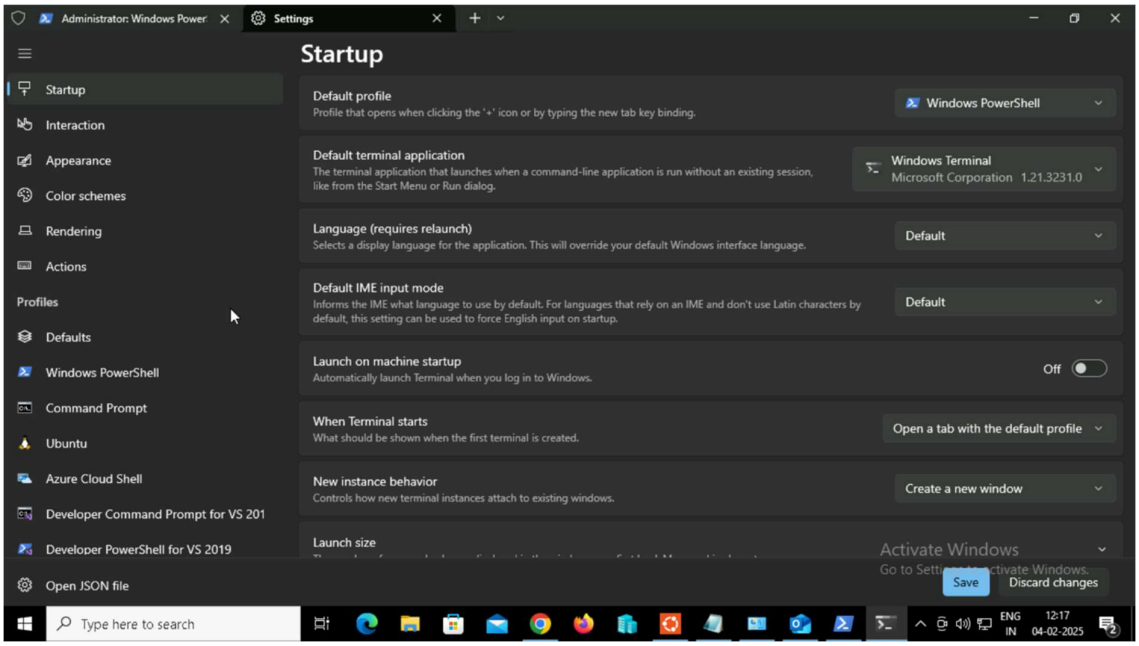
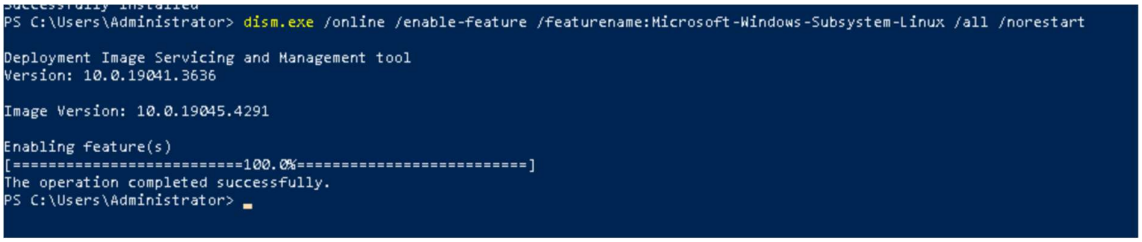
Windows Subsystem for Linux 2

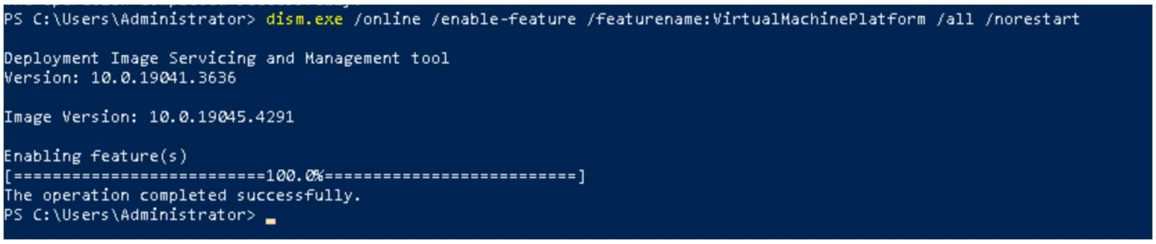
1. Install Windows Terminal



2. Enable WSL2 (Windows 10)

Execute the following commands in a Windows Powershell terminal run as an Administrator





