Computer Hardware and Software

by: Gabriel A. Castro

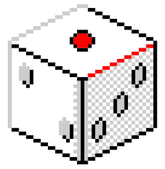
11:99PM

Agenda

Topics Covered

Hardware

Software

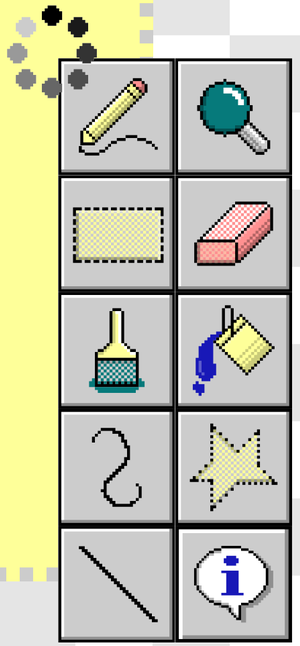


Implementation

Analysis

Start

Computer Hardware



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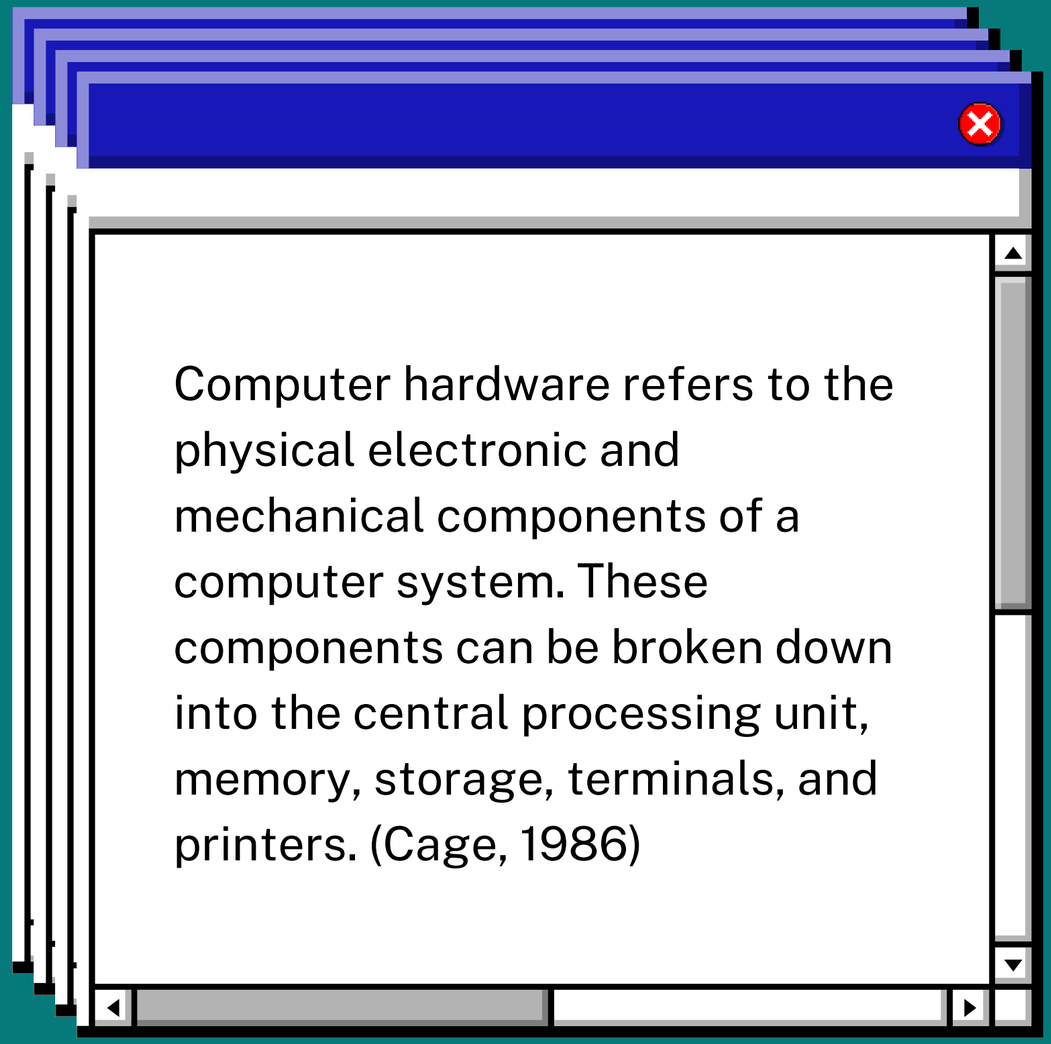
What is Computer Hardware?



