



ACADEMIC TASK 3

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INT301:OPENSOURCE TECHNOLOGIES

SUBMITTED TO:

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QUESTION: USING DESIRED OPEN SOURCE SOFTWARE PROVIDE DETAILS OF THE MOTHERBOARD , NETWORK,STORAGE,DEVICES,DISPLAY.ALSO,CREATE AN HTML REPORT OF EVERYTHING AND CREATE FAVOURITE TO HAVE INSTANT ACCESS TO ANY HARDWARE COMPONENT FROM THE MENY BAR.

1 INTRODUCTION

Hardware is the backbone of Computer System that is essential for system maintenance and upgrading. By understanding the components of Hardware, users can upgrade or replace hardware components to optimize performance or solve problems. The aim of the project is to develop a software tool that can gather detailed information about a computer's hardware components using desired tools.

1.1 OBJECTIVE OF THE PROJECT

the objective of the project would be to provide a detailed and accurate overview of the computer system's hardware components and their specifications.

1. The motherboard is the main circuit board of the computer, and it connects all of the other components together. Its details would include information about its chipset, expansion slots, and other features.
2. The network details include information about the computer's network interface card (NIC), which is responsible for connecting the computer to a network, and any additional networking hardware or software.
3. The storage details include information about the computer's hard disk drive (HDD) or solid-state drive (SSD), as well as any other types of storage devices such as external hard drives or flash drives.
4. The device details include information about any additional hardware devices connected to the computer, such as a printer, scanner, or webcam.
5. the display details include information about the computer's monitor or screen, including its size, resolution, and refresh rate..

1.2 Description of the project

The process to get the Details of the Motherboard, Network, Storage, Devices and Display” involves the following steps:

1. Identification of Open-Source Software: First, we have to identify suitable open-source software tools that can be used to gather information about the motherboard, network, storage, devices, and display here I am using HWiNF064 tool.

2. Collecting Information: Using the HWiNF064 tool, get a detailed analysis of hardware components installed on a computer system, such as the motherboard, processor, memory, storage devices, and more. HWiNF064 also offers real-time system monitoring and sensor information for users to monitor their computer's performance and health.

3. Creating HTML Report: The collected information would be used to create an HTML report that provides detailed information about the hardware components and their specifications. The report would be designed to be easy to read and navigate, providing an overview of the computer's hardware components as well as detailed specifications.

4. Creating Favorites: To make it easy for users to access any hardware component from the menu bar, we create a favorites feature. This feature would allow users to mark specific hardware components as favorites, providing instant access to them from the menu bar.

5. Testing and Refinement: Once the HTML report and favorites feature are developed, we will test them thoroughly to ensure that they work correctly. Any issues or bugs would be identified and addressed, and the report and favorites feature would be refined based on user feedback.

1.3 SCOPE OF THE PROJECT

The scope is to get details of the motherboard, network, storage, devices and display information about the hardware components of a computer system. This information can be useful for a variety of things such as

1. **Troubleshooting:** When a computer system is not functioning properly, knowing the details of the motherboard, network, storage, devices, and display can help identify potential hardware issues that may be causing the problem.
2. **Upgrades:** When upgrading a computer system, it is important to know the specifications of the existing hardware components to ensure compatibility with new components.
3. **System management:** IT professionals and system administrators need to have a comprehensive understanding of the hardware components in a computer system to effectively manage and maintain the system.
4. **Performance optimization:** Knowing the details of the hardware components can help optimize the system's performance by identifying potential bottlenecks or areas for improvement.

SYSTEM DESCRIPTION

2.1 Target System Description

The target System for the components of Hardware Motherboard, Network, Storage, Devices and Display" does not have a specific target system description, as it can be used on any computer system that meets the requirements of the open-source software tools used.

However, the project need to ensure that the open-source software tools used are compatible with the target system's operating system and architecture. For example, if the team uses an open-source tool that is only compatible with Windows, the project would be limited to Windows-based systems.

the target system description should provide a clear and detailed specification of the report of hardware components and the favorites feature, ensuring that the system meets the requirements of the project and provides a useful and intuitive interface for users

The target system description should include details of the feature that allows users to create favorites for instant access to any hardware component from the menu bar. The feature should enable users to quickly access frequently used components without having to navigate through multiple menus. It should provide an intuitive interface that allows users to easily add or remove components from their favorites list.

