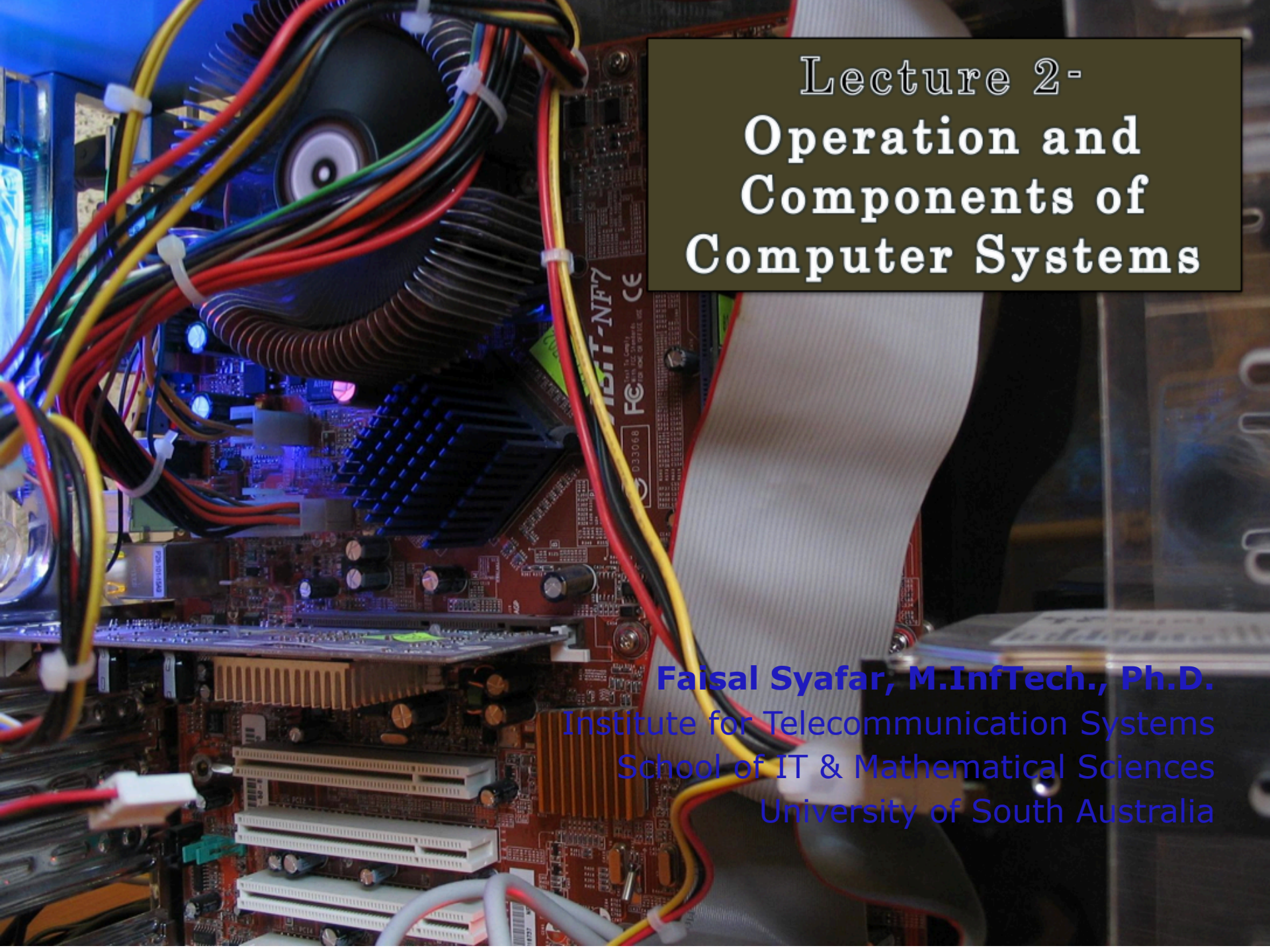




Lecture 2- Operation and Components of Computer Systems

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Last lecture's recap

Course motivations/ admin details

- 1. Data and Information**
- 2. Digital and analog computers**
- 3. Computer Technology**
- 4. Computers – kinds of computers**
- 5. Communication Technology**