Computer hardware refers to the physical electronic and mechanical components of a computer system. These components can be broken down into the central processing unit, memory, storage, terminals, and printers. (Cage, 1986)

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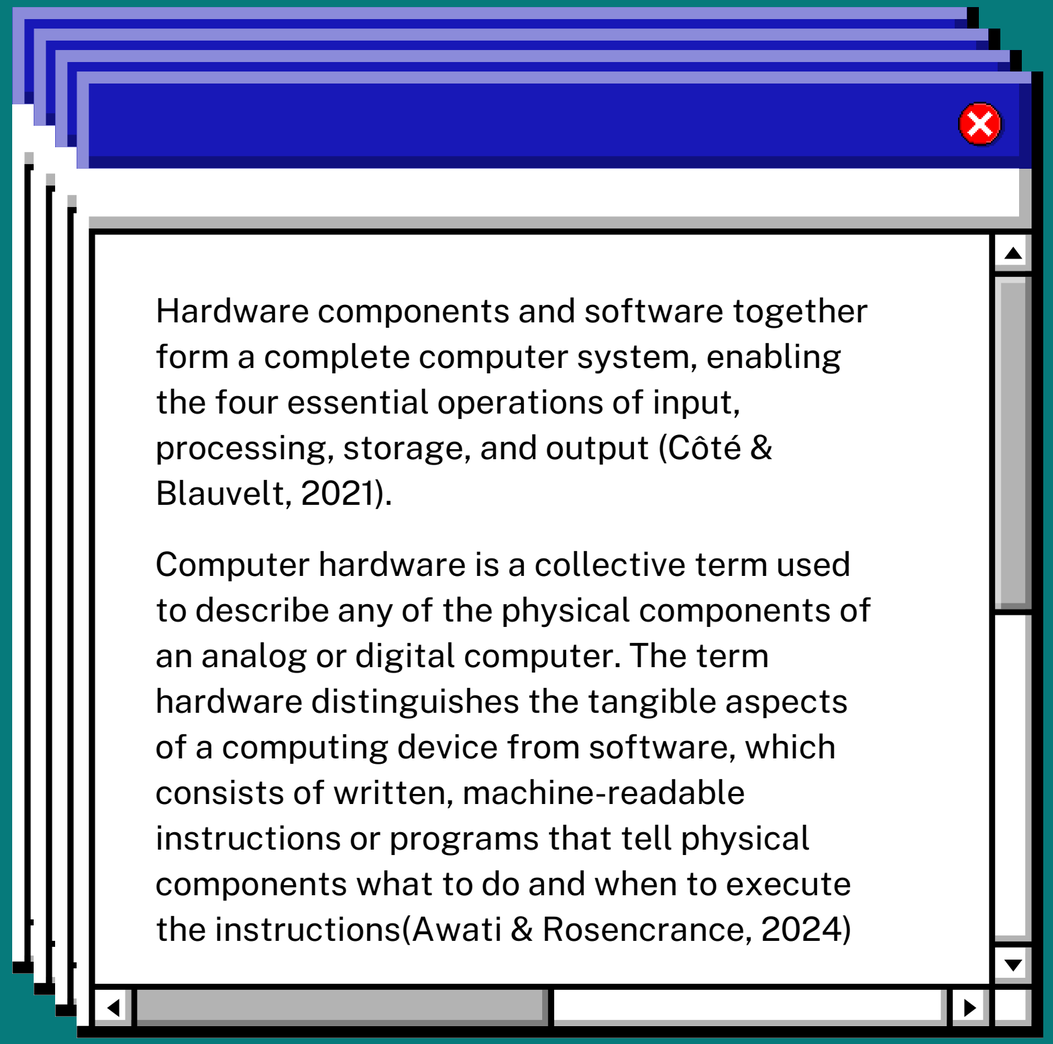
What is Computer Hardware?



