WQD7007 Big Data Management

Introduction to Linux OS

Operating System

- Software that manages a computer's hardware and software resources, providing a foundation for running applications and enabling user interaction.
- Example of OS:
  - Desktop/Laptop: Windows, macOS, Linux, FreeBSD
  - Mobile: Android, iOS.
  - Embedded Systems: Real-time operating systems (RTOS) used in devices like ATMs and industrial equipment.

Linux

- Linux is a family of open-source, Unix-like operating systems based on the Linux kernel, developed by **Linus Torvalds** in 1991, and known for its versatility, security, and wide community support.
- Linux is not a single operating system but rather a family of distributions (Distros), each of which combines the Linux kernel with various software packages and tools. Examples include Ubuntu, Fedora, and Debian.

Ubuntu OS

- Ubuntu is a popular, free, and open-source Linux-based operating system developed by Canonical, suitable for desktops, servers, and IoT devices, offering a user-friendly interface and a wide range of software.
- Ubuntu OS products
  - Ubuntu Desktop
  - Ubuntu Server
  - Ubuntu Pro
  - Ubuntu Core
  - WSL
  - Multipass

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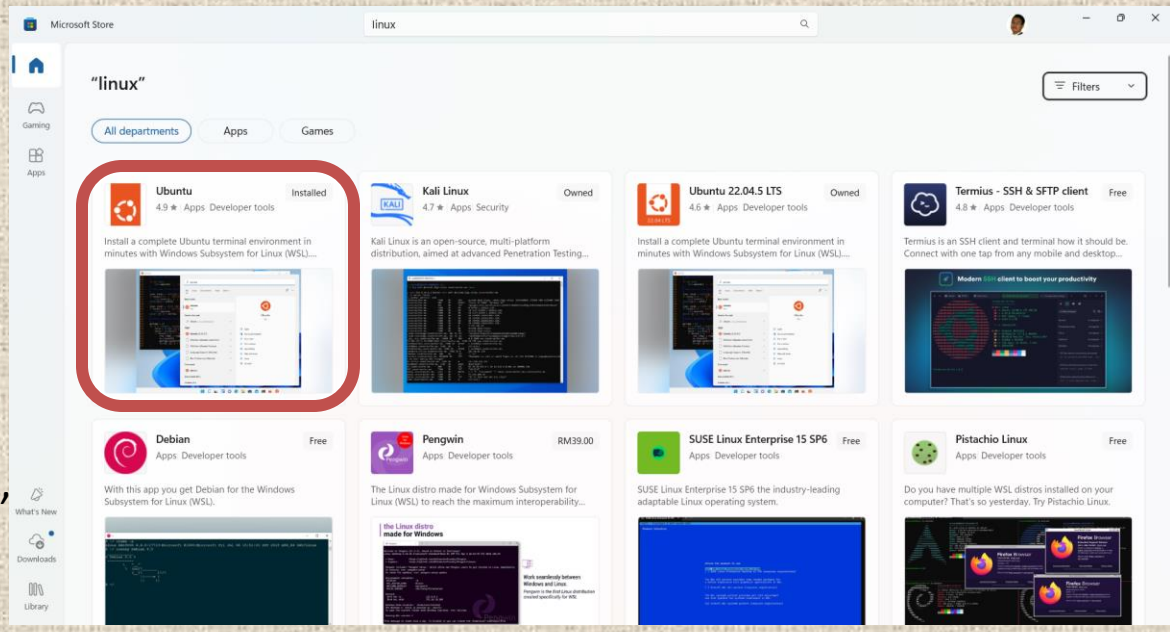
3 Ways to run Linux OS

Linux OS

- There are 3 ways to run Linux OS in your machine
  - Windows Subsystem Linux (WSL)
  - Virtualization
  - Fresh installation

Windows Subsystem Linux (WSL)

- Microsoft Store
  - Required Microsoft account in your windows
- Many distros available in Microsoft Store
  - Search for “Ubuntu”
  - Choose Ubuntu and click GET or INSTALL
  - After installation finish, simply click OPEN to run Ubuntu as WSL
  - If you search for “linux” your will see many linux distros in Microsoft Store



Virtualization

- Virtualization is a technology that creates virtual representations of physical computing resources, allowing multiple operating systems or applications to run on a single physical machine, improving efficiency and resource utilization.
- Virtualization software, often called a hypervisor, sits between the physical hardware and the virtual machines (VMs) or operating systems, managing and allocating resources.

Virtualization

- There are many virtualization software such as Oracle VirtualBox, VMWare, Multipass, UTM (for macOS), etc.
- Install a virtualization software like **VirtualBox** and then download the Ubuntu ISO image, create a new virtual machine in VirtualBox, and install Ubuntu from the ISO image.
- Refer to the videos in Spectrum. You may download and install the latest version of Ubuntu Desktop OS image from the website.

Fresh Installation

- Install Ubuntu Desktop
  - Download an Ubuntu image. Get the Ubuntu image from the Download Ubuntu Desktop page.
  - Create a bootable USB stick (you may use balenaEtcher software).
  - Boot from USB flash drive.
  - Installation setup.
  - Type of installation.
  - Create Your Login Details.
  - Choose your Location.
  - Ready to install.
- Refer to https://ubuntu.com/tutorials/install-ubuntu-desktop

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Introduction to editor in Linux terminal

‘nano’ editor in Linux

- Simple and easy to learn editor
- Useful when you are logging in remotely to the server

‘nano’ Editor

- Execute by typing: `nano (filename)`
  - E.g. `nano mapper.py`
- Type the content as it is
- Save by pressing: `ctrl + x,` followed by `y`
- Quit by pressing: `ctrl + x,` followed by `n`
  - If no edit is made, only `ctrl + x` is needed

vi editor in linux

- It is useful when
  - You are logging in remotely to the server
  - When ‘nano’ is not available (when you are using centOS instead of ubuntu

Vi Editor

- Execute by typing: `vi (filename)`
  - E.g. `vi mapper.py`
- **Enter edit mode** by pressing `i`, **end editing** by pressing `esc`
- Save by pressing `:w`
- Quit by pressing `:x`

Try it yourself!

- Try to create a file named ‘demo.txt’ using ’nano’ command.
- Key in ‘Testing’ in the file and save it.
- Edit the file using ‘nano’ command. Change the content to ‘Testing 123’ and save it.
- Edit the same file using ‘vi’ command. Change the content to ‘123 Testing’ and save it.