Portfolio #4

Computer Hardware and Software

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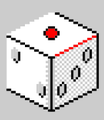
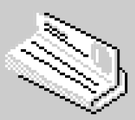


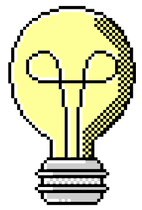


Agenda

Topics Covered

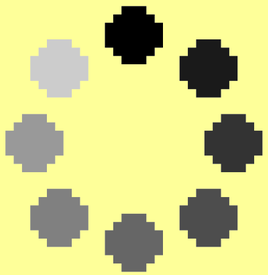
Hardware

Software

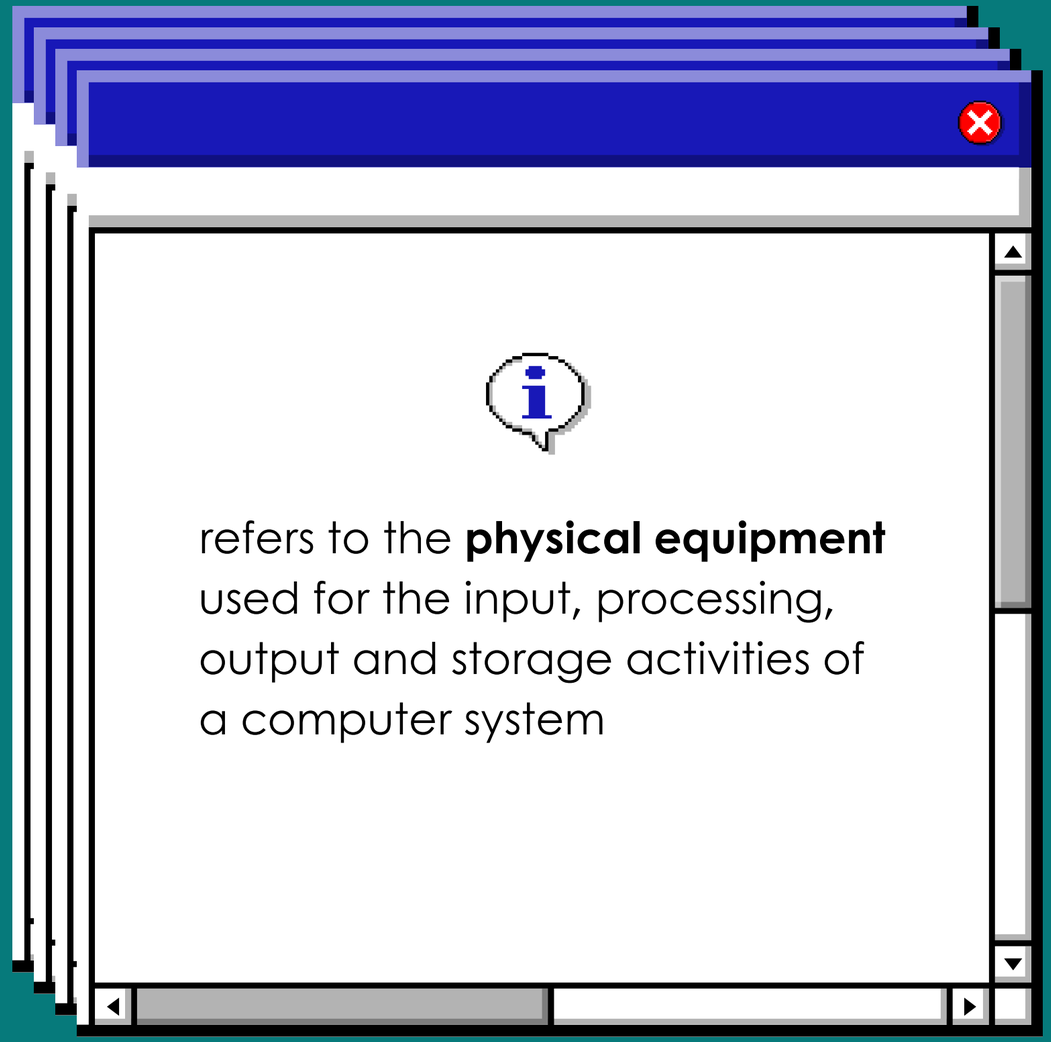


Implementation

Computer Hardware



“Hardware”


refers to the **physical equipment** used for the input, processing, output and storage activities of a computer system