Recap
Computer
Technologies

Personal Computers

Desktop PCs, Laptops,
Workstations, Network Servers



Recap
Computer
Technologies

Multi-user Computers

Mainframes, Supercomputers



Recap
Communication
Technologies







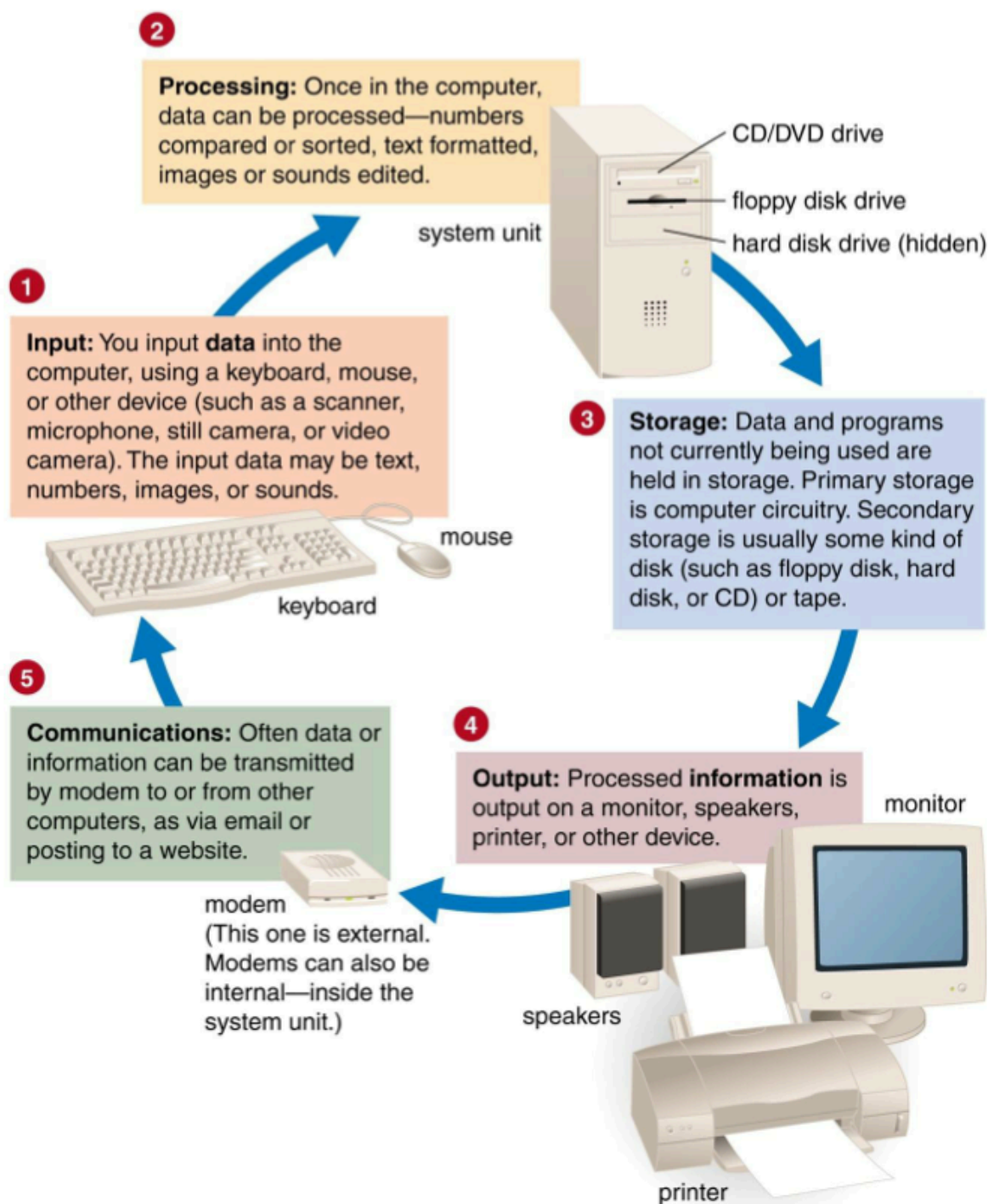

Today's
lecture

Lecture Outline

1. Basic operations of a computer
2. Components of a computer system
 - Hardware
 - Software
 - Data
 - Users
3. Summary of today's lecture

