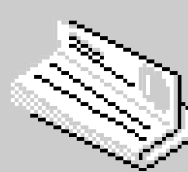
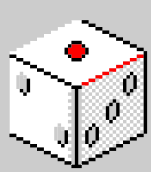
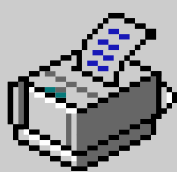
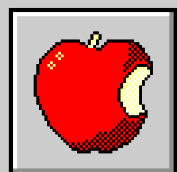


Computer Science as Discipline



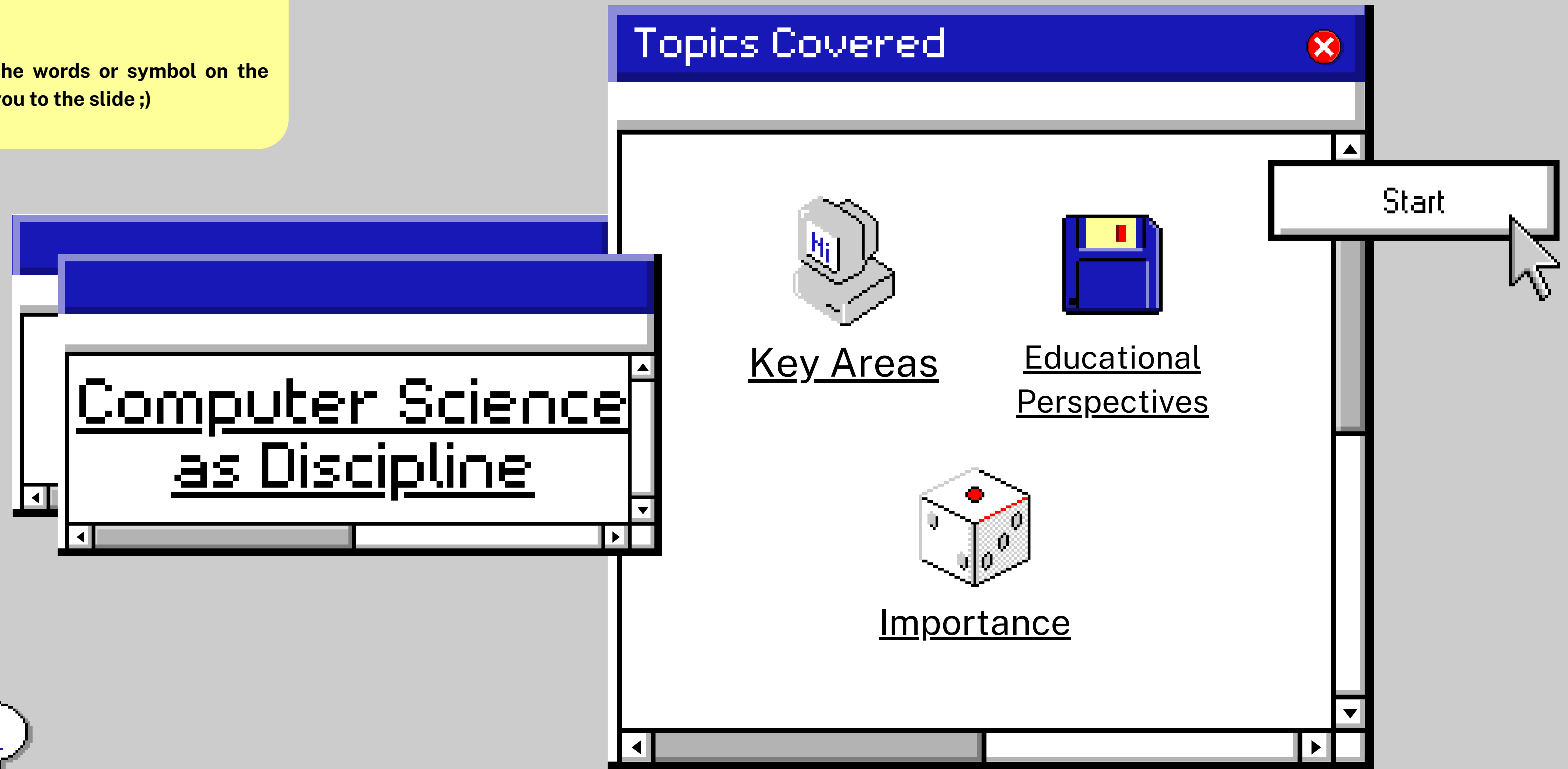
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Tip: Just Click the words for more information :)

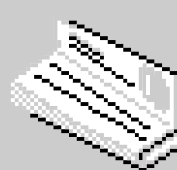
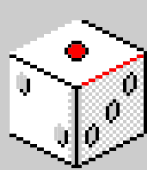
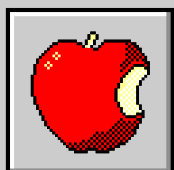
How: Click on the words or symbol on the and it will take you to the slide ;)



What is Computer Science as Discipline?



Computer Science as discipline focuses on studying ***computational systems, algorithms, and principles*** behind ***software and hardware development***. It combines theory and practice to solve complex problems using computing.