Start WSL2 as the default by entering the following command in a Windows PowerShell or command prompt:

```
PS C:\Users\Administrator> wsl --set-default-version 2
For information on key differences with WSL 2 please visit https://aka.ms/wsl2
The operation completed successfully.
PS C:\Users\Administrator>
```

3. Download Linux

Display a list of available Linux distros

```
PS C:\Users\Administrator> wsl --list --online
The following is a list of valid distributions that can be installed.
Install using 'wsl.exe --install <Distro>'.

NAME                            FRIENDLY NAME
Ubuntu                          Ubuntu
Debian                          Debian GNU/Linux
kali-linux                      Kali Linux Rolling
Ubuntu-18.04                    Ubuntu 18.04 LTS
Ubuntu-20.04                    Ubuntu 20.04 LTS
Ubuntu-22.04                    Ubuntu 22.04 LTS
Ubuntu-24.04                    Ubuntu 24.04 LTS
OracleLinux_7_9                 Oracle Linux 7.9
OracleLinux_8_7                 Oracle Linux 8.7
OracleLinux_9_1                 Oracle Linux 9.1
openSUSE-Leap-15.6              openSUSE Leap 15.6
SUSE-Linux-Enterprise-15-SP5    SUSE Linux Enterprise 15 SP5
SUSE-Linux-Enterprise-15-SP6    SUSE Linux Enterprise 15 SP6
openSUSE-Tumbleweed             openSUSE Tumbleweed
PS C:\Users\Administrator>
```

Install the default Ubuntu 20.04 distro

```
PS C:\Users\Administrator> wsl --install
Ubuntu is already installed.
Launching Ubuntu...
root@348b1b94d28058d:~#
```

4. Update Linux

Update Ubuntu applications

```
root@348b1b94d28058d:~# sudo apt update
Hit:1 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:2 http://archive.ubuntu.com/ubuntu noble InRelease
Hit:3 http://archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:4 http://archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
61 packages can be upgraded. Run 'apt list --upgradable' to see them.
root@348b1b94d28058d:~#
```

```
root@348b1b94d28058d:~# sudo apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
  libcgi-fast-perl libcgi-pm-perl libclone-perl libconfuse-common libconfuse2 libencode-locale-perl libfcgi-bin libfcgi-perl libfcgi0t64
  libhtml-parser-perl libhtml-tagset-perl libhttp-date-perl libhttp-message-perl libio-html-perl libllvm17t64 liblwp-mediatypes-perl libtimedate-perl
  liburi-perl
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
  libllvm19 mesa-libgallium
The following upgrades have been deferred due to phasing:
  libunwind8 wsl-setup
The following packages will be upgraded:
  bsdextrautils bsdutils eject fdisk kmod libattr1 libblkid1 libbsd0 libcap2 libcap2-bin libdrm-amdgpu1 libdrm-common libdrm-intel1 libdrm-nouveau2
  libdrm-radeon1 libdrm2 libdw1t64 libegl-mesa0 libelf1t64 libfdisk1 libgbm1 libgl1-mesa-dri libglapi-mesa libglx-mesa0 libgmp10 libgpg-error-l10n
  libgpg-error0 libidn2-0 libkmod2 libmd0 libmount1 libmpfr6 libnghttp2-14 libnss-systemd libpam-cap libpam-systemd libpcre2-8-0 libperl5.38t64 libselinux1
  libsmartcols1 libsqlite3-0 libsystemd-shared libsystemd0 libudev1 libunistring5 libuuid1 mesa-vulkan-drivers mount perl perl-base perl-modules-5.38
  systemd systemd-dev systemd-resolved systemd-sysv systemd-timesyncd udev util-linux uuid-runtime
59 upgraded, 2 newly installed, 0 to remove and 2 not upgraded.
Need to get 77.8 MB of archives.
After this operation, 159 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 bsdutils amd64 1:2.39.3-9ubuntu6.2 [95.2 kB]
Get:2 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 libperl5.38t64 amd64 5.38.2-3.2build2.1 [4867 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 perl amd64 5.38.2-3.2build2.1 [231 kB]
Get:4 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 perl-base amd64 5.38.2-3.2build2.1 [1823 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 perl-modules-5.38 all 5.38.2-3.2build2.1 [3110 kB]
Get:6 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 util-linux amd64 2.39.3-9ubuntu6.2 [1127 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble-updates/main amd64 mount amd64 2.39.3-9ubuntu6.2 [118 kB]
```


