

BS IT 1 2024 - 2025

COMP TALK: COMPUTER HARDWARE AND SOFTWARE

THEIR IMPLEMENTATION IN THE DIFFERENT INSTITUTIONS IN THE COMMUNITY

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COMPUTERS

(device for processing, storing, and displaying information)



Originally referring to a person who performed calculations, the term "computer" is today nearly always used to describe automated technological devices. The design, components, and purposes of contemporary digital electronic computers are the main topics of this article's first section. The history of computers is covered in the second section. See computer science for information on computer theory, software, and architecture.

Computers carry a heavy impact on nowadays' institutions and is a significant tool in today's modern age.

WHAT ARE THE
TYPES OF
COMPUTERS?





Analog computers

Analog computers use continuous physical magnitudes, like voltages, to represent information. Initially, they used mechanical components, but after World War II, voltages became the standard. By the 1960s, digital computers largely replaced them, though analog and hybrid digital-analog systems remained in use for tasks like aircraft and spaceflight simulation.

Digital computers

In contrast to analog computers, digital computers represent information in discrete form, usually as sequences of 0s and 1s (binary digits, or bits). The modern era of digital computers began in the late 1930s and early 1940s in the U.S., Britain, and Germany. Early devices used switches controlled by electromagnets (relays), with programs stored on punched paper tape or cards, and limited internal data storage.





Minicomputers

Minicomputers, introduced in the mid-1960s, were small, inexpensive systems used by single departments or small groups within organizations. Typically dedicated to specific tasks, they had limited computational power but were highly compatible with laboratory and industrial devices for data collection and input.

Microcomputers

A microcomputer is a small computer built around a microprocessor chip. Unlike early minicomputers, which used transistors, microcomputers integrated thousands or millions of transistors on a single chip. The first microprocessor, the Intel 4004, was introduced in 1971, originally for a Japanese calculator. In 1975, the Altair, the first personal computer, used the Intel 8080 microprocessor. Early microcomputers, like minicomputers, had limited storage and data-handling capabilities, but these improved as storage technology and processing power advanced.





Supercomputers

Supercomputers have traditionally been the most potent computers of the day. Historically, their use has been restricted to high-priority calculations for government-sponsored research, like weather modeling and nuclear simulations, and they have been exceedingly costly.