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Key Areas



Algorithms and Data Structures Programming Languages

Artificial Intelligence and Machine Learning

Software Development Computer Systems and Architecture

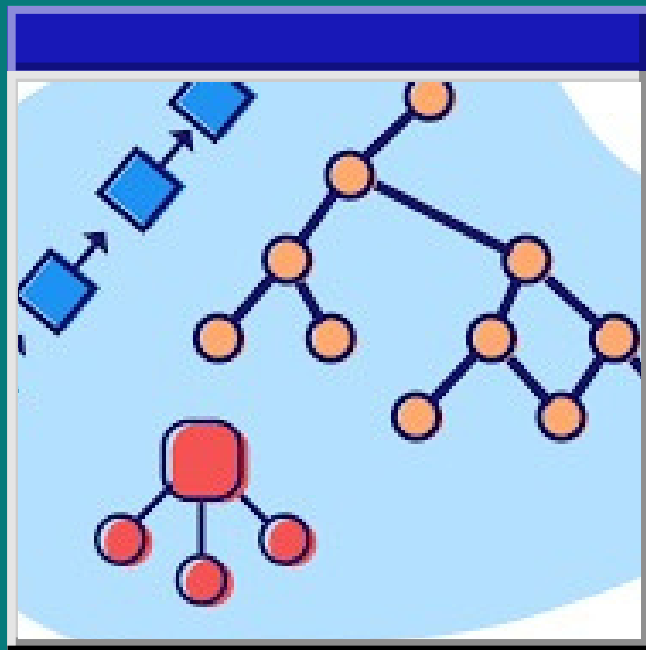
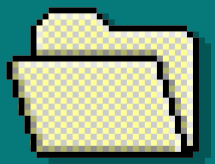
Theoretical Computer Science

Human-Computer Interaction

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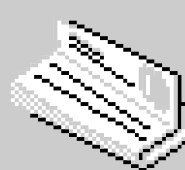
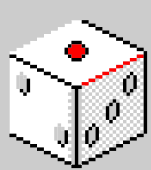
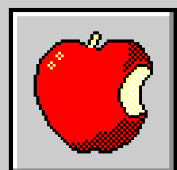


KEY AREAS



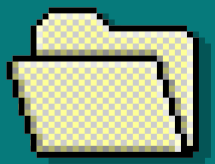
Algorithms and Data Structures

Visual programming tools like Scratch use block-based interfaces to teach algorithms and data structures, making it easier for students to understand how information is organized and processed.



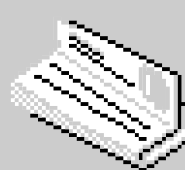
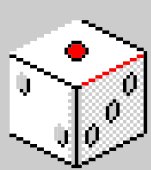
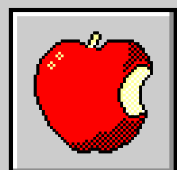
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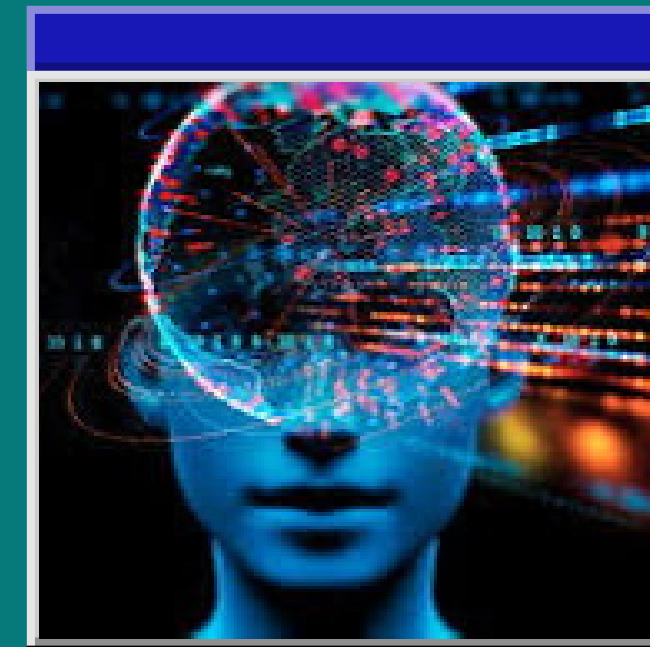
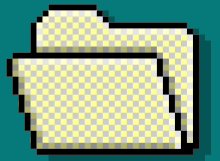
Programming Languages

Beowulf clusters provide researchers with powerful computing resources to study and enhance programming languages.



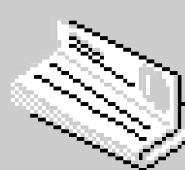
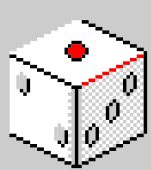
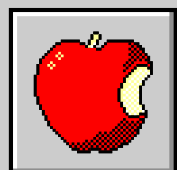
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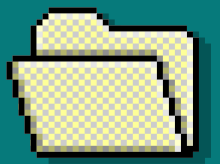
Artificial Intelligence and Machine Learning

Teachers must stay current with AI and machine learning advancements to effectively educate students on cutting-edge technologies.