2.2 ASSUMPTION AND DEPENDENCIES

The assumptions and dependencies of the details of the motherboard, Network, Storage, Devices and Display areas follow,

- The system has all the important drivers and software installed to provide correct information about the components-Here for this project we have installed HWiNF064 tool.
- The System has not been damages-If the System is damaged it can affect accuracy of the details and give different result every time which can create a confusion. so, it's important that the system is working correctly.
- User has permission to access and view the details-it means user must be the owner of the system or someone who the permission of the owner to view the details.
- User has knowledge in identifying the details- If the user has not enough information then that can create a problem.

2.3 FUNCTIONAL /NON FUNCTIONAL DEPENDENCIES

The functional dependencies areas follow:

- Availability of system information - The details of the hardware components and their specifications are available and can be accessed through the tool.
- Access to drivers and software - The necessary drivers and software are installed and available to access system information accurately.
- HTML report generation - The necessary software or tools are available to generate an HTML report of the system information.
- Favorites creation - The user has the necessary permissions and access to create favorites to have instant access to hardware components from the menu bar.

The Nonfunctional dependencies are as follow:

- Compatibility - The software or tools used for accessing system information, generating HTML reports, and creating favorites should be compatible with the system and hardware components.
- Performance - The system should not slow down or become unresponsive when accessing or generating system information.
- Accuracy - The information provided about the hardware components should be accurate and up-to-date.
- Usability - The user interface for accessing and viewing hardware details and creating favorites should be intuitive and easy to use.

