Session – 1 : Getting to know your machine and account
26-01-2019, 10:00 – 12:10 Hrs, NAC 205

Packages needed for this session:

```
hwinfo, lshw, fdisk, memtester, hardinfo, util-linux, clinfo, net-
tools, coreutils, procps, pciutils, dmidecode, lsb-release, hdparm

Use “sudo apt-get install <package>” to install the above
packages.
```

To search for which package a particular executable came from:

```
/usr/bin/sudo apt-get install apt-file
/usr/bin/sudo apt-file update
/usr/bin/apt-file search <executable>
```

1. Hardware of the machine

This module is to let you know about the following peices of hardware you have in your machine: CPU, Memory, Hard Disks, Graphics Card, Monitor Network Cards

Command	Remarks
`/usr/sbin/hwinfo`	Redirect the output to a file and read it. This is a long and comprehensive listing of hardware. Package: **hwinfo**
`/usr/bin/lshw`	Redirect the output to a file and read it. This is a brief listing of hardware. Package: **lshw**
`/bin/cat /proc/cpuinfo`	Explore what cpu you have, how many cores, speed, cache memory etc.,
`/usr/bin/sudo /sbin/fdisk -l`	Use with care. One can use fdisk to edit partitions, format etc., so be careful with this command. Package: **fdisk**
`/bin/cat /proc/partitions`	List the partitions mounted. Use the command **mount** or **df** to see similar information.
`/bin/lsblk -o NAME,SIZE`	Figure out the device and the partitions being used for storage in your machine.
`/usr/bin/lspci`	Explore what hardware components

Command	Remarks
	are associated with the PCI bus. Package: **pciutils**
`/bin/grep “CardName” /var/log/Xorg.0.log`	Use the output of lspci to know the name of the graphics card you have. Use that name to search for details in the log file.
`/usr/bin/top`	Press q to quit. Watch the listing of processes while you open other applications and close them. Explore the meaning of numbers shown in the header of the screen. Package: **procps**
`/bin/df -h`	Explore other options of df to display the details on filesystems mounted. Package: **coreutils**
`/usr/bin/lshw -c display`	Explore other sections under which lshw gives the output. Package: **lshw**
`/bin/dmesg`	Redirect the output to a file and read it. Package: **util-linux**

Further exploration

`/usr/bin/free`	Use with option -h for human readable format of free and used memory. Package: **procps**
`/usr/bin/sudo /usr/sbin/dmidecode --type memory`	Explore what type of memory you have, of what speed etc., Explore what other types of hardware this command can give you details about. Redirect the output to a file and read it. Package: **dmidecode**
`/usr/sbin/memtester 24M 2`	Install this from the package “memtester”. Check for any errors in your memory. In the command given, 24MB of data and 2 iterations are being used to make this test. Package: **memtester**
`/usr/bin/hardinfo`	Install package “hardinfo” to get this tool which has a graphical user interface and can export a report of your hardware. Package: **hardinfo**
`/usr/bin/upower`	Run with -e option to see which option to be

	used for <battery> (the one containing the string BAT). Run “upower -i <battery>” to see the status of your battery. Package: **upower**
`/usr/bin/lscpu`	List CPU information of the machine. Package: **util-linux**
`/usr/bin/sudo /usr/bin/clinfo`	See the capabilities of CPU and GPU to run OpenCL codes. Package: **clinfo**
`/sbin/hdparm -Tt /dev/sda` `/sbin/hdparm -v /dev/sda`	get/set IDE SATA parameters Package: **hdparm**
`/usr/bin/iostat -dx /dev/sda`	Report CPU and I/O statistics. Package: **sysstat**

Configurations:

`/sbin/ifconfig`	Configuration of network interface. Package: **net-tools**

Home work:

[1] Make a listing of the hard ware components you have in your laptop.
[2] Look up internet and identify other variants or models of each of the hardware components. Critically compare the specs with the ones you have in your machine in a tabular fashion.
[3] List the CPU and GPU capabilities of your machine in GigaFlops as per theoretical or vendor provided specs. You don’t have to do any benchmarking yourself for this information.
[4] Count the number of packages installed on your OS.
[5] Find out the difference in the IP configuration of your machine when you connect your laptop using wired LAN in the hostel room and over WiFi using IITMWiFi.