CLASSES OF COMPUTERS

Supercomputers

- indicates the **fastest** computers available at a given time
- cost millions of dollars
- used by large organizations to execute demanding tasks for large data
- typically run **military** and **scientific** applications

Mainframe

- specialize in **transaction processing** and business applications
- can handle millions of transactions per day
- examples are payroll programs, Amazon, and student grade calculation

Desktop PCs

- a **standard tool** for business and the home
- generally includes a central processing unit (CPU)— and a monitor and keyboard
- have primary storage, a rewriteable CD-ROM, a DVD drive, and secondary storage.

CLASSES OF COMPUTERS

Laptops/Notebooks

- **small**, easily transportable, lightweight microcomputers
- **convenient** and easy to transport
- **cost more** than desktops
- provide users with access to processing power and data outside an office environment

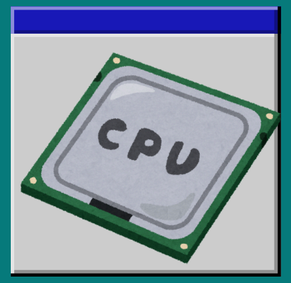
Tablets

- a complete computer contained entirely in a **flat touch screen** that users operate via a stylus, digital pen or fingertip instead of a keyboard or mouse

Thin Client Systems

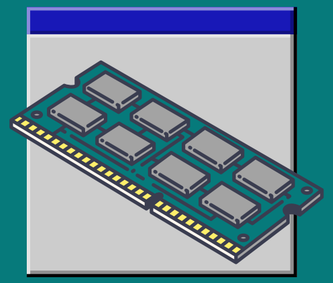
- a desktop system without the full functionality of a PC
- are **less complex**, easier and less expensive to operate and support than PCs
- fast application deployment, centralized management, lower cost and easier installation and maintenance

HARDWARE COMPONENTS



CPU

Manipulates the data and controls the tasks performed by the other components

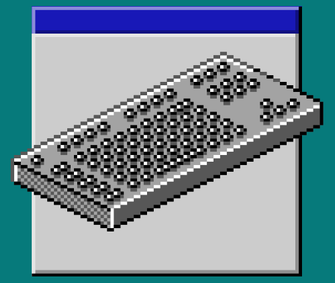


Primary storage

Temporarily stores data and program instructions during processing

Secondary storage

Stores data and programs for future use



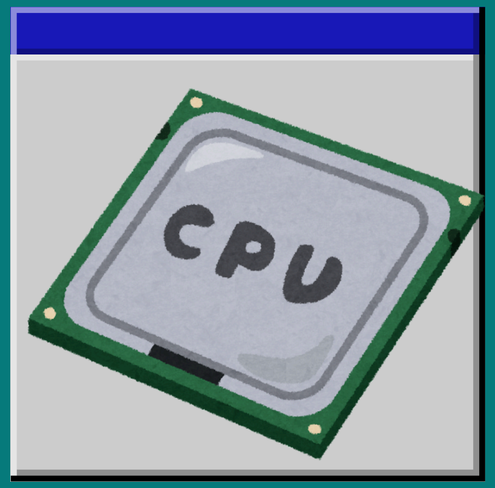
Input

Accepts data and instructions and converts them to a form that the computer can understand

Output

Presents data and information in a form people can understand

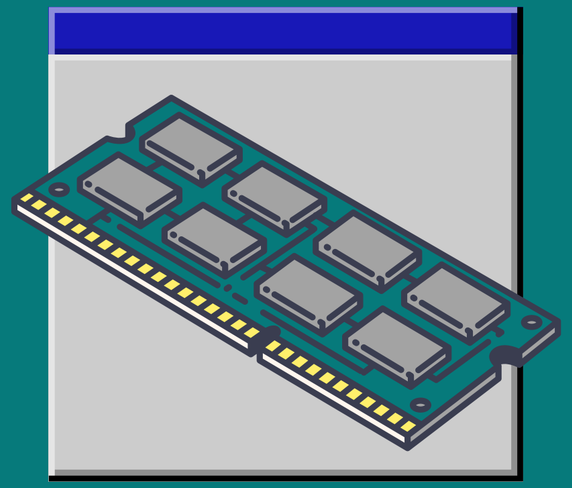
The CPU



- The **central processing unit**
- performs the computation or ‘number crunching’ inside computers
- is a **microprocessor** made up of millions of transistors embedded in a circuit on a silicon wafer or chip