Check for Linux kernel updates.

```
root@348b1b94d28058d:~# wsl --update
Unknown command: --update
WSL
Wsman Shell commandLine, version 0.2.1

USAGE: wsl COMMAND [PARAMS...]

COMMANDS:
identify  - WS-Identify
enum      - WS-Enumerate
get       - WS-Get
put       - WS-Put
invoke    - WS-Invoke
xclean    - Delete all files generated by this tool set
xcred     - Create or display credential file
xcert     - Get server certificate (saved to <IPADDRESS>.crt)

PARAMS specification is specific to a COMMAND.

Output will be saved to ./response.xml. If you want to run parallel
executions in the same directory, define RTFILEPREFIX in the environment.
Doing so may significantly increase files generated.

Requires: curl, xmllint, GNU core utilities.
Optional: xsltproc for output formatting, gpg for encrypted credential.
Optional: wget as alternate for curl when not available.
root@348b1b94d28058d:~#
```

5. Switch Between WSL1 and WSL2

```
PS C:\Users\Administrator> wsl --list --verbose
  NAME              STATE           VERSION
* docker-desktop    Stopped         2
  Ubuntu            Running         2
PS C:\Users\Administrator>
```

To switch Ubuntu to WSL2

```
PS C:\Users\Administrator> wsl --set-version Ubuntu 2
For information on key differences with WSL 2 please visit https://aka.ms/wsl2
Conversion in progress, this may take a few minutes.
The operation completed successfully.
```

To switch Ubuntu to WSL1

```
PS C:\Users\Administrator> wsl --set-version Ubuntu 1
Conversion in progress, this may take a few minutes.
The operation completed successfully.
PS C:\Users\Administrator>
```

6. Set a Default Linux Distribution

List your Linux installations.

```
PS C:\Users\Administrator> wsl --list
Windows Subsystem for Linux Distributions:
docker-desktop (Default)
Ubuntu
PS C:\Users\Administrator>
```

Set a default.

```
PS C:\Users\Administrator> wsl --setdefault Ubuntu
The operation completed successfully.
PS C:\Users\Administrator>
```

7. Run Linux as a Specific User

Run your default distribution as a specific user.

```
PS C:\Users\Administrator> wsl --user anu
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 5.15.167.4-microsoft-standard-WSL2 x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Tue Feb  4 09:14:38 UTC 2025

  System load:  0.08               Processes:             49
  Usage of /:   0.2% of 1006.85GB  Users logged in:       0
  Memory usage: 5%                 IPv4 address for eth0: 172.30.10.97
  Swap usage:   0%                 IPv4 address for eth0: 192.168.1.100

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

This message is shown once a day. To disable it please create the
/home/anu/.hushlogin file.
anu@348b1b94d28058d:/mnt/c/Users/Administrator$
```

8. Move or Clone Your Linux Disk Image

Make a directory.

```
anu@348b1b94d28058d:/mnt/c/Users/Administrator$ mkdir D:\backup
```

Export one by name to a backup .tar file

```
PS C:\Users\Administrator> wsl --export Ubuntu D:\backup\ubuntu.tar
Export in progress, this may take a few minutes.
The operation completed successfully.
PS C:\Users\Administrator>
```

Unregister that distro to remove it from the C

```
PS C:\Users\Administrator> wsl --unregister Ubuntu
Unregistering.
The operation completed successfully.
```

Import the backup into a new WSL2 distro at another location.

```
PS C:\Users\Administrator> wsl --import Ubuntu D:\wsl D:\backup\ubuntu.tar
Import in progress, this may take a few minutes.
The operation completed successfully.
PS C:\Users\Administrator>
```

