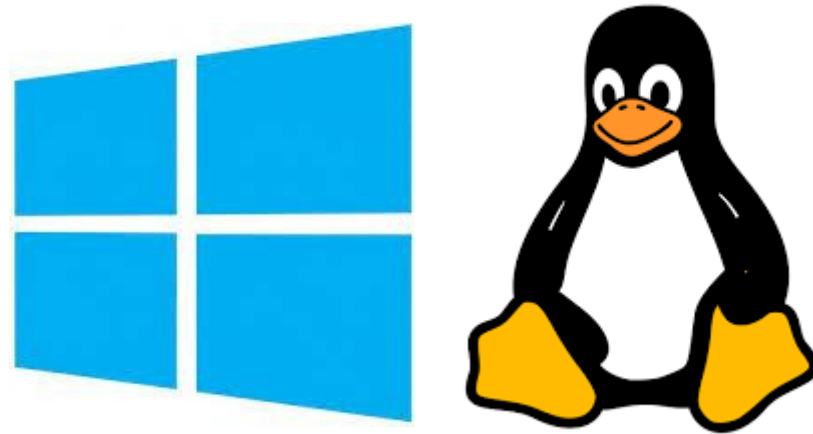


Windows and Linux Operating System Basic Commands



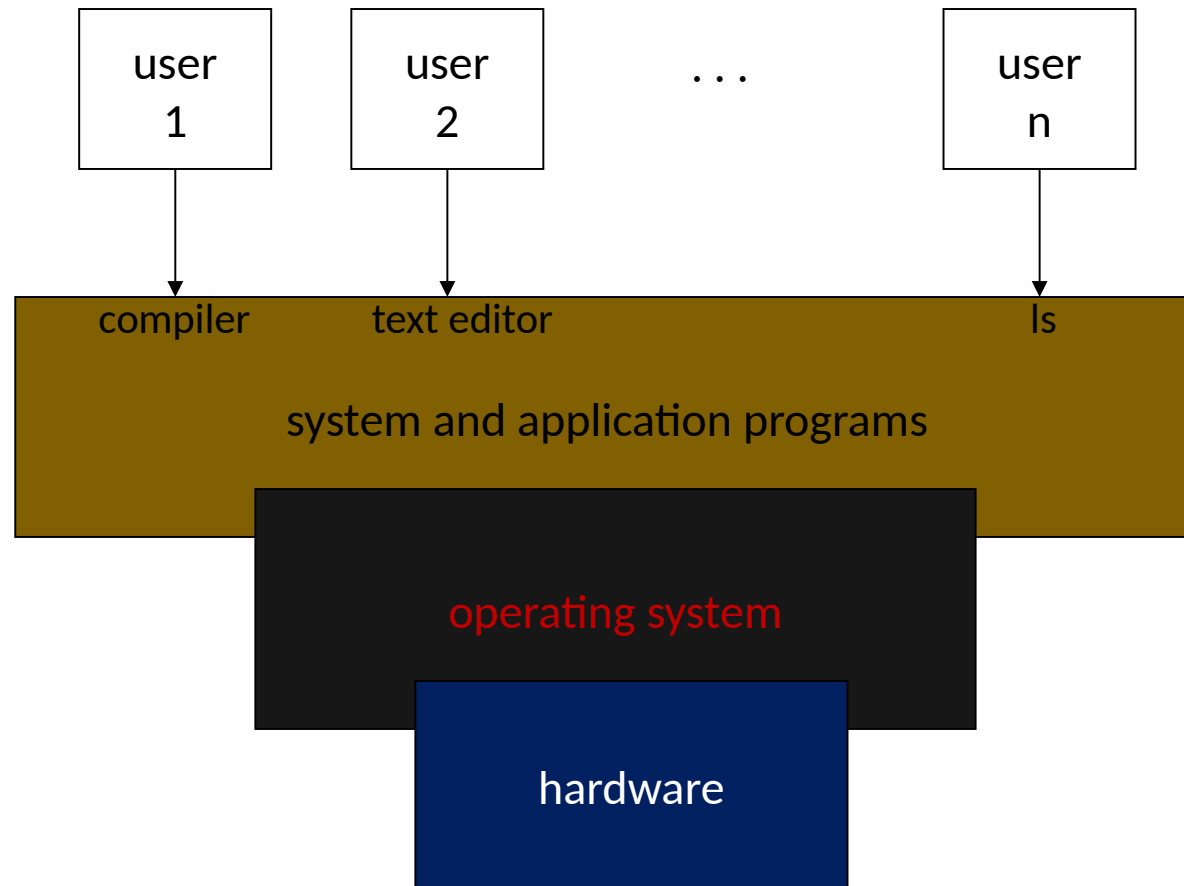
Contents

- Definition of Operating System
- Types of Operating System
- Hardware Basics
- Interaction with Computer (GUI and CLI)
- Basic Commands in Windows OS
- Basic Commands in Linux OS

Definition

- An operating system is an **intermediary** between a **computer user** and the **hardware**.
- Make the hardware **convenient** to use.
- Manages **system resources**.
- Use the hardware in an **efficient manner**.