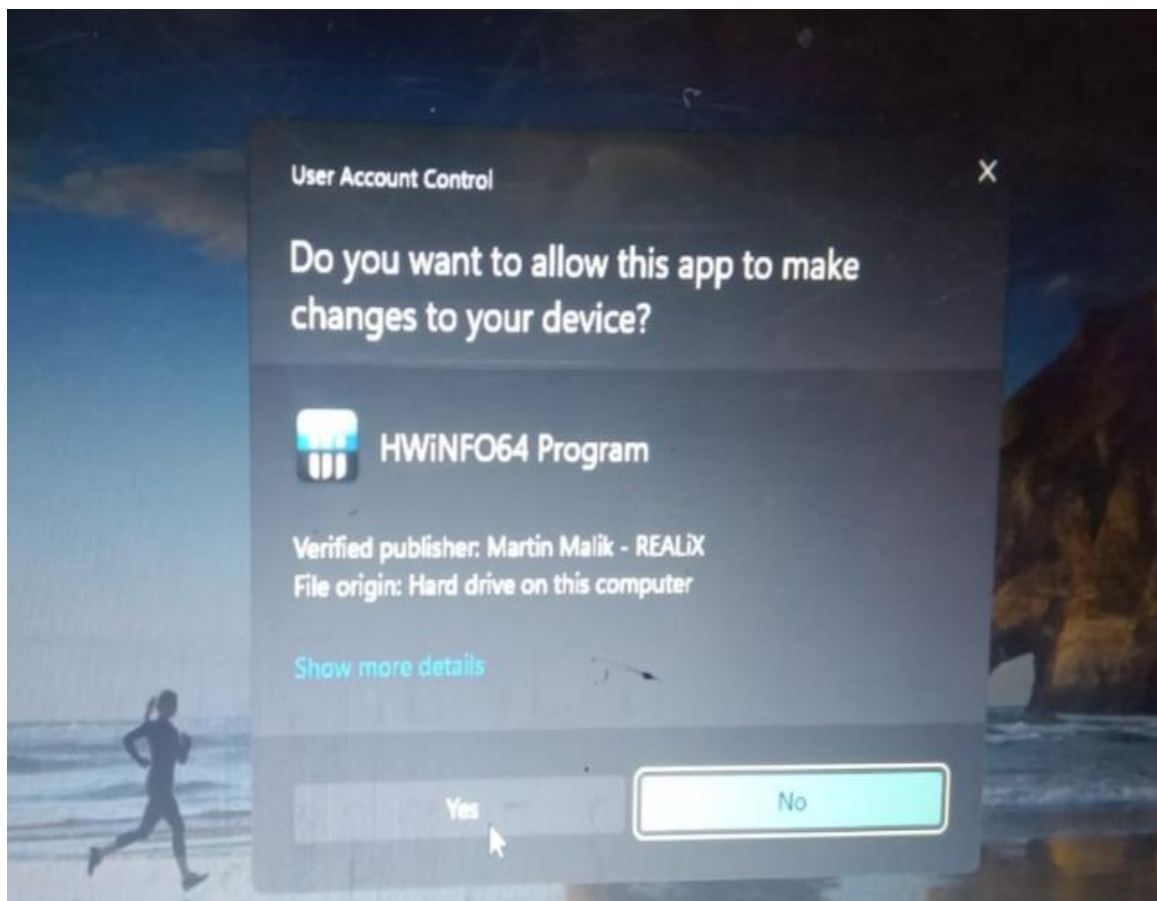
ANALYSIS REPORT

SYSTEM SNAPSHOT AND FULL ANALYSIS REPORT

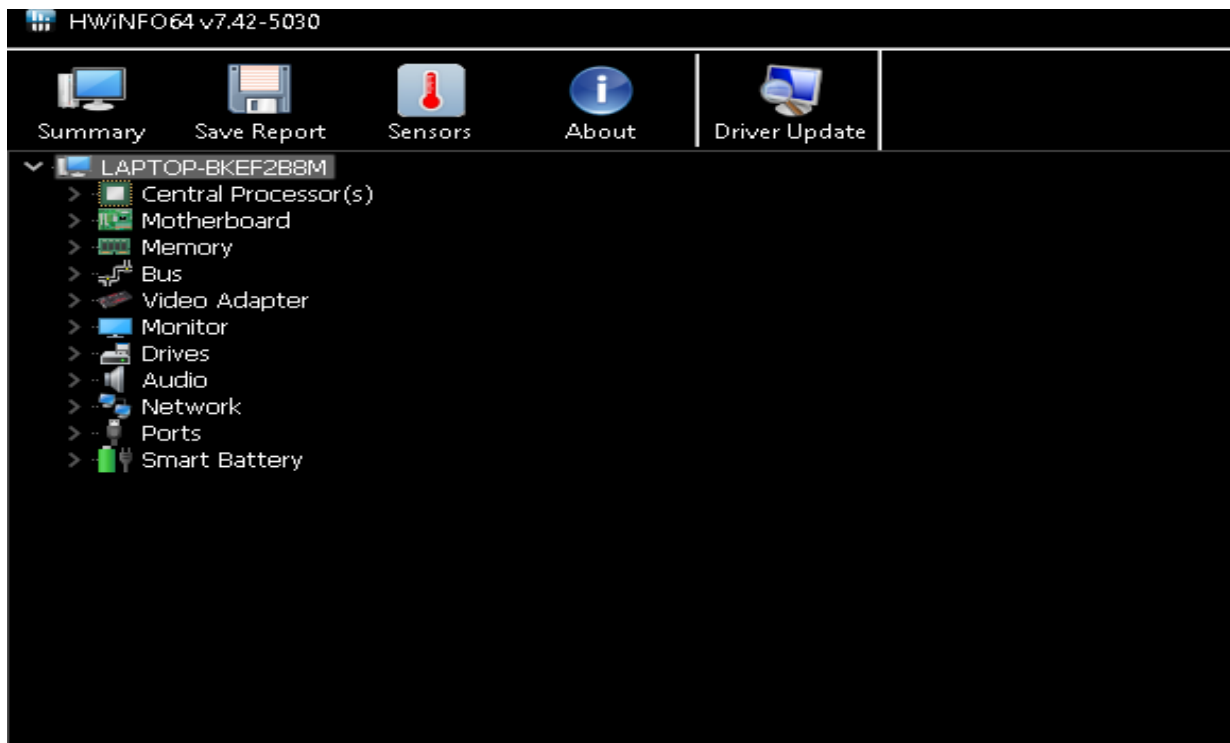
1. TO PROVIDE DETAILS OF THE MOTHERBOARD, NETWORK, STORAGE, DEVICES AND DISPLAY.

Get the details information using HWiNFO64 tool: It is a free and comprehensive hardware information and diagnostic tool for 64-bit versions of Windows. HWiNFO64 can provide detailed information about the hardware components in your system, including the CPU, GPU, motherboard, network, storage, and more. It also includes real-time monitoring capabilities and can generate reports in various formats.

