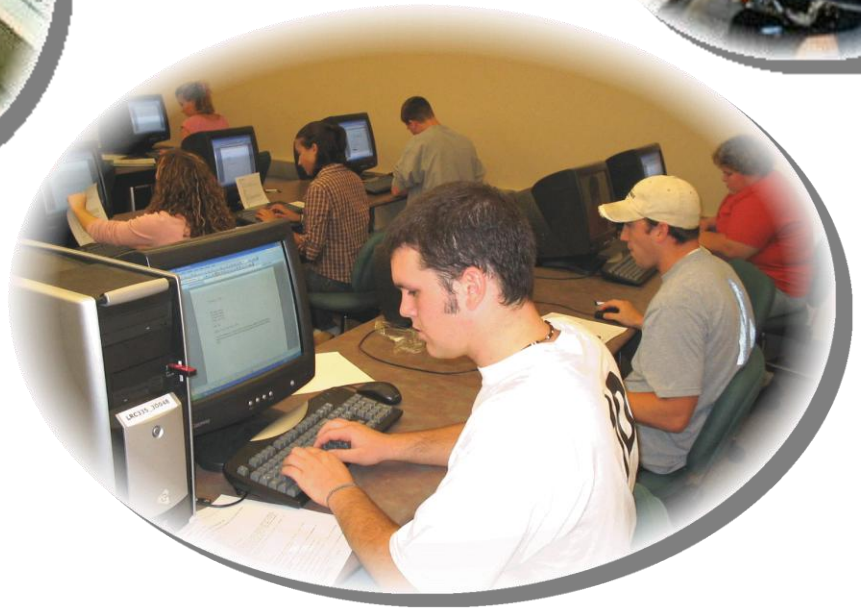
Technology In Action



Technology In Action

Chapter 1
Why Computers Matter to You:
Becoming Computer Fluent

Chapter Topics

- Computer fluency
- Computers and careers
- Computer functions
- Data vs. information
- Computer hardware and software
- Societal challenges and computers
- Future technologies

What is Computer Fluency?

- To be computer fluent you must:
  - Understand a computer's capabilities and limitations
  - Know how to use a computer

Being a Savvy Computer User and Consumer

- Make good purchase decisions
- Maintain your computer
- Keep abreast of changes in technology
- Understand the real risks
- Use the Internet wisely
- Avoid online annoyances
- Avoid hackers and viruses
- Protect your privacy

Computers in your Career?

- Computer careers in:
  - Business
  - The Arts
  - The Medical Field
  - Law Enforcement
  - Legal Fields
  - Education
  - The Sciences
  - Gaming
  - Homes