- has different parts:
  - The **control unit** decodes program instructions and controls the flow of data to and from the ALU, the registers, the caches, storage, and output devices
  - The **arithmetic-logic unit** (ALU) performs the mathematic calculations and makes logical comparisons
  - The **registers** are high-speed storage areas that store very small amounts of data for short periods

Primary Storage

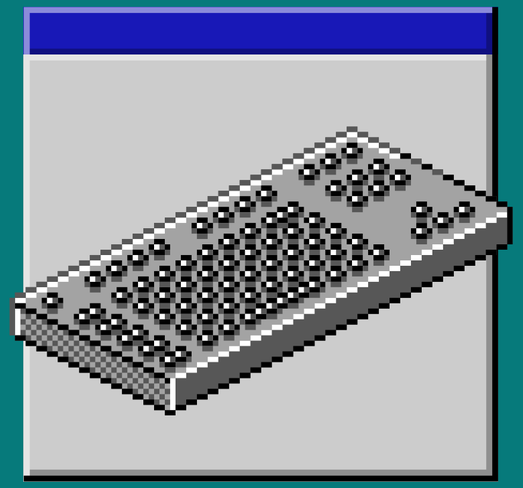


- also known as **main memory**
- the four main types of primary storage:
  - **register** - have the least capacity. stores extremely limited data
  - **cache memory** - temporarily stores data used more often so it is accessed more rapidly than RAM
  - **random access memory** (RAM) - is the part of primary storage that holds small amounts of data for processing
    - when a software program is opened, it is brought from secondary storage into RAM. as the program is used, the program's data are sent into the registers, then to the CPU.
    - is volatile — content is lost if the current is lost / turned off
  - **read-only memory** (ROM) - nonvolatile chip holding critical instructions that can only be read by the computer and cannot be changed by the user (booting, etc.)

Secondary Storage

- nonvolatile storage designed to store very **large amounts of data** for extended periods
- takes more time to retrieve data from it than from RAM
- types of media:
  - **magnetic tape** - the cheapest type medium that can handle large amounts data but is the slowest at data retrieval
  - **magnetic disks** (hard drives) - the most commonly used storage devices because of low cost, high speed, and large capacity
  - **solid state drives** (SSDs) - use less power, are silent and faster than hard drives, but cost significantly more
  - **flash memory devices** (or memory cards) - use less power, smaller, more durable than hard drives but store less data (e.g. USB)

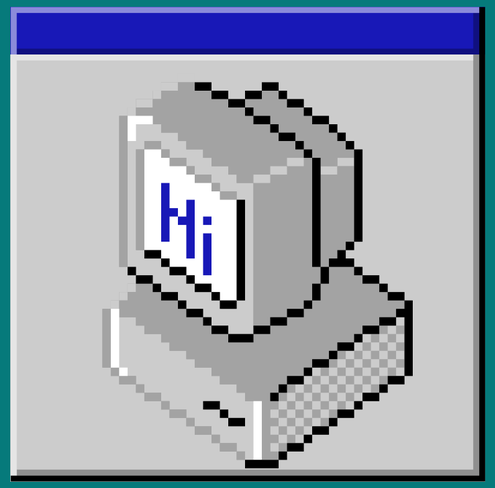
Input Devices



- allow people and other technologies to **enter data** into a computer

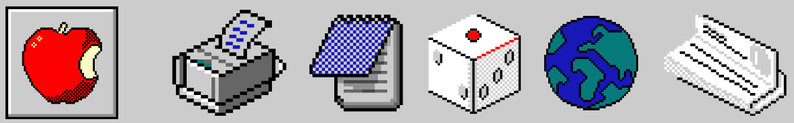
- The two main types of input devices:
  - **human data-entry devices**
    - require human effort to input data
    - e.g. keyboard, mouse, pointing stick, trackball, joystick, touchscreen, stylus and voice recognition
  - **source-data automation devices**
    - input data with minimal human intervention; speeds up data collection and reduces errors
    - e.g. barcode scanners, sensors, magnetic strip readers, OCR

