Cloud Computing Experiment 1

Understanding Virtualization by installing Virtual Box and creating VM(Linux) for a React Application

1. Objective:

The goal of this task is to explore the concept of virtualization by installing VirtualBox and setting up a Virtual Machine (VM) with a Linux operating system. The VM will be utilized to host and deploy a React application, offering practical experience in creating and managing virtual environments for software development and deployment.

2. Background:

Virtualization enables multiple operating systems to operate on a single physical machine by creating virtual versions of resources such as servers. A Virtual Machine (VM) is a software-based emulation of a computer, allowing it to run an operating system and applications independently. Oracle VM VirtualBox, a type 2 hypervisor, manages these VMs. In this experiment, a Linux-based VM will be configured to host a React application. React, a JavaScript library, is used for building dynamic user interfaces. Networking within the VM facilitates internet access and hosting of the React app.

3. Tools and Services:

- VM VirtualBox
- Ubuntu ISO image
- Node.js and npm
- React application code

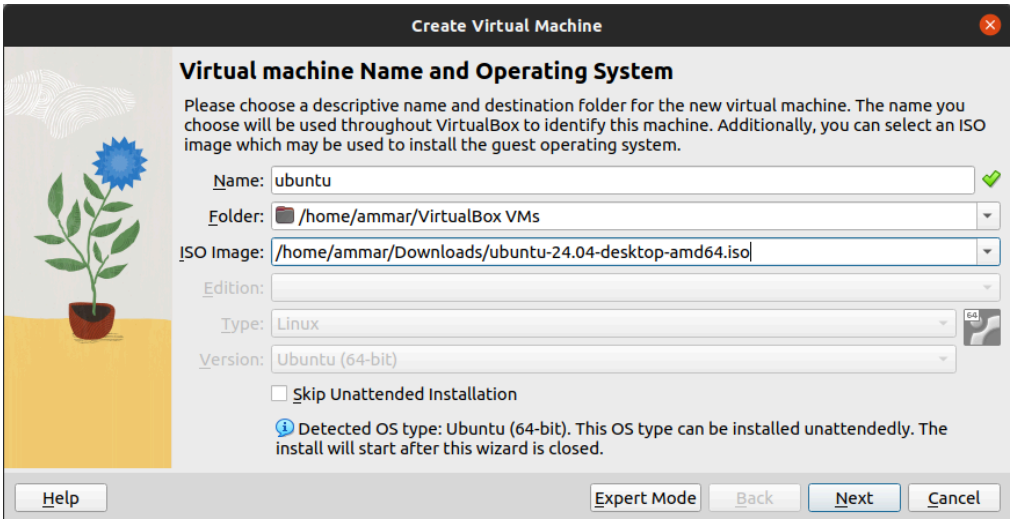
4. Experiment Setup:

1. Install virtualbox
    a. Download Oracle VM VirtualBox from the official website
    b. Follow the installation steps to set up VirtualBox on your host machine.
2. Download Linux ISO
    a. Download the Ubuntu ISO image from the official website.

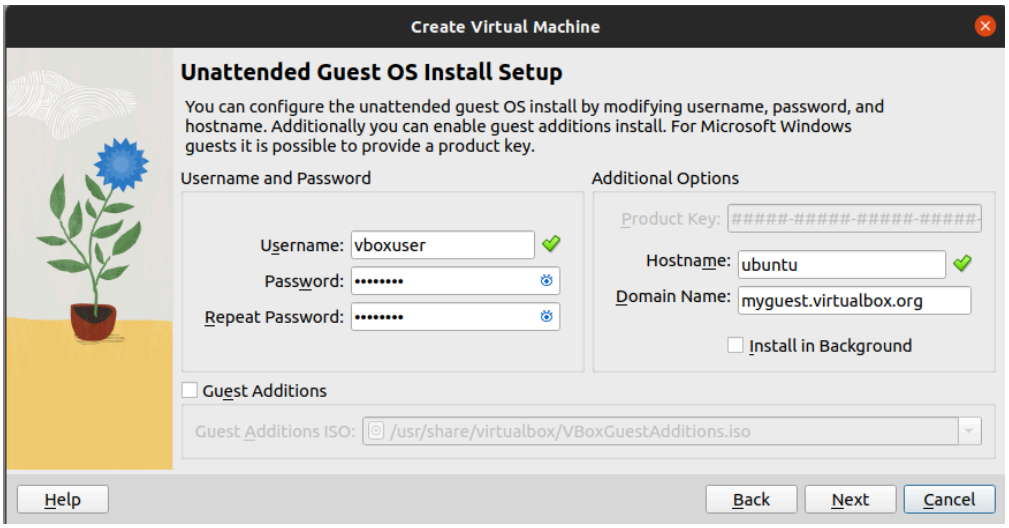
5. Execution:

1. Create a new Ubuntu VM
    a. Open the installed virtualBox and click on “New”.

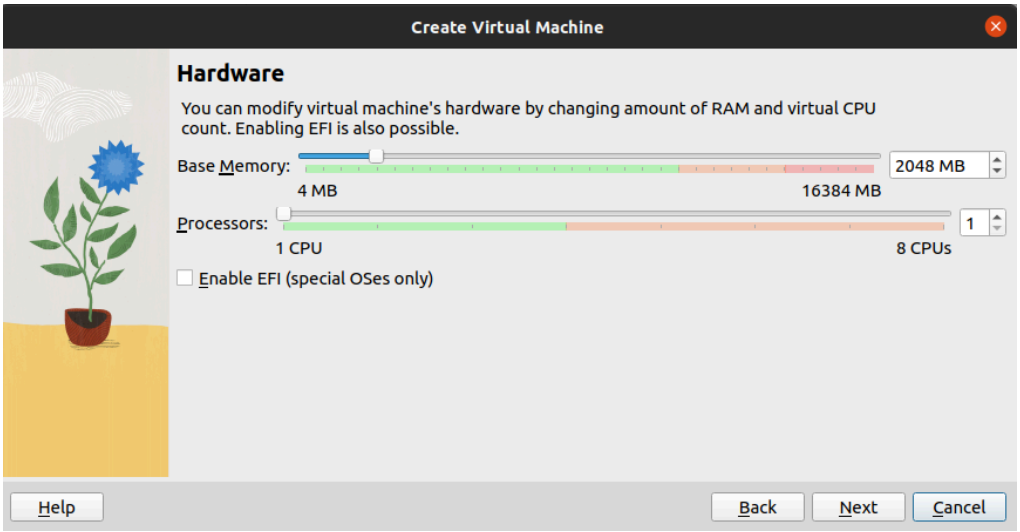
b. Name the virtual machine and select the ISO file downloaded.



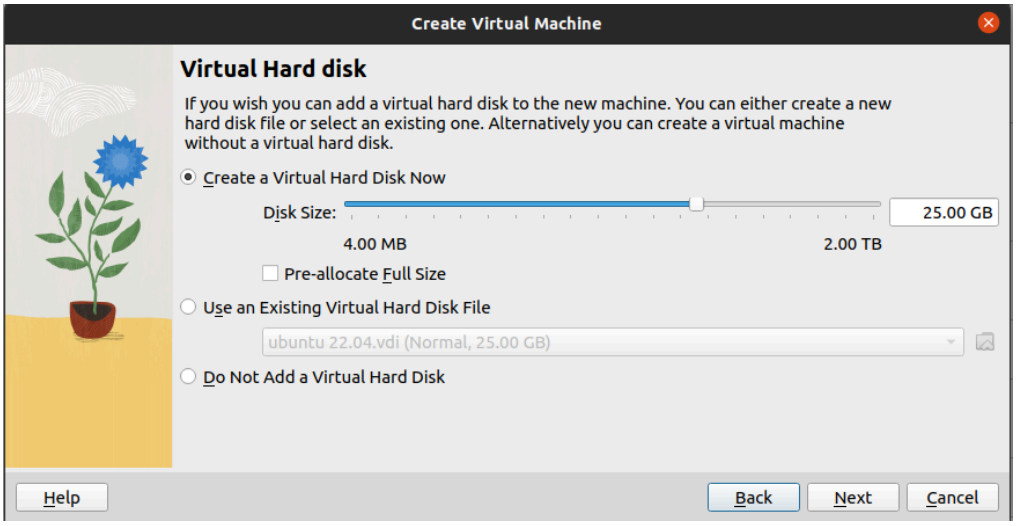
c. The type and version will be automatically detected.
d. Click on next.
e. Provide a username and password for VM.