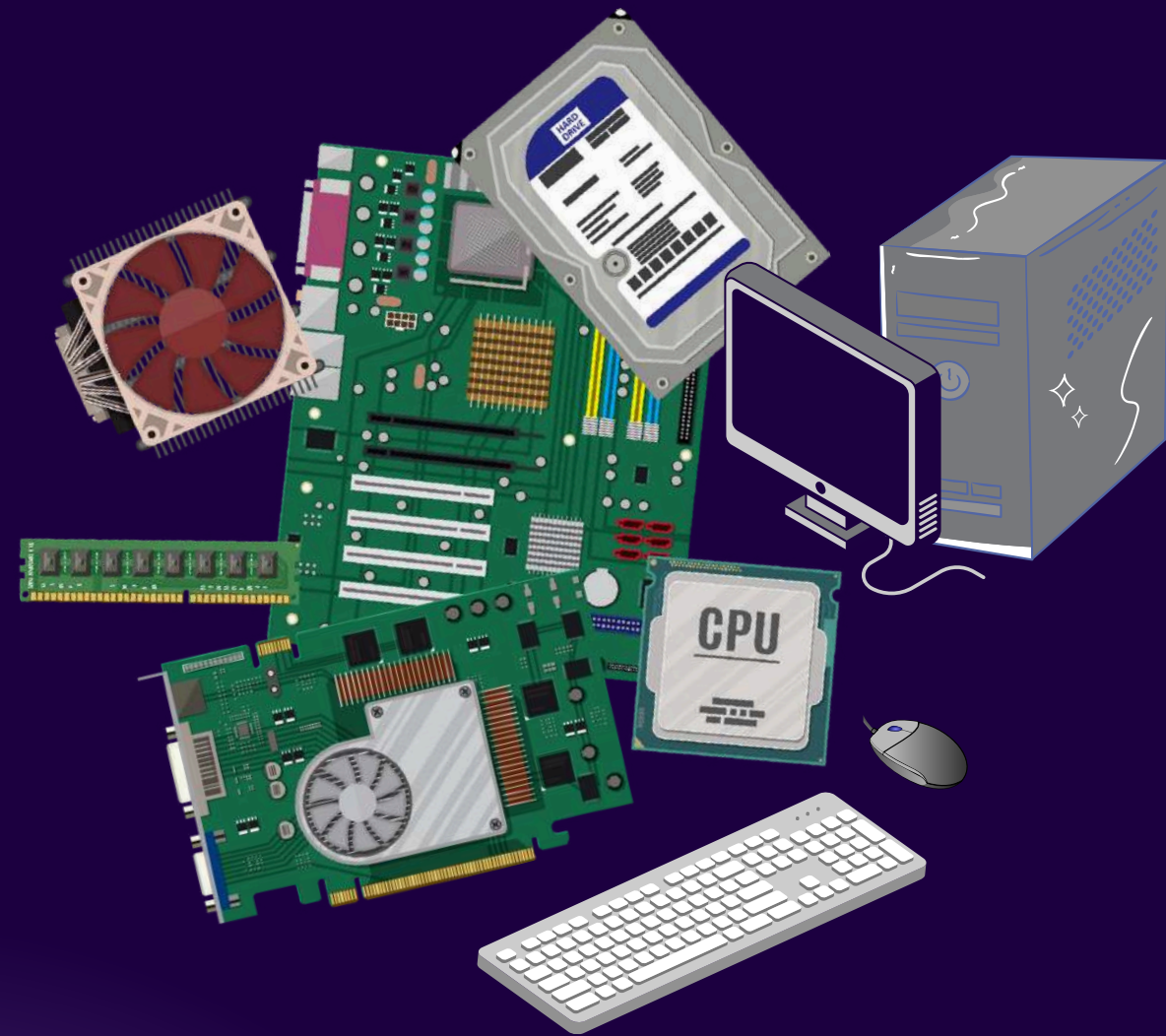
Mainframe computers



Mainframes, created by companies like Unisys and IBM in the 1950s and '60s, were large, expensive computers used by major corporations and government labs. These powerful systems were leased rather than sold, with the IBM 1401 renting for \$8,000 per month in 1959. Known for their large storage, fast components, and reliability, mainframes were designed to handle vital tasks. They were operated by specialized systems programmers, while other users submitted batch jobs to be processed one at a time. Mainframes became essential for organizations due to their ability to manage critical operations.

HARDWARE

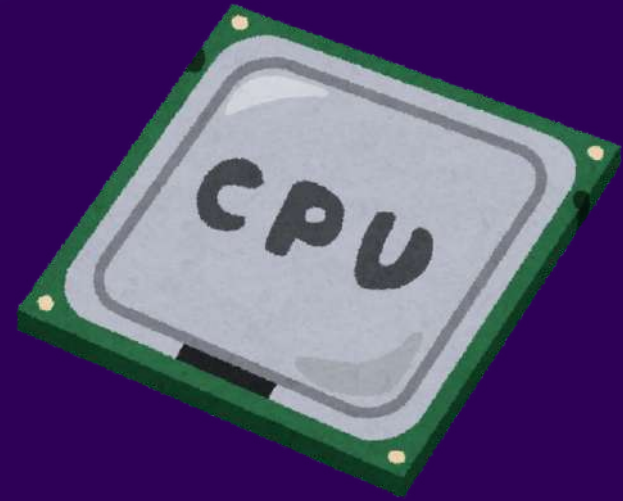
(the physical components of a computer)



The physical elements of a computer, its hardware, are generally divided into the central processing unit (CPU), main memory (or random-access memory, RAM), and peripherals. The last class encompasses all sorts of input and output (I/O) devices: keyboard, display monitor, printer, disk drives, network connections, scanners, and more.

