✅LAB-0 – Linux Installation and Setup

This experiment covers installing **VirtualBox**, setting up **Ubuntu** inside it, installing **Visual Studio Code** on Ubuntu,running few usual commands.

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1. Installation Method

Chosen Method: **Option A – Virtual Machine**

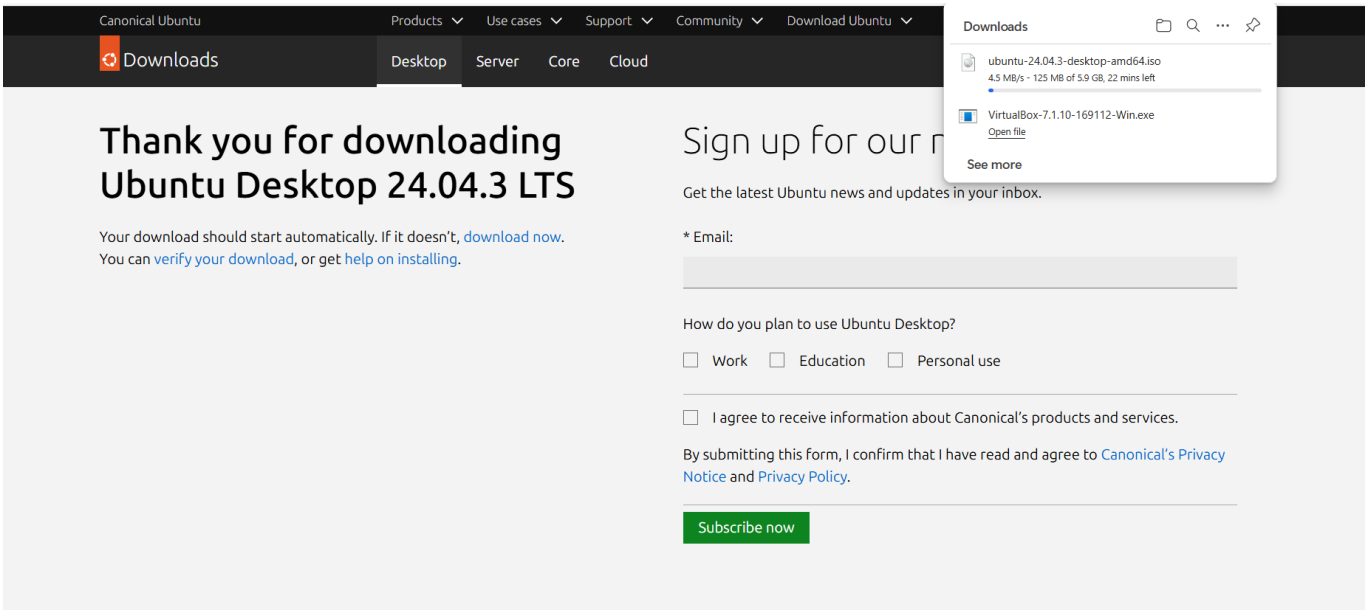
2. Installation Steps

1️⃣ Install VirtualBox

1. Download VirtualBox from the official site:
   https://www.virtualbox.org/wiki/Downloads
2. Choose **Windows hosts**.
3. Run the installer and follow default settings.

2️⃣ Download Ubuntu ISO

1. Visit: https://ubuntu.com/download/desktop
2. Select **Ubuntu 22.04 LTS** and download the `.iso` file.



3️⃣ Install VS Code in Ubuntu

1. In Ubuntu, open **Firefox** (default browser).
2. Go to: https://code.visualstudio.com/Download
3. Download the **.deb** package for Debian/Ubuntu.
4. Double-click the `.deb` file → Install via Ubuntu Software.

5. Launch **VS Code** from the Applications menu.

5️⃣ Final Setup

- You can now use VS Code inside Ubuntu for coding.
- Enable **full-screen mode** in VirtualBox for a better experience.