Computers in Business

- Point of Sale Terminals

- Data mining

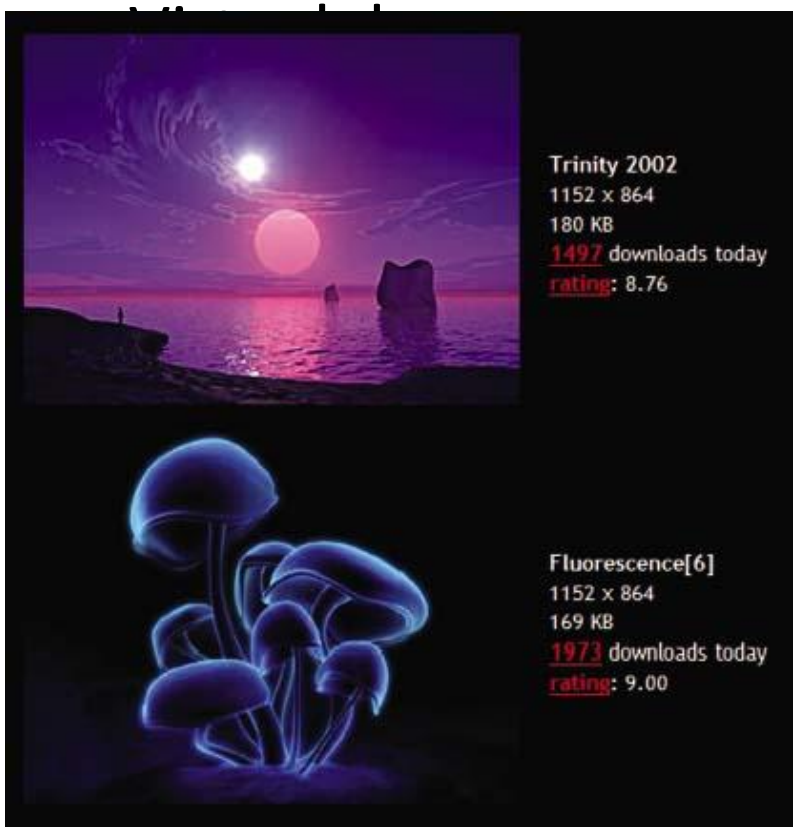
- Tracking merchandise

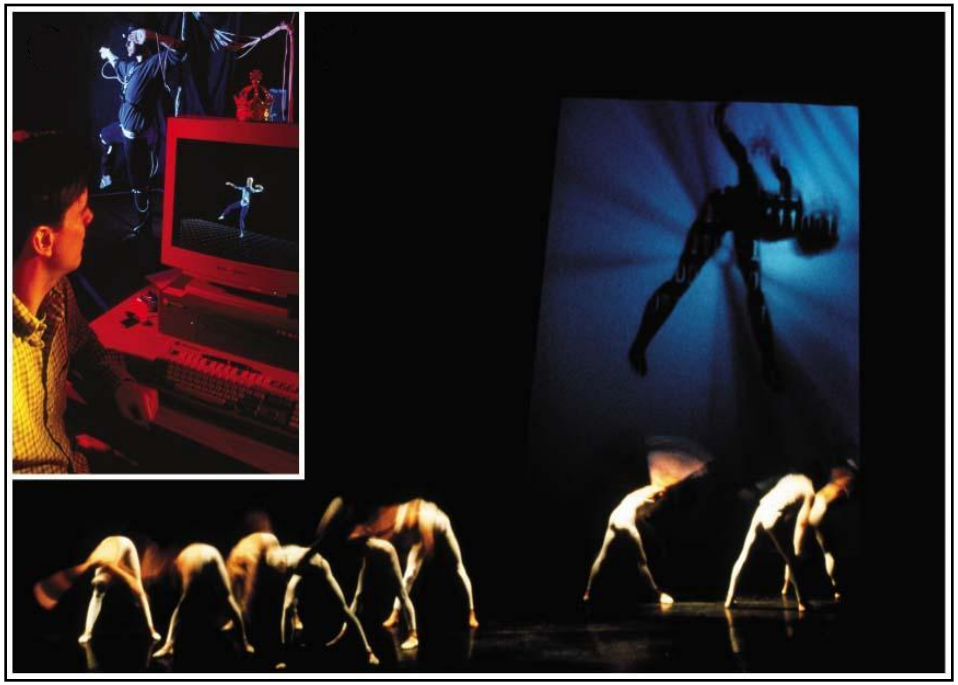
Computers in Farming and Ranching

- Assist in managing complex farming business and information systems
- RFID tags track and record animals in case of diseases
- Computerized sensors and equipment activation protect crops