Hardware components and software together form a complete computer system, enabling the four essential operations of input, processing, storage, and output (Côté & Blauvelt, 2021).

Computer hardware is a collective term used to describe any of the physical components of an analog or digital computer. The term hardware distinguishes the tangible aspects of a computing device from software, which consists of written, machine-readable instructions or programs that tell physical components what to do and when to execute the instructions(Awati & Rosencrance, 2024)

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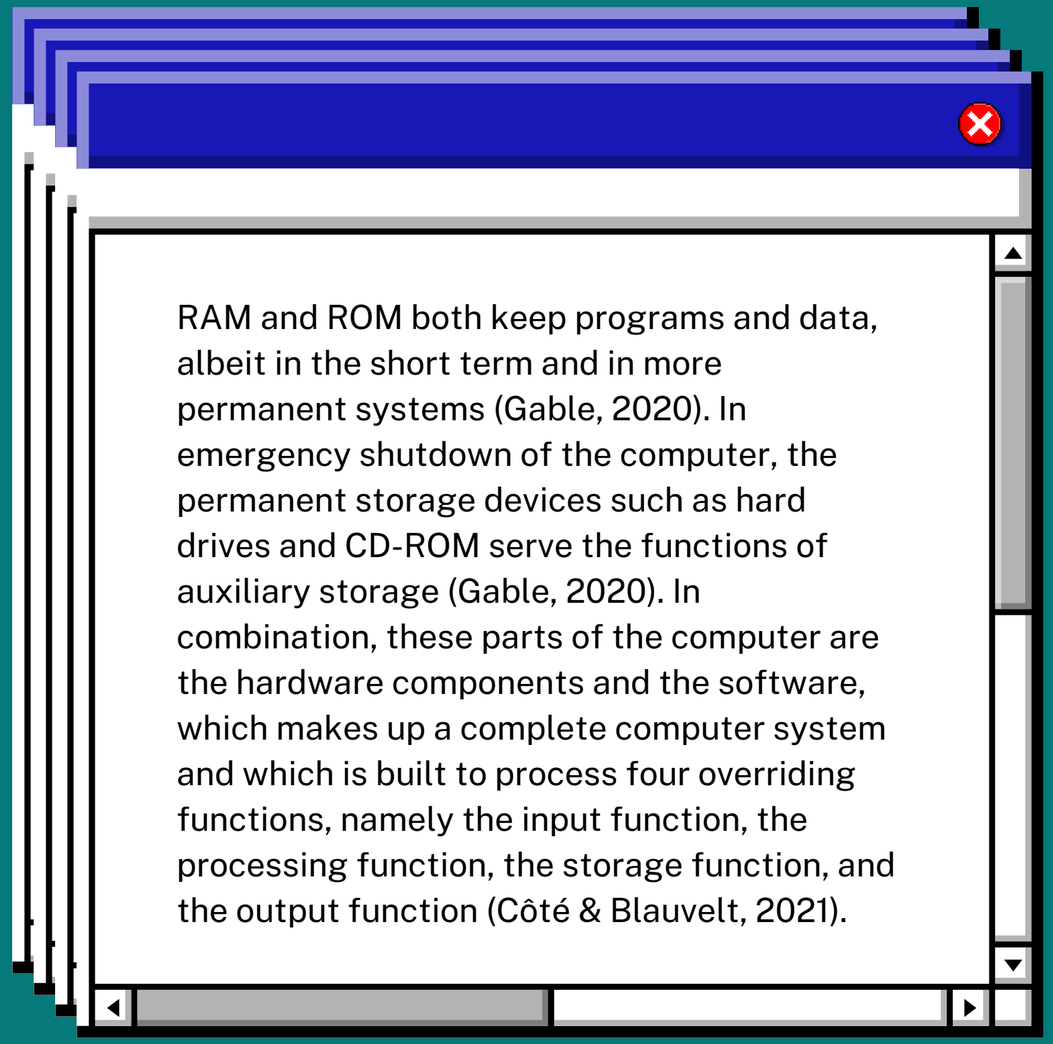
What is Computer Hardware?