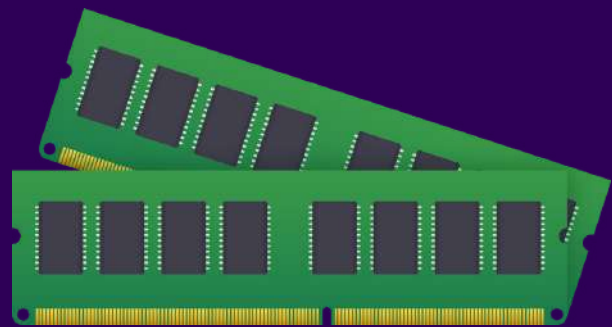
WHAT ARE THE KEY
COMPONENTS OF
HARDWARE?





Central Processing Unit

The Central Processing Unit (CPU) is the core of any digital computer system, consisting of the main memory, control unit, and arithmetic-logic unit. It acts as the physical heart of the computer, connecting to various peripheral devices like input/output units and storage. In modern computers, the CPU is typically integrated into a microprocessor chip.



Random Access Memory

RAM (Random Access Memory) is the main memory of a computer, allowing the CPU to access specific data quickly, regardless of the sequence in which it was stored. There are two types of RAM: Static RAM (SRAM) and Dynamic RAM (DRAM). SRAM stores data as long as power is supplied, while DRAM requires periodic refreshing to retain data. DRAM uses fewer components, allowing for more memory storage, but has slower access times compared to SRAM.

Peripherals

A peripheral device is any device used to input information into a computer, store or process it, and deliver the processed data to a user or machine. These devices make up the peripheral equipment of modern digital systems and are classified into three categories:

Output devices

Convert processed data back into a form that is intelligible to the user. Examples include video display terminals, printers (ink-jet, laser), speakers, and devices that control machinery in response to data.



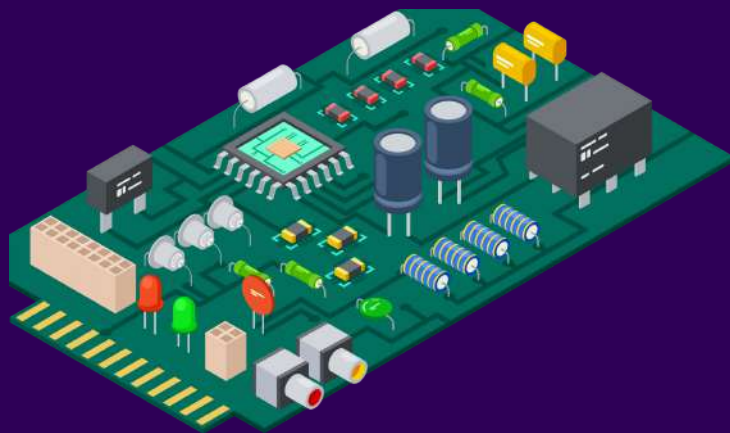
Input devices

Convert data and instructions into a form understandable by the computer. Examples include keyboards, mice, trackpads, microphones, webcams, sensors (for temperature, pressure), and optical laser scanners (used in barcode scanning).



Storage

refers to components that provide long-term data retention, such as hard disk drives (HDDs) and solid-state drives (SSDs). Unlike RAM, storage keeps your data, files, programs, and operating system intact even when the computer is turned off.



Motherboard

The motherboard is the main circuit board in a computer, connecting all components. It holds the CPU, RAM, expansion cards, and connects to storage devices and external peripherals like the monitor, keyboard, and mouse. The motherboard's base is a non-conductive material with copper traces that form the circuits linking the components.

WHAT ARE THE
TYPES OF
HARDWARE?