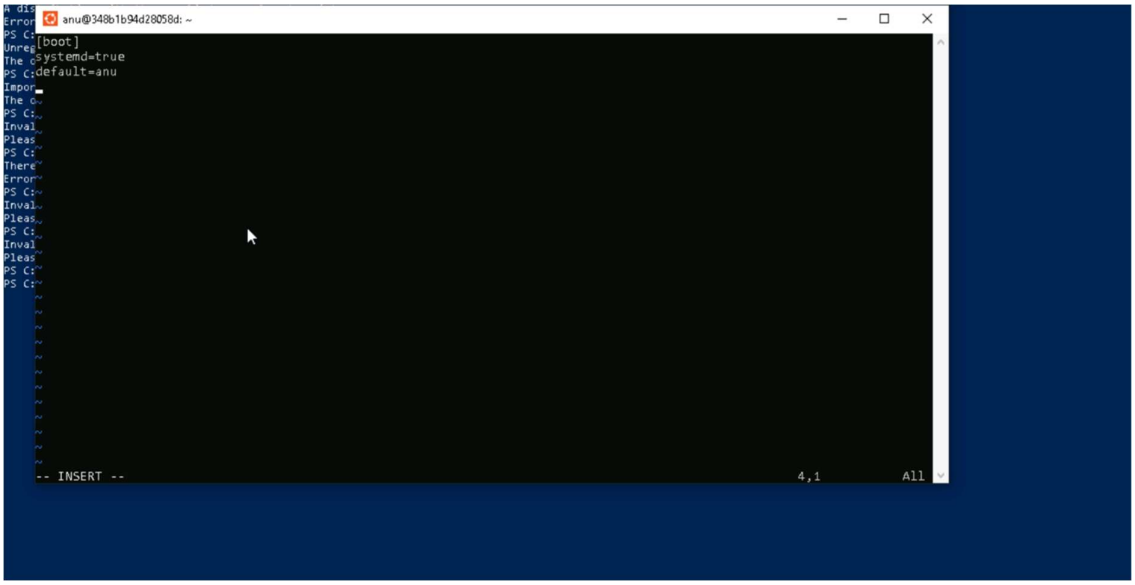
To revert to your own account.

```
PS C:\Users\Administrator> ubuntu config --default-user anu
PS C:\Users\Administrator>
```

Define a user by logging on to the distro

```
anu@348b1b94d28058d:~$ sudo vi /etc/wsl/conf
```

Add the following lines to the file

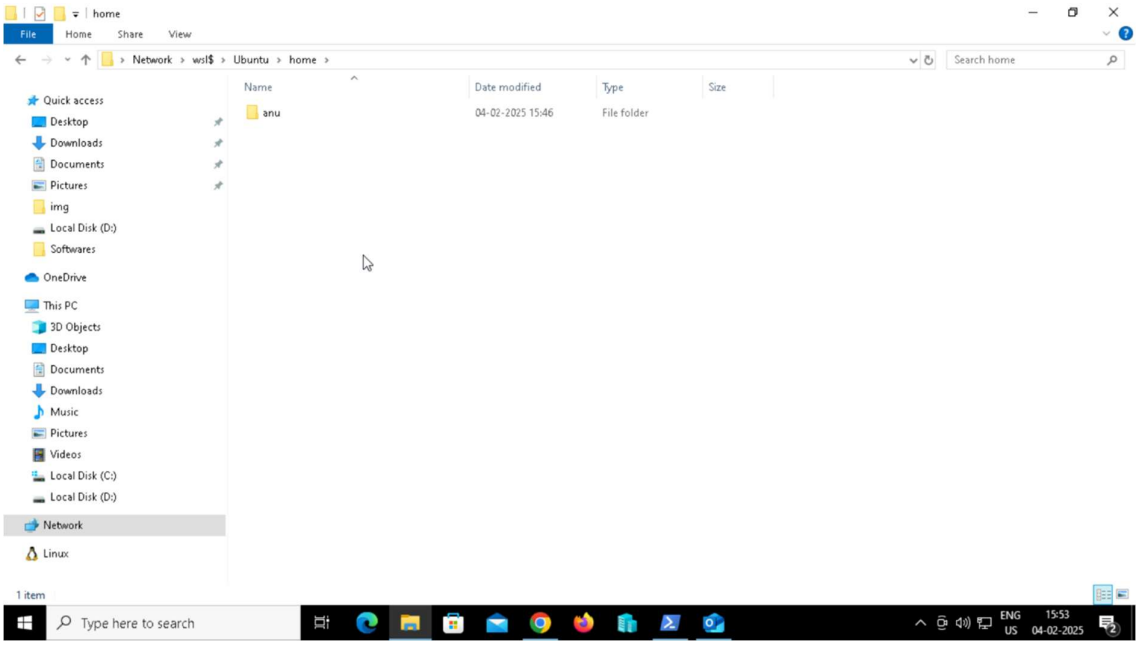


Delete the backup file

```
PS C:\Users\Administrator> wsl --terminate Ubuntu
The operation completed successfully.
PS C:\Users\Administrator>
```