System Diagram Operating System



Types of Operating Systems

- Batch OS
 - submit large number of jobs at one time
 - system decides what to run and when
- Time Sharing OS
 - multiple users connected to single machine
 - few processors, many terminals
- Single User Interactive OS
 - one user, one machine
 - traditional personal computer

Types of Operating Systems (Cont.)

- Parallel OS
 - traditional multiprocessor system
 - higher throughput and better fault tolerance
- Distributed OS
 - networked computers
- Real Time OS
 - very strict response time requirements
 - hardware or software

Hardware Basics

- OS and hardware closely tied together
- Many useful hardware features have been invented to compliment the OS
- Basic hardware resources
 - CPU
 - Memory
 - Disk
 - I/O

Ways to Interact with Computer

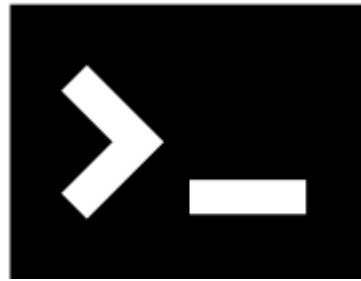
- The operating system enables the interaction between the **user** and **the device**.
- It does this by providing two user interfaces: **a command-line interface** (CLI) and a **graphical user interface** (GUI).



What is GUI?

- GUI is a **visual representation** of communication that makes it **easy** for users to interact with **electronic devices**.
- GUI combines many graphical representations, including graphic icons such as **menus, cursors, tabs, mouse, windows, and scroll bars**.

Ways to Interact with Computer (Cont.)



What is CLI?

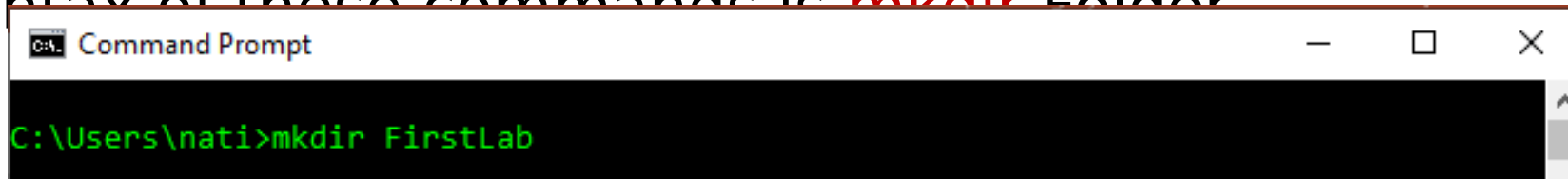
- CLI is a command-line program that **relies on text inputs** to perform operating system functions.
- CLI was the standard way of interacting with computing devices in the **early days of computing**.

NB: Both **GUI** and **CLI** has pros and cons.

Basic Commands of Windows OS

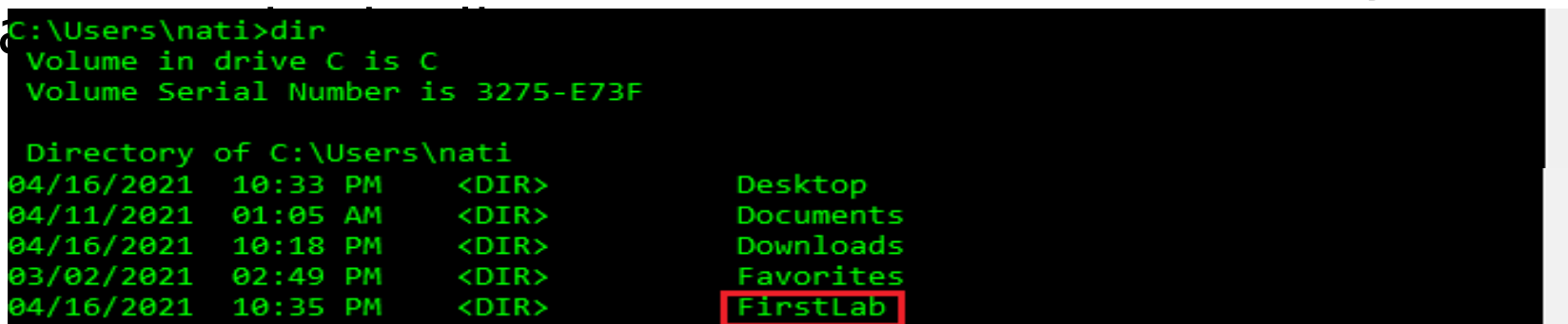
1. Create a New Directory / Folder (mkdir)