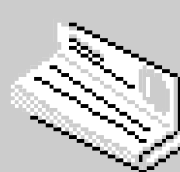
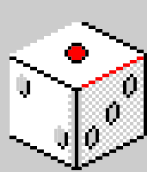
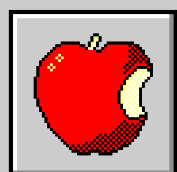
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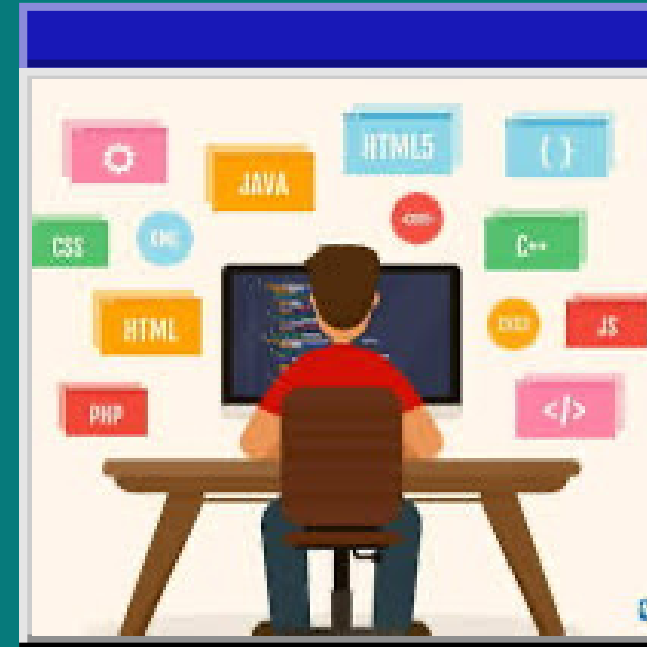
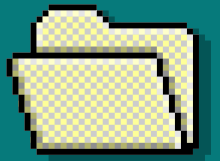
Software Development

Beowulf clusters assist software developers by managing large-scale data and complex computations, streamlining the creation and testing of advanced software.



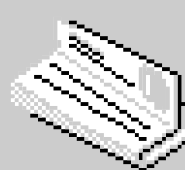
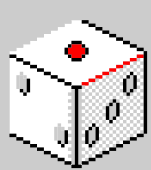
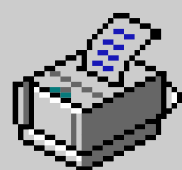
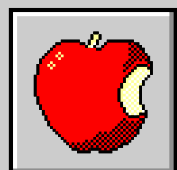
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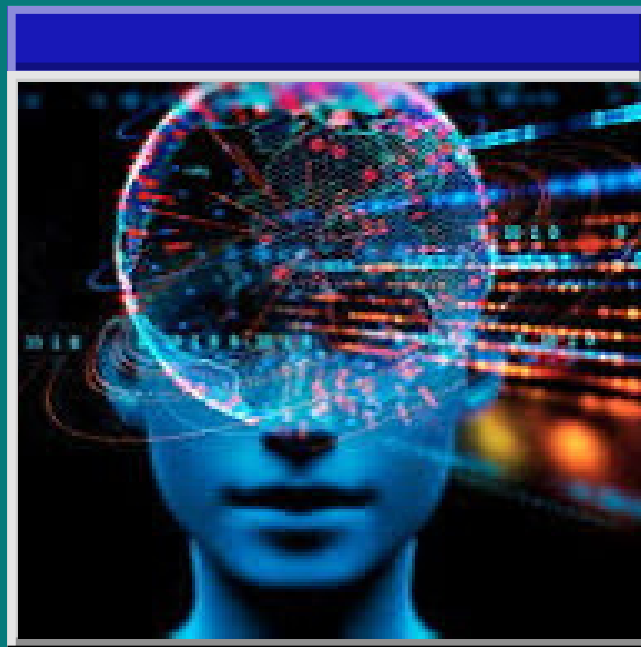
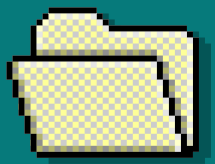
Computer Systems and Architecture

Visual programming tools like Scratch use block-based interfaces to teach algorithms and data structures, making it easier for students to understand how information is organized and processed.



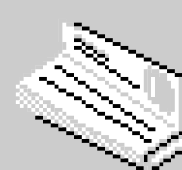
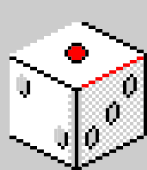
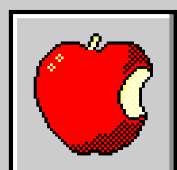
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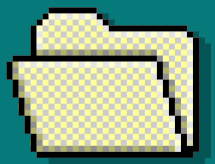
Theoretical Computer Science

Theoretical computer science provides the math needed to solve complex computing problems, like understanding algorithms and encryption.



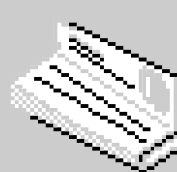
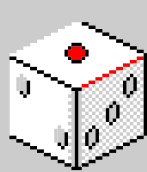
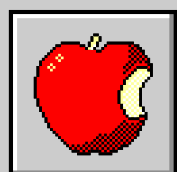
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KEY AREAS



Human-Computer Interaction

Block-based programming teaches students how people use technology by letting them create and test interactive apps.



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Disciplinary Identity

Computer science mixes theory with practical use, demonstrating its influence on technology and other fields.