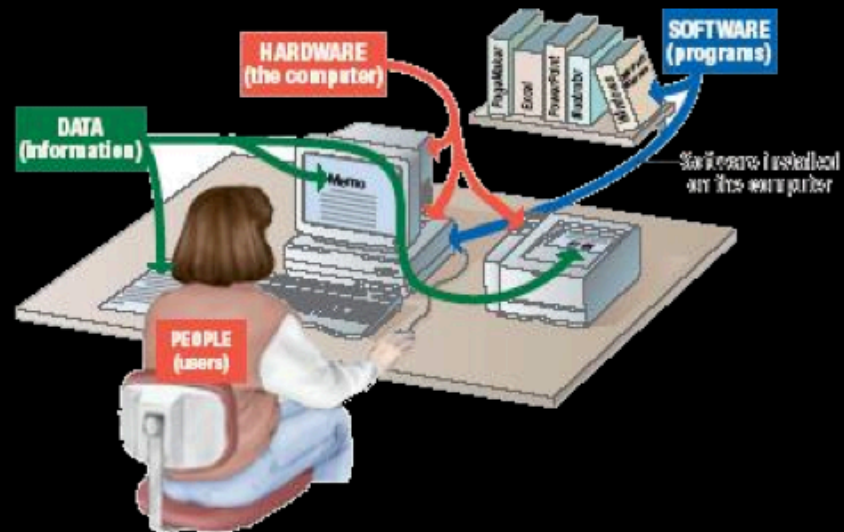
Basic operations of a computer system

1. Input
2. Processing
3. Storage
4. Output



Components of a computer system

- 1. Hardware**
- 2. Software**
- 3. Data**
- 4. Users**



Computer Hardware

Processor, memory, hard-disk drive, video card, sound card, and modem are inside the system cabinet

