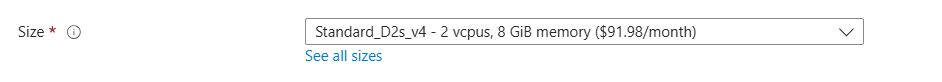
**Assignment 7 - Virtualization**

**Machine specs on Azure:**

1. For use of virtualization in Linux its better to use a VM with higher performance.
2. So we create a VM with high performance,

[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/1.png)

**Checking virtualization support on machine:**

1. Once the VM is created we can check the virtualization support by cpuinfo, **cat /proc/cpuinfo**

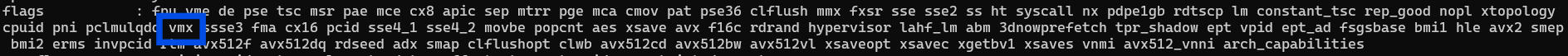
[A screenshot of a computer

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/2.png)

1. Am I using 64 bit CPU/system [x86\_64/AMD64/Intel64]? IN flags check for **lm**

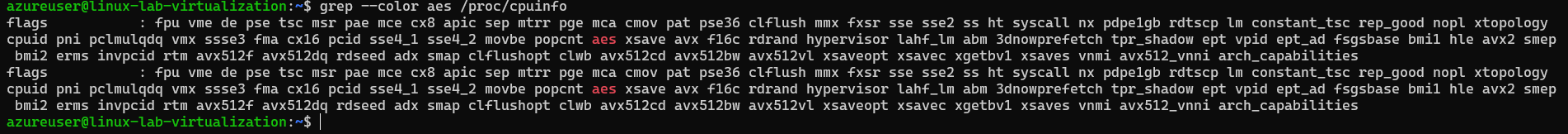
[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/3.png)

1. Do I have hardware virtualization support?
   * vmx – Intel VT-x, virtualization support enabled in BIOS.
   * svm – AMD SVM, virtualization enabled in BIOS.
   * Since we are using intel based system we only have VMX

[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/4.png)

4.Do I have hardware AES/AES-NI advanced encryption support?

aes – Applications performing encryption and decryption using the Advanced Encryption Standard on Intel and AMD cpus.

[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/5.png)

**# Install kvm-ok on a Debian/Ubuntu**

1. sudo apt install cpu-checker

[A screen shot of a computer program

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/6.png)

1. sudo kvm-ok

[A black screen with green and blue text

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/7.png)

**Installing and managing LXD / LXC system**

1. update your system by using apt: apt update && apt upgrade -y

[A screen shot of a computer

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/8.png) [A screenshot of a computer program

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/9.png) [A screen shot of a computer

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/10.png)

1. check if you just updated your kernel or other systems needing a complete system reboot, and if so, reboot: sudo reboot

[A screen shot of a computer

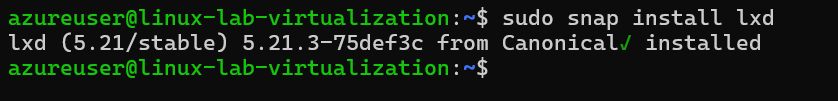
AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/11.png)

1. Install Snap: sudo apt install snap -y

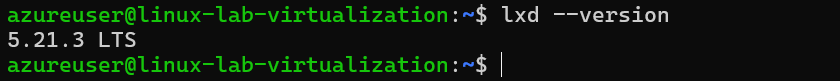
[A computer screen with white text

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/12.png)

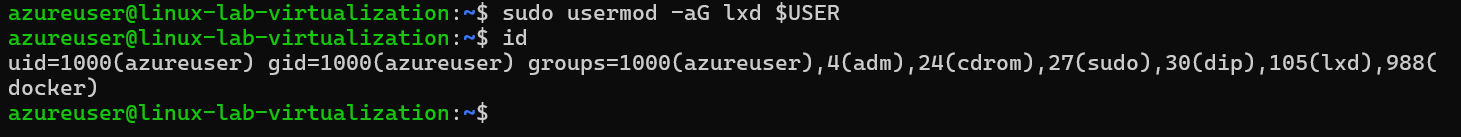
1. install lxd using snap: sudo snap install lxd