Desktops

Desktops are stationary personal computers designed for regular use in a home or office setting. They typically consist of a separate monitor, keyboard, mouse, and a CPU unit that houses the internal components. They offer more power and upgradability compared to portable devices, making them ideal for tasks like gaming, graphic design, and business operations.



Laptops

Laptops are portable personal computers that combine a screen, keyboard, and internal hardware in a single compact unit. They are designed for mobility and convenience, allowing users to work or access data on the go. Laptops generally offer less power than desktops but provide sufficient capabilities for tasks such as browsing, document editing, and media consumption.



Servers

Servers are powerful, high-performance computers that manage, store, and distribute data across networks. They provide services like hosting websites, managing databases, and supporting email or file storage. Servers are typically used by businesses and organizations to handle large volumes of requests and maintain secure, centralized data access.

Mobile devices

Mobile devices, including smartphones and tablets, are small, portable gadgets designed for communication, entertainment, and productivity. They feature touchscreens and wireless connectivity, offering a variety of apps and functionalities such as calling, texting, internet browsing, and media consumption. Mobile devices are designed for easy use while on the move, providing users with access to information and services anywhere.



WHAT'S A
SOFTWARE?

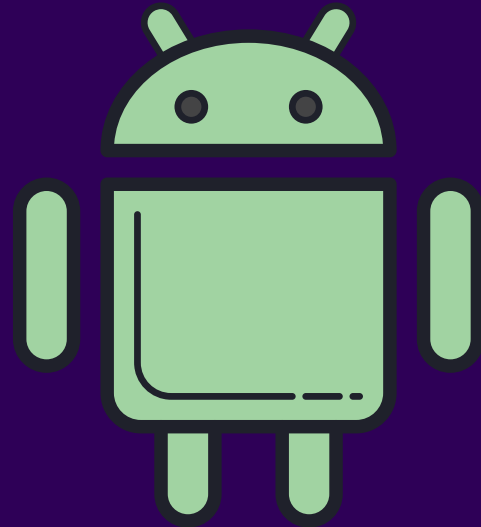


SOFTWARE

(programs that enable computer functionality)



The instructions that inform a computer what to do are called software. The whole collection of programs, processes, and routines involved in a computer system's operation is referred to as software. To distinguish these instructions from hardware, or the actual parts of a computer system, the word was created. A program, often known as a software program, is a collection of instructions that tells the hardware of a computer how to do something.



System Software

System software is the set of programs that manage and control the computer hardware, enabling the system to run smoothly. It includes the operating system (like Windows, macOS, or Linux), device drivers, and other programs that allow hardware and software to communicate.



Application Software

Application software refers to programs designed to perform specific tasks for users, such as word processing, web browsing, or photo editing. Examples include Microsoft Word, Google Chrome, and Adobe Photoshop. These programs are designed to help users complete tasks efficiently.



Utility Software

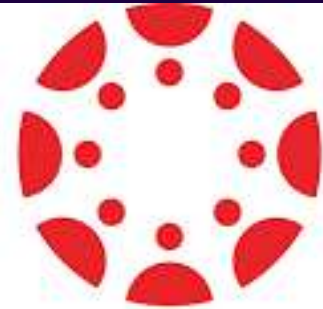
Utility software consists of programs that perform specific maintenance tasks to help manage, optimize, and protect the computer system. Examples include antivirus programs, file management tools, disk cleaners, and backup software, which improve the performance and security of the system.