Computers in the Arts

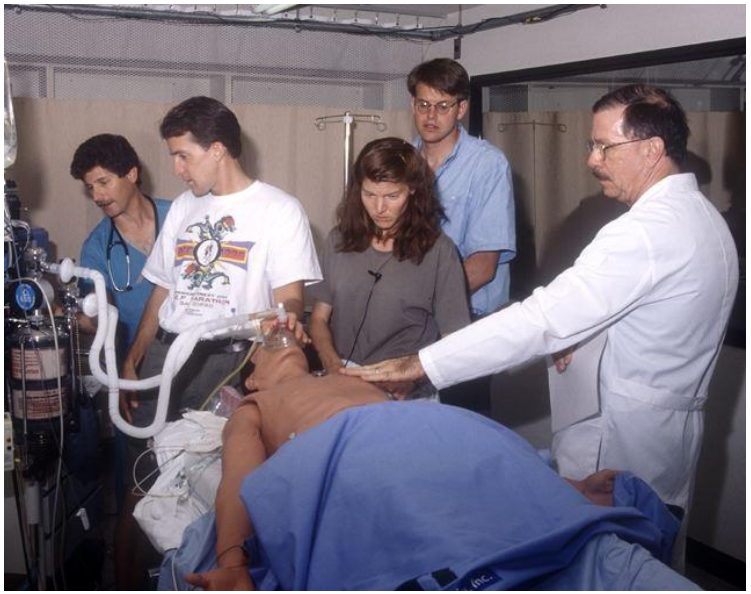
- Virtual art





Computers in the Medical Field

- Virtual reality in medical applications
- Patient simulator



- Da Vinci Surgical System

Computers in Law Enforcement

- Computer forensics

Computers in the Legal Fields

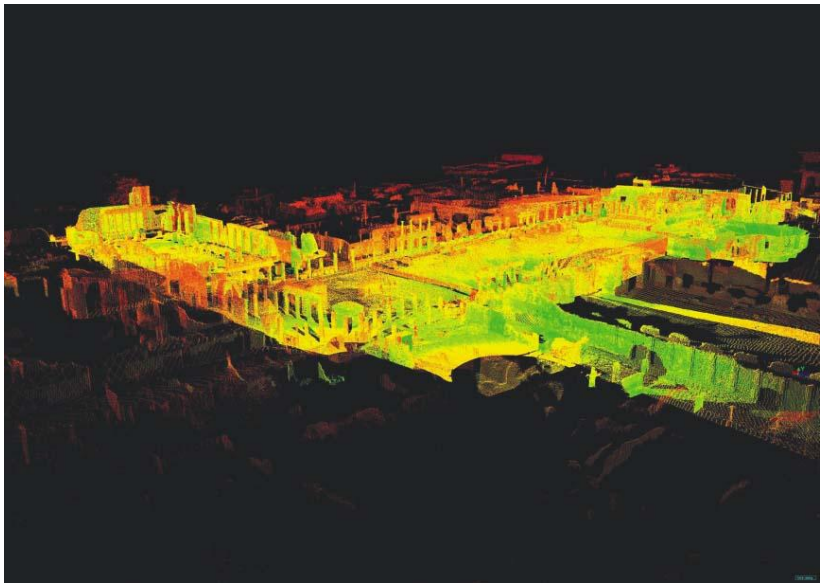
- Surveillance cameras
- Forensic animation

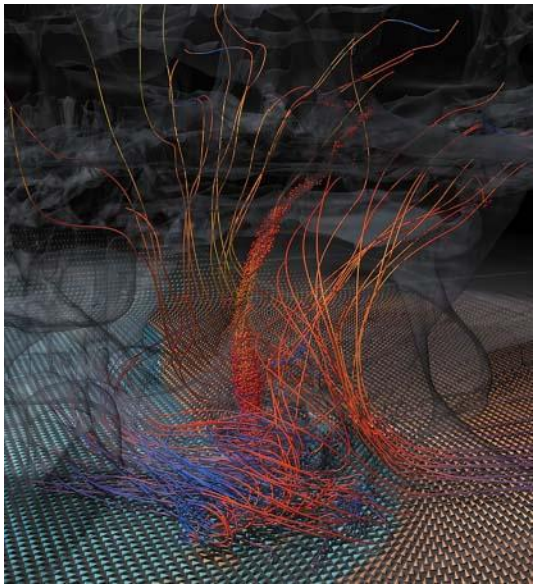
Computers in Education

- Computers in the classroom
- Distance education
- Computerized research
- The Internet

Computers and the Sciences

- Supercomputers
- Archeology
- Meteorology





Computers in Sports

- Training
- Timing and scorekeeping
- Data storage and statistics
- “Smartballs” sense when soccer goals are scored