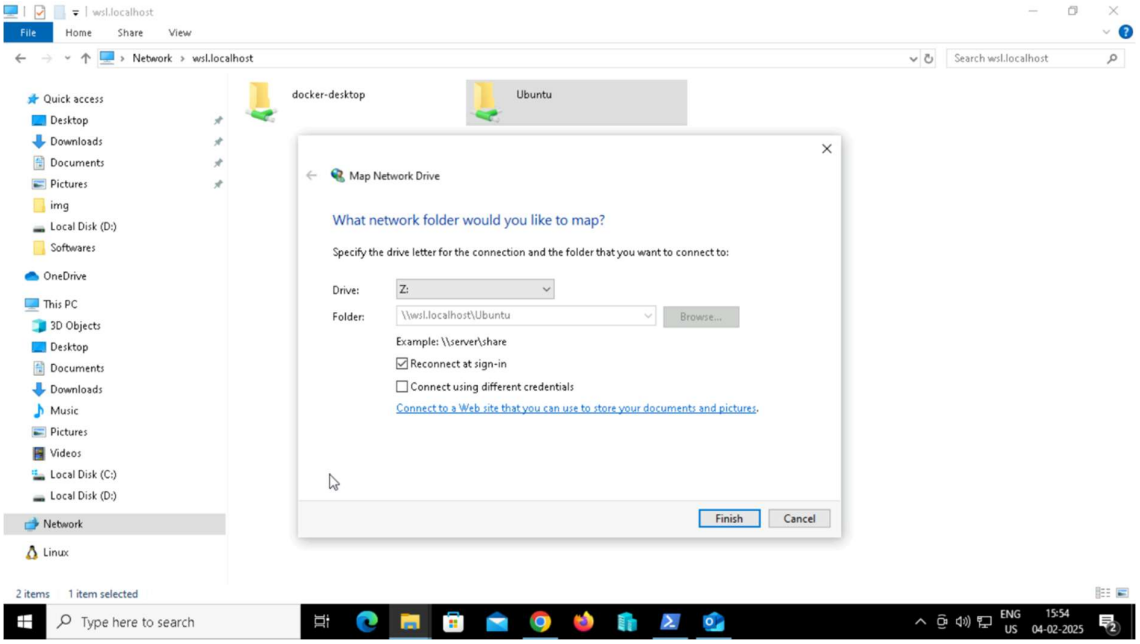
9. Access Linux Files from Windows

You can access WSL2 files from Windows by navigating to \\wsl$\.



10.Map a Network Drive

Mount a network drive to \\wsl$\Ubuntu\ by opening \\wsl$\ in File Explorer, right-clicking the Ubuntu folder, and choosing Map network drive