- You can make a new folder using the **mkdir** (Make Directory) command.
- The syntax of these commands is **mkdir Folder**



```
Command Prompt
C:\Users\nati>mkdir FirstLab
```

- To test if it worked, use the **dir** command. The newly created folder

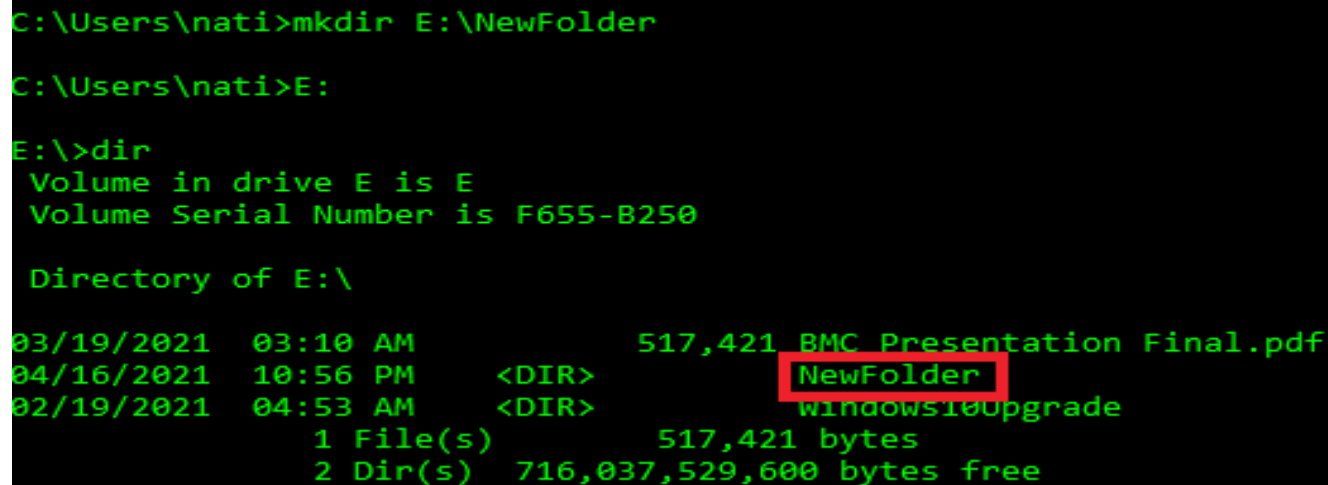


```
C:\Users\nati>dir
Volume in drive C is C
Volume Serial Number is 3275-E73F

Directory of C:\Users\nati
04/16/2021  10:33 PM    <DIR>          Desktop
04/11/2021  01:05 AM    <DIR>          Documents
04/16/2021  10:18 PM    <DIR>          Downloads
03/02/2021  02:49 PM    <DIR>          Favorites
04/16/2021  10:35 PM    <DIR>          FirstLab
```

Basic Commands of Windows OS

- If you are working on the “C:” drive and you want to create a new folder in “E:,” called Google, type **mkdir E:\NewFolder** and then press Enter.
- To test if it worked, type the drive “E:” then press enter.
- Use the **dir** command. The newly created folder appears in the list



The screenshot shows a Windows Command Prompt window with the following text:

```
C:\Users\nati>mkdir E:\NewFolder

C:\Users\nati>E:

E:\>dir
Volume in drive E is E
Volume Serial Number is F655-B250

Directory of E:\

03/19/2021  03:10 AM                517,421 BMC Presentation Final.pdf
04/16/2021  10:56 PM          <DIR>          NewFolder
02/19/2021  04:53 AM          <DIR>          windows10Upgrade
               1 File(s)                517,421 bytes
               2 Dir(s)  716,037,529,600 bytes free
```

The folder "NewFolder" is highlighted with a red box in the directory listing.

