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roll:02

43. Using desired Open-Source Software provide details of the motherboard, network, storage devices, and display. Also, create an HTML report of everything and create favorites to have instant access to any hardware component from the menu bar.

The objective of the project

The "lshw" command in Linux is used to list hardware information of a system. The object of lshw is to provide a detailed report on the hardware configuration of the system including information about the CPU, memory, storage devices, network adapters, and other hardware components. It can also display information about the firmware, BIOS, and other system-level components.

Description of "lshw"

- lshw stands for "list hardware" and is a command-line utility in Linux that provides detailed information about the hardware installed on a system. It can be used to generate a comprehensive report of the computer's hardware, including information about the CPU, memory, storage devices, network interfaces, and other peripherals.

- lshw provides a hierarchical view of the hardware, with each component listed under its respective category. It can also display additional information such as the driver used by each device, the firmware version, and the physical location of the device in the system.

- The lshw utility can be run with different options to customize the output format or to filter the hardware information based on specific criteria. For example, the -class option can be used to display only a specific class of devices (such as the network adapters), while the -short option can be used to generate a more concise output.

The scope of lshw

- The scope of lshw is limited to providing information about the hardware installed on a Linux-based system. It can provide details about the CPU, memory, storage devices, network interfaces, and other peripherals.

- However, lshw does not provide information about the software or applications running on the system. It also does not offer any tools for configuring or modifying the hardware settings.

- Furthermore, while lshw can provide detailed information about the hardware components, it may not be able to detect or report on hardware issues or failures in all cases.

- The scope of lshw is limited to providing detailed hardware information.

Target system description of lshw

- lshw can be used to generate a detailed description of the hardware configuration of a Linux-based system, including the following components:

- **CPU:** Model, clock speed, cache size, and other relevant details.
- **Memory**: Type, capacity, and speed of the installed RAM.
- **Storage devices:** Hard disk drives, solid-state drives, and other storage devices, including their capacity, interface type, and manufacturer details.
- **Network interfaces:** Ethernet, wireless, and other network adapters, including their manufacturer details, MAC addresses, and supported speeds.
- **Other peripherals:** USB devices, sound cards, video cards, and other hardware components connected to the system.
- The lshw output can also provide additional details, such as firmware version, driver used by each device, and the physical location of each component in the system.

- We can say the lshw command can be a valuable tool for system administrators, technicians, and advanced users who need to diagnose hardware-related issues or gather information about the hardware configuration of a Linux-based system.

Functional/Non-Functional Dependencies of lshw

- Functional dependencies of lshw include its ability to gather and display accurate and detailed information about the hardware components installed on a Linux-based system. This information can be used for diagnostic, troubleshooting, or hardware inventory purposes, and is crucial for system administrators, technicians, and advanced users.

- Non-functional dependencies of lshw include its ability to perform efficiently and effectively, without consuming excessive system resources or causing system instability. The command should be reliable and able to provide consistent and accurate results across different hardware configurations and Linux distributions.

Analysis Report

- Command I have used to get my Ubuntu machine information.
- 1st lshw – list hardware
- 2nd lshw – html > demo.html

```
sams@DESKTOP-6NOT9QA:~$        lshw - list hardware
Hardware Lister (lshw) -
usage: lshw [-format] [-options ...]
       lshw -version

        -version        print program version ()

format can be
        -html           output hardware tree as HTML
        -xml            output hardware tree as XML
        -json           output hardware tree as a JSON object
        -short          output hardware paths
        -businfo        output bus information

options can be
        -class CLASS    only show a certain class of hardware
        -C CLASS        same as '-class CLASS'
        -c CLASS        same as '-class CLASS'
        -disable TEST   disable a test (like pci, isapnp, cpuid, etc. )
        -enable TEST    enable a test (like pci, isapnp, cpuid, etc. )
        -quiet          don't display status
        -sanitize       sanitize output (remove sensitive information like serial numbers, etc.)
        -numeric        output numeric IDs (for PCI, USB, etc.)
        -notime         exclude volatile attributes (timestamps) from output

sams@DESKTOP-6NOT9QA:~$        lshw - list hardware
Hardware Lister (lshw) -
usage: lshw [-format] [-options ...]
       lshw -version

        -version        print program version ()

format can be
        -html           output hardware tree as HTML
        -xml            output hardware tree as XML
```

```
sams@DESKTOP-6NOT9QA:~$ lshw -html > demo.html
WARNING: you should run this program as super-user.
WARNING: output may be incomplete or inaccurate, you should run this program as super-user.
sams@DESKTOP-6NOT9QA:~$ ls
GPT-Terminal-Support  calculator.sh       cha.sh  demo.html  grater.sh  test
ashad                 calculator.sh.save  demo    for.sh     script     test09
sams@DESKTOP-6NOT9QA:~$ code .
Updating VS Code Server to version 7f329fe6c66b0f86ae1574c2911b681ad5a45d63
Removing previous installation...
Installing VS Code Server for x64 (7f329fe6c66b0f86ae1574c2911b681ad5a45d63)
Downloading: 100%
Unpacking: 100%
Unpacked 2407 files and folders to /home/sams/.vscode-server/bin/7f329fe6c66b0f86ae1574c2911b681ad5a45d63.
sams@DESKTOP-6NOT9QA:~$
```