Output Devices

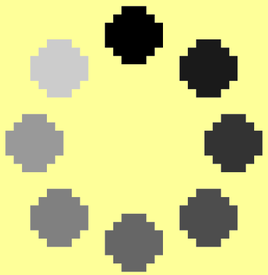


- the output generated by a computer can be **transmitted** to the user via several **output devices** and media

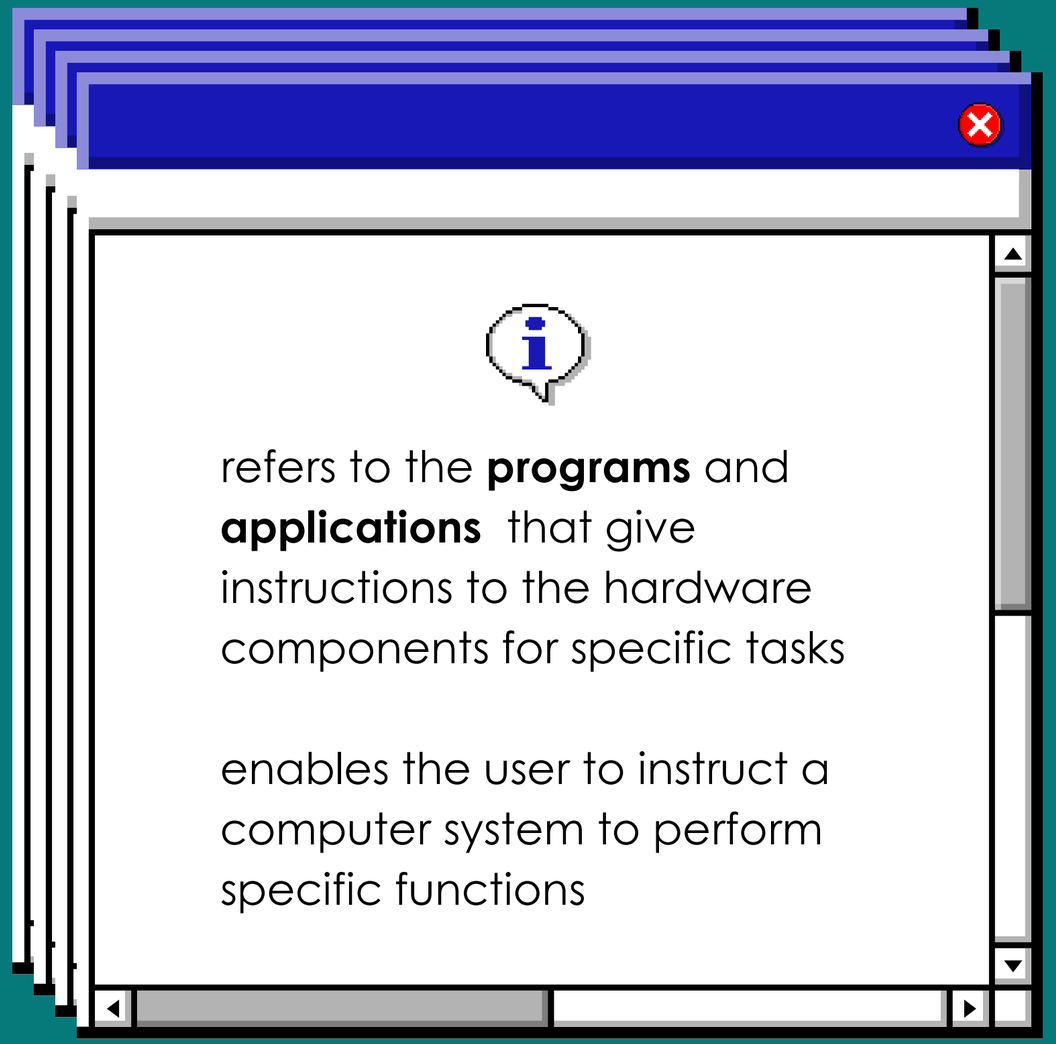
- types of output devices:
  - **monitors**
    - e.g. cathode ray tubes, LCD, flexible displays
  - **printer**
    - e.g. laser, inkjet, thermal
  - **plotters**
    - computer-directed pens for creating high-quality images
  - **e-book readers**
    - wireless, portable reading device with access to books