EXAMPLES

(softwares used daily for school)

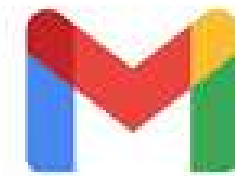


Google Classroom

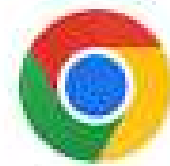


CANVAS

BY INSTRUCTURE



Gmail



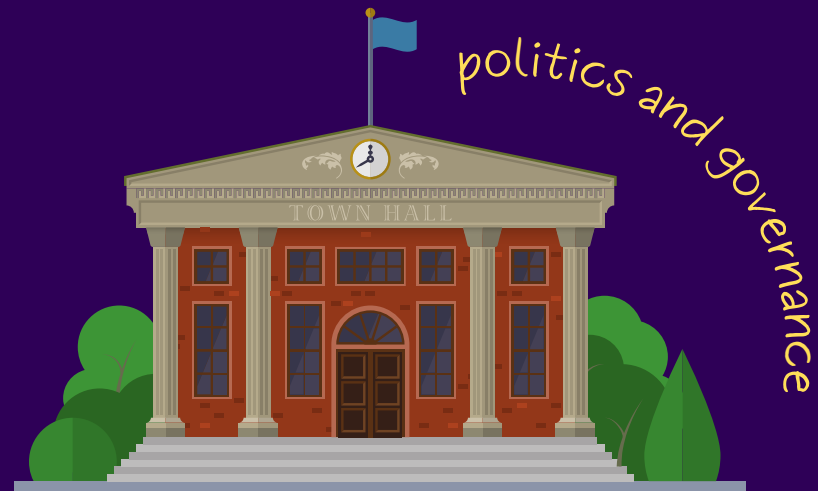
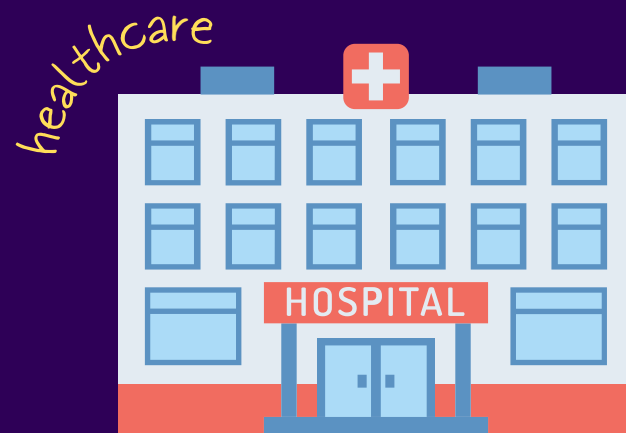
chrome

facebook

for school updates!

IMPLEMENTATION

(its' implementation in various institutions)



implementation
implementation
implementation
implementation
implementation



HEALTHCARE

(its' implementations in the medical field)



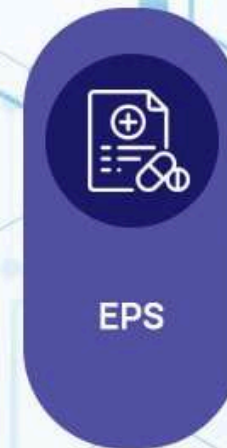
Computers can do various jobs with high efficiency, thus they are utilized in hospitals for patient information management, medical research, surgical operations, medical equipment, and imaging.

Computers are widely used in medicine for hospital information systems, data analysis, medical imaging laboratory computing, computer-aided medical decision-making, critical patient care, computer-assisted therapy, and other applications. Let's discover more about it later on.

HEALTHCARE

(softwares in the medical field)

Types of Healthcare Software



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EDUCATION

(computers' impact on education!)



Computers have greatly impacted education by enhancing teaching, learning, and administration. They enable interactive, Audio-Visual learning, making complex topics easier to understand and engaging for students. With internet access, students can quickly research and retrieve information, eliminating the need for large books. Computers also support online learning, allowing students and teachers to connect remotely, offering flexibility and convenience.

In addition, computers simplify administrative tasks like record-keeping, document creation, and monitoring student performance. Online libraries provide easy access to resources, while Computer-Based Training (CBT) programs allow students to learn at their own pace. Computers also help students stay updated with evolving technologies, preparing them for future advancements.

