**Assignment 1:**

**Objective:** Prepare your system for working in this course by installing essential software and demonstrating its functionality.

**Part 1: Install**

**Tasks:**

1. Download and install **VirtualBox** and the **VirtualBox Extension Pack**.
2. Download **Ubuntu 22.04 Server Edition** (required for ROS2 Humble).
3. Create a new virtual machine with the following specifications:
   * **RAM**: At least 4GB
   * **Processor**: At least 1 (2 recommended)
   * **Hard Drive**: At least 50GB dynamically allocated in .vdi format
   * **USB Controller**: USB 3.0
   * **Network**: Bridged network adapter
   * **Shared Folder**: Accessible between host OS and VM
4. Install **Ubuntu 22.04** on the virtual machine using the tutorial from the textbook.
5. Take a snapshot of the terminal in GNOME with your machine name updated to include your ASURITE ID.

**Part 2: SSH Key Creation**

**Tasks:**

1. Generate an **ed25519 private key** and save it in the ~/.ssh folder in the VM:

ssh-keygen -t ed25519 -f ~/key-<your-asurite>

Example: ssh-keygen -t ed25519 -f ~/key-dma123

This will create two files:

* + ~/key-<your-asurite>
  + ~/key-<your-asurite>.pub

1. Copy the **public key** (key-<your-asurite>.pub) to the VirtualBox shared folder to access it on your host machine. Alternatively, copy its contents to a file on the host machine.

**Part 3: Tailscale Setup**

**Tasks:**

1. Create an account at [Tailscale](https://tailscale.com).
2. Install **Tailscale** on your virtual machine:

sudo apt install tailscale

sudo tailscale up

1. Register your virtual machine on your Tailscale account:
   * Follow the on-screen instructions to add the machine to the Tailnet.
   * Disable key expiry to ensure the machine’s registration doesn’t expire.
2. Accept the invite for adding the machine to your Tailnet:   
   Invitation Link
3. Run the following command to verify the machine is registered:

tailscale status

* + Note the hostname (e.g., en4xxxxxxl.tail<some-custom-number>.ts.net).

1. Take a screenshot of successfully pinging the device:

ping <remote-machine-hostname>