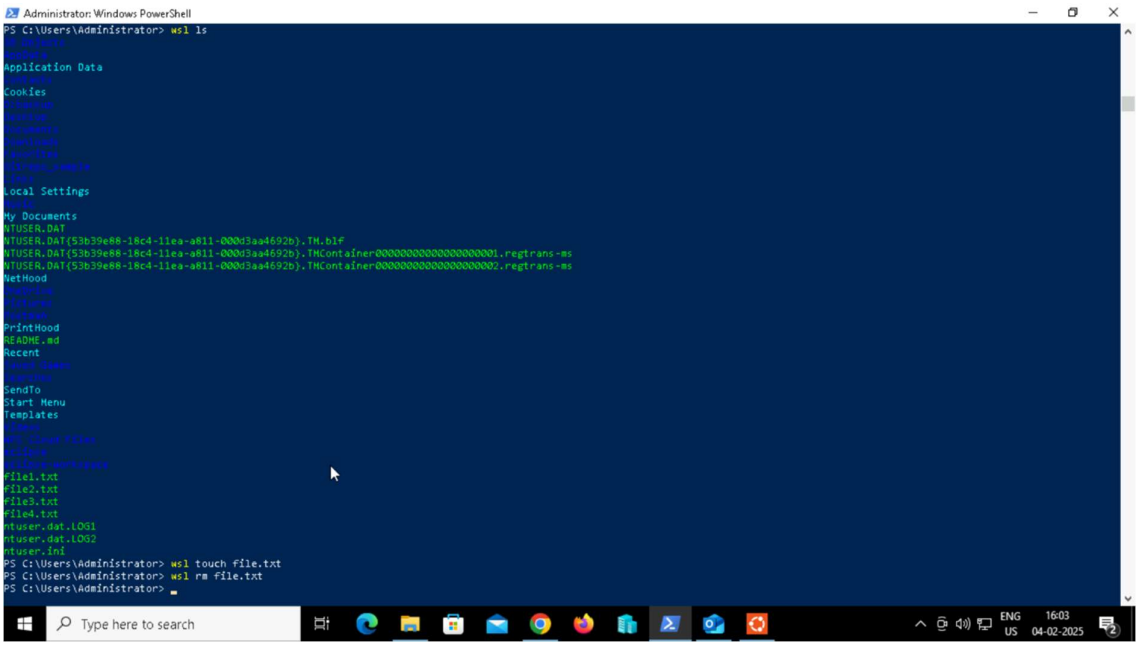


11. Accessing Windows Files from Linux

The WSL2 access Windows files capability allows seamless interaction with files stored on your Windows drives through the /mnt/ directory.

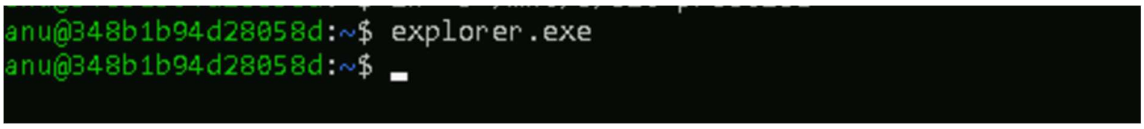
12. Run Linux Commands from Windows

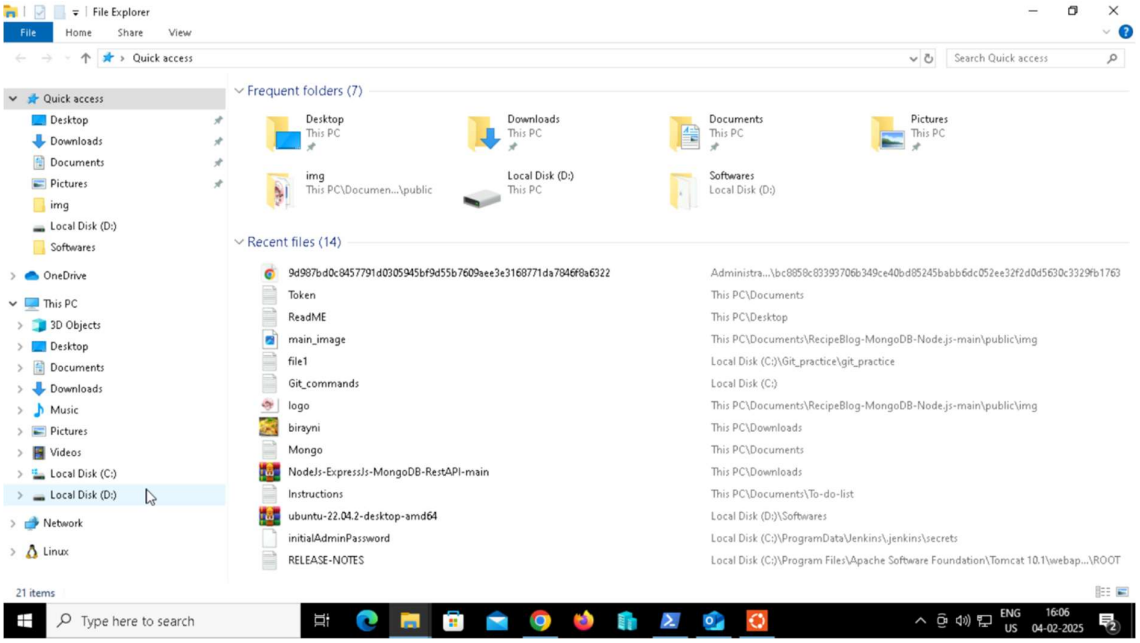
Any Linux (bash) shell command can be run from a Windows Powershell