Basic Commands of Windows OS

2. Change the Drive

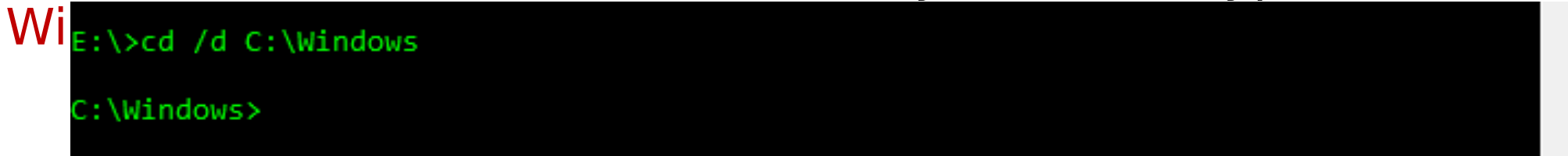
- If you wanted to change the drive from "C:" to "E:", type E: and then press Enter



A screenshot of a Windows Command Prompt window. The title bar reads "Command Prompt". The command prompt shows the current directory as "C:\Users\nati" and the user has entered "E:". The prompt then changes to "E:\>" after pressing Enter.

```
C:\Users\nati>E:  
E:\>
```

- If you are now on the "E:" drive and you want to go to the **Windows** folder from the "C:" drive, you should type **cd /d C:**



A screenshot of a Windows Command Prompt window. The command prompt shows the current directory as "E:\>" and the user has entered "cd /d C:\Windows". The prompt then changes to "C:\Windows>" after pressing Enter.

```
E:\>cd /d C:\Windows  
C:\Windows>
```

Basic Commands of Windows OS

3. Change the Directory / Folder (cd)

- Use **cd** to go to the top of the directory tree.



```
Command Prompt
C:\Users\nati>cd\
C:\>
```

- If you need to go to a specific folder from this drive run the command **CD Folder**.

• Th



```
Command Prompt
C:\>cd windows\system32
C:\Windows\System32>
```

Basic Commands of Windows OS

- Use the `cd..` command to go one folder up.



```
Command Prompt
C:\Windows\System32>cd ..
C:\Windows>
```

The screenshot shows a Windows Command Prompt window with a black background and green text. The title bar at the top reads 'Command Prompt'. The command prompt shows the current directory as 'C:\Windows\System32' and the command 'cd ..' has been entered and executed. The output shows the current directory has changed to 'C:\Windows'.

Basic Commands of Windows OS

4. List Hardware Information (**systeminfo**)

- Use **systeminfo** to know very basic information about your pc's hardware, like – motherboard, processor & ram.

Command Prompt

```
C:\Users\nati>systeminfo
```

```
Host Name:                DESKTOP-9MAJUMS
OS Name:                   Microsoft Windows 10 Pro
OS Version:                10.0.19042 N/A Build 19042
OS Manufacturer:          Microsoft Corporation
OS Configuration:         Standalone Workstation
OS Build Type:              Multiprocessor Free
Registered Owner:          nati
Registered Organization:
Product ID:                 00330-80000-00000-AA846
Original Install Date:      3/2/2021, 11:47:50 AM
System Boot Time:           4/15/2021, 11:10:37 PM
System Manufacturer:        Hewlett-Packard
System Model:               HP EliteBook Folio 9470m
System Type:                x64-based PC
```

Basic Commands of Windows OS

5. Check if Server is Reachable (ping)

- The ping command sends packets of data to a specific IP address (or domain) on a network.
- The ping lets you know how long it took to transmit that data and get a response.
- If you get the response properly then the connection of the device is working properly.
- If not there is a problem with the connection or in the network.

