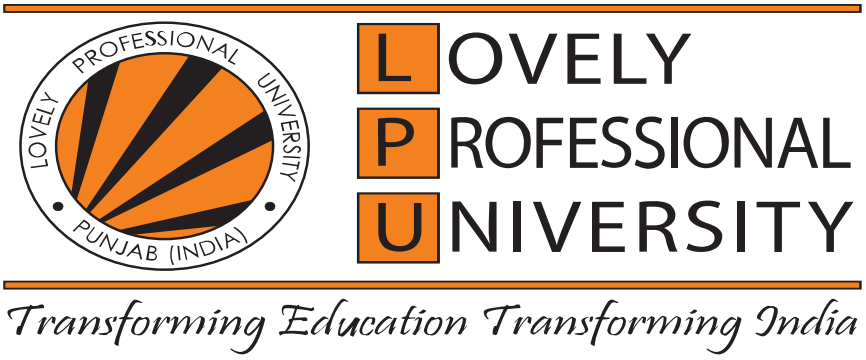


OPEN-SOURCE PROJECT REPORT

ON

DISPLAYING AND ANALYZING VARIOUS INFORMATION ABOUT THE SYSTEM

Submitted by

Aryan Mahale

Registration No.: 11912976

ROLL NO: 05

Course Code: INT301

School of Computer Science & Engineering

Lovely Professional University, Phagwara

1. INTRODUCTION

1.1 Objective

The objective of this project is to provide users with a comprehensive overview of the different system information like the CPU, motherboard, monitor, audio, network, and other components with the help of open-source software. Various tools or software's are available to monitor and optimize the system performance. By analysing system components such as the CPU, motherboard, monitor, audio, network, and others, users can gain a better understanding of their system and identify areas for improvement. Additionally, by displaying the current and average speed/rate of memory, hard drive, and CPU, users can monitor their system's performance over time and make informed decisions about hardware upgrades or optimizations.

1.2 Description

The project will focus on various system information like about CPU, Motherboard and so many as we mentioned in objective about it. As many options are there including CPU-Z, HWiNFO, AIDA64, Speccy but I used Speccy for this project. This tool or software will be used to collect detailed information about different system components, such as CPU, motherboard, monitor, audio, network, and other components. The collected data will be used to analyze the system performance and display the current and average speed/rate of the memory, hard drive, and CPU.

1.3 Scope

This project will cover the following areas:

Introduction to system information tools

Description of various system information tools

Analysis of system information using different tools

Displaying the current and average speed/rate of memory, hard drive, and CPU

Providing recommendations for optimizing system performance

The scope of this project is to provide a high-level overview of system information and how they can be used to monitor and optimize system performance. This report will not go into specific details about how to use each open-source software, but rather provide an overview of their features and capabilities. Additionally, this report will not cover advanced system optimization techniques or hardware modifications.

2. System Description

2.1 Target system description

The target system is a standard desktop computer for this project which is running with window 10 now. Speccy which is an open-source software that is used for the analysis of this desktop but before that we need to know about the specification of this system or desktop.

The CPU, or Central Processing Unit, is the main processing unit of a computer. The Intel Core i5-9400F is a mid-range CPU that was released in 2019. It has 6 cores and 6 threads, with a base clock speed of 2.9 GHz and a turbo boost of up to 4.1 GHz. This CPU is designed for gaming and general use and is a good value for its performance.

RAM, or Random Access Memory, is a type of computer memory that is used to temporarily store data that the CPU needs to access quickly. The 16 GB DDR4 RAM in this computer is a good amount for most applications and will allow for smooth multitasking and running of multiple programs simultaneously.

The hard drive is where data is permanently stored on a computer. The 500 GB NVMe SSD, or Non-Volatile Memory Express Solid-State Drive, is a type of solid-state drive that is faster than traditional hard drives. It uses flash memory to store data and has no moving parts, which makes it faster and more reliable. This type of hard drive is becoming increasingly popular due to its speed and reliability.

The graphics card, or GPU, is a specialized processor designed to handle the complex calculations needed for graphics-intensive applications such as gaming and video editing. The NVIDIA GeForce GTX 1660 Ti is a mid-range graphics card that was released in 2019. It has 6 GB of GDDR6 memory and can run most games at 1080p resolution in high settings. This graphics card is a good value for its performance and is a good choice for mid-range gaming PCs.