Computer Gaming Careers

- Programming
- 3D animation

Computers at Home

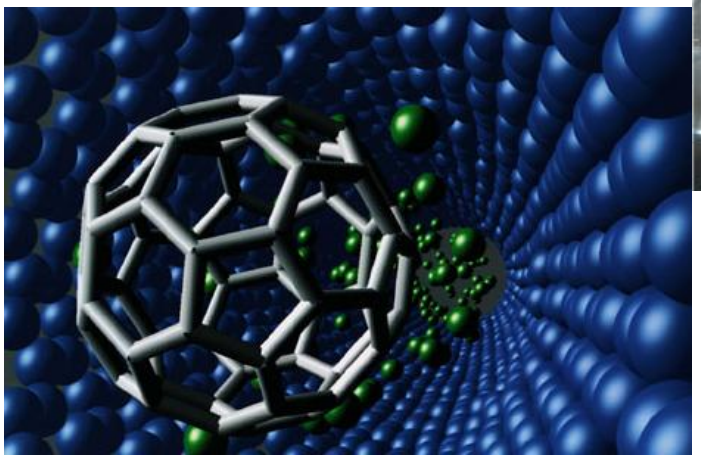
- Robotics
- Smart appliances

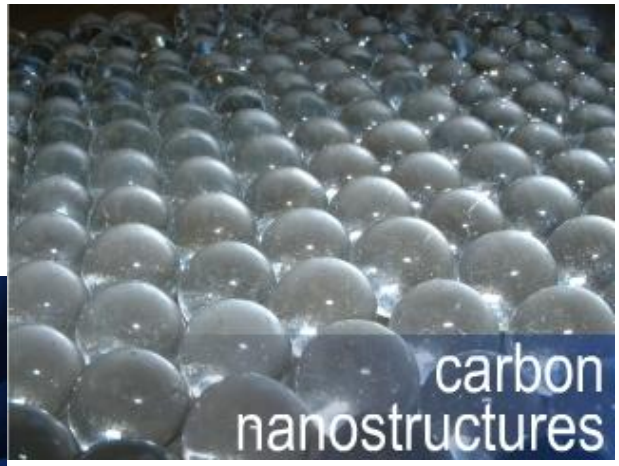
Technology of Tomorrow

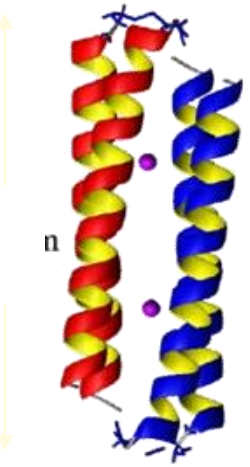
- Nanoscience
- Biomedical chip implants
- Artificial Intelligence

Nanoscience

- Molecules and nanostructures
- Nanomachines

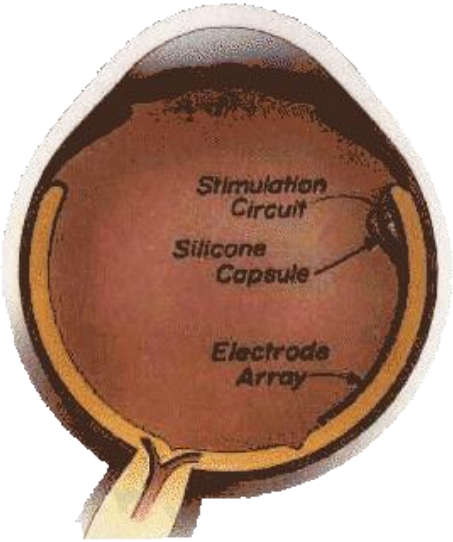






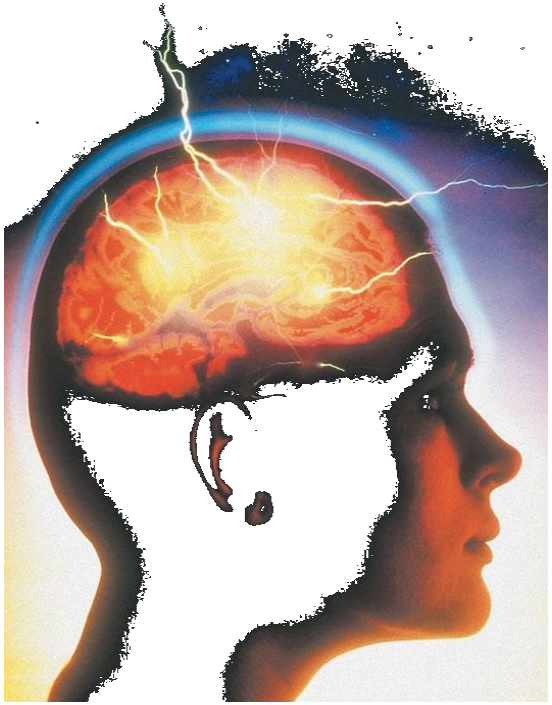
Biomedical Chip Implants

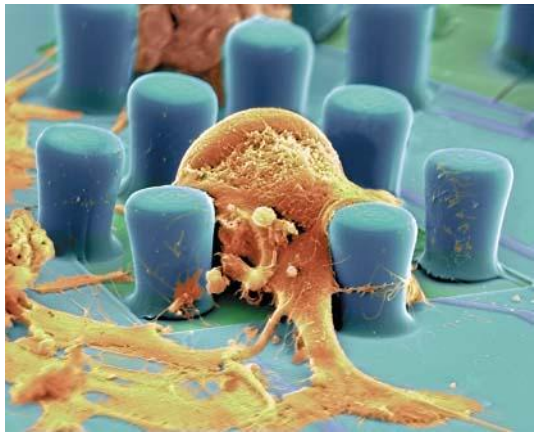
- Technological solutions to physical problems
- Identity chips