f. Allocate the required memory and processor for the VM.



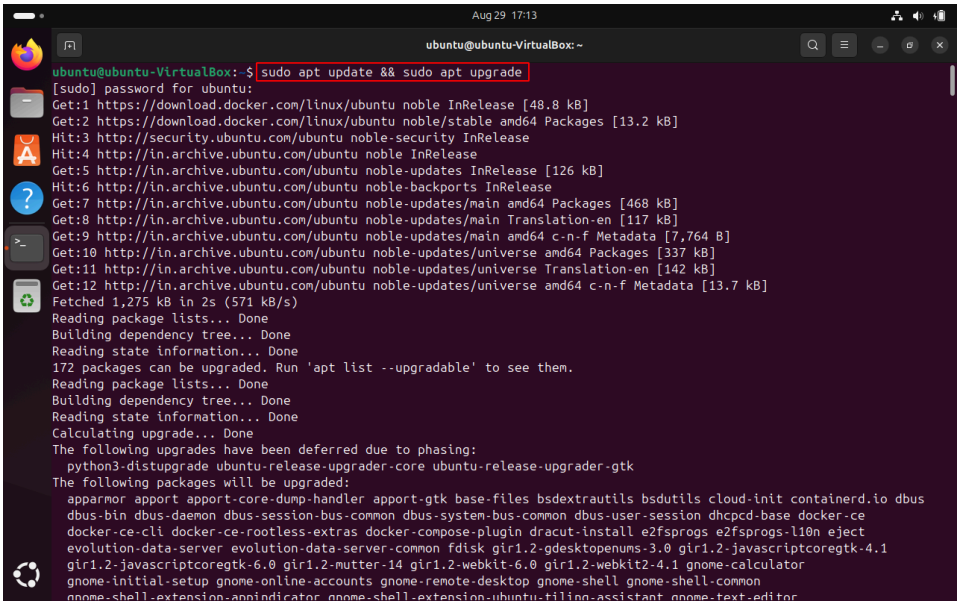
g. Provide a suitable hard disk size for the VM



h. Click Next and then Finish button to create the Ubuntu VM.

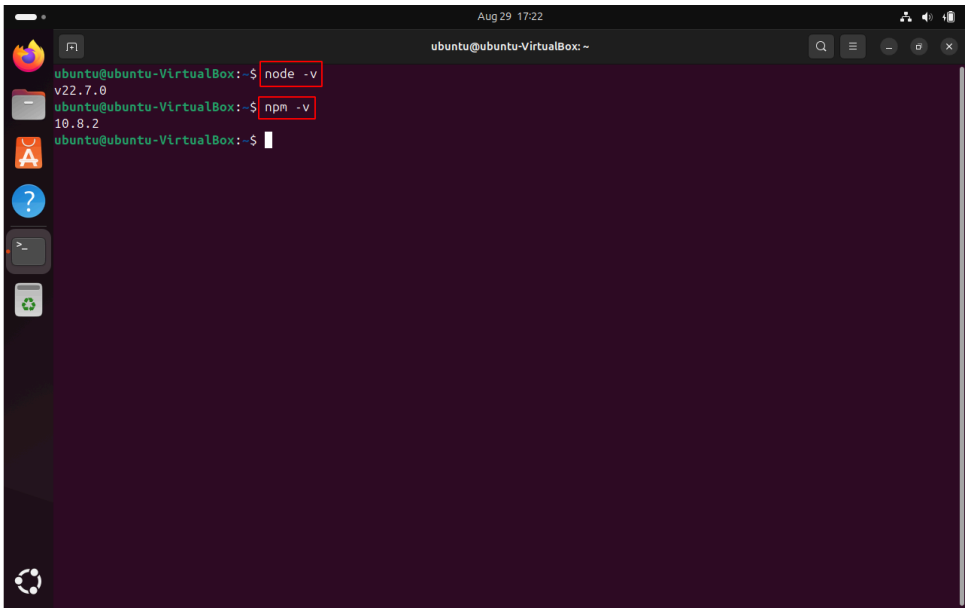
2. Setup Linux environment and install the dependencies.
   a. Once the VM is created, boot into the VM.