✅ **You have successfully set up VirtualBox, Ubuntu, and VS Code!**

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3. Terminal Outputs

1️⃣ lsb_release -a

The command lsb_release -a displays information about the Linux distribution you are running.

lsb_release = Linux Standard Base release.

-a option = shows all available details.

It typically outputs:

- Distributor ID (e.g., Ubuntu, Debian)
- Description (full name of the OS + version)
- Release (version number, e.g., 22.04)
- Codename (e.g., jammy, focal)

📸Output image of the commands :

2️⃣ $ uname -a

The command uname -a prints detailed system information about the Linux kernel and machine.

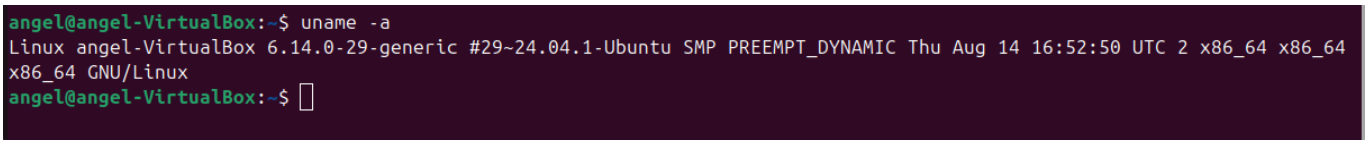
uname = Unix Name

-a option = shows all available details.

It typically outputs:

- Kernel name (e.g., Linux)
- Hostname of the machine
- Kernel release (version number)
- Kernel version (build details)
- Machine hardware name (e.g., x86_64)
- Processor type
- Hardware platform
- Operating system

📸Output image of the commands :



3️⃣ df -h

The command df -h displays the disk space usage of all mounted file systems.

df = disk free

-h option = human-readable format (sizes shown in KB, MB, GB instead of raw blocks).

It typically shows:

- Filesystem name (e.g., /dev/sda1)
- Size of the partition
- Used space
- Available space
- Percentage of usage
- Mount point (where the filesystem is attached, e.g., / or /home)

📸Output image of the commands :

4️⃣ free -m

The command free -m displays the system's memory (RAM and swap) usage in megabytes.

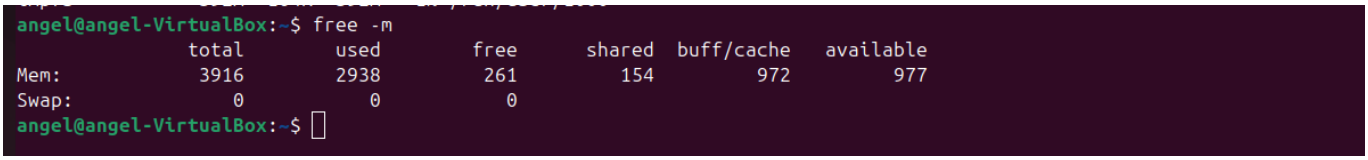
free = shows memory usage summary.

-m option = presents values in MB (megabytes).

It typically shows:

- **total**: total installed RAM
- **used**: RAM currently in use
- **free**: unused RAM
- **shared**: memory used by tmpfs/shmem
- **buff/cache**: memory used for disk caching
- **available**: RAM available for starting new applications
- **swap**: usage of swap space (virtual memory)

📸Output image of the commands :



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4. Reflection

During installation, the main challenges I faced were:

- Setting up VirtualBox guest additions.
- Configuring correct RAM and disk size.
- Enabling virtualization in BIOS.

📌5. Extra Questions

Q1. What are two advantages of installing Ubuntu in VirtualBox?

- Can run Ubuntu without affecting existing OS.
- Easy to take snapshots and revert to earlier states.

Q2. What are two advantages of dual booting instead of using a VM?

- Better performance (uses hardware directly).
- Access to full system resources (RAM, GPU, disk).b