[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/13.png)

1. check lxd version and installation: lxd --version

[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/14.png)

1. check that your user belongs to LXD group: id, and look for LXD. If you do not find lxd group, add user to it: sudo usermod -aG lxd $USER

[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/15.png)

1. check lxc system for listing of machines and containers: lxc list

[A screen shot of a computer

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/16.png)

1. initialize xld, to configure system to your environment: lxd init. Make sure you run this as basic user, without root / sudo privileges it will ask series of questions, so based on your requirement answer them.
   * When it asks about clustering, choose ‘no’ (unless you’re setting up a cluster)
   * For storage, I recommend saying ‘yes’ to a new storage pool
   * The ‘dir’ backend is fine for beginners
   * Say ‘yes’ to a network bridge
   * Choose ‘no’ to make LXD sever available over the network.

[A computer screen shot of white text

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/17.png)

1. Once lxd is initialized successfully, we can verify the information using following set of commands:

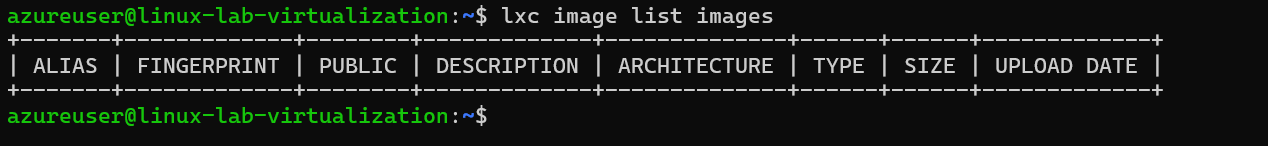
$lxc profile list $lxc network list $lxc storage list

[A screenshot of a computer screen

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/18.png)

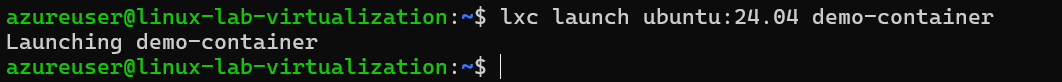
1. In order to list all available images, run:

$lxc image list images:

[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/19.png)

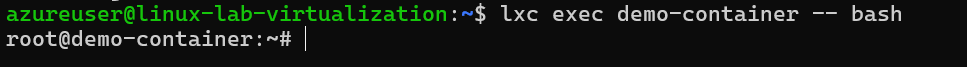
1. Create your first container:

$lxc launch ubuntu:24.04 demo-container

[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/20.png)

1. Access the console of container. Run:

$ lxc exec demo-container -- bash

[](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/21.png)

**Installing and managing Docker engine based system**

**Basic steps:**

Follow good instructions from Docker, at <https://docs.docker.com/>

[A screenshot of a computer

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/22.png)

More specifically from Ubuntu engine install instructions for Ubuntu system, and using convenience script:

<https://docs.docker.com/engine/install/ubuntu/#install-using-the-convenience-script>

curl -fsSL [https://get.docker.com](https://get.docker.com/) -o get-docker.sh

sudo sh get-docker.sh

Executing docker install script, commit: 7cae5f8b0decc17d6571f9f52eb840fbc13b2737

<...>

[A screen shot of a computer program

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/23.png)

post installation guide tells us to make user part of Docker group on Linux machine:

sudo groupadd docker

sudo usermod -aG docker $USER

newgrp docker

[A computer screen with white text

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/24.png)

check docker version

[A screenshot of a computer

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/25.png)

**Run Nginx on docker:**

1. Get the latest Nginx

[A screen shot of a computer

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/26.png)

1. Start docker nginx image
   * docker run -p 80:80 nginx
   * docker run -d -p 80:80 nginx (To run on background use -d tag)

[A screen shot of a computer program

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/27.png)

1. If we open the IP of our virtual machine we can see Nginx is running,

[A screenshot of a computer

AI-generated content may be incorrect.](https://github.com/Rashmika-Dineth/Linux/blob/main/Assignment%207/Images/28.png)