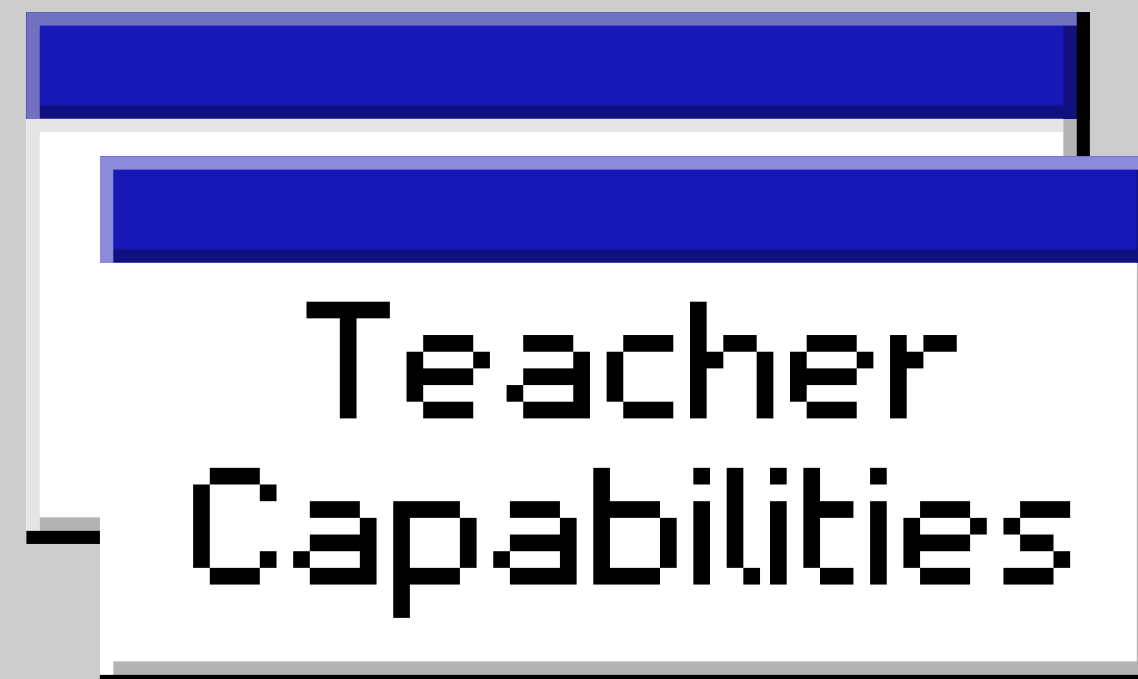
Disciplinary Education and Research



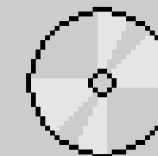
Powerful computers like Beowulf clusters help improve computer science education and research by supporting big projects.



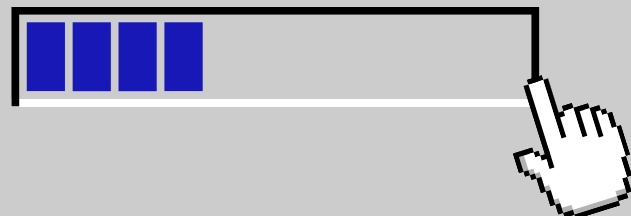
Block-based programming makes learning computer science concepts more engaging and hands-on.



Teachers need strong digital skills and current knowledge to effectively teach computer science.



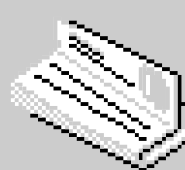
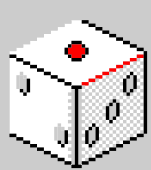
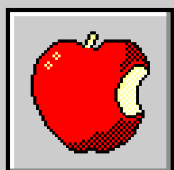
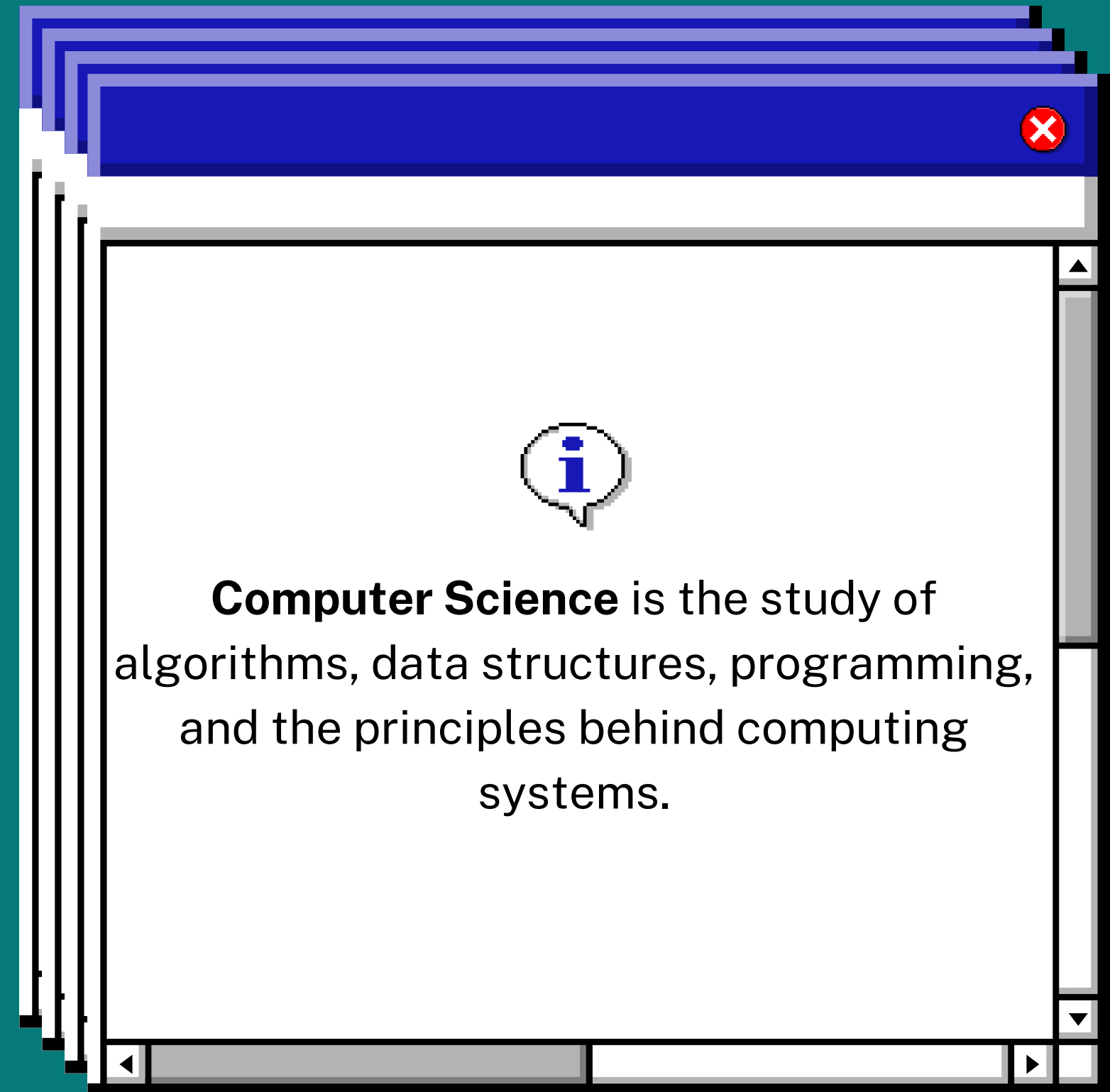
Importance of Computer Science