id: desktop-6not9qa
description: Computer
width: 64 bits
capabilities: *smp vsyscall32*

id: core
description: Motherboard
physical id: 0

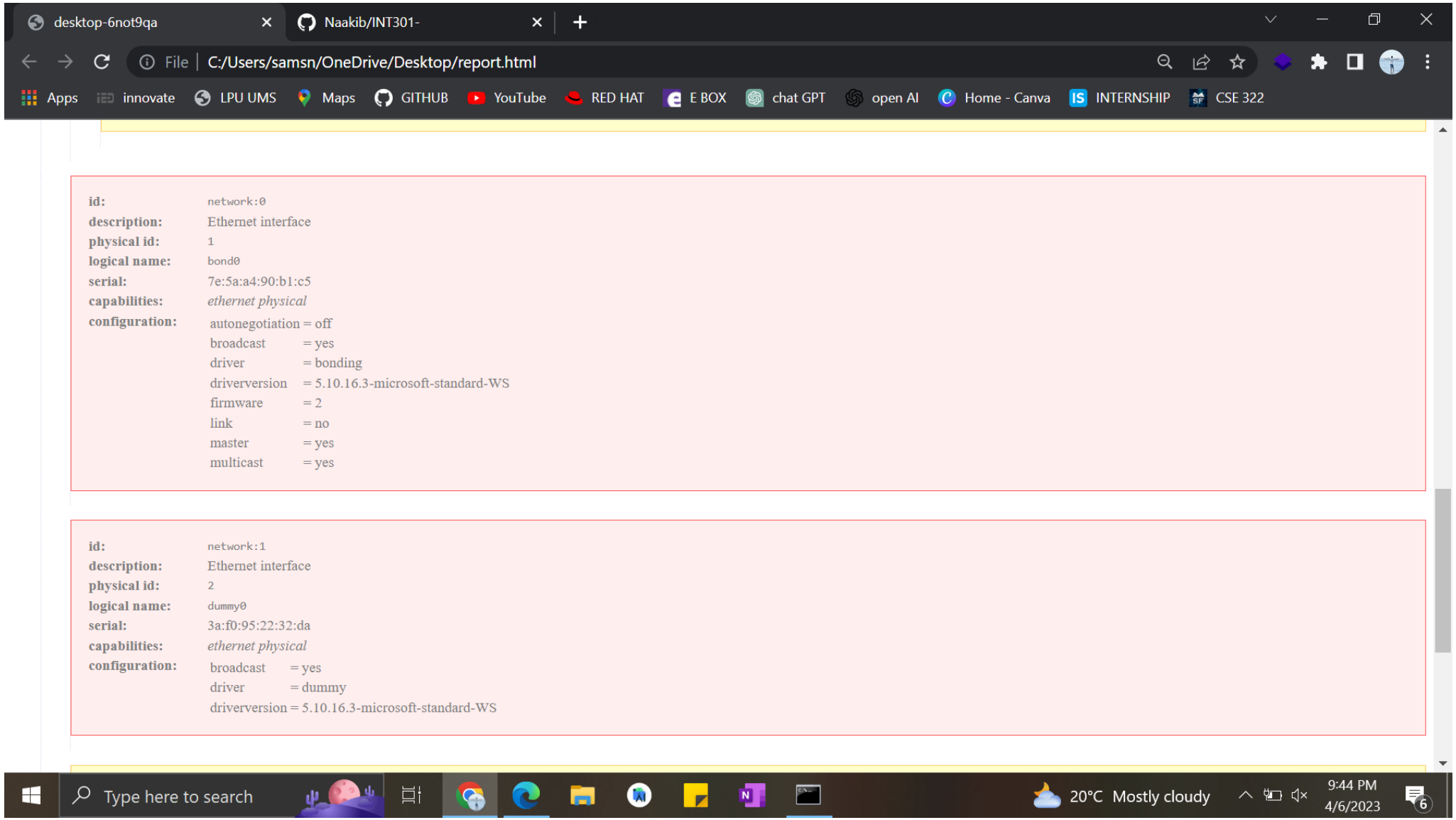
id: memory
description: System memory
physical id: 0
size: 6400MiB