RAM and ROM both keep programs and data, albeit in the short term and in more permanent systems (Gable, 2020). In emergency shutdown of the computer, the permanent storage devices such as hard drives and CD-ROM serve the functions of auxiliary storage (Gable, 2020). In combination, these parts of the computer are the hardware components and the software, which makes up a complete computer system and which is built to process four overriding functions, namely the input function, the processing function, the storage function, and the output function (Côté & Blauvelt, 2021).

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Computer Software

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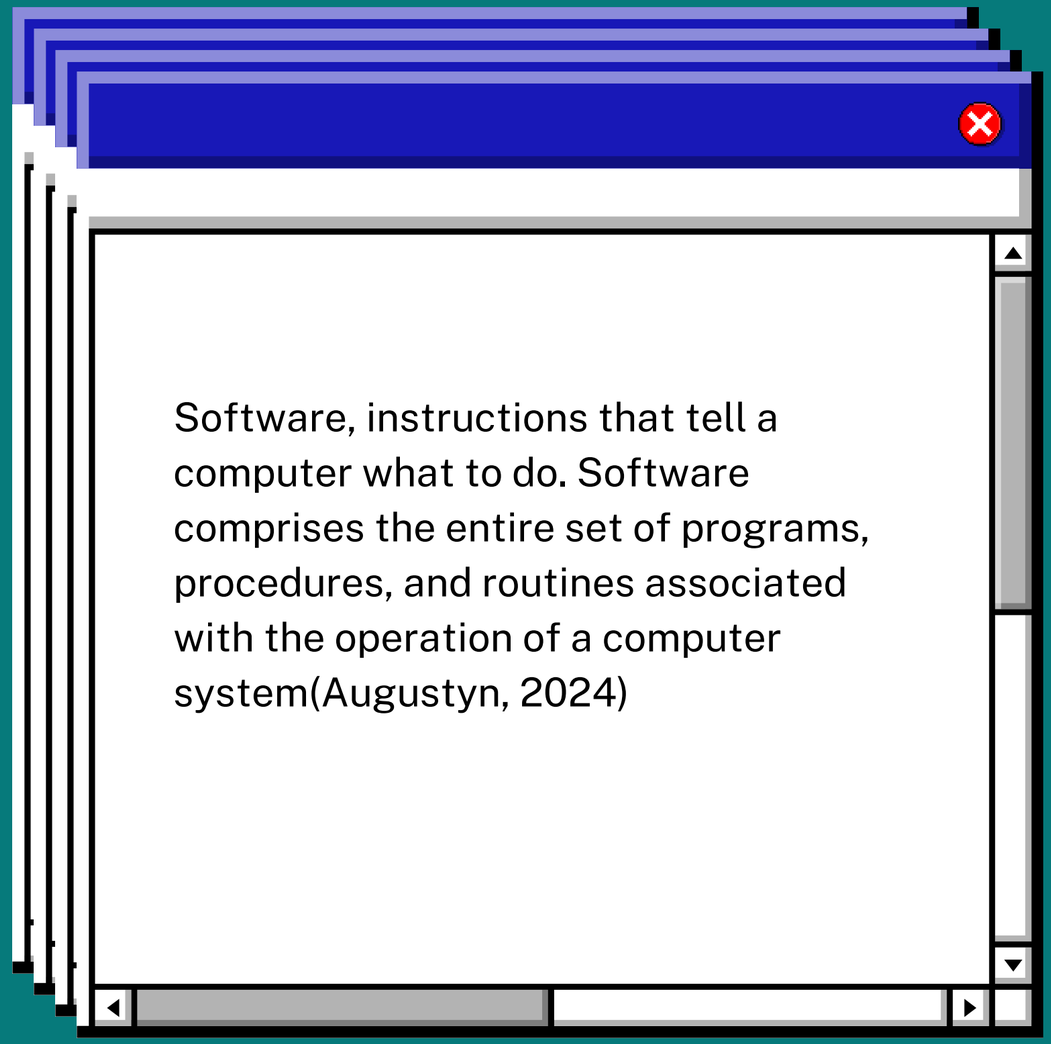
What is Computer Software?