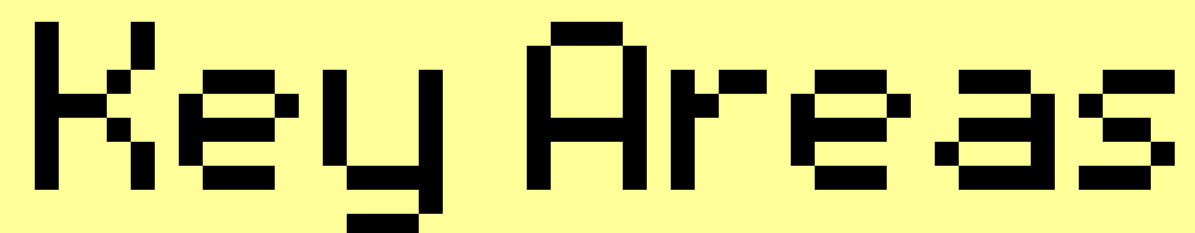
Innovation	Problem-Solving	Interdisciplinary Applications
Innovative teaching in computer science drives advancements in technologies like AI and cybersecurity, highlighting the field’s role in tech	Computer Science can help solve tough problems like beowulf clusters. It can help with powerful computing resources for big data analysis.	Computer science influences other fields, like biology and physics, by offering important computing tools and methods.

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COMPUTER SCIENCE



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Data Structures - Organization and storage of data.

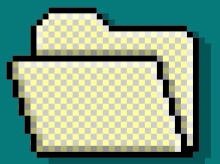
Software Development - The process of building software solutions.

Programming - Writing code to implement algorithms.

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BRANCHES OF COMPUTER SCIENCE



Theory of Computation

Explores what problems can be
solved by computers.



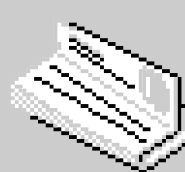
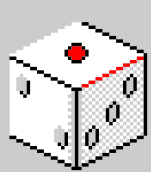
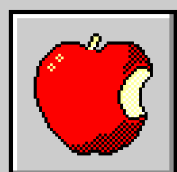
Networking

Study of how computers
communicate.



Databases

Efficient storage and retrieval
of large data sets.

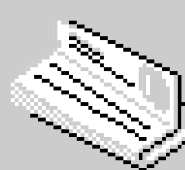
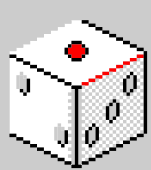
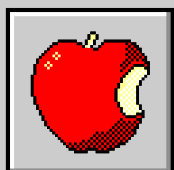


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INFORMATION TECHNOLOGY



Information Technology (IT) involves the use of computers, networks, and systems to store, retrieve, transmit, and manage data.



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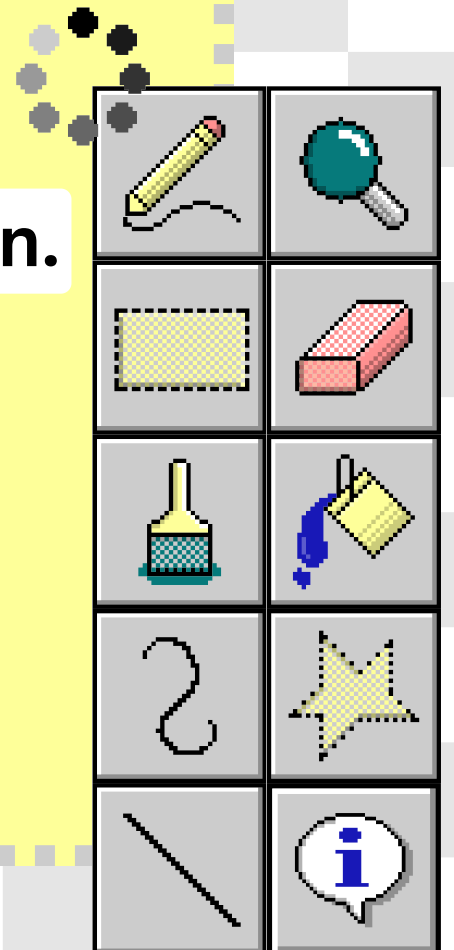


Key Areas

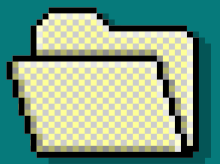


- Hardware - Physical components of computers and devices.
- Software - Programs and applications used to process data.
- Networking - Connecting systems to share resources and information.
- Data Management - Storing and organizing data for easy access and security.
- Security - Protecting data and systems from unauthorized access.

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BRANCHES OF INFORMATION TECHNOLOGY



IT Infrastructure

The foundation of hardware, software, and networks that support an organization's technology needs.