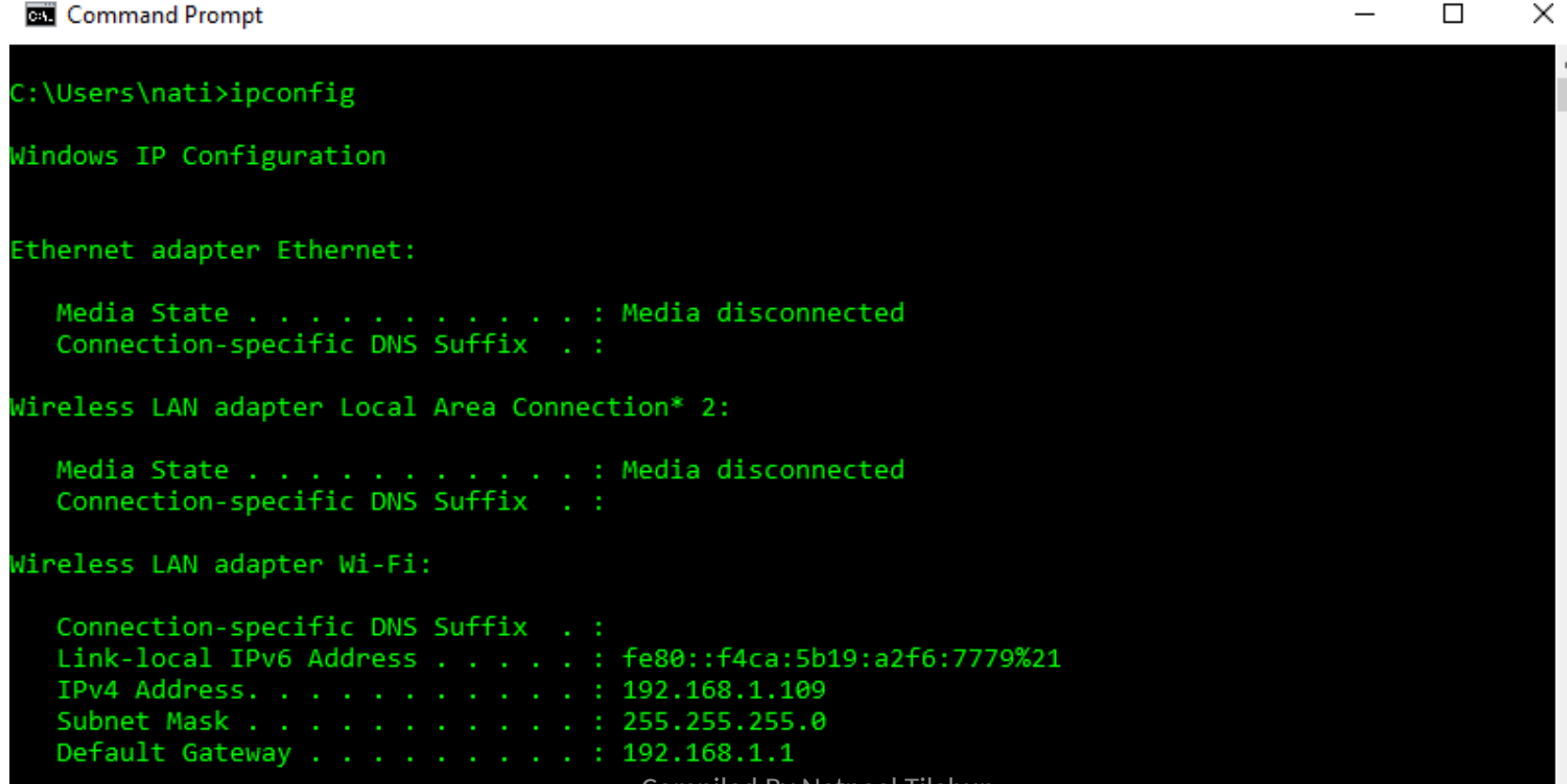
```
C:\Users\IBM COMPUTER>ping google.com
Pinging google.com [74.125.200.101] with 32 bytes of data:
Reply from 74.125.200.101: bytes=32 time=77ms TTL=104
Reply from 74.125.200.101: bytes=32 time=74ms TTL=104
Reply from 74.125.200.101: bytes=32 time=52ms TTL=104
Reply from 74.125.200.101: bytes=32 time=59ms TTL=104

Ping statistics for 74.125.200.101:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 52ms, Maximum = 77ms, Average = 65ms
```