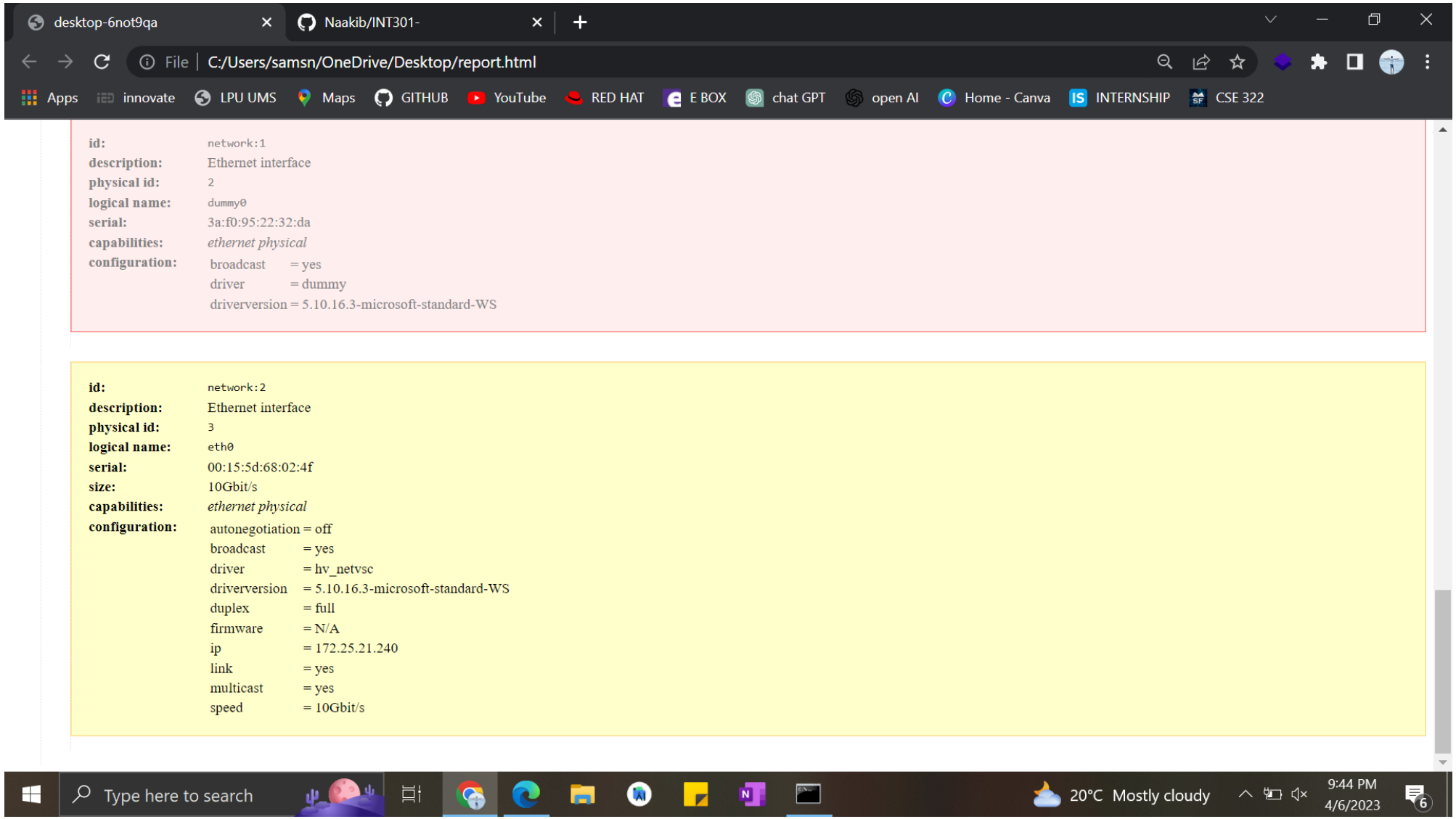
id: cpu
product: Intel(R) Core(TM) i7-8565U CPU @ 1.80GHz
vendor: Intel Corp.
physical id: 1
bus info: cpu@0
width: 64 bits
capabilities: *fpu fpu_exception wp vme de pse tsc msr pae mce cx8 apic sep mtrr pge mca cmov pat pse36 clflush mmx fxsr sse sse2 ss ht syscall nx pdpe1gb rdtscp x86-64 constant_tsc rep_good nopl xtopology cpuid pni pclmulqdq ssse3 fma cx16 pcid sse4_1 sse4_2 movbe popcnt aes xsave avx f16c rdrand hypervisor lahf_lm abm 3dnowprefetch invpcid_single ssbd ibrs ibpb stibp fsgsbase bmi1 avx2 smep bmi2 erms invpcid rdseed adx smap clflushopt xsaveopt xsavec xgetbv1 xsaves flush_l1d arch_capabilities*

