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Objective:

Install ns-2 and get familiar with the basic commands and script structure.

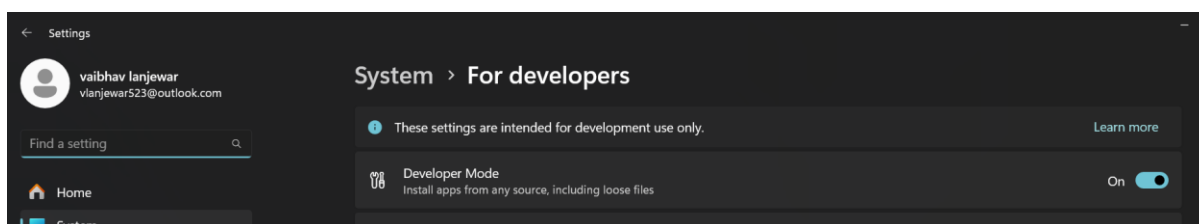
Tasks:

- Install ns-2 on your system.
 - Run a simple wired network simulation.
 - Analyze the output trace files and understand the format.
-

Report:

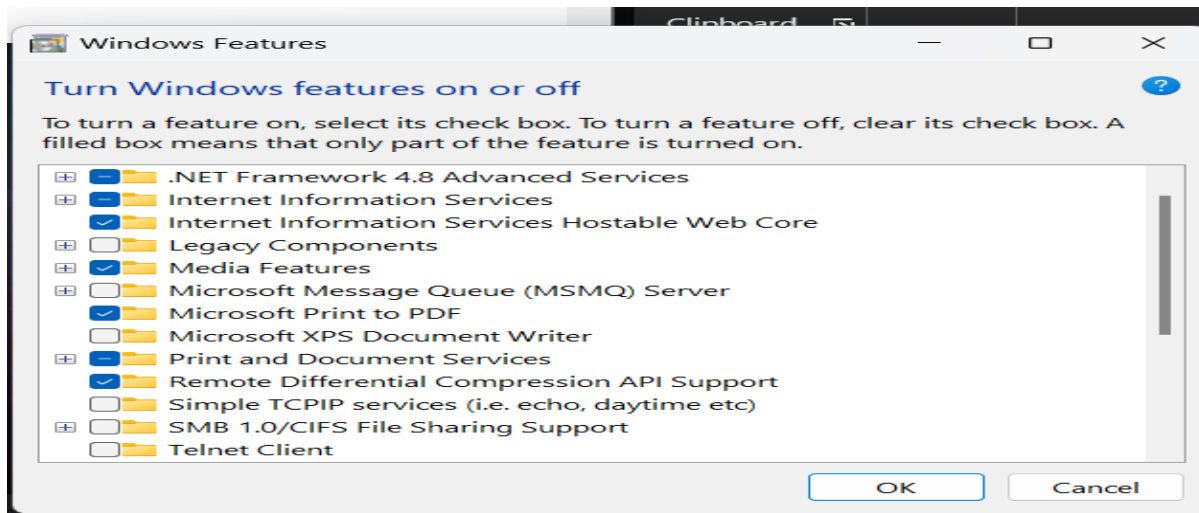
Enable Developer Mode:

- Open Developer Settings via the search (Windows + S).
- Enable "Install apps from any source..." and confirm.