b. Open the terminal and update the package manager.

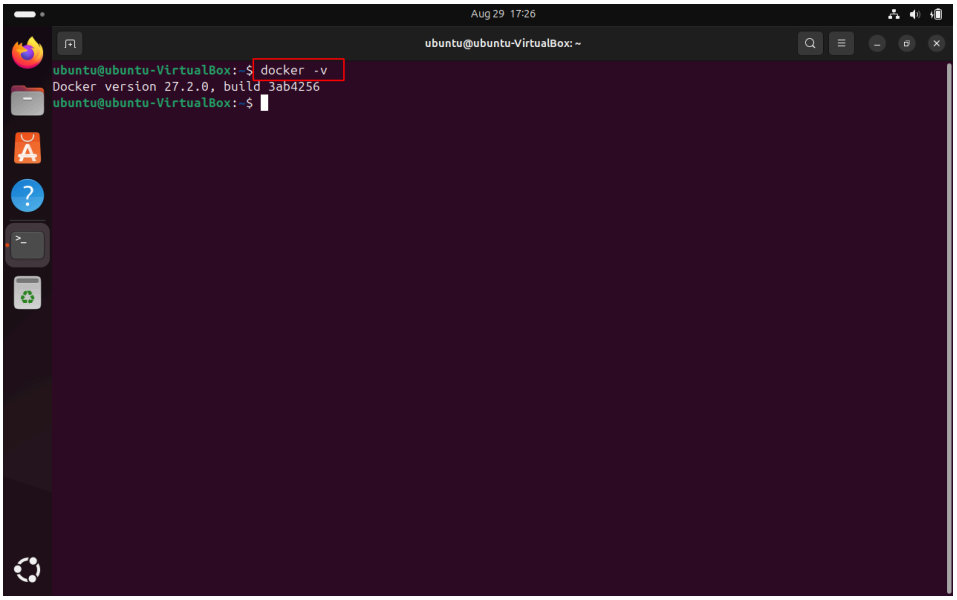


c. Install npm and Node.js.
https://docs.npmjs.com/downloading-and-installing-node-js-and-npm

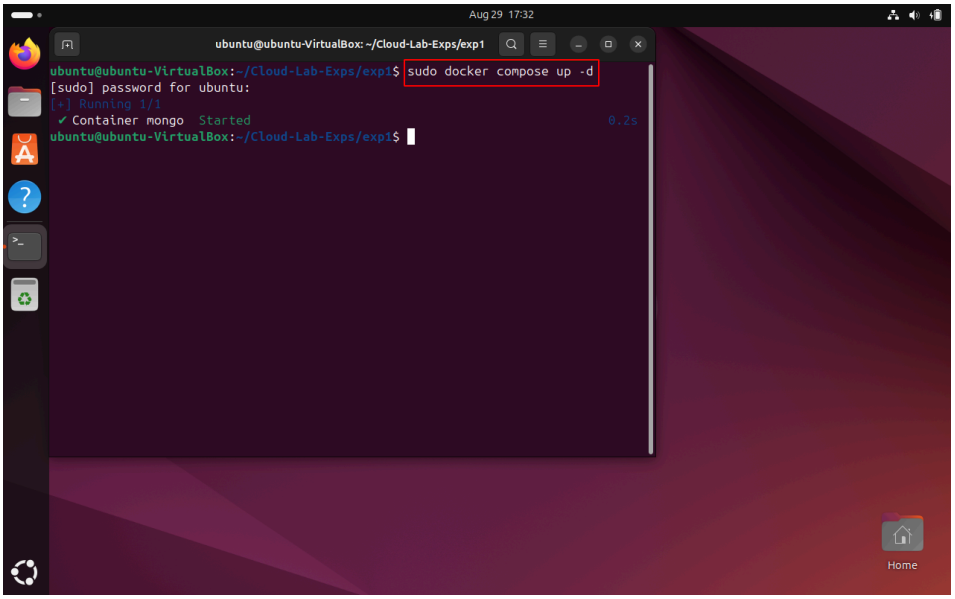
d. Verify the installation using these commands:



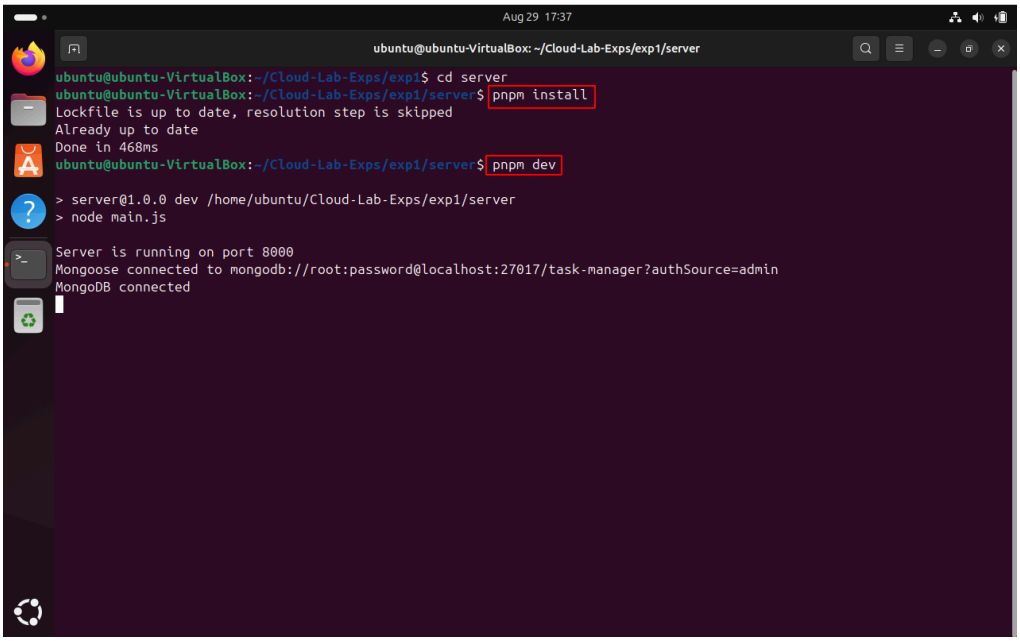
e. Install docker desktop from official site [documentation](#) and verify the installation using this command