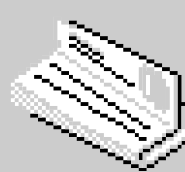
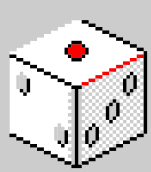
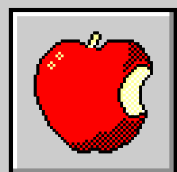
Cybersecurity

Protecting systems and data from cyber threats.



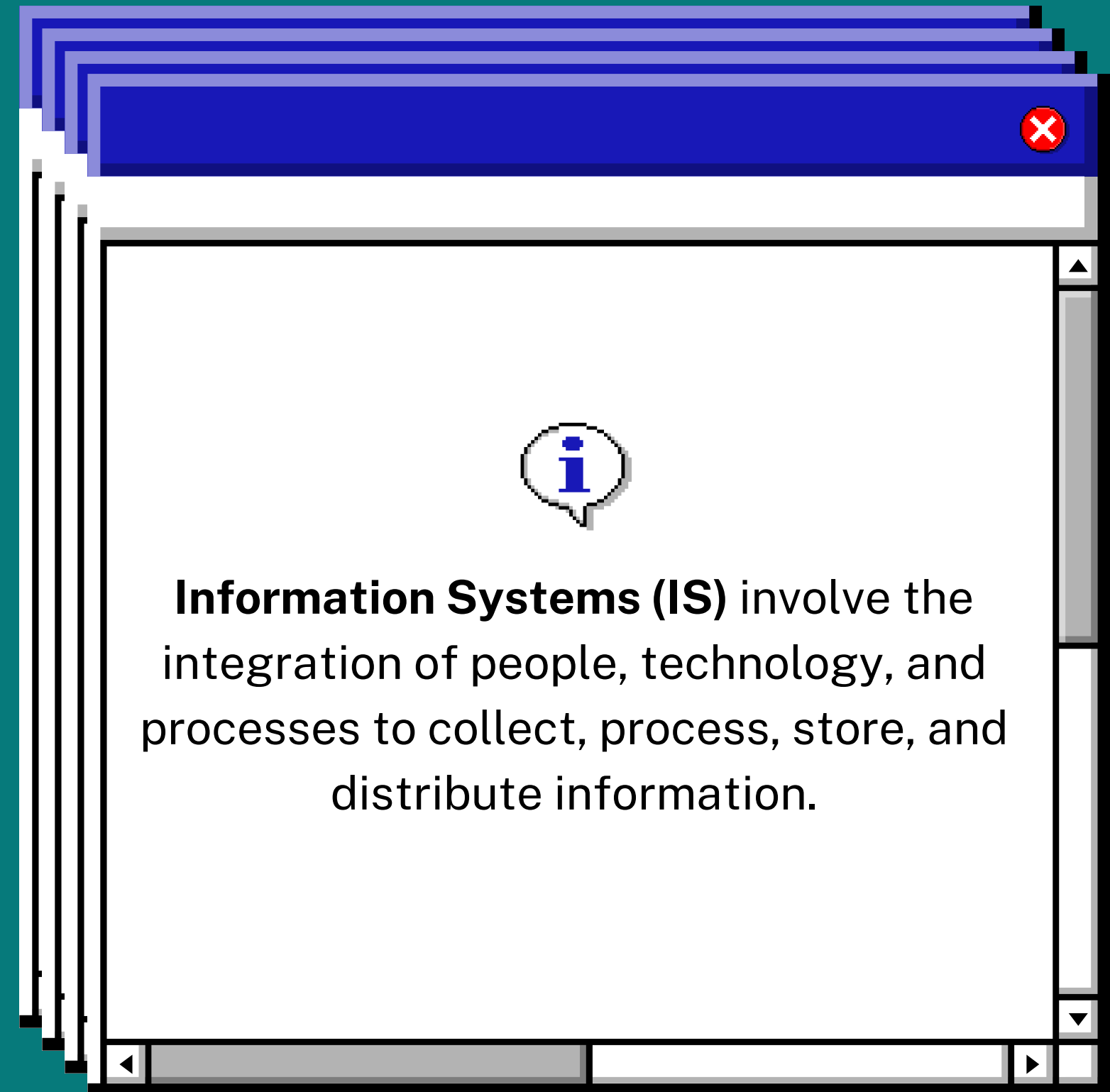
Cloud Computing

Storing and accessing data and applications over the internet.

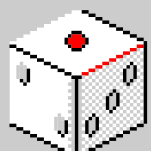
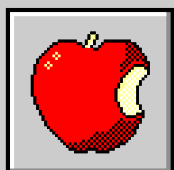


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INFORMATION SYSTEM

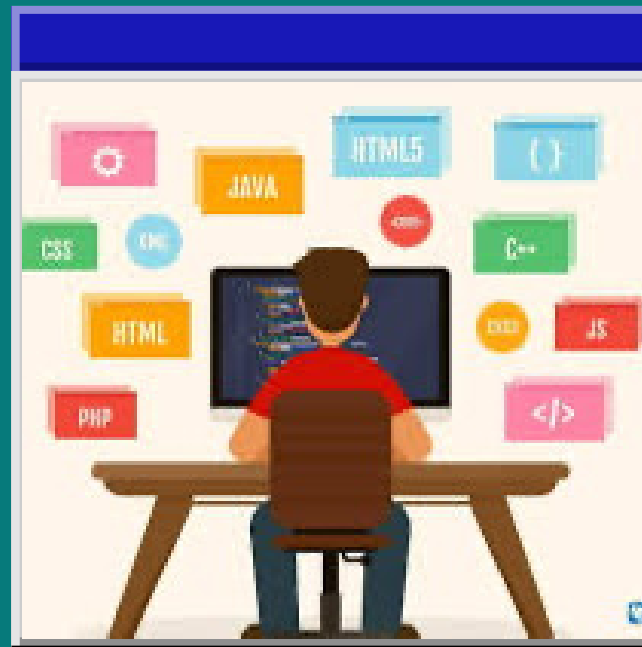
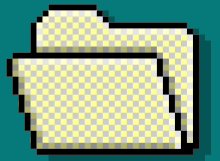


Information Systems (IS) involve the integration of people, technology, and processes to collect, process, store, and distribute information.



