Report of Assignment 1 : Devesh Mishra M25AI2021

Installation of Virtual Box and creation of multiple VMs:
Virtual box software is downloaded from the official website. The website has the official installer (VirtualBox-7.2.6a-172322-Win) for windows based host machine. With the help of that installer, I have installed the Virtual box. I had got only one dependency while installing virtual box that is related to Microsoft Visual C++ Redistributable (VC++ Runtime), after installing that, virtual box was installed successfully on PC

Than I have downloaded the Ubuntu server iso (ubuntu-24.04.3-live-server-amd64) and created a virtual machine using oracle virtual box UI interface. It asked about the RAM and storage allocation, Initially I had given 2 GB RAM and 5GB hard disk storage. It ask for host machine name, user name and password. 2nd VM is created using clone option, given by virtual box so same machine is copied. then using Ubuntu commands*, I had updated the host machine name of 2nd VM.
1stVM: act as micro service deployment server. It is CLI based. I have used Python3 and Flask for deploying my micro service. VENV is used to create the isolated environment for this project. This is because the underlying OS is forced me to do the same. I was not able to install the python and flask package anywhere. However, in RHEL Linux I had never faced such problem.
2nd VM: It is the same clone of 1st VM. Ad with Curl and Lynx Utility, it can mimic the website type interface till certain limit. However, after certain try, I switched to change this CLI based machine to UI based Ubuntu OS. So installed UI package* for OS along with Firefox browser*. So 2nd VM is actually serving the user which is using that micro service.

Configuration of network settings to connect the VMs.
Both VMs are having 2 network adaptors: 1 is configured as NAT: to access internet, connection with outer world using host machine internet and 2nd is configured as INTERNAL NETWORK to connect with other VMS. While configuring "generation of different MAC address" is chosen to avoid MAC conflict.

1st VM : vm1:
hostname : VM1_MicroserviceHost
username : rootvm1
password : rootvm1
2 network adaptors:
NAT is : 10:0:2:15/24 : en0s3
Interneal N/W: 192.168.100.10/24 : enp0s8

2nd VM : vm2
hostname : VM2_Client
username : rootvm1
password : rootvm1
2 network adaptors:
NAT is : 10:0:2:15/24 : en0s3
Interneal N/W: 192.168.100.11/24 : enp0s8
The micro service application:

At * marked points, internet help is taken.

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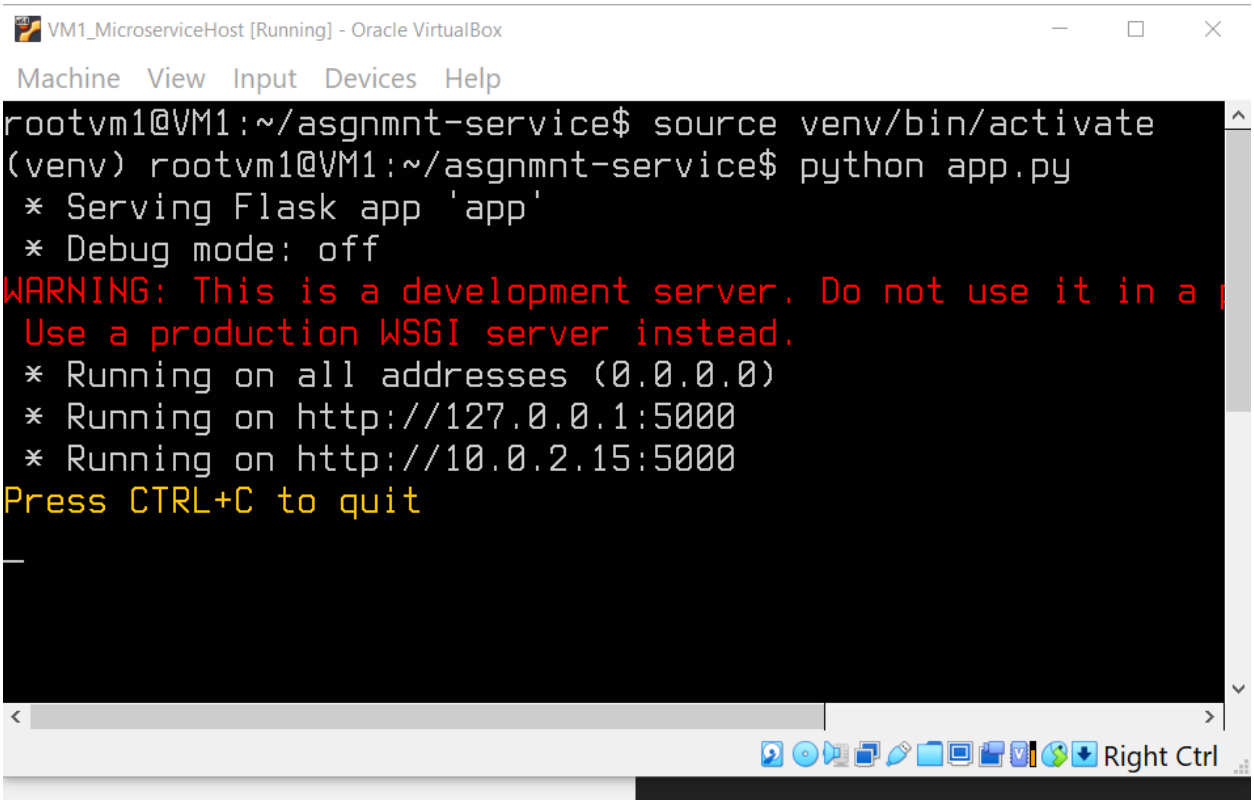
- This micro service application is developed using Python Flask and deployed on an Ubuntu Server virtual machine. The micro service exposes basic REST endpoints and serves a simple web page that can be accessed from a client virtual machine over an internal network.
- The deployment process involved setting up the virtual machine, installation of Python and its dependencies then the Flask application so that it listens on all network interfaces.
- Details of the Python File (app.py):
- The file uses the Flask framework to develop a lightweight micro service application.
- The home route (/) displays a simple web page and display the assignment-related information.
- The health route (/health) acts as a REST API and returns a JSON response indicating the host server status.
- The application is configured to run on port 5000 and listen on all network interfaces, allowing access from another virtual machine.