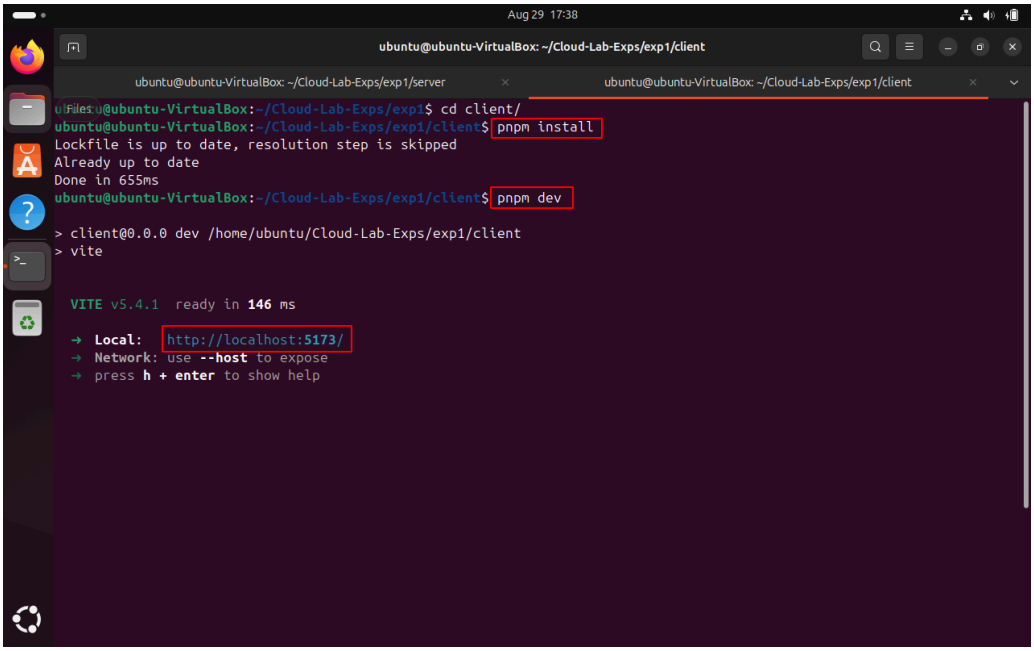
3. Setup the React project
    a. Clone this repository from Github using the git clone command.
    b. Initialize the mongoDB using the docker command.



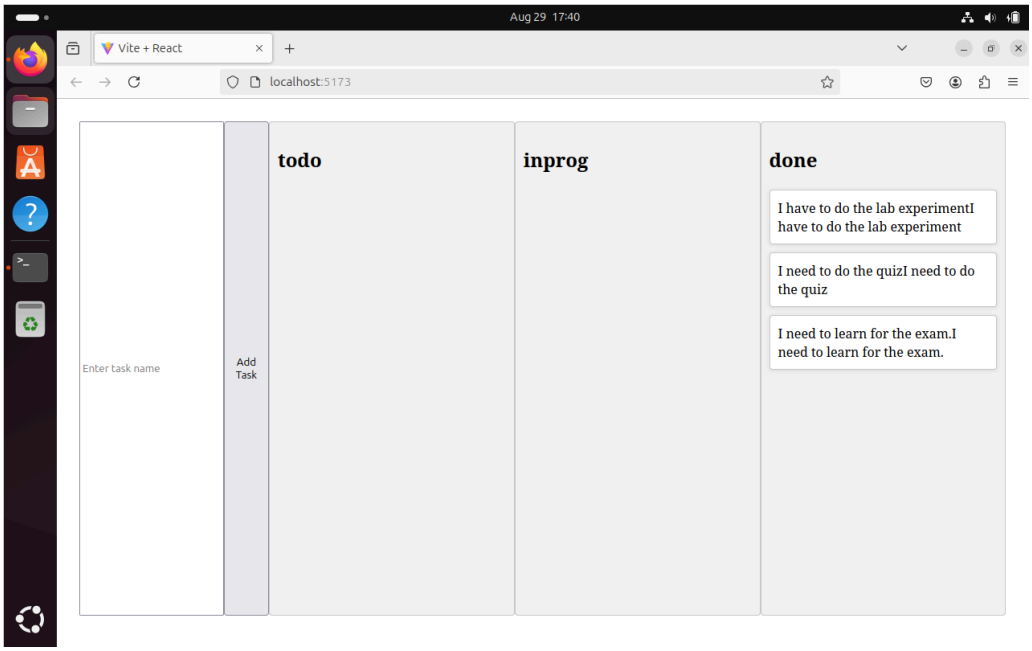
c. Navigate to the server folder and install the dependencies and start the server.



d. Navigate to the client folder and install dependencies and start the client application.



e. Now the react application is running on port 5173 of the VM.



4. Once done, save the VM state or shut it down through virtualbox.

6. Observations:

Observed that VirtualBox and Linux VM are set up, Node.js and npm work, the React application runs with code changes, and the app is accessible from the browser, confirming proper networking.

7. Results:

Virtualization was understood by installing Virtual Box and running a React Application.