Computer Software



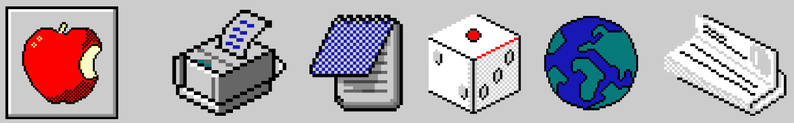
“Software”


refers to the **programs** and **applications** that give instructions to the hardware components for specific tasks
enables the user to instruct a computer system to perform specific functions

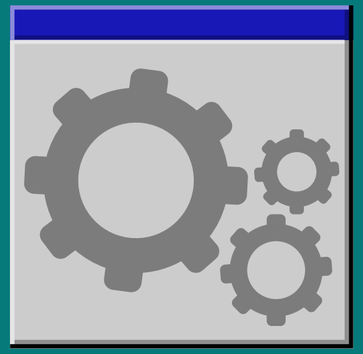
“Software”

TERMS

- **computer programs**
  - sequences of instructions for the computer
- **programming**
  - the process of writing, or coding, programs
- **documentation**
  - a written description of the functions of the program



TYPES OF SOFTWARE



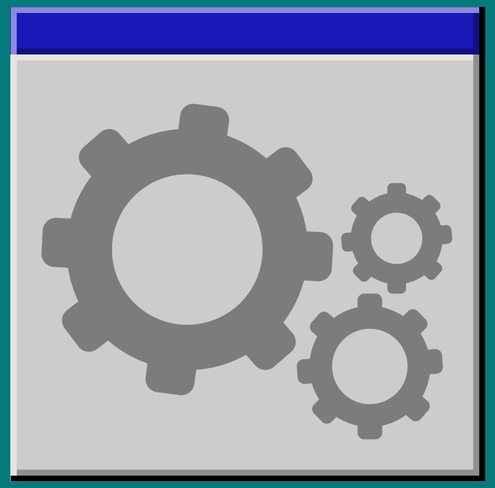
Systems software

- is an intermediary between computer hardware and application programs
- provides self-regulatory functions for computer systems, (e.g. loading itself when first turned on)
- provides commonly used sets of instructions for all applications

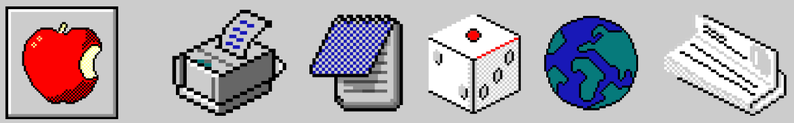
Application software

- provides more specific functionality to a user (e.g. general word processing, a payroll program), is used by many organizations today
- applies a computer to a certain need
- may be proprietary or off the shelf

Systems Software

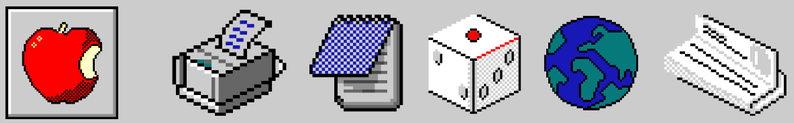


- controls and supports the computer system and its information-processing activities
- directs the basic functions of the computer
- facilitates the programming, testing and debugging of programs
- The **operating system** (OS) is the director of a computer's operations
  - It provides an interface between the user and the hardware
- The ease or difficulty of the interaction between the user and the computer is determined by the **user interface**
  - The **graphical user interface** (GUI) allows users to exercise direct control of visible **icons** & **actions** that replace complex commands
  - A **haptic interface** allows the user to feel a sense of touch by applying forces, vibrations and/or motions to the user
  - A **social interface** guides the user by using cartoonlike characters, graphics, animation and voice commands