Basic Commands of Windows OS

6. Networking Information (**ipconfig**)

- **ipconfig** will provide you your ip address along with your local network



```
Command Prompt
C:\Users\nati>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

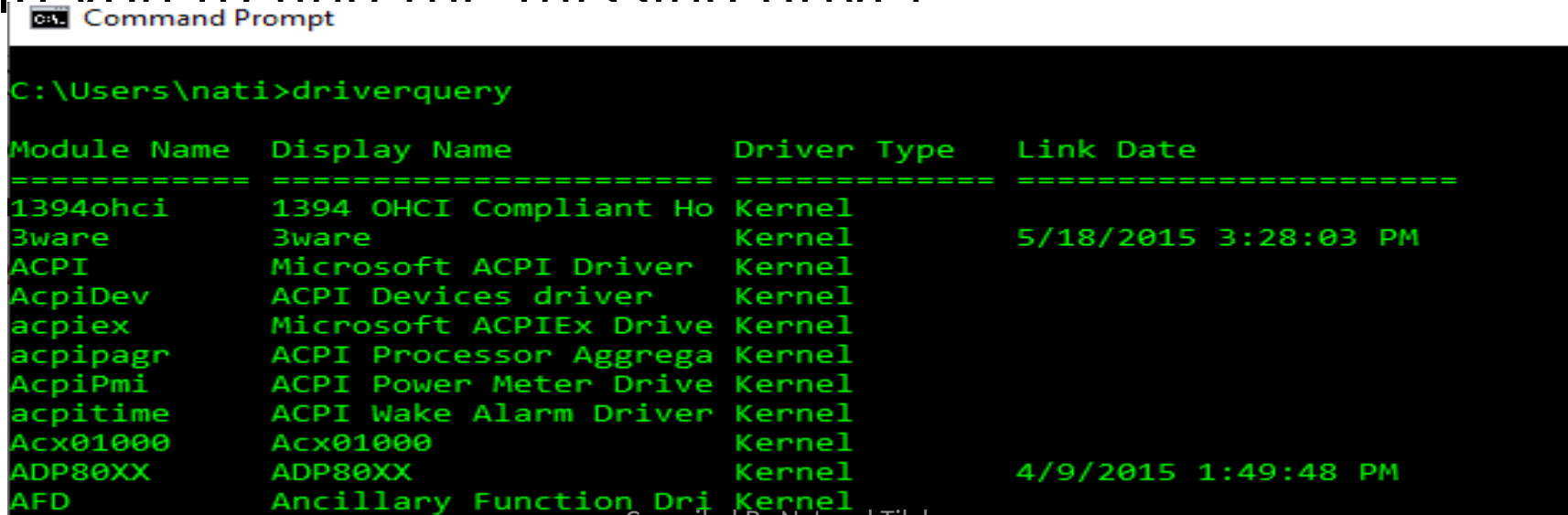
Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::f4ca:5b19:a2f6:7779%21
    IPv4 Address. . . . . : 192.168.1.109
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1
```

Basic Commands of Windows OS

7. Lists Installed Drivers (**driverquery**)

- Drivers are very important in your PC.
- Missing a important driver can hamper your work.
- Use **driverquery** command to get a full list of installed drivers in your pc.
- It'll help you to find the missing driver



```
C:\Users\nati>driverquery

Module Name      Display Name      Driver Type      Link Date
=====
1394ohci         1394 OHCI Compliant Ho Kernel
3ware            3ware             Kernel           5/18/2015 3:28:03 PM
ACPI             Microsoft ACPI Driver Kernel
AcpiDev          ACPI Devices driver Kernel
acpiex           Microsoft ACPIEx Drive Kernel
acpipagr         ACPI Processor Aggrega Kernel
AcpiPmi          ACPI Power Meter Drive Kernel
acpitime         ACPI Wake Alarm Driver Kernel
Acx01000         Acx01000          Kernel
ADP80XX          ADP80XX           Kernel           4/9/2015 1:49:48 PM
AFD              Ancillary Function Dri Kernel
```

Basic Commands of Windows OS

8. Scan and Repair System Files (`sfc /scannow`)

- `sfc /scannow` will scan and repair windows system files.
- But you must be run the cmd console as an administrator.

 Administrator: Command Prompt - `sfc /scannow`

```
Microsoft Windows [Version 10.0.19042.867]
(c) 2020 Microsoft Corporation. All rights reserved.

C:\WINDOWS\system32>sfc /scannow

Beginning system scan. This process will take some time.

Beginning verification phase of system scan.
Verification 4% complete.
```

Basic Commands of Windows OS

9. List Currently Running Task (**tasklist**)

- Use task list to get currant list of all tasks running on your pc.

```
C:\Users\nati>tasklist
```

Image Name	PID	Session Name	Session#	Mem Usage
System Idle Process	0	Services	0	8 K
System	4	Services	0	10,788 K
Registry	100	Services	0	116,384 K
smss.exe	424	Services	0	1,124 K
csrss.exe	552	Services	0	5,788 K
wininit.exe	672	Services	0	6,744 K
services.exe	720	Services	0	9,964 K
lsass.exe	732	Services	0	19,928 K
svchost.exe	928	Services	0	33,152 K
fontdrvhost.exe	956	Services	0	13,332 K
svchost.exe	508	Services	0	19,204 K
svchost.exe	644	Services	0	8,340 K
svchost.exe	1176	Services	0	5,824 K
svchost.exe	1256	Services	0	10,276 K
svchost.exe	1264	Services	0	11,612 K
svchost.exe	1320	Services	0	15,444 K
svchost.exe	1360	Services	0	13,476 K