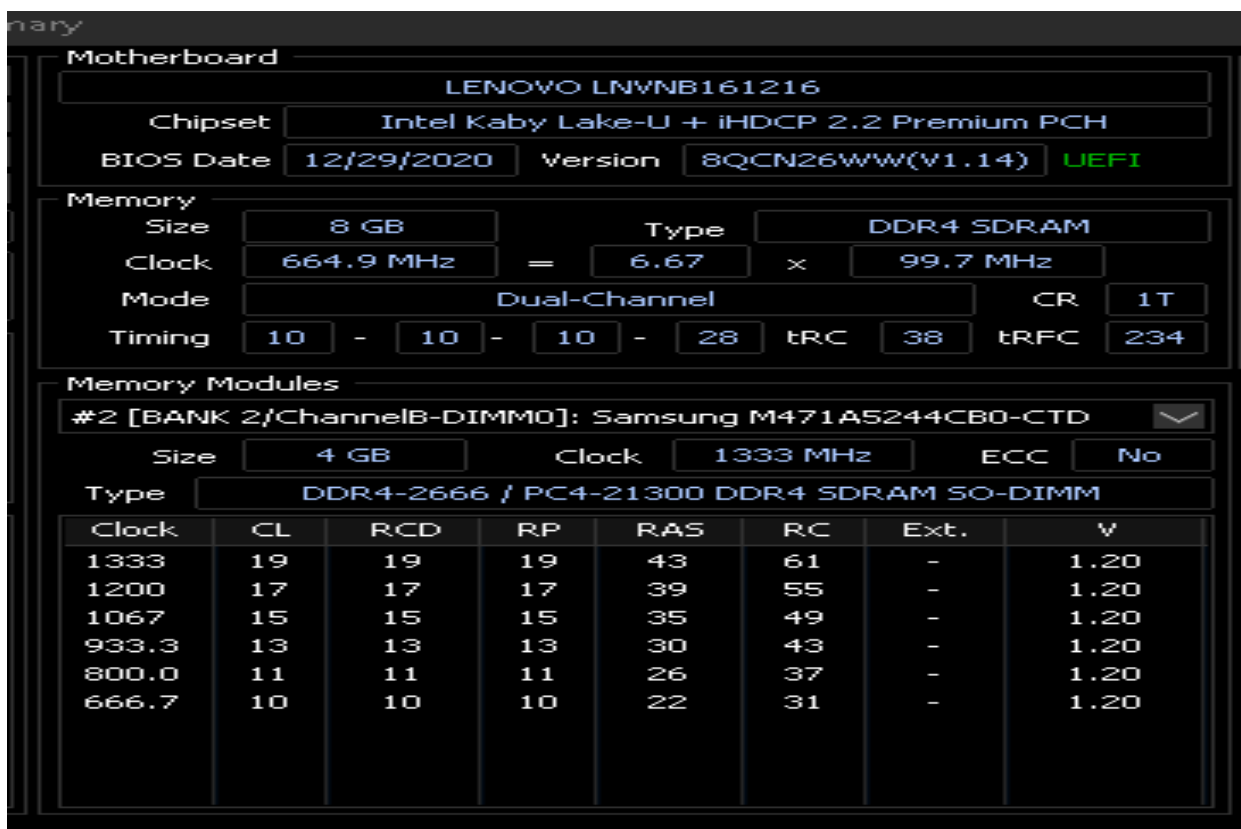
STEP 1: Download and install HWiNFO64 on your system.



STEP 2: After Installing the software Go to Summary, there you can see many hardware component names are showing



STEP 3: TO GET THE DETAIL INFORMATION OF MOTHERBOARD AGAIN CLICK ON SUMMARY.



STEP 4: TO GET THE DETAILS INFORMATION OF NETWORK-In the main HWiNFO64 window, look for the "Network" section on the left-hand side and click on it to expand it. Under the "Network" section, we will find a list of network devices installed on our system, such as Ethernet controllers, wireless adapters, and more. By clicking on the a specific network device we can view detailed information about it, such as the device model, driver version, network speed, MAC address, and more.

