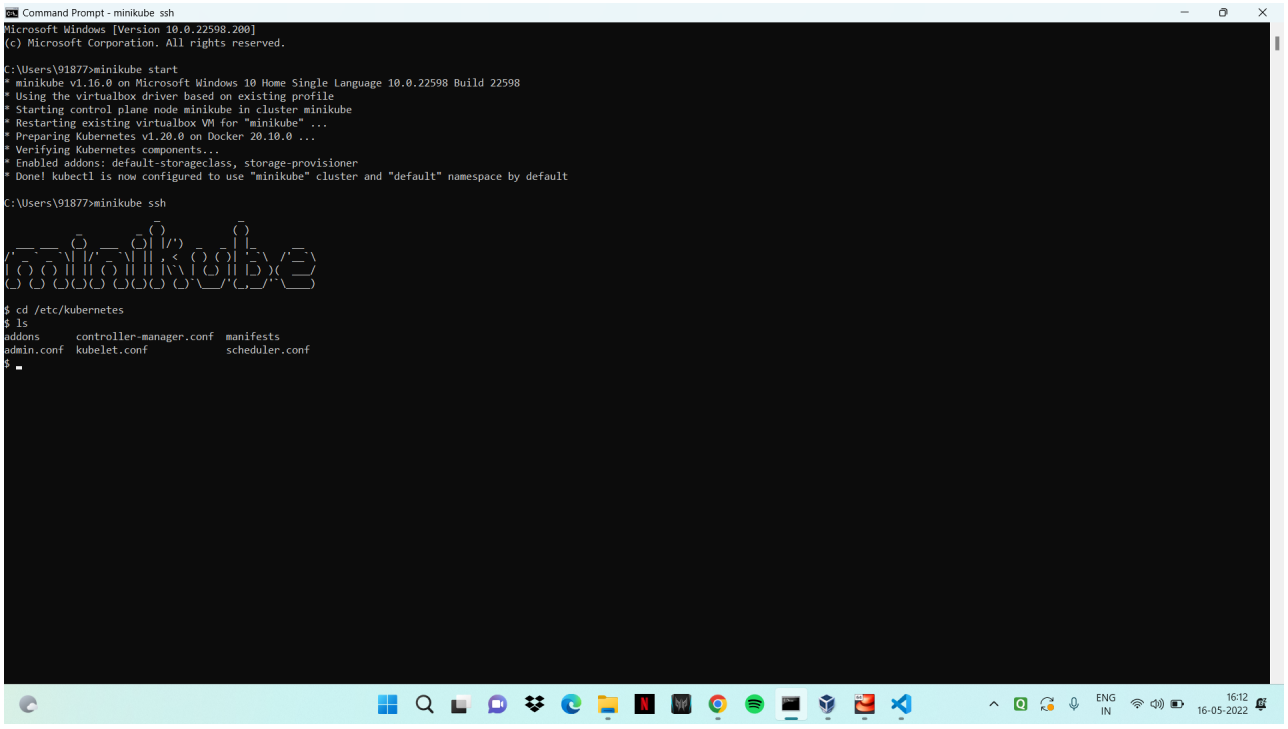


3.7.3 Web Application

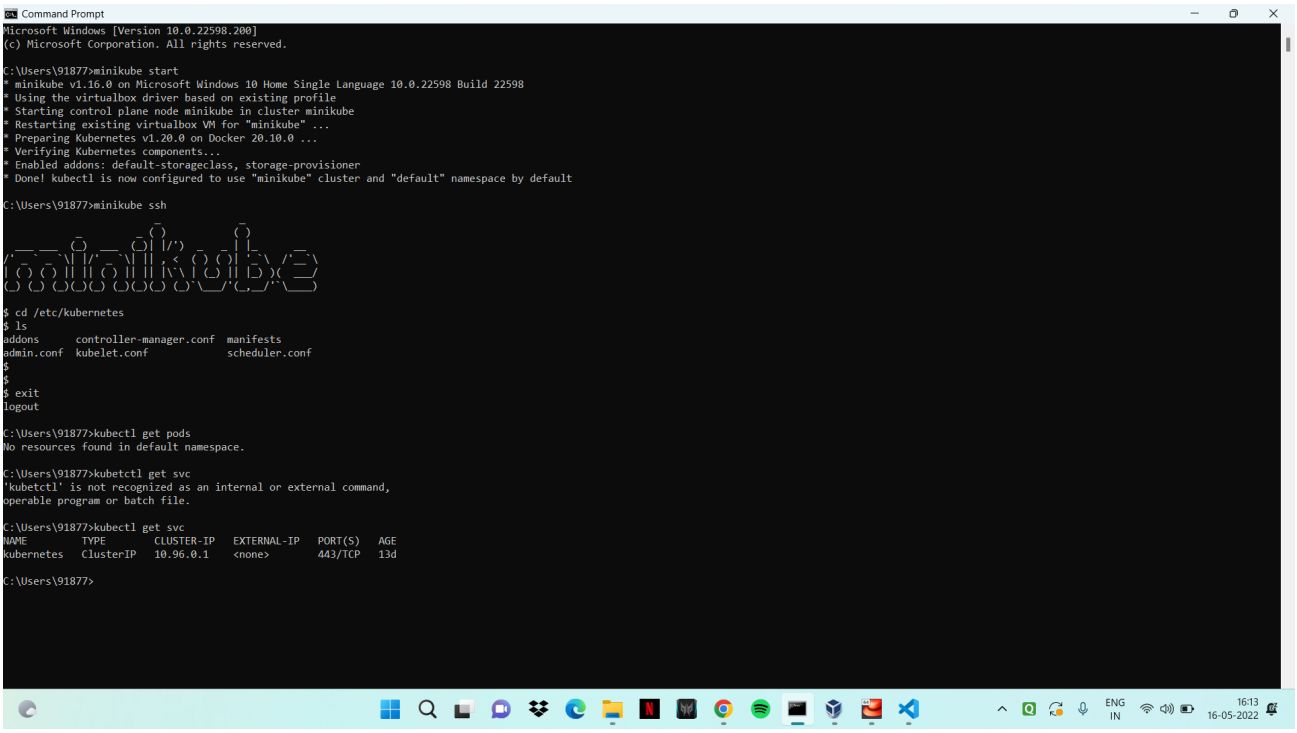




3.7.4 Minikube Cluster



3.7.5 Kubernetes



CHAPTER - 4

RESULT & DISCUSSION

The project entitled Kubernetes Web Controller was completed successfully.The system has been developed with much care and free of errors and at the same time it is efficient and less time consuming.The purpose of this project was to develop a web application to provide a efficient way to create a server and deliver a fully functional server for k8s so that anyone who dont understand k8s or have basic knowledge of it can come and deploy and run their applications or containers here and look and manage from single webUI page. .This project helped us in gaining valuable information and practical knowledge on several topics like Python CGI along with front end technology HTML,CSS, Javascript devops tools like Kubernetes Linux Docker and more.The entire system is secured. Also the project helped us understand about the development phases of a project and software development life cycle. We learned how to test different features of a project .This project has given us great satisfaction in having designed an application which can be implemented and used by any user.There is a scope for further development in our project to a great extent.

Docker Swarm and Kubernetes both are very powerful container orchestration tool. There are many more containerization tool like Docker like Openshift, EKS, Fragnite, CRI_0, Rocket, etc.

References

[1]https://www.ibm.com/in-en/cloud/learn/containerization

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[4] https://kubernetes.io/docs/home/

[5] https://docs.python.org/3/library/cgi.html

[6] https://www.javatpoint.com/linux-tutorial