Artificial Intelligence

- Robots
- Neurons vs. Microchips





Challenges Facing a Digital Society

- Computer use ethics
- Privacy risks
- Personal data collection
- Monitoring e-mail
- Copyright infringement
- Software piracy

Becoming Computer Fluent

- Data processing
- Bits and bytes
- Computer hardware
- Computer software
- Computer platforms
- Specialty computers

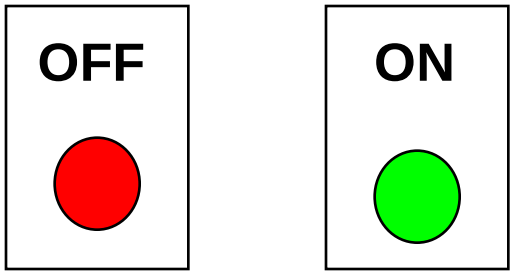
Computers are Data Processing Devices

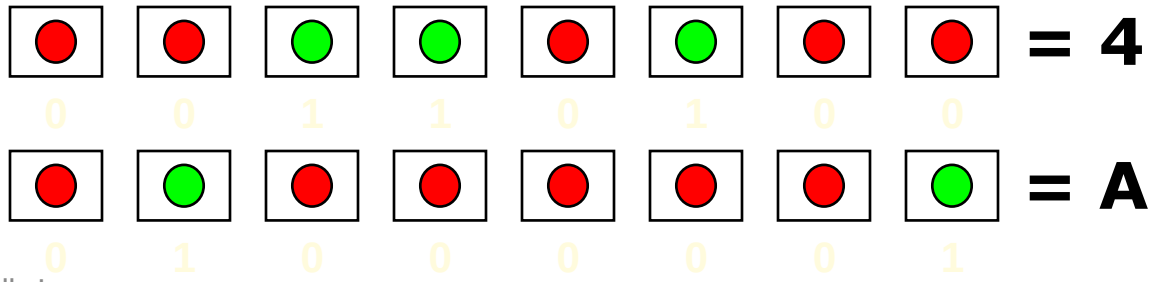
- Four major functions:
  - Input data
  - Process data
  - Output information
  - Store data and information

Bits and Bytes: The Language of Computers

- Bit
  - Binary digit
  - 0 or 1
- Byte
  - Eight bits
- ASCII (**A**merican **S**tandard **C**ode for **I**nformation **I**nterchange)
  - Each byte represents a letter, number or special character

Microchip Switch





How Much is a Byte?

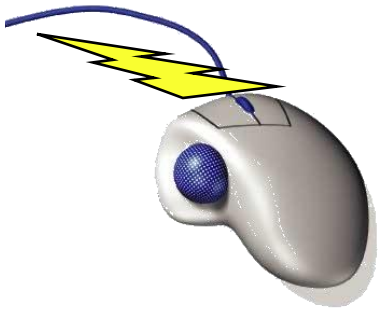
NAME	ABBREVIATION	NUMBER OF BYTES	RELATIVE SIZE
Byte	B	1 byte	Can hold one character of data.
Kilobyte	KB	1,024 bytes	Can hold 1,024 characters or about half of a typewritten page double-spaced.
Megabyte	MB	1,048,576 bytes	A floppy disk holds approximately 1.4 MB of data, or approximately 768 pages of typed text.
Gigabyte	GB	1,073,741,824 bytes	Approximately 786,432 pages of text. Since 500 sheets of paper is approximately 2 inches, this represents a stack of paper 262 feet high.
Terabyte	TB	1,099,511,627,776 bytes	This represents a stack of typewritten pages almost 51 miles high.
Petabyte	PB	1,125,899,906,842,624 bytes	The stack of pages is now 52,000 miles high, or about one-fourth the distance from the Earth to the moon.