EDUCATION

(softwares in the educational field)



EDUCATION

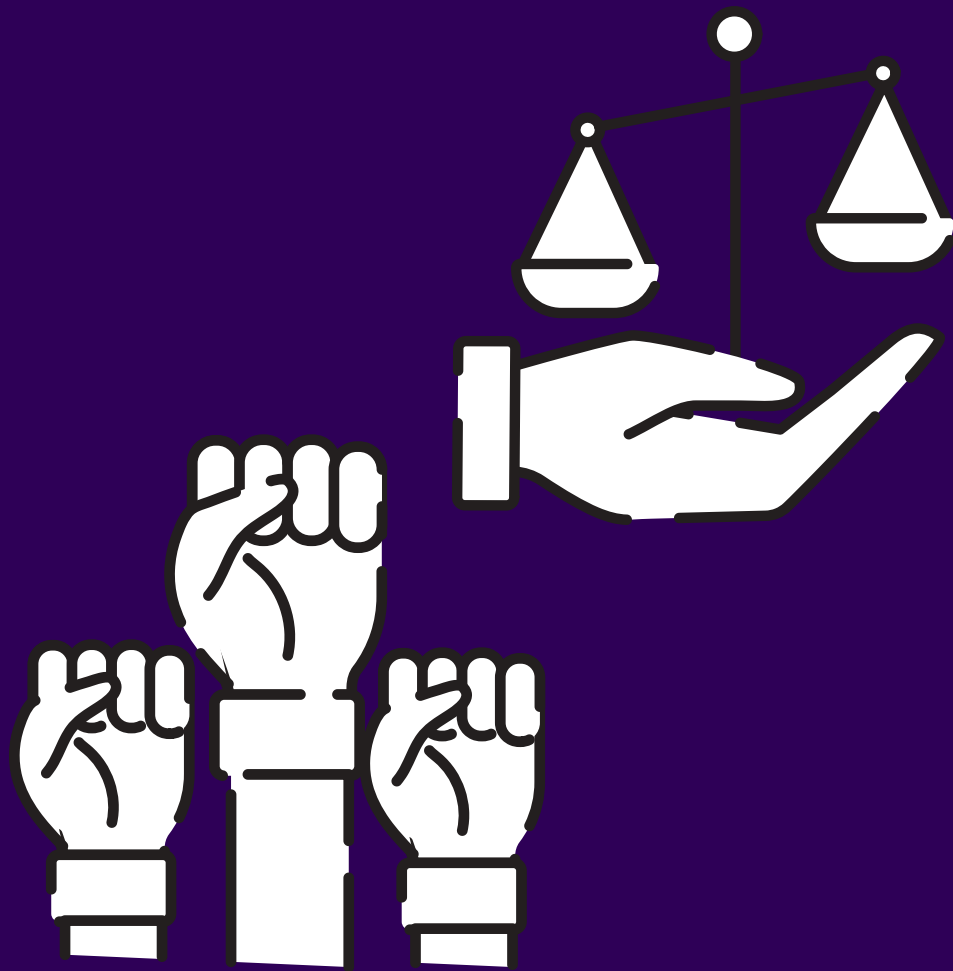
(hardwares in the educational field)

TYPES OF HARDWARE



POLITICS AND GOVERNANCE

(the impacts of computers on politics and in governing)



Computers play a crucial role in modern politics, with technology shaping the political landscape. As voters increasingly engage in virtual environments, politicians must leverage digital platforms like social media, websites, and blogs to connect with their audience. Understanding both political and computer terms is essential in this era.

Computer technology aids politicians by facilitating quick communication with voters, targeting specific audiences through data collection and digital media. Political campaigns now rely heavily on data for creating tailored marketing strategies and delivering personalized messages. Technology also helps politicians engage with supporters, solicit donations, and address important issues like online privacy and data protection, which are central topics in today's political discourse.

GOVERNMENT

(hardwares in the government field)



“storing massive amounts of data of ALOT of PEOPLE!”