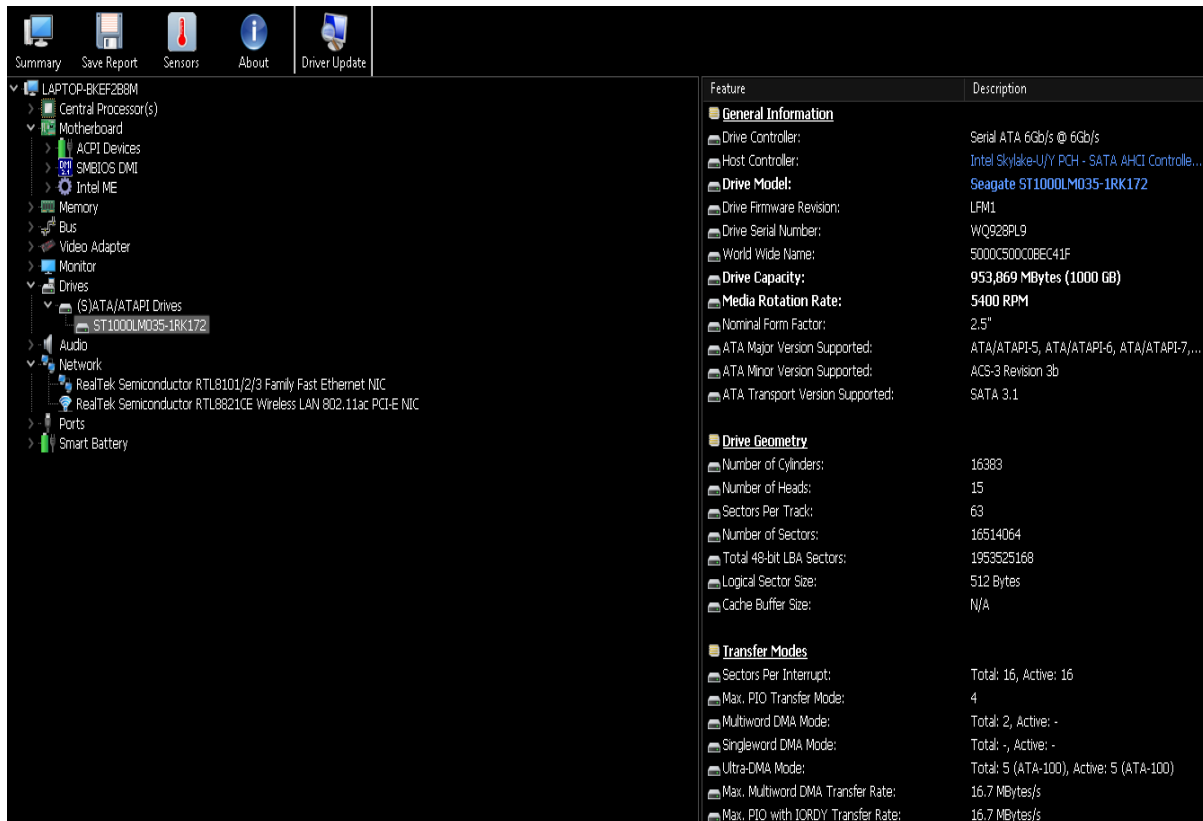
The screenshot shows the HWiNFO64 interface with the 'Network' section expanded in the left-hand tree. The 'RealTek Semiconductor RTL8101/2/3 Family Fast Ethernet NIC' is selected. The right-hand pane displays the following information:

Feature	Description
General Information	
Network Card:	RealTek Semiconductor RTL8101/2/3 F...
Vendor Description:	Realtek PCIe FE Family Controller
MAC Address:	9C-5A-44-6B-19-7A
Capabilities	
Maximum Link Speed:	100 Mbps
Transmit Buffer Size:	96896 Bytes
Receive Buffer Size:	775168 Bytes
Hardware ID:	PCI\VEN_10EC&DEV_8136&SUBSYS_38601...
Driver Information	
Driver Manufacturer:	Realtek
Driver Description:	Realtek PCIe FE Family Controller
Driver Provider:	Realtek
Driver Version:	10.31.828.2018
Driver Date:	28-Aug-2018
DeviceInstanceId	PCI\VEN_10EC&DEV_8136&SUBSYS_38601...
Location Paths	PCIROOT(0)\#PCI(1C04)\#PCI(0000)

The screenshot shows the HWiNFO64 interface with the 'Network' section expanded in the left-hand tree. The 'RealTek Semiconductor RTL8821CE Wireless LAN 802.11ac PCIe NIC' is selected. The right-hand pane displays the following information:

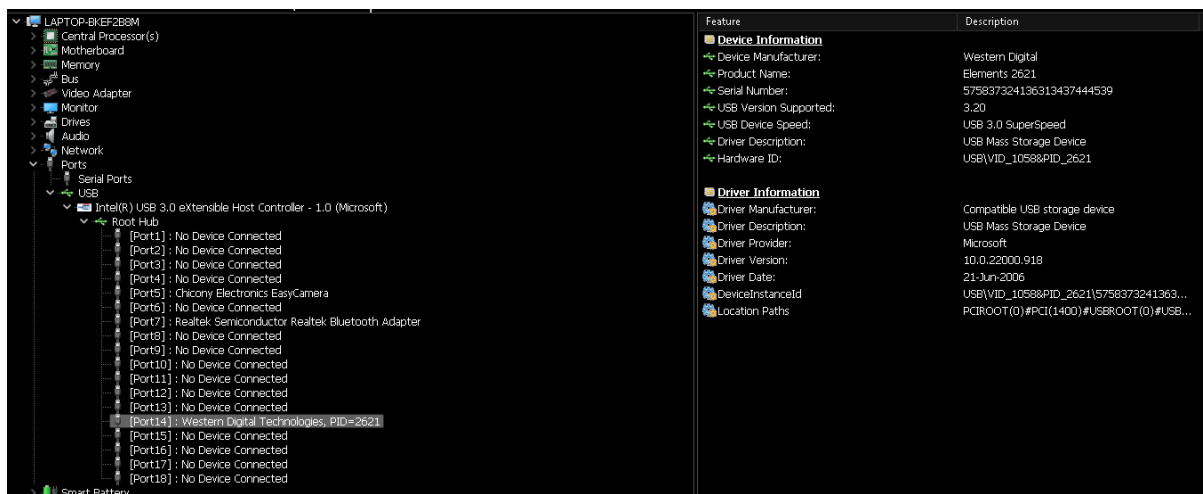
Feature	Description
General Information	
Network Card:	RealTek Semiconductor RTL8821CE Wir...
Vendor Description:	Microsoft
MAC Address:	28-39-26-74-1E-A7
Capabilities	
Maximum Link Speed:	72 Mbps
Transmit Buffer Size:	Unknown
Receive Buffer Size:	Unknown
Hardware ID:	PCI\VEN_10EC&DEV_C821&SUBSYS_C0241...
Driver Information	
Driver Manufacturer:	Realtek Semiconductor Corp.
Driver Description:	Realtek 8821CE Wireless LAN 802.11ac PCI...
Driver Provider:	Realtek Semiconductor Corp.
Driver Version:	2024.0.8.113
Driver Date:	08-Oct-2019
DeviceInstanceId	PCI\VEN_10EC&DEV_C821&SUBSYS_C0241...
Location Paths	PCIROOT(0)\#PCI(1C05)\#PCI(0000)

STEP 5: TO GET THE DETAILS INFORMATION OF STORAGE: In the main HWiNFO64 window, look for the "Drives" section on the left-hand side and click on it to expand it. Under the "Drives" section, We will find a list of all the storage devices installed on our system, such as hard drives, solid-state drives, and more .By Clicking on a specific storage device we can view detailed information about it, such as the device model, capacity, interface type, health status, and more.