13. Run Windows Applications from Linux

Through Windows WSL2, you can launch Windows applications





14. Install Applications

```
anu@348b1b94d28058d:~$ git config --global core.autocrlf input
anu@348b1b94d28058d:~$ sudo apt update
[sudo] password for anu:
Hit:1 http://archive.ubuntu.com/ubuntu noble InRelease
Get:2 http://security.ubuntu.com/ubuntu noble-security InRelease [126 kB]
Get:3 http://archive.ubuntu.com/ubuntu noble-updates InRelease [126 kB]
Get:4 http://security.ubuntu.com/ubuntu noble-security/main amd64 Packages [615 kB]
Get:5 http://archive.ubuntu.com/ubuntu noble-backports InRelease [126 kB]
Get:6 http://security.ubuntu.com/ubuntu noble-security/main Translation-en [118 kB]
Get:7 http://archive.ubuntu.com/ubuntu noble/universe amd64 Packages [15.0 MB]
Get:8 http://security.ubuntu.com/ubuntu noble-security/main amd64 Components [8972 B]
Get:9 http://security.ubuntu.com/ubuntu noble-security/universe amd64 Packages [803 kB]
Get:10 http://security.ubuntu.com/ubuntu noble-security/universe Translation-en [171 kB]
22% [7 Packages 1591 kB/15.0 MB 11%] [Waiting for headers]
```

```
anu@348b1b94d28058d:~$ sudo apt install git-all
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  apache2 apache2-bin apache2-data apache2-utils cvs cvsps git git-cvs git-doc git-email git-gui git-man git-mediawiki git-svn gitk gitweb
  libalgorithm-c3-perl libaprit64 libaprutil1-dbd-sqlite3 libaprutil1-ldap libaprutil1t64 libauthen-sasl-perl libb-hooks-endofscope-perl
  libb-hooks-op-check-perl libcgi-fast-perl libcgi-pm-perl libclass-c3-perl libclass-c3-xs-perl libclass-data-inheritable-perl libclass-inspector-perl
  libclass-method-modifiers-perl libclass-singleton-perl libclass-xsaccessor-perl libclone-perl libcommon-sense-perl libdata-dump-perl libdata-optlist-perl
  libdatetime-format-builder-perl libdatetime-format-iso8601-perl libdatetime-format-strptime-perl libdatetime-locale-perl libdatetime-perl
  libdatetime-timezone-perl libdbd-sqlite3-perl libdbi-perl libdevel-callchecker-perl libdevel-caller-perl libdevel-lexalias-perl libdevel-stacktrace-perl
  libdigest-bubblebabble-perl libdigest-hmac-perl libdynaloader-functions-perl libemail-valid-perl libencode-locale-perl libeval-closure-perl
  libexception-class-perl libfcgi-bin libfcgi-perl libfcgi0t64 libfile-listing-perl libfile-sharedir-perl libfont-afm-perl libhtml-form-perl
  libhtml-format-perl libhtml-parser-perl libhtml-tagset-perl libhtml-tree-perl libhttp-cookies-perl libhttp-daemon-perl libhttp-date-perl
  libhttp-message-perl libhttp-negotiate-perl libidn12 libio-html-perl libio-socket-ssl-perl libjson-perl libjson-xs-perl liblua5.4-0
  liblwp-mediatypes-perl liblwp-protocol-https-perl libmailtools-perl libmediawiki-api-perl libmodule-implementation-perl libmodule-runtime-perl
  libmro-compat-perl libnamespace-autoclean-perl libnamespace-clean-perl libnet-dns-perl libnet-dns-sec-perl libnet-domain-tld-perl libnet-http-perl
  libnet-libidn-perl libnet-smtp-ssl-perl libnet-ssleay-perl libpackage-stash-perl libpackage-stash-xs-perl libpadwalker-perl libparams-classify-perl
  libparams-util-perl libparams-validate-perl libparams-validationcompiler-perl libperl4-corelibs-perl libreadonly-perl libref-util-perl
  libref-util-xs-perl librole-tiny-perl libserf-1-1 libspecio-perl libsub-exporter-perl libsub-exporter-progressive-perl libsub-identify-perl
  libsub-install-perl libsub-name-perl libsub-quote-perl libsvn-perl libsvn1 libtcl8.6 libterm-readkey-perl libtimedate-perl libtk8.6 libtry-tiny-perl
  libtypes-serialiser-perl liburi-perl libutf8proc3 libvariable-magic-perl libwww-perl libwww-robotrules-perl libxft2 libxss1 libxstring-perl
```

15. Installing Graphical Linux Applications