

Operating Systems - SE 5th A

Fall 2025

Lab 1 Plan: WSL2 Setup and Ubuntu Configuration

Objective

The purpose of this lab is to introduce students to Windows Subsystem for Linux (WSL2) and guide them through the installation, setup, and configuration of Ubuntu. By the end of this lab, students should be able to run and use a Linux environment on Windows for development and operating system-related tasks.

Learning Outcomes

After completing this lab, students will be able to:

1. Understand the concept and advantages of WSL2.
2. Install and enable WSL2 on Windows.
3. Install Ubuntu from Microsoft Store.
4. Configure Ubuntu environment (update, upgrade, user setup).
5. Run basic Linux commands in Ubuntu under WSL2.

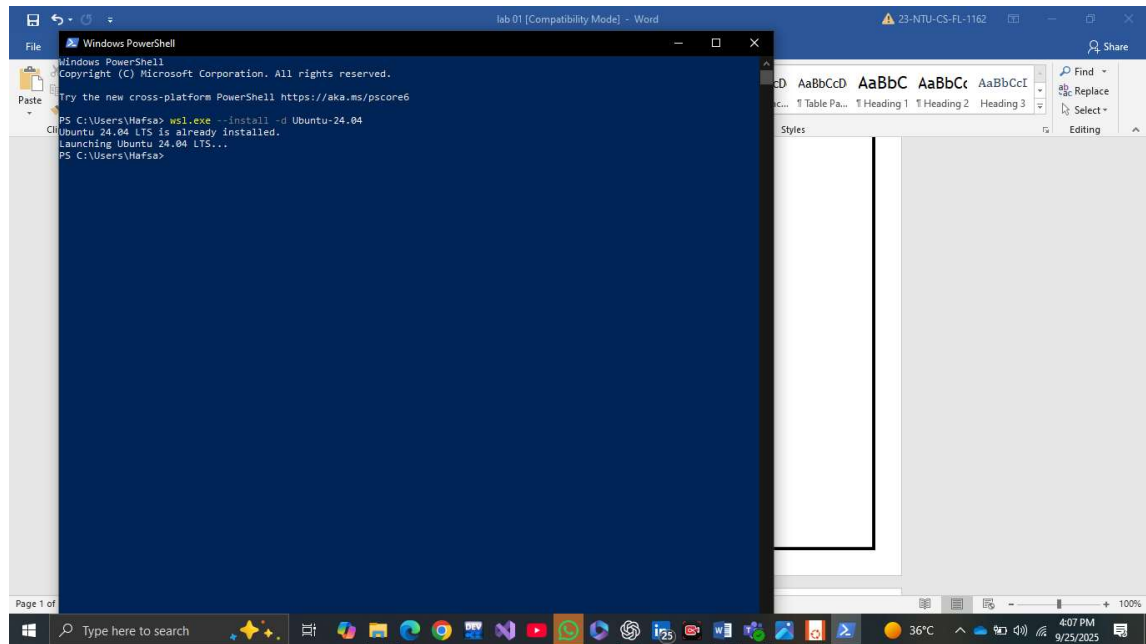
Lab Activities

Task 01: Installing WSL2 on Windows

Step 1: Open **PowerShell as Administrator**.