Storage

CD/DVD drive
Floppy disk drive
Hard disk drive

Output Monitor

Processing
Memory
Communications

System unit

Output Printer

Speaker

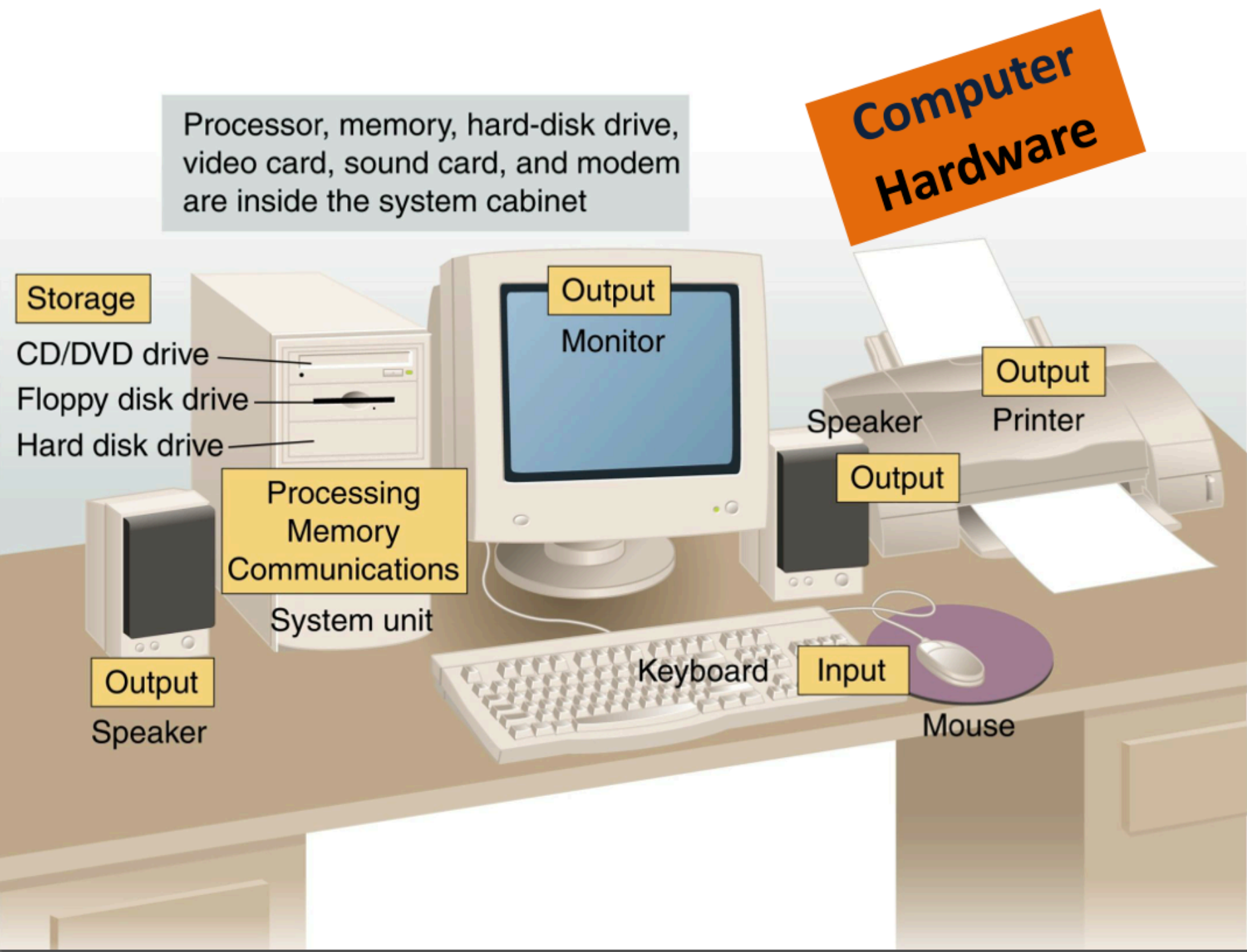
Output

Output Speaker

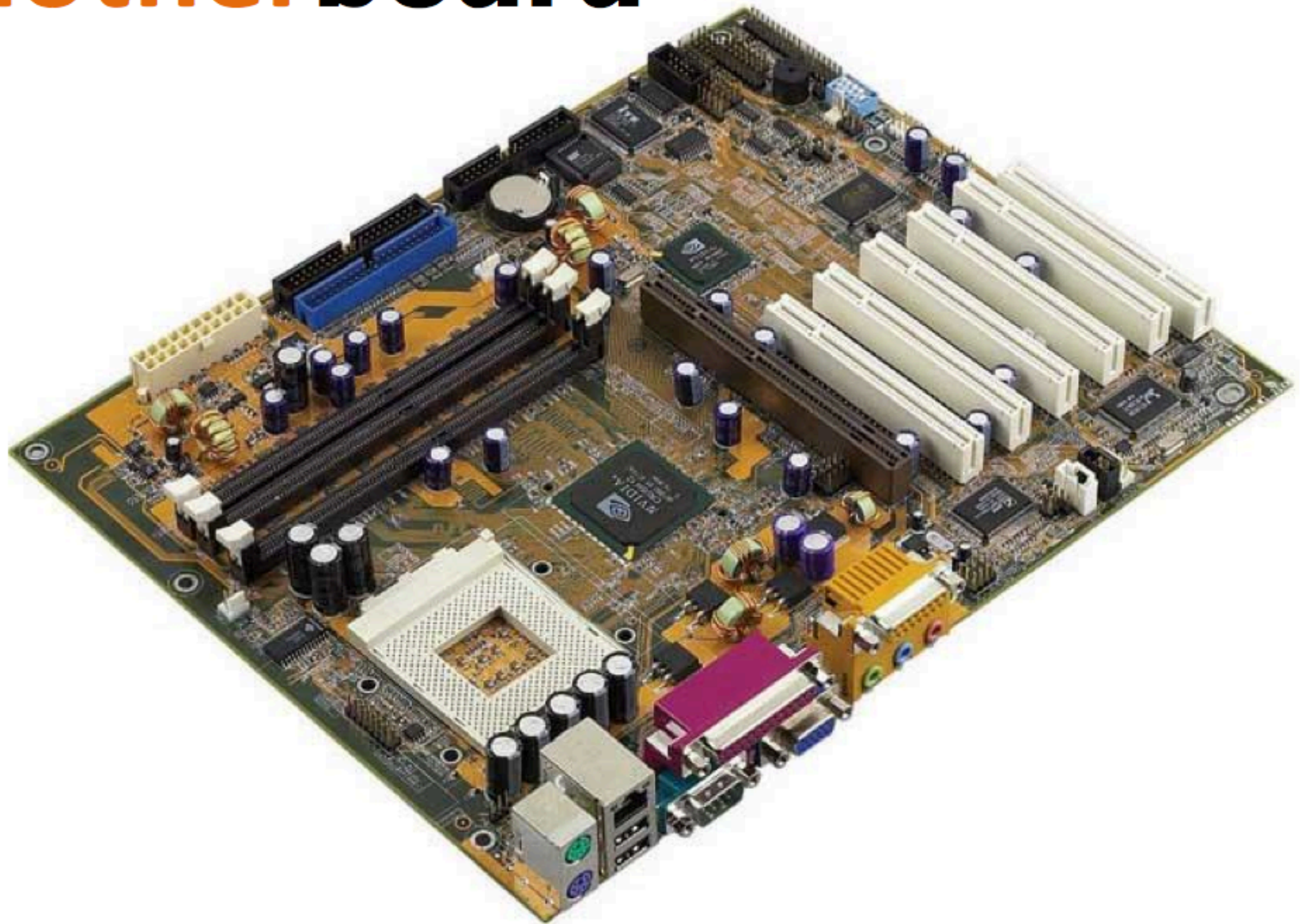
Keyboard

Input

Mouse