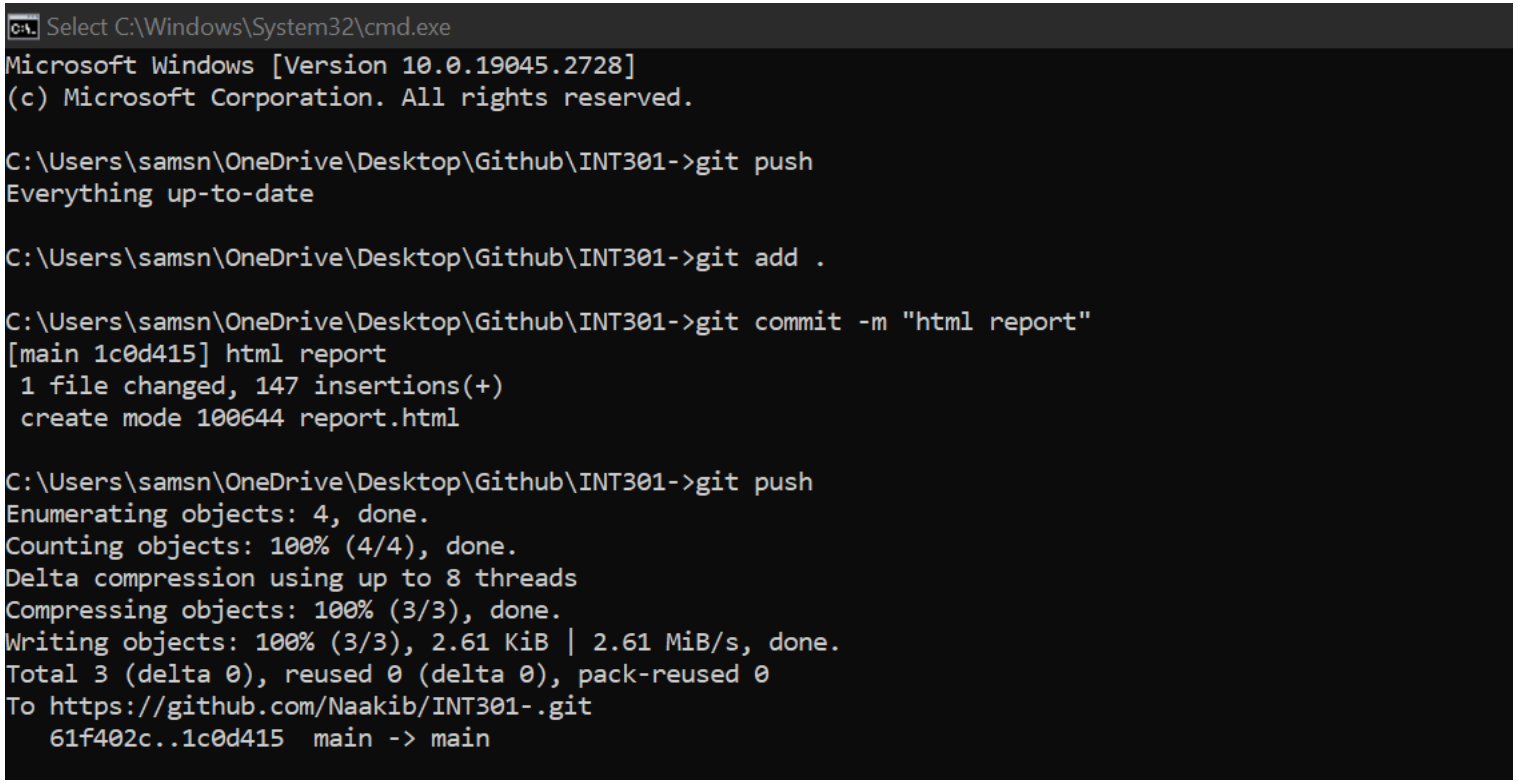
id: display:0

id: display:0
description: 3D controller
product: Microsoft Corporation
vendor: Microsoft Corporation
physical id: 2
bus info: pci@8f5f:00:00.0
version: 00
width: 32 bits
clock: 33MHz
capabilities: *bus_master cap_list*
configuration: driver = dxgkrnl
latency = 0
resources: irq : 0