POLITICAL

(hardwares in the political field, such as electronic voting)





BUSINESS

(computers' impact on business)

Computers have become integral to nearly every aspect of modern business operations. They help streamline processes such as product creation, marketing, accounting, and administration, making businesses more efficient and cost-effective. By automating tasks like data entry and financial calculations, computers reduce the need for manual labor, saving both time and resources. The ability to analyze large volumes of data allows businesses to make better-informed decisions, improve strategies, and optimize profits.

In marketing, computers enable businesses to reach a larger audience through digital platforms like social media, email campaigns, and websites. This not only enhances brand visibility but also allows for targeted marketing efforts, leading to better customer engagement and higher conversion rates. Computers also simplify the process of maintaining customer records, tracking inventory, and handling financial transactions, which are essential for day-to-day operations.



BUSINESS

(softwares for gettin down to business!)

Frameworks	 ZEND FRAMEWORK		 smarty	 Symfony	 CodeIgniter
Language				 python™	
eCommerce	 Magento™ <small>Open Source eCommerce</small>		 osCommerce <small>Open Source E-Commerce Solutions</small>		 zencart <small>the art of e-commerce</small>
CMS	 WORDPRESS	 Drupal	 Joomla!	 moodle	 TYPO3
Others	 SUGARCRM <small>THE CLOUD IS OPEN</small>	 OpenX	 ubuntu	 Asterisk	 Apache Solr

HERE COMES MY
ANALYSIS/REACTION





ANALYSIS/REACTION



As I explored the impact of computer hardware and software in various institutions, I began to realize just how deeply intertwined these elements are in shaping modern society. At first, I saw them as separate, abstract concepts, but upon further reflection, it became clear that they are the very backbone of today's technological landscape, and they play a crucial role in the way institutions—whether in business, healthcare, or education—function and evolve.

Understanding computer hardware has given me a greater appreciation for the infrastructure that powers the world's digital systems. From the processors that drive our devices to the memory and storage that hold our data, hardware is not just the physical components of a computer—it is the essential framework that supports everything we do online and offline. As industries increasingly rely on more powerful hardware to store and process vast amounts of data, I realized how critical these systems are to facilitating everything from basic operations to advanced artificial intelligence. The evolution of hardware is vital for the continued success and expansion of technology across all sectors, ensuring that we can handle ever-growing data demands and more complex computational tasks.



ANALYSIS/REACTION



The exploration of software has deepened my understanding of how these systems come to life and serve real-world needs. Software isn't just a collection of programs—it's the tool that makes the hardware functional, translating user input into meaningful actions. In sectors like healthcare, software manages patient records, improves diagnostics, and facilitates telemedicine, while in education, it provides interactive learning tools and streamlines administrative tasks. The integration of cloud computing and AI-powered applications has revolutionized how businesses and institutions operate, making tasks faster, more efficient, and more accessible. This reinforced my understanding that software isn't just about coding or creating apps—it's about solving problems and creating systems that simplify, improve, and innovate daily operations across industries.

The implementation of these technologies across institutions also showed me just how crucial IT is to the advancement of society. In healthcare, technology is transforming patient care and record-keeping. In education, it supports distance learning and streamlines management. For businesses, it enhances customer service, boosts productivity, and improves decision-making processes. The versatility of both hardware and software means that IT is not just a field that supports other industries—it is the driving force behind their growth and efficiency.



ANALYSIS/REACTION



Reflecting on all of this has reassured me that choosing Information Technology as my course was not only the right decision but also one that aligns perfectly with the future. The scope of IT is vast, and its applications are only going to expand as technology continues to evolve. From managing data to automating processes, IT is an indispensable part of every institution, and its potential is limitless. This course is not just about understanding the tools we use today but about being prepared for the innovations of tomorrow. The more I learn, the more I'm convinced that Information Technology is the key to unlocking new opportunities, solving complex problems, and shaping the future of industries worldwide.

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