To Run the server micro service appciation:

Go to folder “asgnmnt_service” and execute command “source venv/bin/activate” then run tht flask based python application using command “python app.py”

O/P be like



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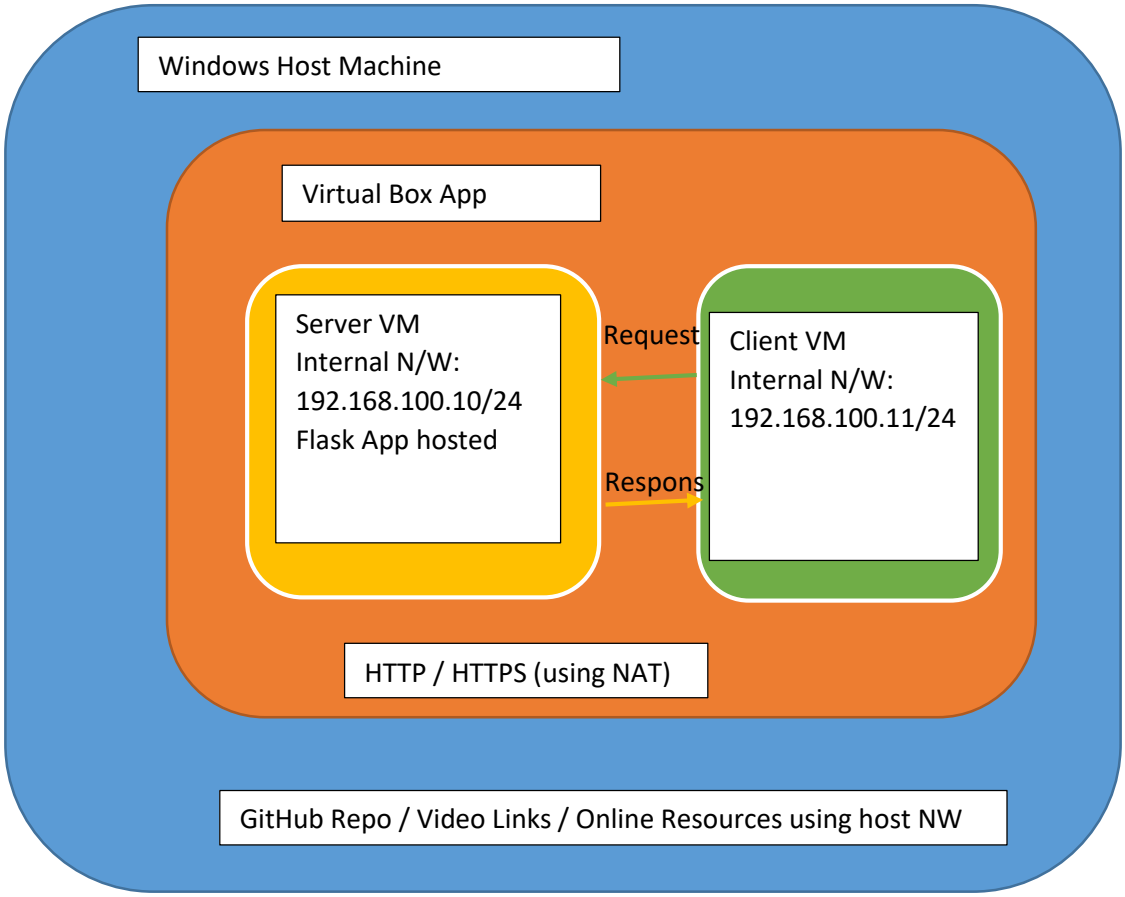
Architecture Design:



3. Link to Source Code and video Repo:
https://github.com/deveshmishra22/VCC_ASGNMNT_1

https://drive.google.com/drive/folders/1G3WBMpvM29YFNkKrF4bc8cdj-JgyKGdB?usp=sharing

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O/P at client machine

type https://192.168.100.10:5000/
First page will display which will have to links.. Health and Assignemnt Details
Health Page will simply display the connection status with server
Assignment Page will display the assignment details, It will open the git repo too.
I have problem due to certificates* so executed below command
sudo apt update
sudo apt install --reinstall ca-certificates
sudo update-ca-certificates
Than this problem also get resolved

.

At * marked points, internet help is taken.