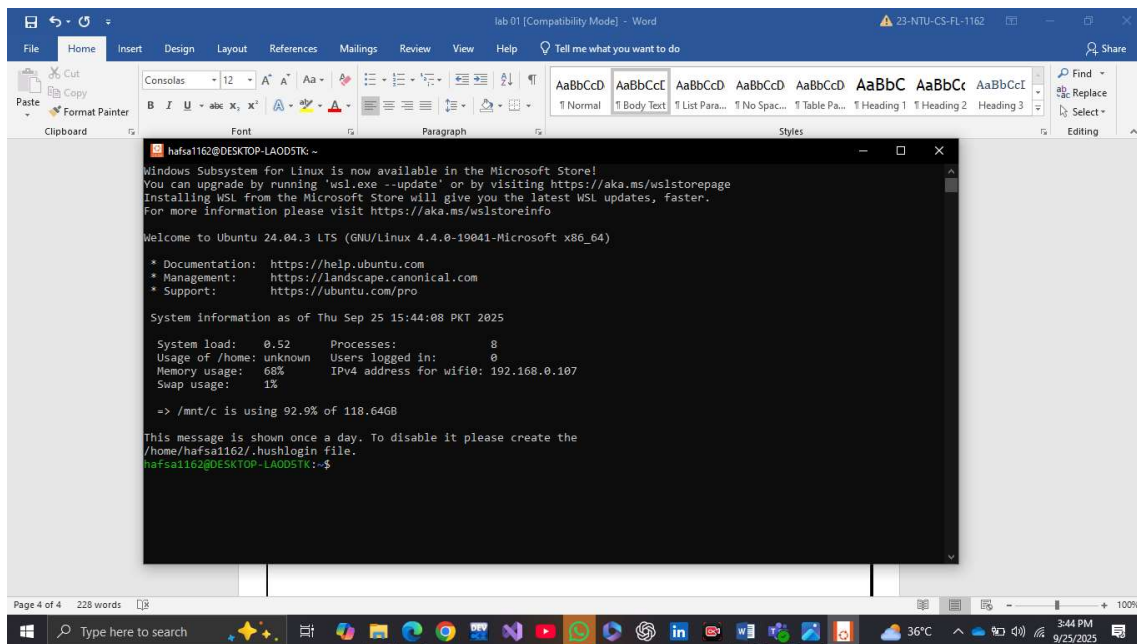
Step 2: Run command to enable WSL and Virtual Machine Platform:

```
wsl.exe --install -d Ubuntu-24.04
```



Task 02: Verifying setup on Windows

Step 1: Open Ubuntu 24.04 in Windows terminal or Ubuntu shell directly



Step 2: Create new user and password

```
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1
hafsai1162@DESKTOP-LA0D5TK:~$ cs wsl_lab1
Command 'cs' not found, but can be installed with:
sudo apt install csound
hafsai1162@DESKTOP-LA0D5TK:~$ cd wsl_lab1
-bash: cd: wsl_lab1: No such file or directory
hafsai1162@DESKTOP-LA0D5TK:~$ git clone git@github.com:HafsaAmjad230/wsl_lab1.git
Cloning into 'wsl_lab1'...
warning: You appear to have cloned an empty repository.
hafsai1162@DESKTOP-LA0D5TK:~$ cd wsl_1
-bash: cd: wsl_1: No such file or directory
hafsai1162@DESKTOP-LA0D5TK:~$ cd wsl_lab1
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1$ exho "# My first WSL lab project" > README.md
Command 'exho' not found, did you mean:
  command 'echo' from deb coreutils (9.4-3ubuntu6.1)
Try: sudo apt install <deb name>
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1$ echo "# My first WSL lab project" > README.md
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1$ git add .
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1$ git commit -m "Initial commit"
Author identity unknown

*** Please tell me who you are.

Run

  git config --global user.email "you@example.com"
  git config --global user.name "Your Name"

to set your account's default identity.
Omit --global to set the identity only in this repository.

fatal: empty ident name (for <hafsai1162@DESKTOP-LA0D5TK.localdomain>) not allowed
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1$ git config --global user.name "Hafsa Amjad"
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1$ git config --global user.email "h5526760@gmail.com"
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1$ git commit -m "Initial commit"
[main (root-commit) 203e202] Initial commit
1 file changed, 1 insertion(+)
create mode 100644 README.md
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1$ explorer .exe.
Command 'explorer' not found, did you mean:
  command 'xplorer' from deb xplorer (3.3.2+dfsg-7)
Try: sudo apt install <deb name>
hafsai1162@DESKTOP-LA0D5TK:~/wsl_lab1$
```