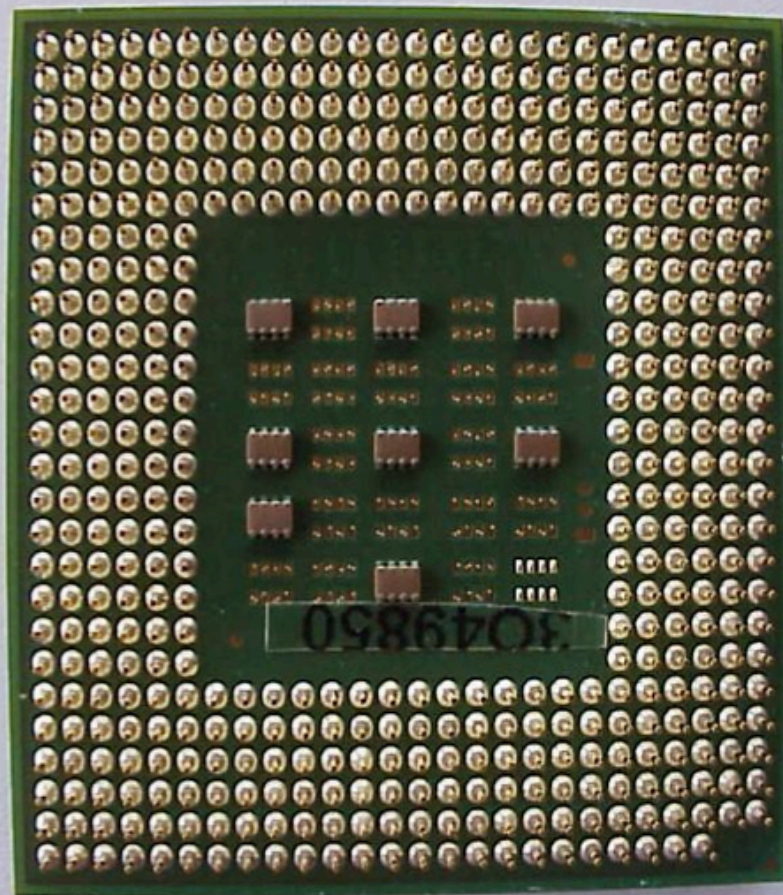
Motherboard



Input devices

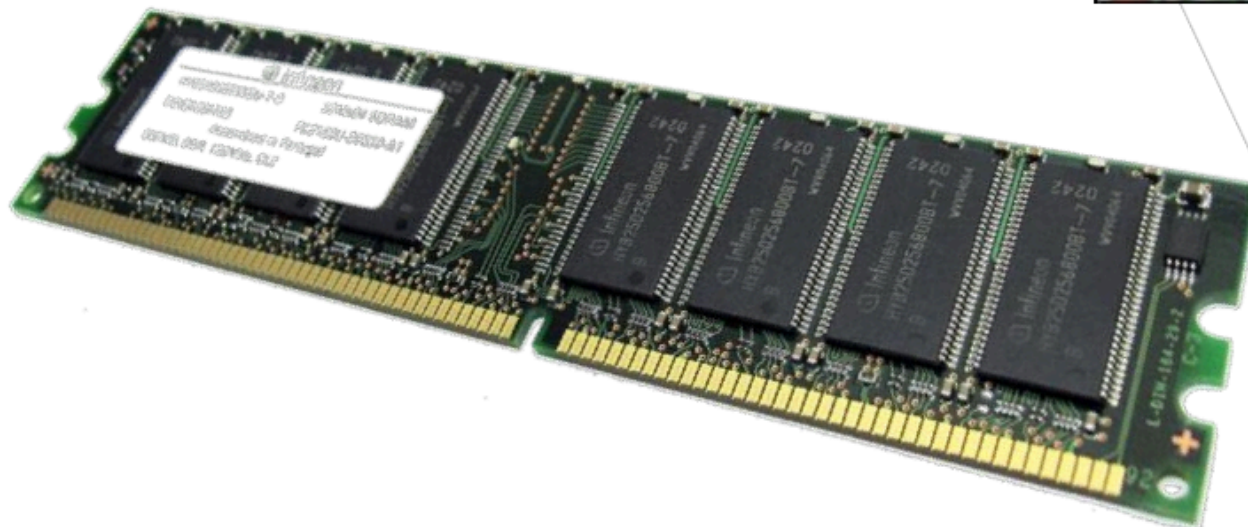
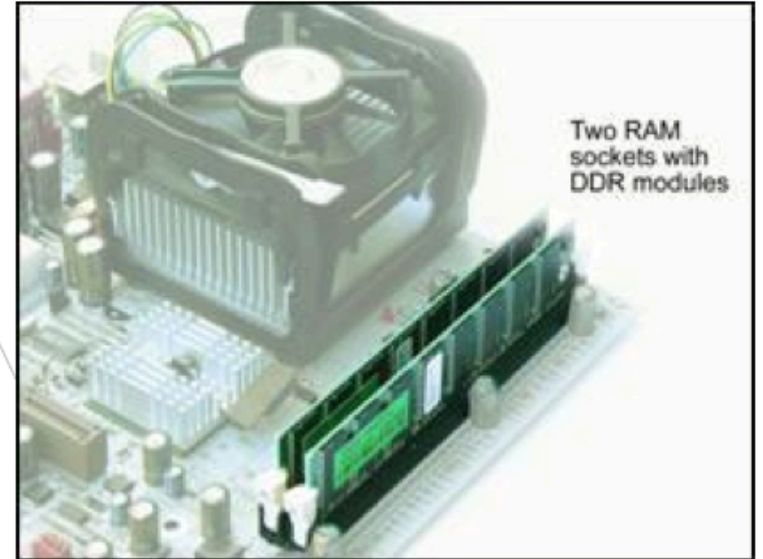