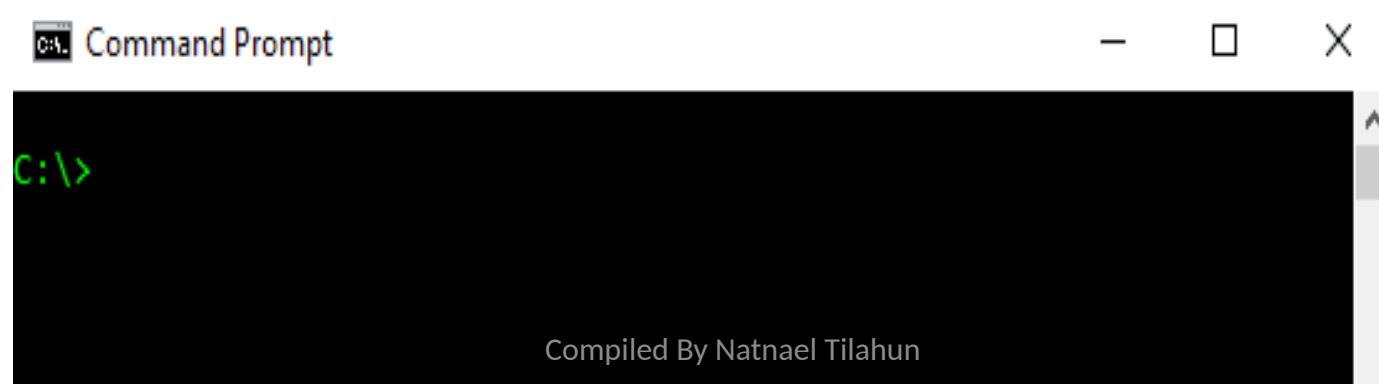
Basic Commands of Windows OS

10. Clear Screen (cls)

- To clear the existing commands in prompts type **cls** and press Enter.

```
C:\Users\nati\Desktop>cd ..  
C:\Users\nati>cd ..  
C:\Users>cd ..  
C:\>cls
```

- After hit the enter, the screen cleared



Basic Commands of Windows OS

11. Create a New File

Follow this two steps to create and display the file

Step 1: Echo Hello World > "file.txt"

Step 2: type "file.txt"

```
C:\Users\nati\Desktop>cd LabFile
C:\Users\nati\Desktop\LabFile>echo This is the first lab class > "file.txt"
C:\Users\nati\Desktop\LabFile>dir
Volume in drive C is C
Volume Serial Number is 3275-E73F

Directory of C:\Users\nati\Desktop\LabFile

04/17/2021  02:19 AM    <DIR>          .
04/17/2021  02:19 AM    <DIR>          ..
04/17/2021  02:19 AM                30 file.txt
                1 File(s)                30 bytes
                2 Dir(s)  423,067,402,240 bytes free

C:\Users\nati\Desktop\LabFile>type "file.txt"
This is the first lab class
C:\Users\nati\Desktop\LabFile>
```

Basic Commands of Windows OS

- To add or append text to an existing text file, we need to use the **greater than symbol twice**.
- **echo** Goodbye World >> "file.txt"

```
C:\Users\nati\Desktop\LabFile>echo adding some text >> "file.txt"

C:\Users\nati\Desktop\LabFile>type "file.txt"
This is the first lab class
adding some text
```

Basic Commands of Windows OS

12. Deleting File (del)

- Used to delete the file created.
- Command: **del** <file with extension>

```
C:\Users\nati\Desktop\LabFile>dir
Volume in drive C is C
Volume Serial Number is 3275-E73F

Directory of C:\Users\nati\Desktop\LabFile

04/17/2021  02:19 AM      <DIR>          .
04/17/2021  02:19 AM      <DIR>          ..
04/17/2021  02:32 AM                49 file.txt
                1 File(s)                49 bytes
                2 Dir(s)  423,065,047,040 bytes free

C:\Users\nati\Desktop\LabFile>del file.txt

C:\Users\nati\Desktop\LabFile>dir
Volume in drive C is C
Volume Serial Number is 3275-E73F

Directory of C:\Users\nati\Desktop\LabFile

04/17/2021  02:38 AM      <DIR>          .
04/17/2021  02:38 AM      <DIR>          ..
                0 File(s)                  0 bytes
                2 Dir(s)  423,063,499,328 bytes free
```

