**Bharatiya Vidya Bhavans'**
**Sardar Patel Institute of Technology**
**Munshinagar, Andheri(W), Mumbai-400058**
**(Autonomous College Affiliated to University of Mumbai)**

**Academic Year: 2025 26** **Semester: III** **Class: MCA**
**Course Code: MC520** **Course Name: Cloud Computing**

Experiment No.1
Date: 29.08.25

**Aim**: Ubuntu: Creating and Running Virtual Machines on Hosted Hypervisors (Virtual Box, KVM, QEMU)

CO Mapping – OECS1.2

**Objective**: To learn and implement the process of creating, configuring, and running virtual machines in Ubuntu using hosted hypervisors such as VirtualBox, KVM, and QEMU, enabling efficient virtualization for testing, development, and deployment purposes.

**Concept**:
Hosted hypervisors are virtualization platforms that run as applications on top of an existing operating system, enabling the creation and management of virtual machines (VMs). Tools like VirtualBox, KVM, and QEMU allow a single physical computer to simulate multiple independent computing environments, each with its own virtual CPU, memory, storage, and network interfaces.
In this setup, the hypervisor intercepts and manages hardware access requests from guest operating systems, allowing them to share host resources securely and efficiently. Virtual machines can be configured with varying hardware specifications, boot from ISO images, and connect to different network modes such as NAT, bridged, or host-only. This approach is widely used for software testing, development, training, and running multiple OSes without altering the host system.

**Observation**:

**Step 1:** Update package lists
sudo apt update

**Step 2:** Install QEMU, KVM, libvirt, and other required packages

sudo apt install -y qemu-kvm libvirt-daemon-system libvirt-clients bridge-utils virt-manager virtinst virt-viewer

**Step 3:** Add your user to the kvm and libvirt groups
sudo adduser $USER kvm

**Step 4:** Enable and start libvirt service
sudo systemctl enable --now libvirtd

**Step 5:** Reboot the system
sudo reboot

**Step 6:** Verify your user is in the groups
groups

**Step 7:** Check if KVM modules are loaded
lsmod | grep kvm

**Step 8:** List available virtual machines
virsh list –all

**Step 9:** Open Virtual Machine Manager
virt-manager

Some problems that I faced:
The ubuntu 24 version was not compatible with the guest OS, I had to switch to ubuntu 22 version.