Processing devices



Memory devices

RAM:
Volatile memory



ROM:
Non-volatile memory

Storage devices

Magnetic storage: Hard disks Non-volatile memory



IDE – Integrated
Drive Electronics



Zip disk



Floppy disk

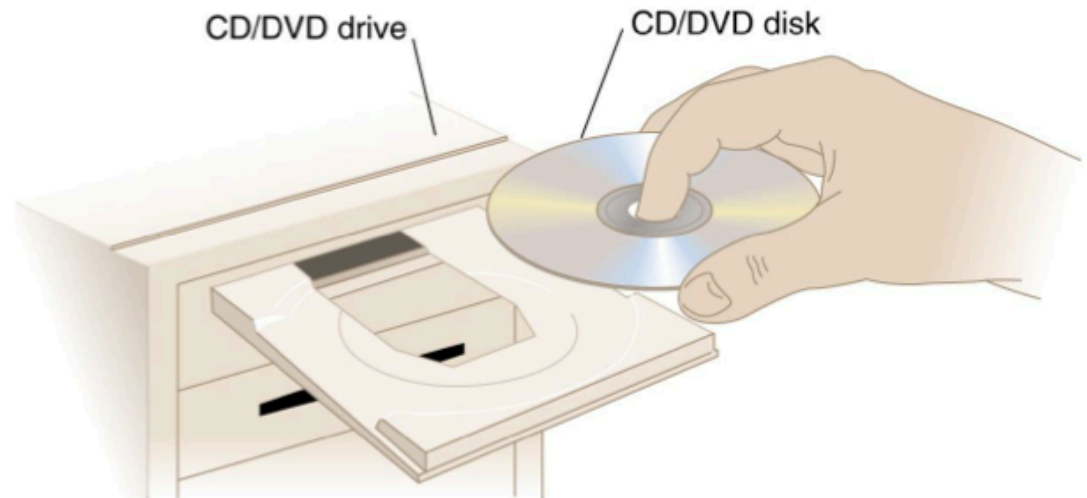


SCSI – Small Computer
Systems Interface