The monitor is the display screen that is used to show the output of a computer. The 24-inch 1080p IPS display is a good size for most desktop setups and provides a clear and vibrant image. IPS stands for In-Plane Switching and is a type of display technology that provides better colour accuracy and wider viewing angles compared to other display types such as TN (Twisted Nematic). This type of monitor is a good choice for gaming and general use.

2.2 Assumption and Dependencies

The project assumes that the target system on which the project will be carried out is running a clean installation of Windows 10. A clean installation means that the operating system has been installed from scratch, with no remnants or data from a previous installation. This is an important assumption, as any pre-existing software or hardware issues may interfere with the project's execution or result in unexpected outcomes.

It also assumes that there are no significant software or hardware issues on the target system. Software issues may include viruses, malware, or outdated drivers, while hardware issues may include malfunctioning components like hard drives or RAM. These issues can significantly impact the performance of the system and may affect the project's outcome.

It assumes that the user has basic knowledge of how to install and use system information tools. These tools are used to gather information about the hardware and software components of a computer system. Basic knowledge of these tools is required to execute the project, as they may be used to gather important data that is required for the project's completion.

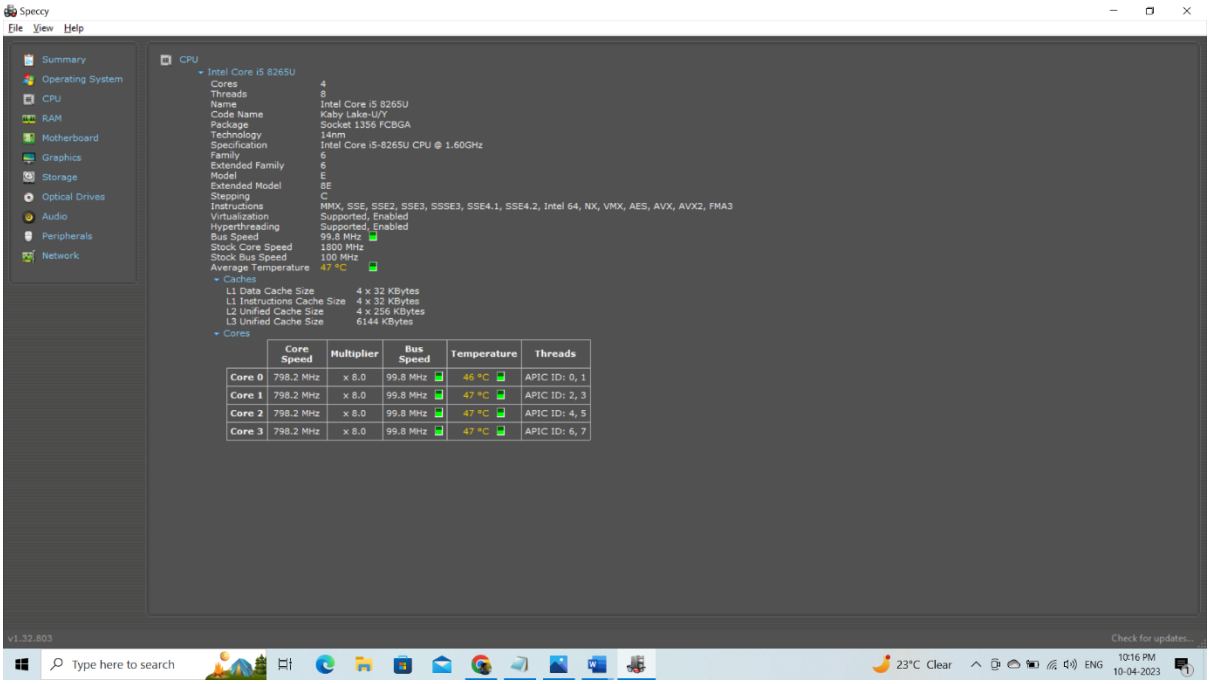
In short, the assumptions made for a project, include the requirement for a clean installation of Windows 10, the absence of significant software or hardware issues, and basic knowledge of system information tools. These assumptions are important to ensure that the project can be executed smoothly and that the outcomes are reliable.

2.3 Data set

This project does not rely on any specific data set but rather on real-time data collected from the target system using system information tools.

3. Analysis Report

This section will describe in detail about the report as discussed earlier with some snapshots as a prove to know more clearly about this.