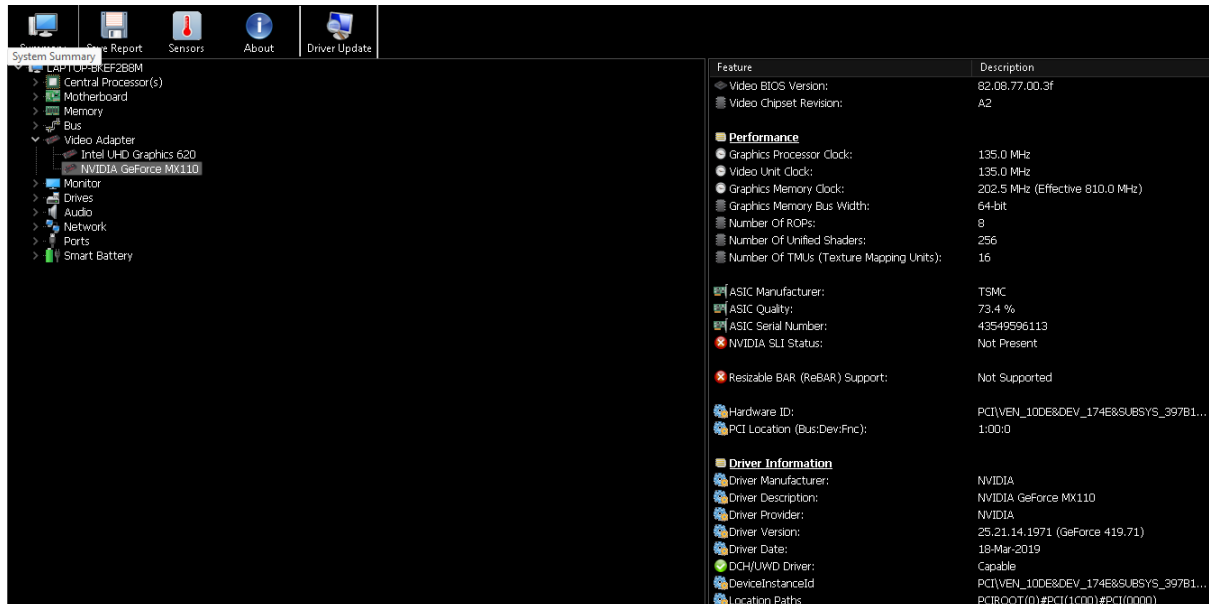
Feature	Description
General Information	
Drive Controller:	Serial ATA 6Gb/s @ 6Gb/s
Host Controller:	Intel Skylake-U/Y PCH - SATA AHCI Controlle...
Drive Model:	Seagate ST1000LM035-1RK172
Drive Firmware Revision:	LFM1
Drive Serial Number:	WQ928PL9
World Wide Name:	5000C500C0BEC41F
Drive Capacity:	953,869 MBytes (1000 GB)
Media Rotation Rate:	5400 RPM
Nominal Form Factor:	2.5"
ATA Major Version Supported:	ATA/ATAPI-5, ATA/ATAPI-6, ATA/ATAPI-7,...
ATA Minor Version Supported:	ACS-3 Revision 3b
ATA Transport Version Supported:	SATA 3.1
Drive Geometry	
Number of Cylinders:	16383
Number of Heads:	15
Sectors Per Track:	63
Number of Sectors:	16514064
Total 48-bit LBA Sectors:	1953525168
Logical Sector Size:	512 Bytes
Cache Buffer Size:	N/A
Transfer Modes	
Sectors Per Interrupt:	Total: 16, Active: 16
Max. PIO Transfer Mode:	4
Multword DMA Mode:	Total: 2, Active: -
Singleword DMA Mode:	Total: -, Active: -
Ultra-DMA Mode:	Total: 5 (ATA-100), Active: 5 (ATA-100)
Max. Multword DMA Transfer Rate:	16.7 MBytes/s
Max. PIO with IORDY Transfer Rate:	16.7 MBytes/s

STEP 6: TO GET THE DETAILS INFORMATION OF DEVICES :



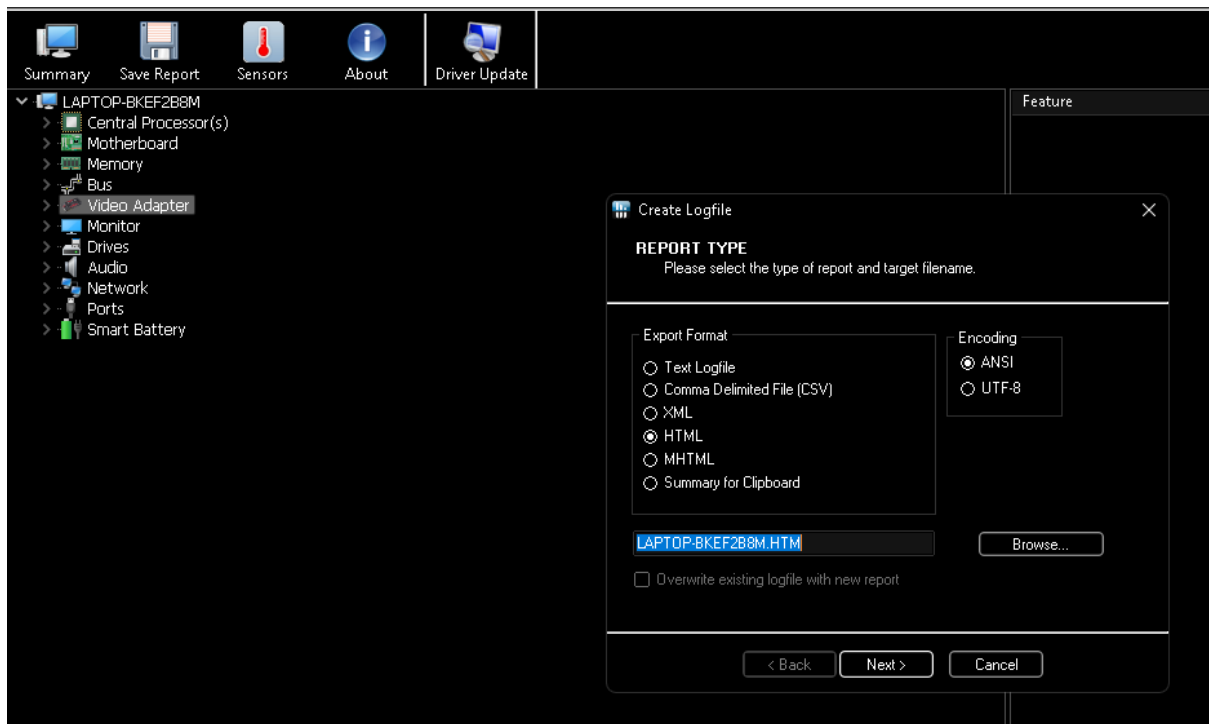
Feature	Description
Device Information	
Device Manufacturer:	Western Digital
Product Name:	Elements 2621
Serial Number:	575837324136313437444539
USB Version Supported:	3.20
USB Device Speed:	USB 3.0 SuperSpeed
Driver Description:	USB Mass Storage Device
Hardware ID:	USB\VID_1058&PID_2621
Driver Information	
Driver Manufacturer:	Compatible USB storage device
Driver Description:	USB Mass Storage Device
Driver Provider:	Microsoft
Driver Version:	10.0.22000.918
Driver Date:	21-Jun-2006
DeviceInstanceId	USB\VID_1058&PID_2621\5758373241363...
Location Paths	PCIROOT(0)\#PCI(1400)\#USBROOT(0)\#USB...

