

# EMERGING TECHNOLOGIES IN LIBRARIES & INFORMATION CENTERS

LISC-01403  
(Foundation –IV)



# Hardware Components

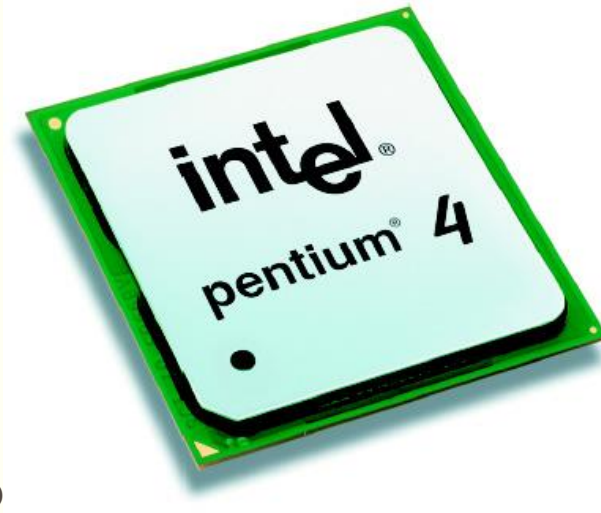
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- **Processing:** Directs execution of instructions and the transformation of data
- **Memory:** Temporarily stores data and instructions before and after processing
- **Input:** Provides the interface used for data entry *into* a device
- **Output:** Provides the interface to retrieve information *from* a device
- **Storage:** Stores data, information, and instructions for the long term
- **Communications:** Connects one IT device to another

# The Central Processing Unit

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- Core of all computing operations is a **chip** composed of millions of transistors called the **central processing unit** (or CPU).
- A **transistor** is an electronic switch that can be on (1) or off (0).
- By combining multiple transistors we can represent data in a binary format.
- The CPU works together with memory to control the execution of instructions and the processing of data.
- CPU speed is measured by its *clockspeed* in billions of cycles per second (*gigahertz*).



# Memory

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- There are two types of memory—long term (ROM) memory and short-term (RAM) memory
- Both types of memory are built onto memory chips
- Both are measured in number of bytes stored:
  - 1000's (kilobytes—KB)
  - Millions (megabytes—MB)
  - Billions (gigabytes—GB)

# Read Only Memory

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- **Read Only Memory (ROM)** contains instructions that are not meant to be changed or changed only infrequently
- ROM is present in most IT devices
- In computers, ROM holds instructions used to control the startup process
- There are far fewer ROM chips than RAM chips in a computer

# Random Access Memory

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- **Random Access Memory (RAM)** is the predominant form of memory in a computer.
- The CPU can access any item stored in RAM directly (randomly).
- RAM is temporary memory so anything in RAM is lost when the computer is shut down.
- Increasing RAM capacity is the easiest way to increase effectiveness of a computer.

# Input Hardware

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- Input devices provide one interface between the internal processes of an IS and its environment.
- It allows us to enter data and commands.
- Input devices include:
  - Keyboards
  - Pointing devices such as a mouse
  - Scanning devices such as a barcode scanner



# Keyboard

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- Most widely used input device for computers.
- Highly versatile, providing the capability to enter all types of data as well as instructions.
- **Ergonomic** keyboards are keyboards that are designed to keep users safe as well as enabling them to be more productive.



# Pointing and Scanning Devices

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- Pointing devices such as a mouse allow users to provide instructions to a computer using physical movements, such as “point” and “click”.
- Pointing devices tend to require less training than a keyboard.
- More useful to entering commands than for entering data.
- Scanning devices such as barcode readers improve speed and efficiency or perform a task more efficiently.

# Output Hardware

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- Output devices convert IT-processed information into a form usable by knowledge workers (or other machines)
- Quality and speed of output is important in choosing an output device.
- Common output devices include
  - Display devices such as **liquid crystal displays (LCDs)**
  - Printers, typically laser or ink-jet as well as plotters
  - Speakers



# IT Storage Hardware

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- Storage refers to hardware media and devices used to contain large amounts of data and instructions for the long term.
- Storage is much slower to access than memory.
- Examples include:
  - Hard drive
  - CD and DVDs
  - USB flash memory



# Communications Hardware

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- **Network interface card (NIC)**  
provides the physical connection  
between the computer and a local  
network
  - Wired
  - Wireless
- **Modems** allow you to connect to a  
remote network over a  
telecommunications line (telephone  
line or cable TV service)