The above snapshot talk about the CPU with the help of Speccy open-source software. AS described above all things mentioned with details.

Cores: 4
This refers to the number of physical processing units within the processor. In this case, there are four cores, meaning the processor can handle four tasks simultaneously.

Threads: 8
Each core can handle two threads, so the total number of threads is twice the number of cores. In this case, there are eight threads, allowing for better multitasking and performance.

Name: Intel Core i5 8265U
This is the official name of the processor.

Code Name: Kaby Lake-U/Y
This is the code name of the processor's microarchitecture, which is a specific design of the processor.

Package: Socket 1356 FCBGA
This is the physical socket type that the processor uses to connect to the motherboard.

Technology: 14nm
This refers to the size of the transistors on the processor's chip, measured in nanometres. The smaller the size, the more transistors can fit on the chip, allowing for better performance and efficiency.

Specification: Intel Core i5-8265U CPU @ 1.60GHz
This is the full specification of the processor, including the model’s name and clock speed.

Family: 6
This is a general category for the processor based on its design and features.

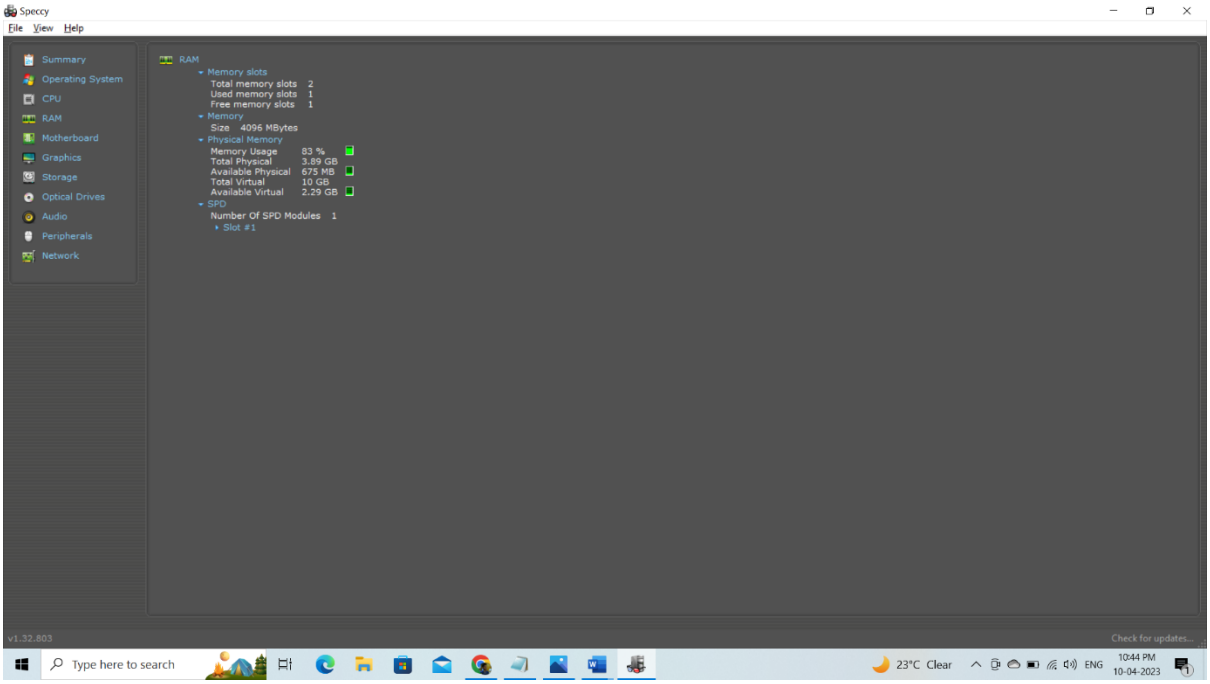
Extended Family: 6
This provides a further categorization of the processor within its family.

Model: E
This is a specific model of the processor within its family and extended family.

Extended Model: 8E
This provides a further categorization of the processor within its model.

Stepping: C

This is a version number for the processor's microcode, which is software that controls the processor's operation.



This snapshot talks about the RAM and see all details below for more information.

The image is providing information about the memory slots in a computer system, along with details about the memory and physical memory usage.