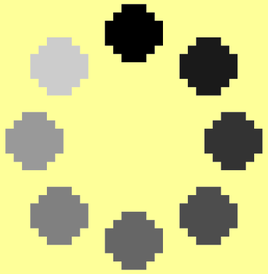


Application Software

- consists instructions that direct a computer system to perform specific information-processing activities which provide functionality for users
- may be developed in house by an organization, or purchased, leased or rented from a software vendor
- application programs that help individual users increase productivity are referred to as **personal application software:**
  - **spreadsheets**
    - manipulate numerical data using rows and columns
  - **word processing**
    - manipulate text with writing and editing features
  - **presentation**
    - create information to appear on electronic slides
  - **personal finance**
    - monitor cheques, investments, credit cards, bills



Implementation



implementations in

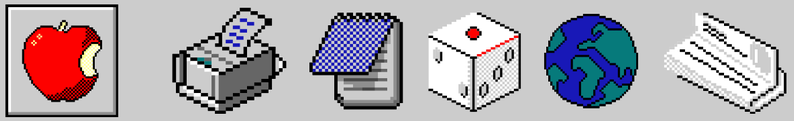
HARDWARE

FOR BUSINESS MAJORS

- The design of computer hardware has profound impacts for businesspeople
- Personal and organizational success can depend on an understanding of hardware design
- Because innovations are occurring so rapidly, hardware decisions at both the **individual** and **organizational** level are difficult:
  - At the **individual** level, most people who have a home or office computer system and want to upgrade it, or people who are contemplating their first computer purchase, are faced with the decision of when to buy as much as what to buy and at what cost.
  - At the **organizational** level, these same issues plague IS professionals. However, they are more complex and more costly.
- Most organizations have many different computer systems in place at the same time. Innovations may come to different classes of computers at different times or rates. Therefore, managers must decide when old hardware legacy systems still have a productive role in the organization and when they should be replaced.

implementations in

SOFTWARE



FOR THE ACCOUNTING MAJOR

- Accounting application software performs the organization's accounting functions, which are repetitive and high volume. Each business transaction produces data that must be captured. After accounting applications capture the data, they manipulate them as necessary.

FOR THE FINANCE MAJOR

- Financial application software provides information about the firm's financial status to persons and groups inside and outside the firm.
  - **Forecasting** applications predict and project the firm's future activity.
  - **Funds management** applications analyze expected cash flows.
  - **Control** applications enable managers to monitor their financial performance, through analyzing budgeting and performance ratios.

FOR THE MARKETING MAJOR

- Marketing application software helps management solve problems that involve marketing the firm's products. Marketing applications provide information about the firm's products and competitors, its distribution system, its advertising activities, and its pricing strategies.

Reaction

Researching on hardware, software, and their applications in society helped me understand how technology supports different fields. In hardware, the tangible components like the CPU, storage devices, and input/output devices, serves as the essential framework; while software brings the hardware to life by enabling the execution of tasks through applications and systems that interact with the hardware. Learning about systems and the need for documentation showed me the intricacy of software development. On the topic of implementations through specific applications of hardware, I learned that it is especially impactful in the area of business. For example, in business and IS (information systems), understanding hardware is crucial, as decisions about upgrading or maintaining systems can affect costs and efficiency. Rapid advances in technology make these decisions challenging, as both personal and organizational use often depends on having the right tools at the right time. It became clear that businesses rely on an up-to-date infrastructure and professionals to navigate these complexities. Researching software implementations tailored to fields like accounting, finance, and marketing opened my eyes to the demands of each area. Accounting software needs to handle repetitive tasks with precision, processing vast amounts of data. Finance applications are focused on analysis, from managing cash flows to making predictions based on historical data. Marketing software is equally dynamic, providing insights into everything from customer preferences to competitor pricing. Each area shows how technology is applied in specific ways to meet the needs of different businesses.