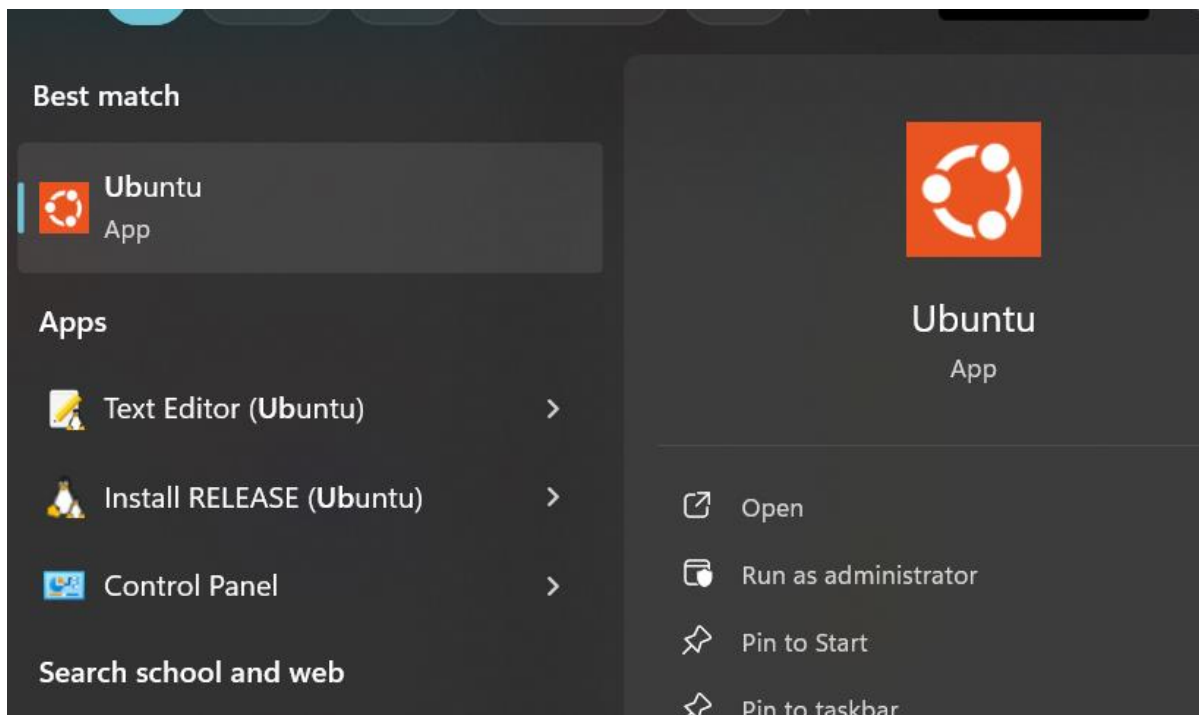


Turn on Windows Subsystem for Linux (WSL):

- Go to "Turn Windows Features on or off" via the search.
- Check the "Windows Subsystem for Linux" option and apply.



Ubuntu is installed from Microsoft store



Install NS2 and Dependencies:

```
vnbl@LAPTOP-6B7F23AA: ~$ sudo apt update
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.133.1-microsoft-standard-WSL2 x86_64)

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

 * 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/vnbl/.hushlogin file.
vnbl@LAPTOP-6B7F23AA:~$
```

sudo apt update

```
This message is shown once a day. To disable it please create the
/home/vnbl/.hushlogin file.
vnbl@LAPTOP-6B7F23AA:~$ sudo apt update
[sudo] password for vnbl:
Hit:1 http://archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:3 http://archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:4 http://archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:5 http://archive.ubuntu.com/ubuntu jammy-updates/main amd64 Packages [1941 kB]
Get:6 http://security.ubuntu.com/ubuntu jammy-security/main amd64 Packages [129 kB]
```

sudo apt-get [install](#) ns2

```
55 packages can be upgraded. Run 'apt list --upgradable' to see them.
vnbl@LAPTOP-6B7F23AA:~$ sudo apt-get install ns2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ns2 is already the newest version (2.35+dfsg-3.1).
0 upgraded, 0 newly installed, 0 to remove and 55 not upgraded.
vnbl@LAPTOP-6B7F23AA:~$
```

sudo apt-get install nam

```
0 upgraded, 0 newly installed, 0 to remove and 55 not upgraded.
vnbl@LAPTOP-6B7F23AA:~$ sudo apt-get install nam
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be upgraded:
  nam
1 upgraded, 0 newly installed, 0 to remove and 54 not upgraded.
Need to get 0 B/201 kB of archives.
After this operation, 1734 kB disk space will be freed.
(Reading database ... 48854 files and directories currently installed.)
Preparing to unpack ../nam_1.15-5.2_amd64.deb ...
Unpacking nam (1.15-5.2) over (1.14) ...
```

sudo apt-get install gedit

```
Processing triggers for man-db (2.10.2-1) ...
vnbl@LAPTOP-6B7F23AA:~$ sudo apt-get install gedit
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
gedit is already the newest version (41.0-3).
0 upgraded, 0 newly installed, 0 to remove and 54 not upgraded.
vnbl@LAPTOP-6B7F23AA:~$ |
```

```
0 upgraded, 0 newly installed, 0 to remove and 54 not upgraded.
vnbl@LAPTOP-6B7F23AA:~$ sudo apt install tcl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
tcl is already the newest version (8.6.11+1build2).
0 upgraded, 0 newly installed, 0 to remove and 54 not upgraded.
vnbl@LAPTOP-6B7F23AA:~$ |
```

Set Working Directory:

```
vnbl@LAPTOP-6B7F23AA:~$ cd /mnt
vnbl@LAPTOP-6B7F23AA:/mnt$ cd c/
vnbl@LAPTOP-6B7F23AA:/mnt/c$ cd Users/vlanj
vnbl@LAPTOP-6B7F23AA:/mnt/c/Users/vlanj$ cd Desktop/
```

Write and Save a TCL Program:

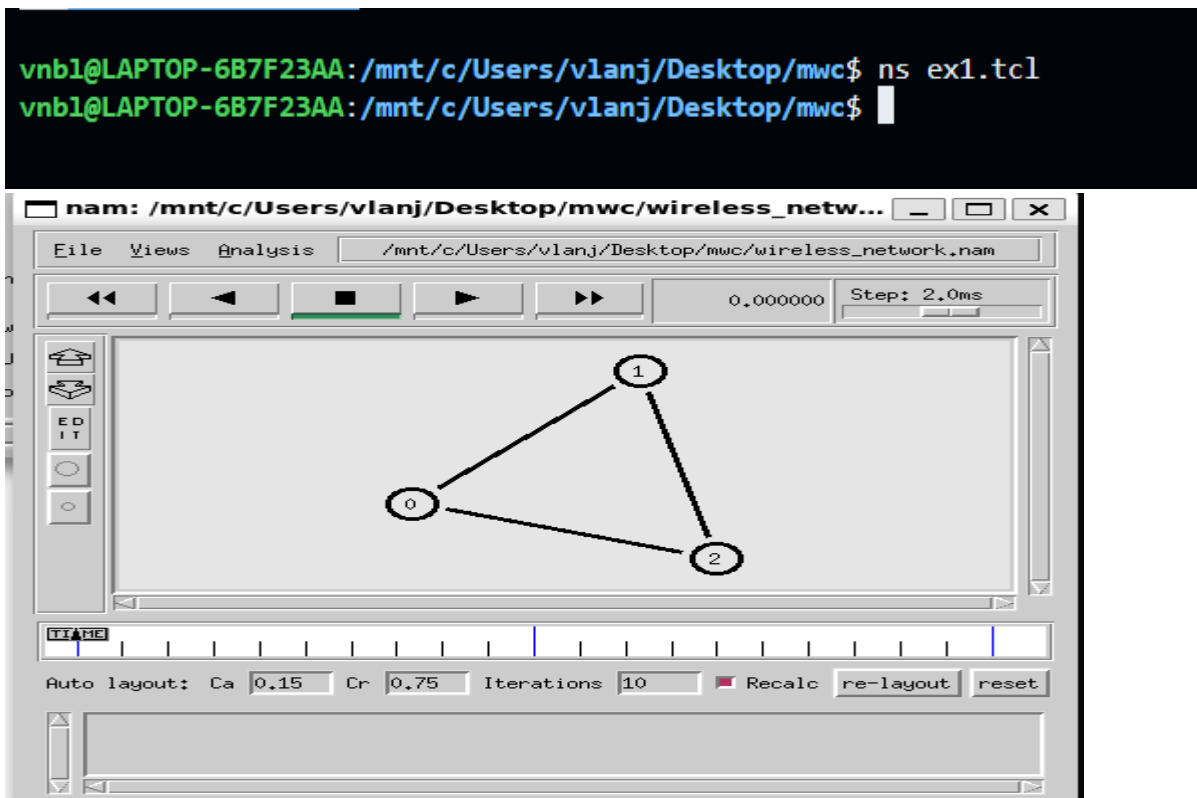
export DISPLAY=:0

gedit ex1.tcl

```
vnbl@LAPTOP-6B7F23AA:~$ sudo apt install tcl
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
tcl is already the newest version (8.6.11+build2).
0 upgraded, 0 newly installed, 0 to remove and 54 not upgraded.
vnbl@LAPTOP-6B7F23AA:~$ cd mnt
-bash: cd: mnt: No such file or directory
vnbl@LAPTOP-6B7F23AA:~$ cd /mnt
vnbl@LAPTOP-6B7F23AA:/mnt$ cd c/
vnbl@LAPTOP-6B7F23AA:/mnt/c$ cd Users/vlanj
vnbl@LAPTOP-6B7F23AA:/mnt/c/Users/vlanj$ cd Desktop/
vnbl@LAPTOP-6B7F23AA:/mnt/c/Users/vlanj/Desktop$ cd 7thsem/
-bash: cd: 7thsem/: No such file or directory
vnbl@LAPTOP-6B7F23AA:/mnt/c/Users/vlanj/Desktop$ cd 7thsem/
-bash: cd: 7thsem/: No such file or directory
vnbl@LAPTOP-6B7F23AA:/mnt/c/Users/vlanj/Desktop$ export DISPLAY=:0
gedit ex1.tcl

1 #create global variables
2
3 set ns [new Simulator]
4
5
6
7 #setting nam trace
8
9 set namf [open wired1.nam w]
10
11 $ns namtrace-all $namf
12
13
14
15 #open the trace file
16
17 set tracef [open wired1.tr w]
18
19 $ns trace-all $tracef
20
21 set proto rlm
22
23
24
```

ns ex1.tcl



Conclusion:

Following these steps will install NS2 on Windows 10/11, enabling users to write and run network simulation programs. Successful completion results in a NAM window showing the output of the executed program.

This summarized process provides a clear path for installing NS2 and running simulations on a Windows environment using WSL and Ubuntu.