Software, instructions that tell a computer what to do. Software comprises the entire set of programs, procedures, and routines associated with the operation of a computer system(Augustyn, 2024)

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What is Computer Software?

Computer programs, or software, are used to control the functioning of the computer equipment, or hardware, for conducting experiments or analyzing data. In most computers, programs that control experiments or analyze data run in conjunction with an operating system(Gollub, 1991).

The idea of software as a computer programmer was first conceived by Alan Turing (1912-1954) the British mathematician and logician in 1935. (Mukherjee, 2015)

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What is Computer Software?

Most sources credit mathematician Paul Niquette. He reportedly came up with the word in 1953 to mark the difference between computer programs and the computers (or "hardware") that use the programs. John W. Tukey, a chemist and statistician, is credited with the first printed use of the term when he wrote a scientific article in 1958. (Valle, 2015)

The relationship between them is crucial for the functioning of a computer. Software instructs the hardware on how to perform specific tasks, and the hardware executes these instructions. Without software, hardware is inert, and without hardware, software has no platform to run on(Juhaishi, 2005)

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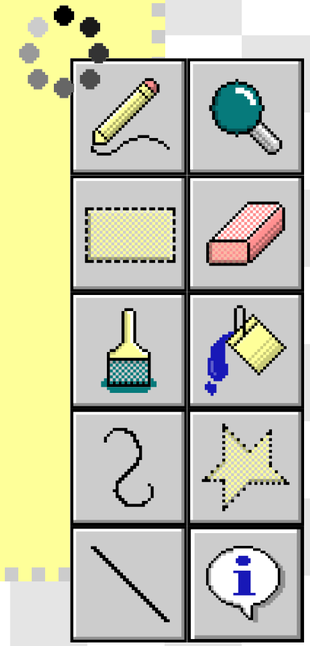
Their Implementation in the different institutions in the community



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Their Implementation in the different institutions in the community

The implementation of both hardware and software play a very important part in the development of different institutions in order for them to have the best quality, service, and efficiency.

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Their Implementation in the different institutions in the community

Software implementation is a critical business process. It enables your company to integrate and utilize software solutions effectively. When done correctly, it can boost your team's efficiency and productivity, increasing your bottom line. (Watson, 2024)

Information technology (IT) has increased productivity with hardware and software such as robotics and flexible manufacturing systems. IT has also improved information sharing and coordination along the supply chain by integrating business processes with software(Gong, Cheng & Nault, 2021).

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Their Implementation in the different institutions in the community

In a school practice, the role of educational software as a modern interactive medium is to create preconditions, to enable and accelerate the process of learning and understanding of the topics, to increase the motivation and activity of pupils in the process of education, to secure the mastering of all levels of education, starting from the knowledge of basic facts on the processes, events and phenomena, over understanding through thought processing to practical application (Collins, Hammond & Wellington, 1997).