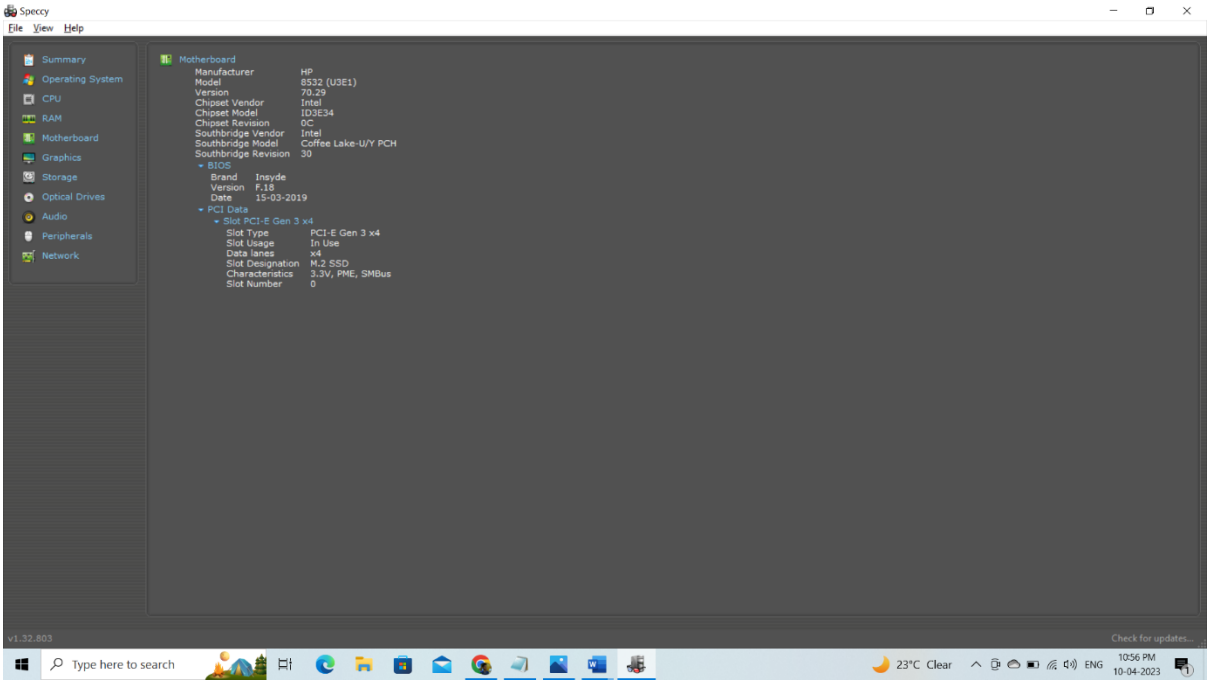
Firstly, it mentions that there are a total of two memory slots available in the system, out of which one slot is currently being used, and one slot is free for future upgrades. The memory size of the system is mentioned to be 4096 MBytes or 4GB. This refers to the total amount of memory that the system has available for use.

Moving on to the physical memory section, the statement provides information about the memory usage of the system. Memory usage is mentioned to be 86%, which means that a significant portion of the available memory is currently in use.

The total physical memory available in the system is mentioned to be 3.89 GB. This refers to the total amount of memory that is physically installed in the system.

However, only 546 MB of physical memory is currently available for use, which means that most of the installed memory is currently in use by the system. The statement also provides information about the total virtual memory available in the system, which is mentioned to be 10 GB. This refers to the amount of virtual memory that the system can utilize in addition to the physical memory.

Out of the total virtual memory available, only 2.17 GB is currently available for use by the system.

