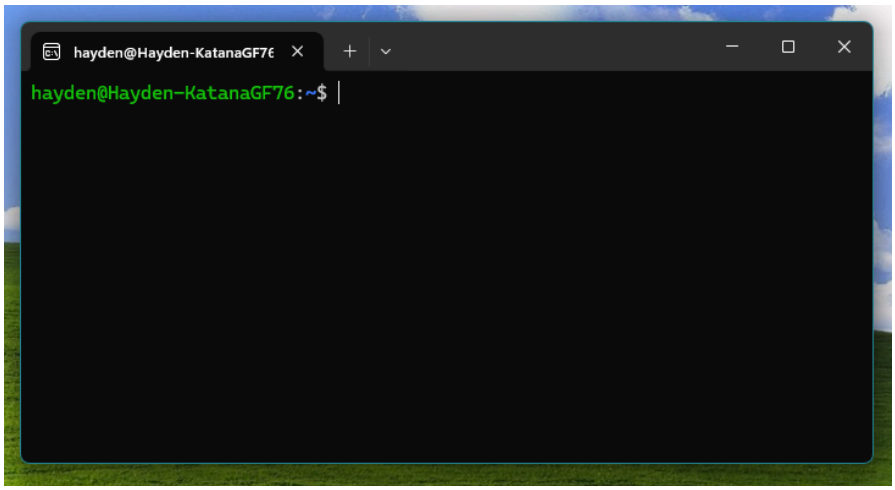
Intro to WSL



When you launch Ubuntu (WSL) from the Start Menu in Windows, a black window pops up. You should see your username and a blinking cursor. But what exactly are we looking at? Let's break it down and define some key terms before we move forward. Be sure to come back and check this doc if you're ever confused about wording.

Terminal

The **terminal** is the black window you're typing in. Think of it as a chat window between you and your computer. It's a simple command-line interface (CLI) that lets you interact with something called a **shell**. But what's a shell?

Shell

The **shell** is the program that reads the commands you type into the terminal. You write a command, hit Enter, and the shell interprets it and translates your words into instructions the system can understand. There are many types of shells. You might have heard of PowerShell on Windows. On Linux, the most common one is **Bash**. But what's Bash?

Bash

Bash is a type of shell that understands Linux commands like ls, cd, and mkdir. It's the default shell that comes bundled with most Linux distributions, including Ubuntu. When you type a command, Bash processes it and passes the request to the Linux **kernel**. But what's the kernel?

Kernel

The **kernel** (Linux) is the core of the operating system (Ubuntu). You don't talk to the kernel directly. You talk to the shell (Bash), the shell talks to the kernel, the kernel talks to your hardware (memory, CPU, keyboard, hard drive, etc.)

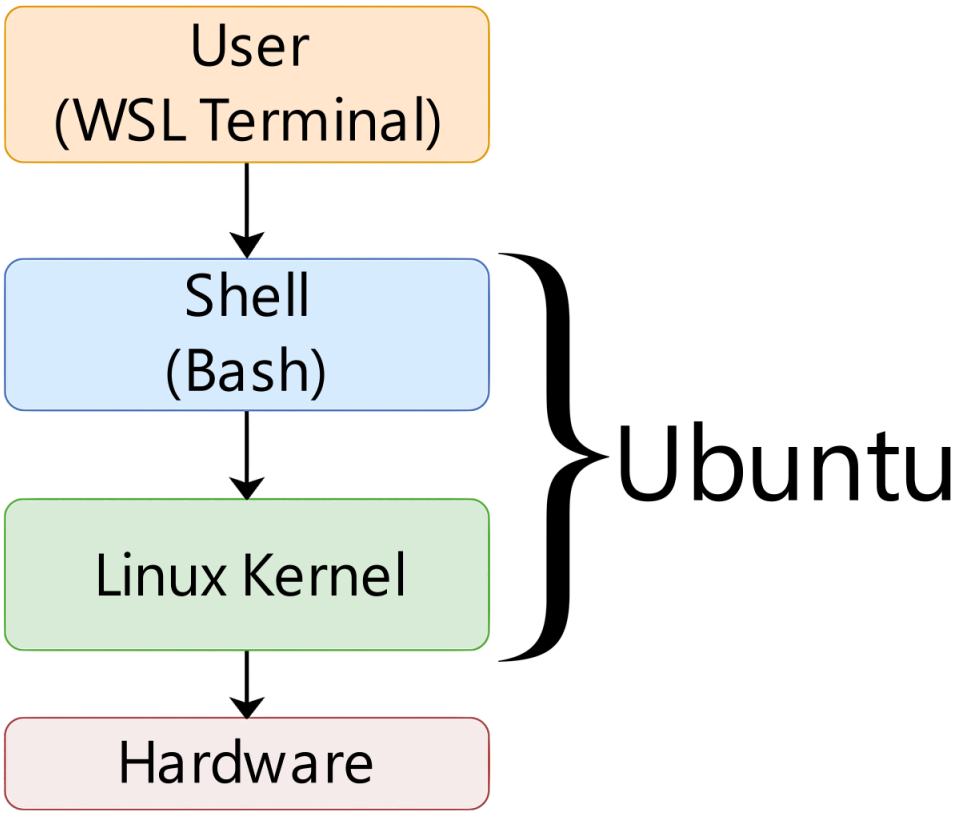
When most people say "Linux," they're usually talking about a Linux distribution, which is a complete OS that bundles the Linux kernel with all the other tools, programs, and user interfaces you actually interact with. But remember, Linux is really just the kernel, not the full OS. The distro we're using is **Ubuntu**. But what's Ubuntu?

Ubuntu

Ubuntu is one of those Linux distributions, and the one we're using for this course. It includes the Linux kernel plus all the extra stuff that makes it usable.

WSL (Windows Subsystem for Linux)

This is what you'll be using for Unit 1. You're not using a separate Linux computer. You're running Ubuntu inside of Windows, thanks to WSL (Windows Subsystem for Linux). WSL allows Windows to run a real Linux environment, including the Linux kernel, without needing a dual-boot setup. When you installed Ubuntu 24.04 LTS from the Microsoft Store, you installed a version of Ubuntu specially packaged to run under WSL.



This is a super simplified diagram of what's going on when you use WSL. Under the hood, WSL runs a real Linux kernel inside of a lightweight virtual machine. You're using Ubuntu's userspace (which includes Bash, apt, and other tools) while the kernel operates separately in the background. This gives you full Linux compatibility without leaving Windows.

Later on we'll actually set up Linux within a virtual machine, but for now WSL is a great place to practice simple commands.