Step 3: Run the following commands

sudo apt update

sudo apt upgrade

```
hafsai1162@DESKTOP-LA0D5TK:~$ sudo apt update
Setting up libsystemd0:amd64 (255.4-1ubuntu8.10) ...
Setting up systemd-dev (255.4-1ubuntu8.10) ...
Setting up systemd (255.4-1ubuntu8.10) ...
Initializing machine ID from random generator.
Failed to take /etc/passwd lock: Invalid argument
dpkg: error processing package systemd (--configure):
installed systemd package post-installation script subprocess returned error exit status 1
Errors were encountered while processing:
systemd
E: Sub-process /usr/bin/dpkg returned an error code (1)
hafsai1162@DESKTOP-LA0D5TK:~$ sudo apt install build-essential -y
[sudo] password for hafsai1162:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
You might want to run 'apt --fix-broken install' to correct these.
The following packages have unmet dependencies:
build-essential : Depends: libc6-dev but it is not going to be installed or
                    libc-dev
                    Depends: gcc (>= 4:12.3) but it is not going to be installed
                    Depends: g++ (>= 4:12.3) but it is not going to be installed
                    Depends: make
                    Depends: dpkg-dev (>= 1.17.11) but it is not going to be installed
libpam-systemd : Depends: systemd (= 255.4-1ubuntu8.4) but 255.4-1ubuntu8.10 is to be installed
systemd-sysv : Depends: systemd (= 255.4-1ubuntu8.4) but 255.4-1ubuntu8.10 is to be installed
udev : Depends: libudev1 (= 255.4-1ubuntu8.10) but 255.4-1ubuntu8.4 is to be installed
E: Unmet dependencies. Try 'apt --fix-broken install' with no packages (or specify a solution).
hafsai1162@DESKTOP-LA0D5TK:~$
```