In conclusion, researching for this powerpoint helped me appreciate the importance of both hardware and software in shaping the workforce and how their continuous development influences daily operations in different fields. This understanding makes me more aware of the role technology plays in both professional and personal contexts, where it is essential to stay informed about advancements and adapt accordingly.

REFERENCES

Kurbangalievna, I. G., & Radikovna, S. L. (2017). Computer hardware basics: Intermediate Level. https://core.ac.uk/download/pdf/197460762.pdf

Reintjes, J. F. (1970). Hardware.

Bin, E., Ziv, A., & Ur, S. (2007). Hardware and software. Verification and Testing. https://www.johnwiley.com.au/highered/rainer/ausnz/studentresources/content/plugitin/ch02_hardware_software.pdf

Ugah, J. O., Agu, S. C., & Elugwu, F. (2018). Relationship between Operating System, Computer Hardware, Application Software and Other Software. International Journal of Computer Trends and Technology, 64, 12-16. https://www.researchgate.net/profile/Agu-Sunday/publication/329974415_Relationship_between_Operating_System_Computer_Hardware_Application_Software_and_Other_Software/links/5e3c981d458515072d861c38/Relationship-between-Operating-System-Computer-Hardware-Application-Software-and-Other-Software.pdf

Бугайов, О. Є. (2007). Computer Hardware. https://dspace.nau.edu.ua/bitstream/NAU/15970/5/img690.pdf

REFERENCES

Scriven, M. (1990). The evaluation of hardware and software. Studies in Educational Evaluation, 16(1), 3-40. https://d1wqtxts1xzle7.cloudfront.net/79615200/s0191-491x_2805_2980070-720220126-31619-acl1n7-libre.pdf

Standard, B. P. P. Hardware. nd). Florence, Italy: EB Neuro SpA. https://csrc.nist.rip/external/nvlpubs.nist.gov/nistpubs/Legacy/SP/nbsspecialpublication500-20e1977.pdf

Ariyani, N. W. S., Rahyuda, K., Sukaatmadja, I. P. G., & Yasa, N. N. K. (2016). Mediating role of customer relationship marketing improve business performance base on culture organizations: Case study on computer hardware industry in Indonesia. International Business Management, 10(1), 32-37. https://repositori.unud.ac.id/protected/storage/upload/repositori/f9318f5e0ee3f53cd971f5d949365fc5.pdf

Ramanaiah, K. V., & Sridhar, Siripurapu (2014). Hardware implementation of artificial neural networks. i-Manager's Journal on Embedded Systems, 3(4), 31. https://imanagerpublications.com/assets/pdfDownload/JES/2015/01JES_January_15/JESJanuary15RP04.pdf

Soderman, D. (1998, April). Implementing C designs in hardware. In DesignCon98, 1998 International Verilog Conference & 1998 FPGA Configurable Computing Machine Conference. http://www.asicdsn.com/c2hw.pdf

REFERENCES

Shi, M. (2010). Software functional testing from the perspective of business practice. Computer and information science, 3(4), 49. https://pdfs.semanticscholar.org/6c2e/33324e97d12825201cd77b7d23738ca18f35.pdf

Pursky, O., Selivanova, A., Dubovyk, T., & Herasymchuk, T. (2019, November). Software implementation of e-trade business process management information system. In CS&SE@ SW (pp. 171-181). https://d1wqtxts1xzle7.cloudfront.net/76375972/paper12-libre.pdf

Kateb, M., Swies, R., Obeidat, B., & Maqableh, M. (2015). An investigation on the critical factors of information system implementation in Jordanian information technology companies. European Journal of Business and Management, 7(36), 11-28. https://core.ac.uk/download/pdf/234626994.pdf

Kiadehi, E. F., & Mohammadi, S. (2012). Cloud ERP: Implementation of enterprise resource planning using cloud computing technology. Journal of Basic and Applied Scientific Research, 2(11), 11422-11427. https://wp.kntu.ac.ir/mohammadi/32.pdf

Tambovcevs, A., & Tambovceva, T. (2013, July). ERP system implementation: benefits and economic effectiveness. In Proceedings of the 2013 international conference on systems, control, signal processing and informatics (pp. 215-221). Riga Technical University. https://npublications.com/journals/saed/2022/a062014-003(2022).pdf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