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KEY AREAS



People

- Users who interact with the system and utilize the information.



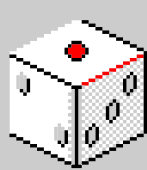
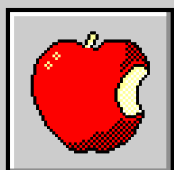
Technology

- Tools and systems used to manage and process data.



Processes

- Procedures and rules for handling data and information.



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Main Components



Hardware - Physical devices used in the system (e.g., computers, servers).

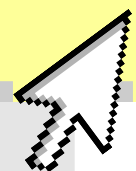
Software - Applications and programs that process data (e.g., databases, spreadsheets).

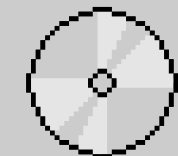
Data - Raw facts that are processed into meaningful information.

Networks - Systems that connect hardware to share information (e.g., internet, intranet).

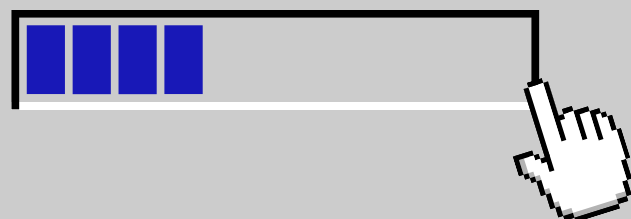
Procedures - Rules and guidelines for operating the system effectively..

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TYPES OF INFORMATION SYSTEM



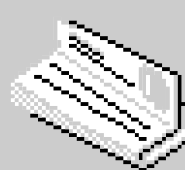
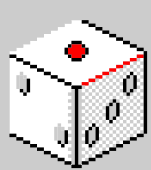
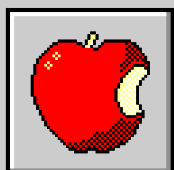
Transaction Processing Systems (TPS)	Management Information Systems (MIS)	Decision Support Systems (DSS)	Executive Information Systems (EIS)
Handle routine transactions and operations.	Provide information for management decision-making.	Assist in complex decision-making processes.	Provide high-level information for executives.

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SOFTWARE ENGINEERING



Software Engineering is the disciplined approach to the design, development, testing, and maintenance of software systems.



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KEY AREAS



Software Development Life Cycle (SDLC) - The phases of software development from planning to maintenance.

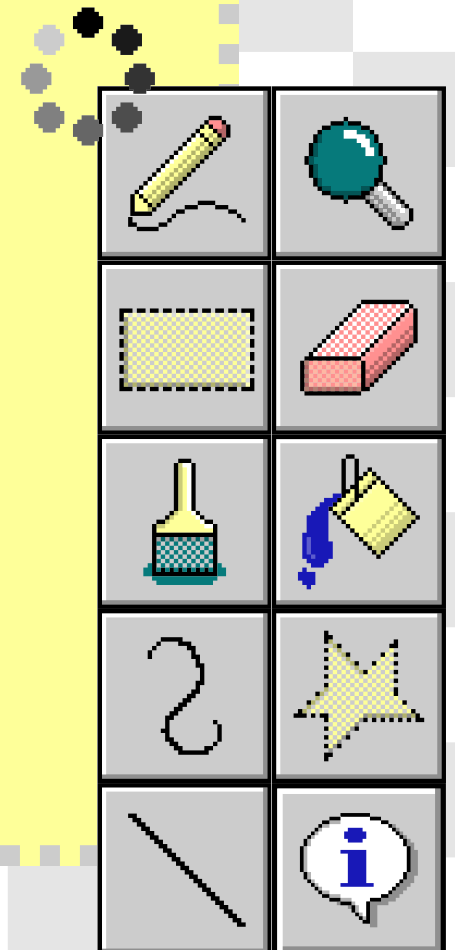
Design - Structuring the software and its components.

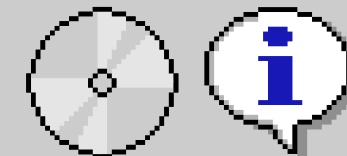
Implementation - Writing and integrating code..

Testing - Ensuring the software works correctly and meets requirements.

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Maintenance - Updating and fixing software after deployment..





MAIN PHASES OF SOFTWARE ENGINEERING

Planning	Analysis	Design	Implementation	Testing	Deployment	Maintenance
Defining the scope, resources, and schedule for the project	Understanding and documenting what the software needs to achieve.	Creating a blueprint for the software, including architecture and interfaces.	Coding the software and converting design into a functional system.	Verifying that the software works as intended and fixing any issues.	Releasing the software to users	Updating the software to fix issues or add features.

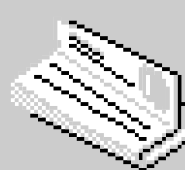
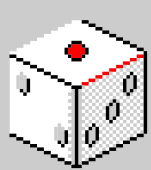
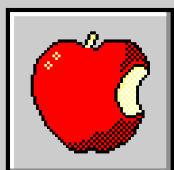
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COMPUTER ENGINEERING



Computer Engineering combines electrical engineering and computer science principles to design and develop computer systems and hardware.