id: display:1
description: 3D controller
product: Microsoft Corporation
vendor: Microsoft Corporation
physical id: 3
bus info: pci@e4f8:00:00.0
version: 00
width: 32 bits
clock: 33MHz
capabilities: *bus_master cap_list*
configuration: driver = dxgkrnl
latency = 0
resources: irq : 0


desktop-6not9qa
Naakib/INT301-
File | C:/Users/samsn/OneDrive/Desktop/report.html
Apps
innovate
LPU UMS
Maps
GITHUB
YouTube
RED HAT
E BOX
chat GPT
open AI
Home - Canva
INTERNSHIP
CSE 322
id: network:0
description: Ethernet interface
physical id: 1
logical name: bond0
serial: 7e:5a:a4:90:b1:c5
capabilities: ethernet physical
configuration: autonegotiation = off
broadcast = yes
driver = bonding
driverversion = 5.10.16.3-microsoft-standard-WS
firmware = 2
link = no
master = yes
multicast = yes
id: network:1
description: Ethernet interface
physical id: 2
logical name: dummy0
serial: 3a:f0:95:22:32:da
capabilities: ethernet physical
configuration: broadcast = yes
driver = dummy
driverversion = 5.10.16.3-microsoft-standard-WS
Type here to search
20°C Mostly cloudy
9:44 PM
4/6/2023


desktop-6not9qa
Naakib/INT301-
File | C:/Users/samsn/OneDrive/Desktop/report.html
Apps
innovate
LPU UMS
Maps
GITHUB
YouTube
RED HAT
E BOX
chat GPT
open AI
Home - Canva
INTERNSHIP
CSE 322
id: network:1
description: Ethernet interface
physical id: 2
logical name: dummy0
serial: 3a:f0:95:22:32:da
capabilities: ethernet physical
configuration: broadcast = yes
driver = dummy
driverversion = 5.10.16.3-microsoft-standard-WS
id: network:2
description: Ethernet interface
physical id: 3
logical name: eth0
serial: 00:15:5d:68:02:4f
size: 10Gbit/s
capabilities: ethernet physical
configuration: autonegotiation = off
broadcast = yes
driver = hv_netvsc
driverversion = 5.10.16.3-microsoft-standard-WS
duplex = full
firmware = N/A
ip = 172.25.21.240
link = yes
multicast = yes
speed = 10Gbit/s
Type here to search
20°C Mostly cloudy
9:44 PM
4/6/2023


Select C:\Windows\System32\cmd.exe
Microsoft Windows [Version 10.0.19045.2728]
(c) Microsoft Corporation. All rights reserved.
C:\Users\samsn\OneDrive\Desktop\Github\INT301->git push
Everything up-to-date
C:\Users\samsn\OneDrive\Desktop\Github\INT301->git add .
C:\Users\samsn\OneDrive\Desktop\Github\INT301->git commit -m "html report"
[main 1c0d415] html report
1 file changed, 147 insertions(+)
create mode 100644 report.html
C:\Users\samsn\OneDrive\Desktop\Github\INT301->git push
Enumerating objects: 4, done.
Counting objects: 100% (4/4), done.
Delta compression using up to 8 threads
Compressing objects: 100% (3/3), done.
Writing objects: 100% (3/3), 2.61 KiB | 2.61 MiB/s, done.
Total 3 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/Naakib/INT301-.git
61f402c..1c0d415 main -> main

Reference/ Bibliography lshw

- **lshw is a command-line tool for displaying detailed information about the hardware configuration of a Linux system. Here are some references and resources that can help you learn more about lshw:**
- **Official lshw website: http://www.ezix.org/project/wiki/HardwareLiSter**
- **Linux man page for lshw: https://linux.die.net/man/1/lshw**
- **How to use lshw command in Linux: https://www.tecmint.com/lshw-commands-to-check-hardware-information-in-linux/**
- **Detailed guide to using lshw: https://www.howtoforge.com/linux-lshw-command/**
- **lshw command examples: https://www.networkworld.com/article/3332670/how-to-use-the-lshw-command-in-linux.html**
- **lshw GitHub repository: https://github.com/lyonel/lshw**
- **ArchWiki page on lshw: https://wiki.archlinux.org/index.php/Lshw**
- **Ubuntu Manpage Repository for lshw: http://manpages.ubuntu.com/manpages/bionic/man1/lshw.1.html**

Thank you