Generate SSH key:

```
Select hafsa1162@DESKTOP-LA0D5TK: ~\wsl_lab1
Enter file in which to save the key (/home/hafsa1162/.ssh/id_ed25519):
Created directory /home/hafsa1162/.ssh
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/hafsa1162/.ssh/id_ed25519
Your public key has been saved in /home/hafsa1162/.ssh/id_ed25519.pub
The key's fingerprint is:
SHA256:594uuxLEBUN008X/gkFVqgHifn9dg6wi8WadSc0hZFo hafsa1162@DESKTOP-LA0D5TK
The key's randomart image is:
+--[ED25519 256]--+
|      .==..oo      |
|      o+o= .       |
|      ..o* o       |
|      .+ + .       |
|    E   S   o....o   |
|    =   o + .o..    |
|    . . * o o. +    |
|    o .+ B.+o.. o   |
|    |   o. + ++oo.. |
|-----[SHA256]-----+

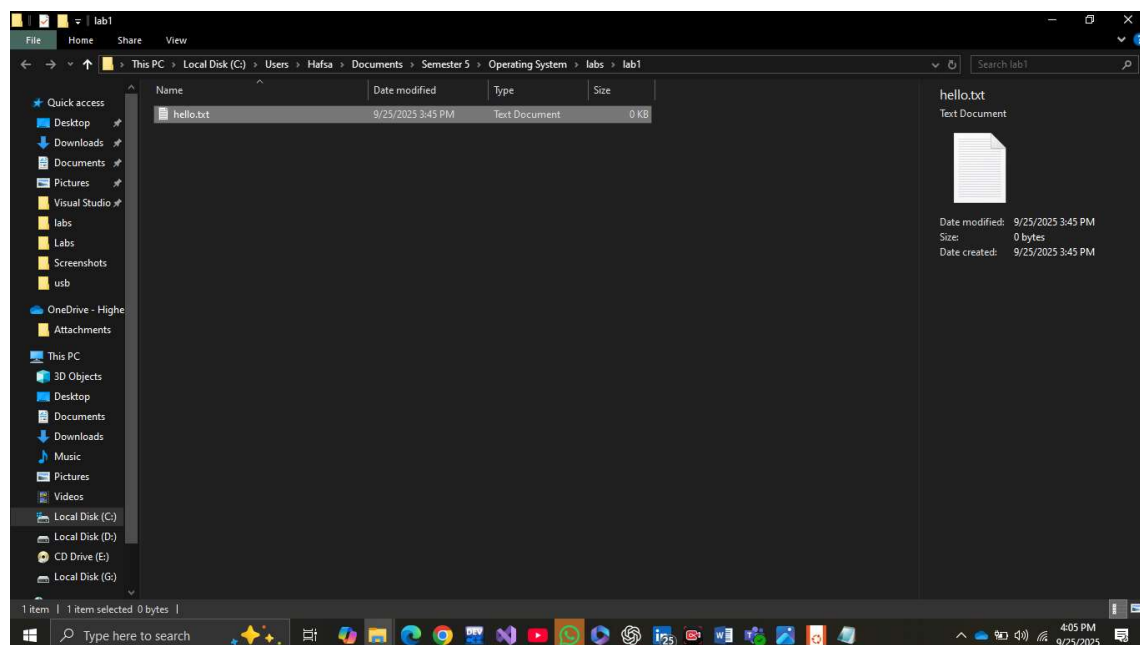
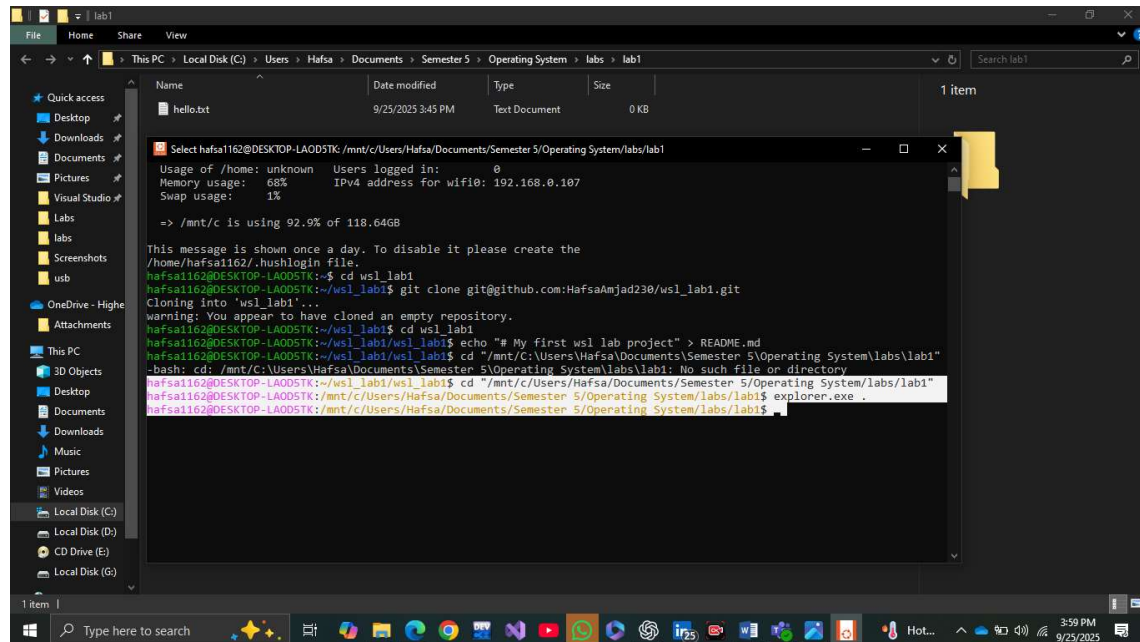
hafsa1162@DESKTOP-LA0D5TK:~$ cat ~/.ssh/id_ed25519.pub
ssh-ed25519 AAAAC3NzaC1lZD11NTE5AAAAIAIwHr5wrj2DWHMDKciw5/ofnJduIMtLgwS9vkv04pk0 hafsa1162@DESKTOP-LA0D5TK
hafsa1162@DESKTOP-LA0D5TK:~$ ls ~/.ssh
id_ed25519  id_ed25519.pub
hafsa1162@DESKTOP-LA0D5TK:~$ ssh -T git@github.com
The authenticity of host 'github.com (20.207.73.82)' can't be established.
ED25519 key fingerprint is SHA256:+D1Y3uvvV6TujJhbpZisF/zLDA0zPMSvHdkr4UvCOqU.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? y
Please type 'yes', 'no' or the fingerprint: yes
Warning: Permanently added 'github.com' (ED25519) to the list of known hosts.
Hi hafsa1162! You've successfully authenticated, but GitHub does not provide shell access.
hafsa1162@DESKTOP-LA0D5TK:~$ git clone git@github.com:username/repository.git
Cloning into 'repository'...
Connection closed by 20.207.73.82 port 22
fatal: Could not read from remote repository.

Please make sure you have the correct access rights
and the repository exists.
hafsa1162@DESKTOP-LA0D5TK:~$ git clone git@github.com:hafsa1162/wsl_lab1.git
Cloning into 'wsl_lab1'...
ERROR: Repository not found.
fatal: Could not read from remote repository.
```

Task 03: Linux filesystem and directory structure

Step 1: Explore Linux filesystem and basic linux files.

Step 2: Explore how Ubuntu (Linux) can access Windows file system under /mnt/c/.



Step 3: Practice creating files in Windows and accessing them in Ubuntu.