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KEY AREAS



Digital Logic Design - The foundation of building circuits and hardware using logic gates.

Microprocessors - Central processing units that execute instructions for computing tasks..

Embedded Systems - The structure and organization of a computer's components (e.g., memory, CPU)..

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Computer Architecture - Computers integrated into larger devices to perform dedicated functions..





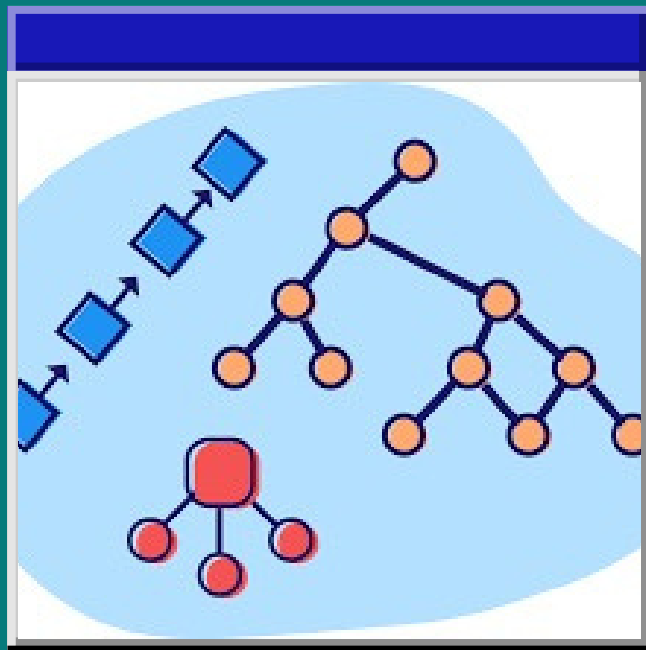
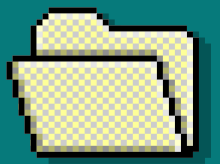
MAIN FOCUS AREA

Combinational Logic	Sequential Logic	Memory Systems	Processor Design	Hardware-Software Interface
Circuits where the output is determined by the current inputs (e.g., adders, multiplexers).	Circuits where the output depends on both current inputs and previous states (e.g., flip-flops, counters).	Understanding how data is stored and accessed (e.g., RAM, caches).	Creating efficient CPU architectures for executing instructions.	The connection between hardware components and software that controls them.

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APPLICATION OF COMPUTER ENGINEERING



Designing Microchips

Creating the integrated circuits that power computers and electronic devices.



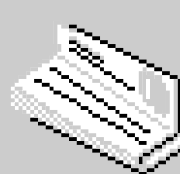
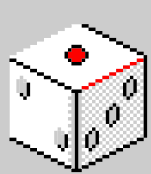
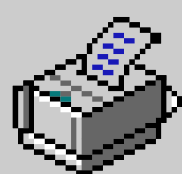
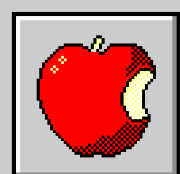
Building Embedded Systems

Developing hardware for devices like smartphones, medical equipment, and cars.



Optimizing Performance

Balancing speed, power, and efficiency in computing systems.



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Thank you!

Insert a parting or call-to-action message here.



The technology field requires five main academic disciplines to create and operate the technologies – Computer Science, Information Technology, Information Systems, Software Engineering and Computer Engineering. Every area has its focus and role.

The entire thing about how computers do this is what Computer Science studies. It is related to algorithms (series of steps) and data structures (organization principles), as well programming (code writing). From artificial intelligence and software development, to computer networking and data structures.

Source: Think with Google
Information Technology (IT) is the use of computers to store, retrieve...medium.com It covers hardware (physical computer components), software solutions (applications and programs) as well networking aspects of computers like establishment connections between various computing devices, data management involves organising the material itself on any electronic device. IT professionals make sure technology systems run smoothly and securely, including IT infrastructures (basic hardware/software), cybersecurity (protecting against threats), and cloud computing to access services via the internet.

Information Systems (IS), is the science that connects people, technology and processes to handle information. The system consists of hardware, software, input, output data networks and procedures. Information Systems help organizations conduct their daily activities and decision making. For example, transaction processing systems (supporting day-to-day routines) management information systems (which underpin most decisions in the organization), and executive information system (delivering topline insights).

Software engineering deals with software product development in a structured way. Software Development: All the planning, design, coding and testing of software development in a nutshell. Elements include the Software Development Life Cycle (SDLC), requirements engineering (specification and software creation) and testing – essentials in making sure software does what it is supposed to do. Common best practices such as modularity (separating software into parts), documentation (recording everything) and version control aid in the creation of dependable programs.

Combining electrical engineering and computer science to design hardware leads us to Computer Engineering. This covers everything from the design of electronic circuits to that advanced semiconductor technology in both integrated circuit blocks and fabrication processes, through which digital signal processing is entrusted. They design memory layout, processors as well ensuring that software and hardware are in sync together.

The areas of basic sciences, known as engineering disciplines have a systematic approach to technology so that they cooperate in the creation and application of technical knowledge used for tangible purposes.

Leigh Marie Panuncialman



- **BS Information Technology - 1**
- **19 years old**
- **Graduated from De La Salle
Andres Soriano Memorial College**

I chose BS IT because I always found it interesting and took up the courage to pursue this program. I also took up this course because it is in high demand and can help me in my choosing in my career in the future.

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