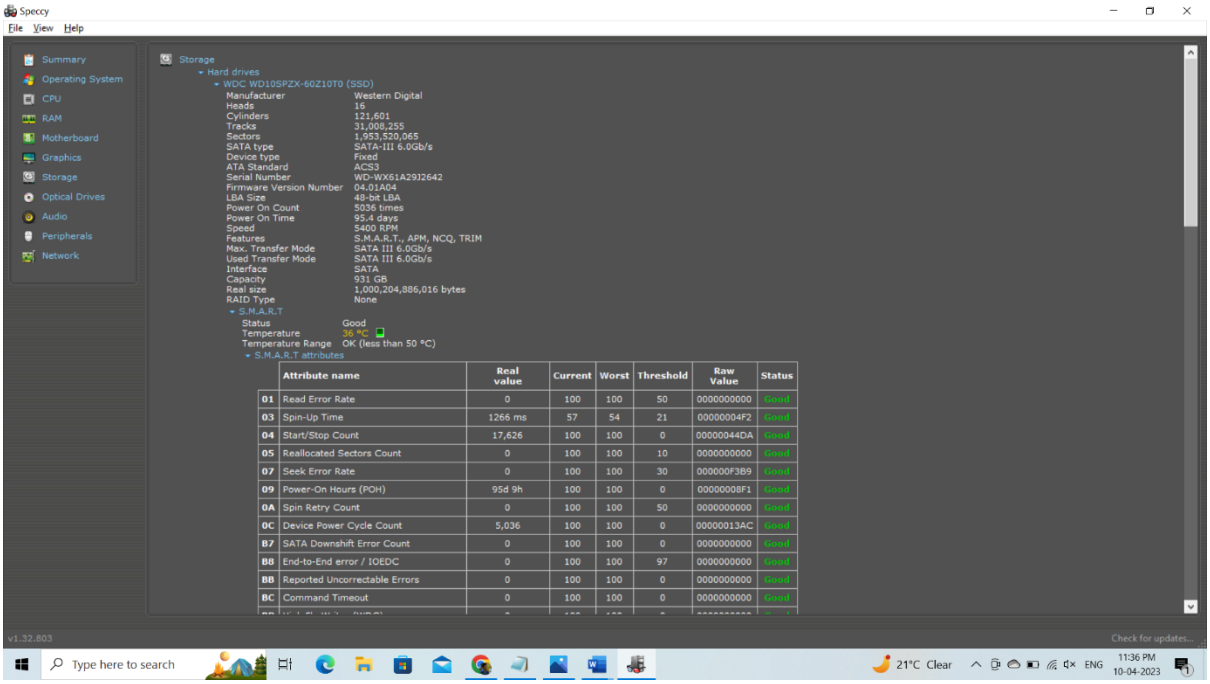


The above snapshot is all about the Motherboard of this device which is desktop running on window 10.

It provides information about a computer system's manufacturer, model, version, chipset, BIOS, and PCI data. The computer system is manufactured by HP, and its model number is 8532 (U3E1). The system's version is 70.29. The chipset vendor of the system is Intel, and the model is ID3E34. The chipset revision is mentioned to be 0C.

The Southbridge vendor is also Intel, and the model is Coffee Lake-U/Y PCH. The Southbridge revision is mentioned as 30. Moving on to the BIOS section, the statement mentions that the brand of the BIOS is Insyde. The version of the BIOS is F.18, and the date of release is mentioned as 15-03-2019.

It is about the PCI data of the system. It mentions that there is one PCI-E Gen 3 x4 slot in use in the system, and it is designated as M.2 SSD. The slot number of the PCI-E Gen 3 x4 slot is mentioned as 0, and it has four data lanes. The characteristics of the slot are mentioned as 3.3V, PME, and SMBus.



Storage plays a vital role in any device specially with your desktop and above image show about the storage of this device which is used for the project.

The hard drive's manufacturer is Western Digital, and the model is WDC WD10SPZX-60Z10T0. It is a Solid-State Drive (SSD), which means that it uses flash memory instead of spinning disks to store data. The hard drive has 16 heads, 121,601 cylinders, and 31,008,255 tracks. It has 1,953,520,065 sectors, and a capacity of 931 GB.

The SATA type of the hard drive is mentioned as SATA-III 6.0Gb/s, and it is a fixed device with an ATA Standard of ACS3. The LBA size is 48-bit LBA.

The hard drive has a serial number of WD-WX61A29J2642, and the firmware version number is 04.01A04. It also provides information about the hard drive's power on count and power on time. The power on count is mentioned as 5036 times, and the power on time is 95.4 days.

The speed of the hard drive is mentioned as 5400 RPM, and it has various features like S.M.A.R.T., APM, NCQ, and TRIM. The hard drive's maximum transfer mode and the currently used transfer mode are both SATA III 6.0Gb/s.

The interface of the hard drive is SATA, and its real size is mentioned as 1,000,204,886,016 bytes. However, the actual capacity of the hard drive is 931 GB.

The RAID type of the hard drive is mentioned as None, indicating that it is not part of any RAID configuration.

4. References

- Google
- You Tube
- GitHub
- Speccy
- Wikipedia