STEP 7: TO GET THE DETAILS INFORMATION OF DISPLAY HWiNFO64 provides detailed information about the display components of our system under the "Video Adapter" section, which includes information about both the graphics card and the connected display devices.



CREATE AN HTML REPORT OF EVERYTHING

STEP 1: BY CLICKING ON THE OPTION OF SAVE REPORT WE GET A BOX TO SELECT WHICH TYPE OF FILE WE WANT TO MAKE HERE, I HAVE SELECTED HTML ALSO HERE WE CAN SELECT THE LOCATION WHERE WE WANT TO SAVE THIS FILE AND WE CAN GIVE NAME TO THE FILE..



STEP 2: Then,a checklist appears select all those option for which we want to make report here, I am selected all the componets for which we taken the snapsorts



STEP 3: Report is created

HWINFO64 v7.42-5030

Creation Time 09.04.2023 04:52

Content:

- Motherboard
- Video
- Drives
- Network
- Ports

LAPTOP-BKEF2B8M

[Current Computer]

Computer Brand Name:

LENOVO Lenovo ideapad 130-15IKB

[Operating System]

Motherboard

[Computer]

Computer Brand Name:

LENOVO Lenovo ideapad 130-15IKB

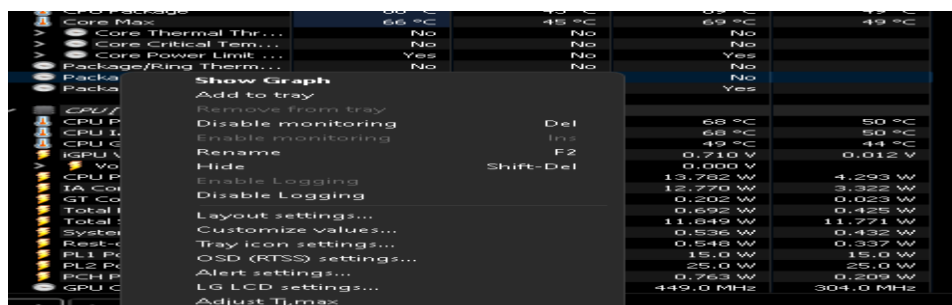
[Motherboard]

Motherboard Model:

LENOVO LNVNB161216

TO CREATE FAVOURITE

By clciking on add to tray option we can make favourite



REFERENCES

- https://download.cnet.com/HWiNFO64/3000-2094_4-75532466.html
- <https://www.cpuid.com/softwares/cpu-z.html>
- <https://www.mouser.in/applications/tools-for-open-source-hardware/>
- https://en.wikipedia.org/wiki/Open-source_hardware
- <https://www.pcmag.com/reviews/realix-hwinfo64>
- <https://www.techpowerup.com/download/gpu-z/>