Computer Hardware

- Input devices
- System unit
- Output devices
- Storage devices

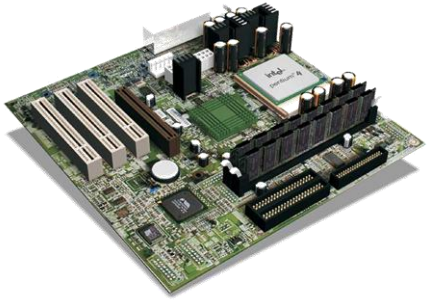
Input Devices

- Enter data to be processed
  - Keyboard
  - Scanners
  - Mouse
  - Trackball
  - Touch screen
  - Microphone
  - Game controller
  - Digital camera



System Unit

- Cabinet that houses all components
- Motherboard
- CPU
- Memory modules



Output Devices

- Enable us to see or hear the processed information
  - Monitor
  - Speakers
  - Printers

Storage Devices

- Enable us to store data or information to be accessed again

Hard Disk Drive

Floppy Disk

CD / DVD Drive

Flash Drive

Computer Software

- **Software** - programs that enable the hardware to perform different tasks
- Application software
  - Tools for getting things done

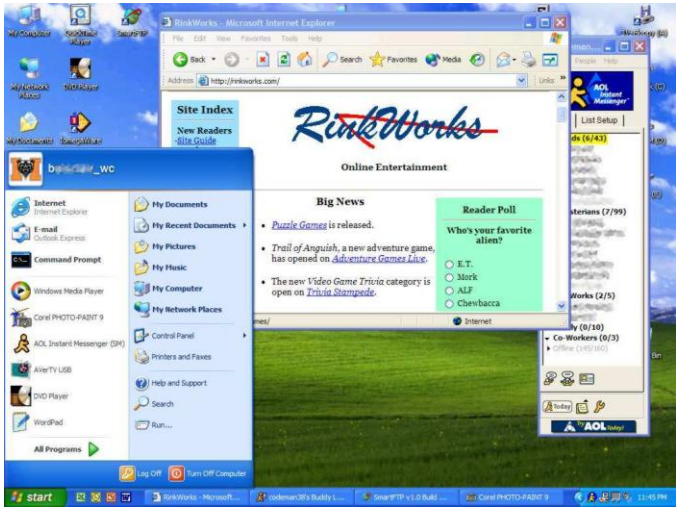
Computer Software

- System software
  - Essential for platform operation and support

Computer Platforms: PCs and Macs

PC

- CPU – Intel, AMD
- Operating system – Microsoft Windows

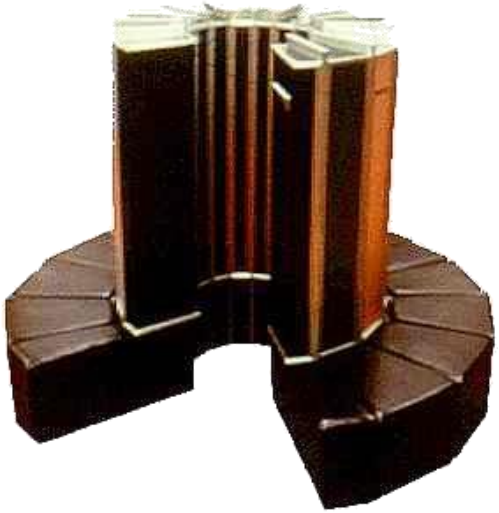


Mac

- CPU – Motorola
- Operating system – Apple Mac OS

Specialty Computers

- PDA
- Server
- Mainframe
- Supercomputer
- Microcontrollers



Chapter 1 Summary Questions

- What does it mean to be “computer fluent”?

Chapter 1 Summary Questions

- What is a savvy computer user and consumer?

Chapter 1 Summary Questions

- How can becoming computer fluent help you in a career?

Chapter 1 Summary Questions

- What are some future technologies?

Chapter 1 Summary Questions

- What kinds of challenges do computers bring to society?

Chapter 1 Summary Questions

- What are a computer's four main functions?

Chapter 1 Summary Questions

- What is the difference between data and information?

Chapter 1 Summary Questions

- What are a bit and a byte?

Chapter 1 Summary Questions

- What hardware does a computer use to perform its functions?

Chapter 1 Summary Questions

- What are the two main types of software?

Chapter 1 Summary Questions

- What different kinds of computers are there?