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Their Implementation in the different institutions in the community

Health information technology (HIT) is the hardware, software, and systems that comprise the input, transmission, use, extraction, and analysis of information in the healthcare sector. The end-users of this technology include not only patients, physicians, and other front-line healthcare providers, but also medical researchers, healthcare insurance companies, public health agencies, regulatory and quality assurance entities, pharmaceutical and medical device corporations, and various levels of government. Because these entities assume a huge range of roles and have such varied needs and goals, the technology and systems that underlie HIT are, at the societal scale, critical to the delivery and advancement of healthcare. (Jen, Kerndt, & Korvek, 2023)

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Their Implementation in the different institutions in the community

The 2014 legislation included a provision for GAO to annually review agencies' data center inventories and strategies. This report addresses (1) agencies' progress and plans for data center closures and savings; and (2) agencies' progress against OMB's June 2019 revised data center optimization metrics. To do so, GAO assessed the 24 DCOI agencies' data center inventories as of August 2019, reviewed their reported cost savings documentation, evaluated their data center optimization strategic plans, and assessed their progress against OMB's established optimization targets. (US Government Accountability Office, 2020).

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Reaction/Analysis

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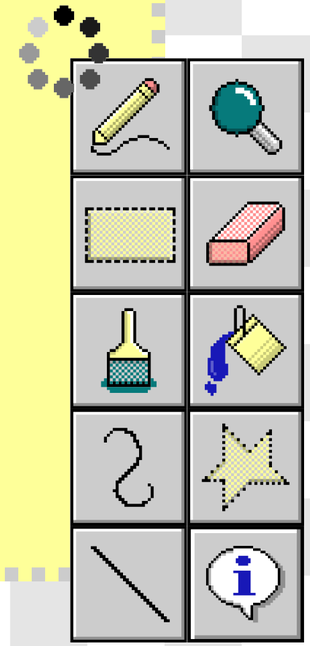

Reaction or Analysis

Hardware and software are the most important parts that define how computers operated and performs a given task. One is important for the other, without one, the computer cannot properly function, it is a complete system. That makes today's world full of plenty of hardware and software, which increases the efficiency of technologies in the current systems.

For institutions to be in a position to compete for business and sustain itself in the current market must catch up with the developments in both the hardware and the software. Failure to have or be compatible with newer and or superior technologies could lead to operational problems or poor security or inability to provide adequate services in a world that is rapidly embracing technology. Thus, constant input into and change with new technologies are not only desirable but mandatory for future sustainability.

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Reaction or Analysis

The consequences when institutions do not upgrade to newer hardware and software others as seen earlier. Older hardware often poses a problem of slow processing, frequent breakdowns thereby incurring high maintenance costs and compliance with new technologies in the market. Older software often do not support modern features, security procedures or interfaces with other systems. Also, systems in old models are prone to cyber threats since hackers target those systems, which is a great concern for institutions.

Adopting newer technologies has definite benefits for any institution. Implementing new hardware will always increase the capability of processing, storage, and power effectiveness. Implementing updated software always improves operation, security, and compatibility with the new systems such as Artificial Intelligence and Cloud computing. It is important for institutions to invest new and good quality systems in their operations can easily adopt efficient ways of doing things that result to high productivity and competitiveness.

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Reaction or Analysis

In conclusion, it is important for many institutions to incorporate newer and high quality hardware and software as a way towards ensuring operational effectiveness, security and the institution’s growth in the world. These updates must be given top priority in institutions if they have to meet the challenges of the increasingly complex, fast, and technological world.

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References

https://www.sciencedirect.com/science/article/abs/pii/S0733863518307812?via%3Dihub
https://www.thieme-connect.de/products/ejournals/abstract/10.4103/0971-3026.69346
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Thank you!