Basic Commands of Windows OS

13. Deleting Folder (del)

- Used to delete the folder created.
- Command: **rmdir** <foldername>

Step 1: Create a folder

```
C:\Users\nati\Desktop>mkdir LaB
```

Step 2: Check the folder with the command **dir**

```
04/06/2021  06:14 PM    <DIR>          Int2CS
04/17/2021  03:06 AM    <DIR>          LaB
04/15/2021  01:43 AM    <DIR>          Netsi
04/16/2021  11:01 PM             14,562 new_image.PNG
04/10/2021  09:52 AM             28,749 new_image.png
04/11/2021  01:47 AM    <DIR>          NFM
04/10/2021  10:33 PM             1,122,257 nfmr.ipynb
04/13/2021  01:19 AM             13,638 Note.docx
```

Step 3: Delete the folder with command **rmdir**

```
C:\Users\nati\Desktop>rmdir LaB
```

Basic Commands of Linux OS

1. **pwd** – Print Working Directory

- One way to identify the directory you are working in is the **pwd** command
- It displays the current working directory path and is useful

```
$ pwd
```

2. **mkdir** – to make a directory.

mkdir [directory name] if you would like to create a directory in the name 'myproject' type

```
$ mkdir myproject
```

Basic Commands of Linux OS

3. **rm** – Remove File/Directory

- This command is used to remove files in a directory or the directory itself.
- A directory cannot be removed if it is not empty.

rm [name of the file]

rm -r removes all the contents in a directory and the directory

as `$ rm file1`

```
$ rm -r myproject
```

Basic Commands of Linux OS

4. `su` / `sudo` command -

- There are some commands that need elevated rights to run on a Linux system.
- So you run them as a System Administrator which normal users cannot do.

`su` command changes the shell to be used as a `super user` and until you use the `exit` command you can continue to be `the super user`

`sudo` - if you just need to run something as a super user, you can use the `sudo` command.

- `sudo shutdown 2` - `shutdown` and turns of the computer after 2 minutes
- `sudo shutdown -r 2` - `shuts down` and reboots in 2 minutes
- Use

```
$ sudo shutdown 2
```

```
$ sudo shutdown -r 2
```

Basic Commands of Linux OS

5. `passwd` –

- This command is used to change the `user account password`.
- You could change `your password` or the `password of other users`.
- Note that the normal system users may only change `their own password`, while `root` may modify the password for any account.

```
pa $ passwd admin
```

Basic Commands of Linux OS

6. mv – Move or Rename a file

- To move a file or rename a file you would use the mv command.
- Here the file name gets changed from first.txt to second.txt.
- Type ls to view the change

```
$ mv first.txt second.txt
```

7. cp – Copy a file

- In case you need a copy of the file second.txt in the same directory you have to use the cp command

```
$ cp second.txt third.txt
```

Basic Commands of Linux OS

8. ls – List

- List directory contents.
- If you know windows you would know that the command dir is used to list the contents in a directory.
- In Linux, the ls command is used to list out files and directories. Some versions may support **color-coding**. The names in **blue** represent the names of directories.
- ls -l | more – this helps to **paginate the output** so you can view page by page.

```
$ ls -l filename
```

Basic Commands of Linux OS

9. `echo` –

- This command is used to display a text or a string to the standard output or a file.

```
$ echo "Basics of linux commands"
```

10. `wc` – Word Count

- The `wc` (word count) command in Linux operating system is used to find out the number of new lines, word count, byte and characters count in a file specified by the file arguments.
- `wc [options] filenames.`

```
$ wc -l readme.txt
```

Basic Commands of Linux OS

11. `man` –

- This command is used to view the on-line reference manual pages for commands/programs.

```
$ man grep  
$ man mkdir
```

12. `history` –

This command is used to show previously used commands or to get information about the commands executed by a user.

```
$ history
```

Basic Commands of Linux OS

13. `clear` –

- This command lets you clear the terminal screen

```
$ clear
```

14. `apt-get`

- It is used to **install new software packages**,
- Remove available software packages,
- Upgrade **existing software packages** as well as **upgrade the entire operating system**.
- `apt` – stands for **advanced packaging tool**.

```
$ sudo apt-get update
```

Basic Commands of Linux OS

15. `reboot` –

- This command lets you `reboot` the system

```
$ reboot
```

Group Assignment

- Prepare a manual for installation of **Ubuntu operating system** on virtual machine **“Oracle VM VirtualBox”**



Oracle VM VirtualBox



Ubuntu operating system