Storage devices

Optical storage: CD/ DVD

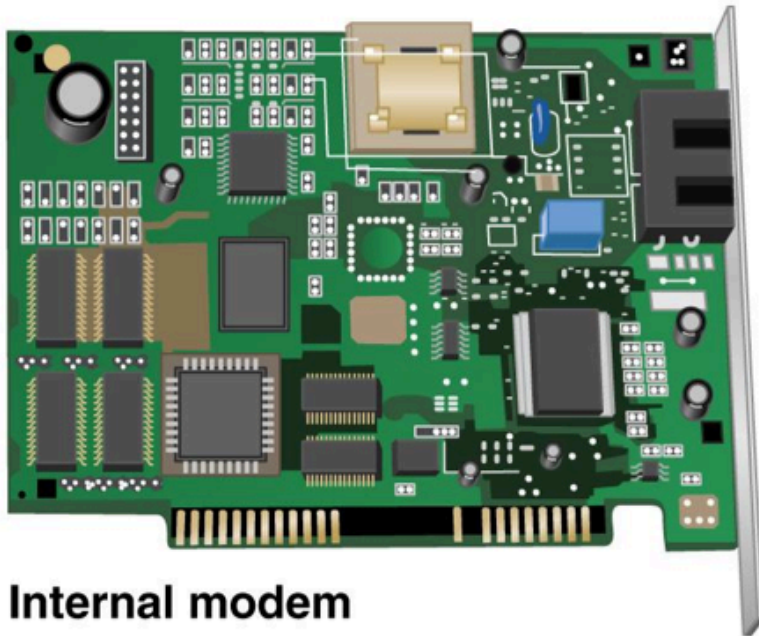
Non-volatile memory



Output devices



Communication devices

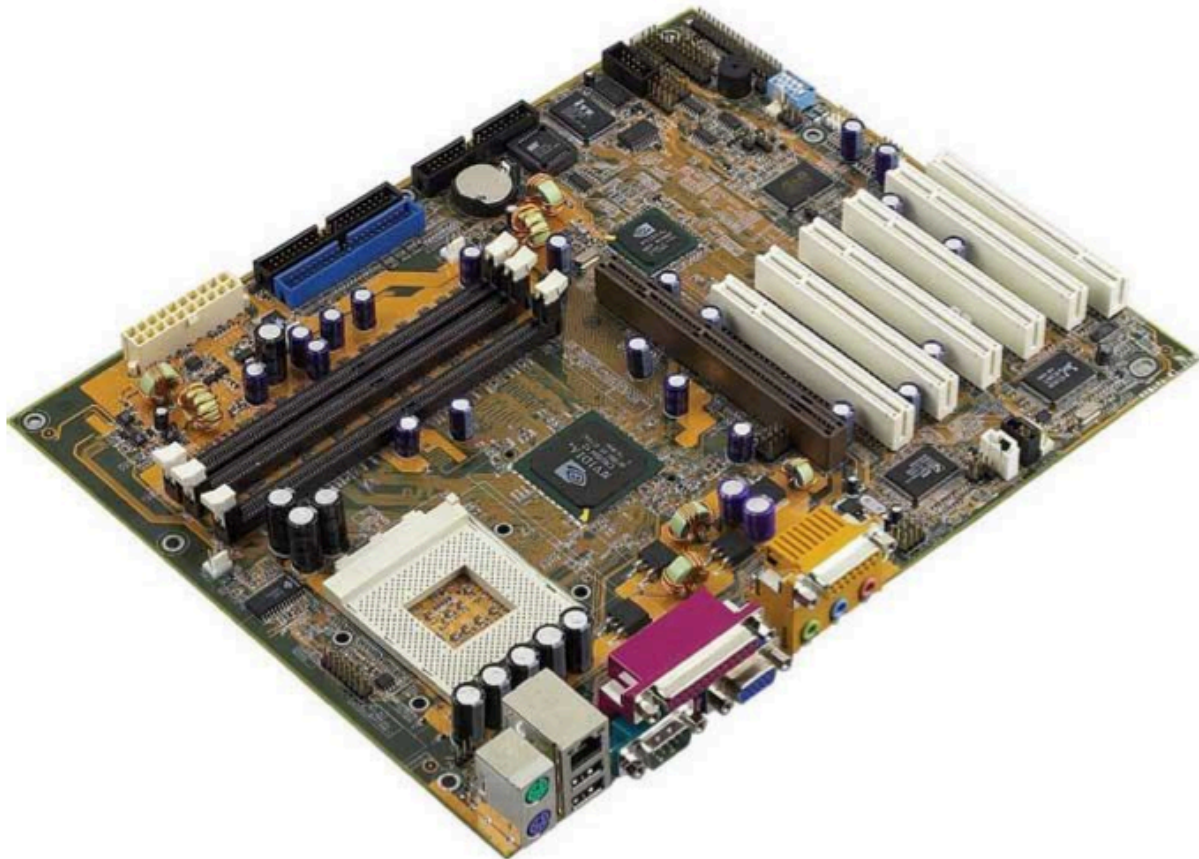


Internal modem



Motherboard

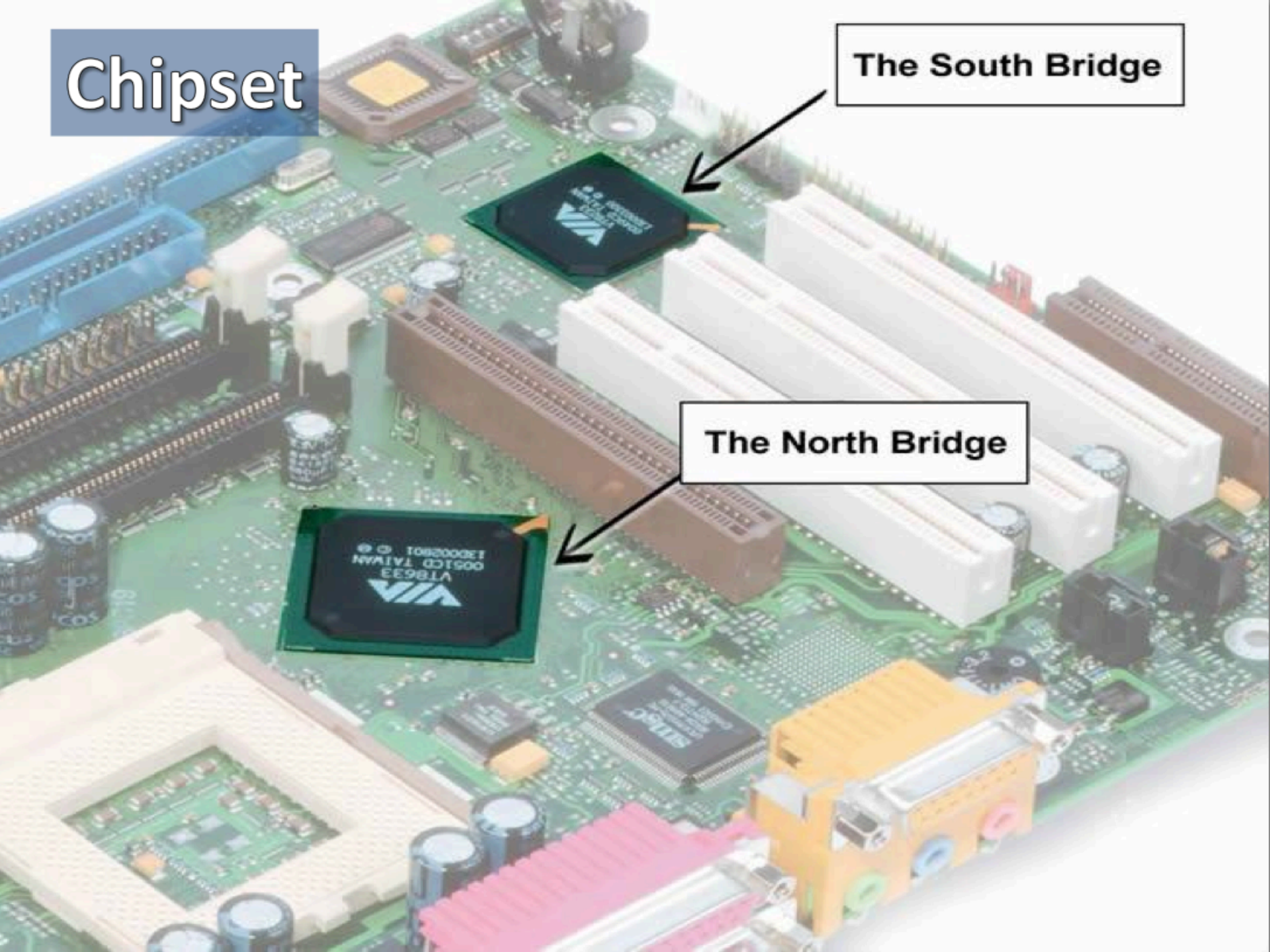
Chipset and Expansion slots

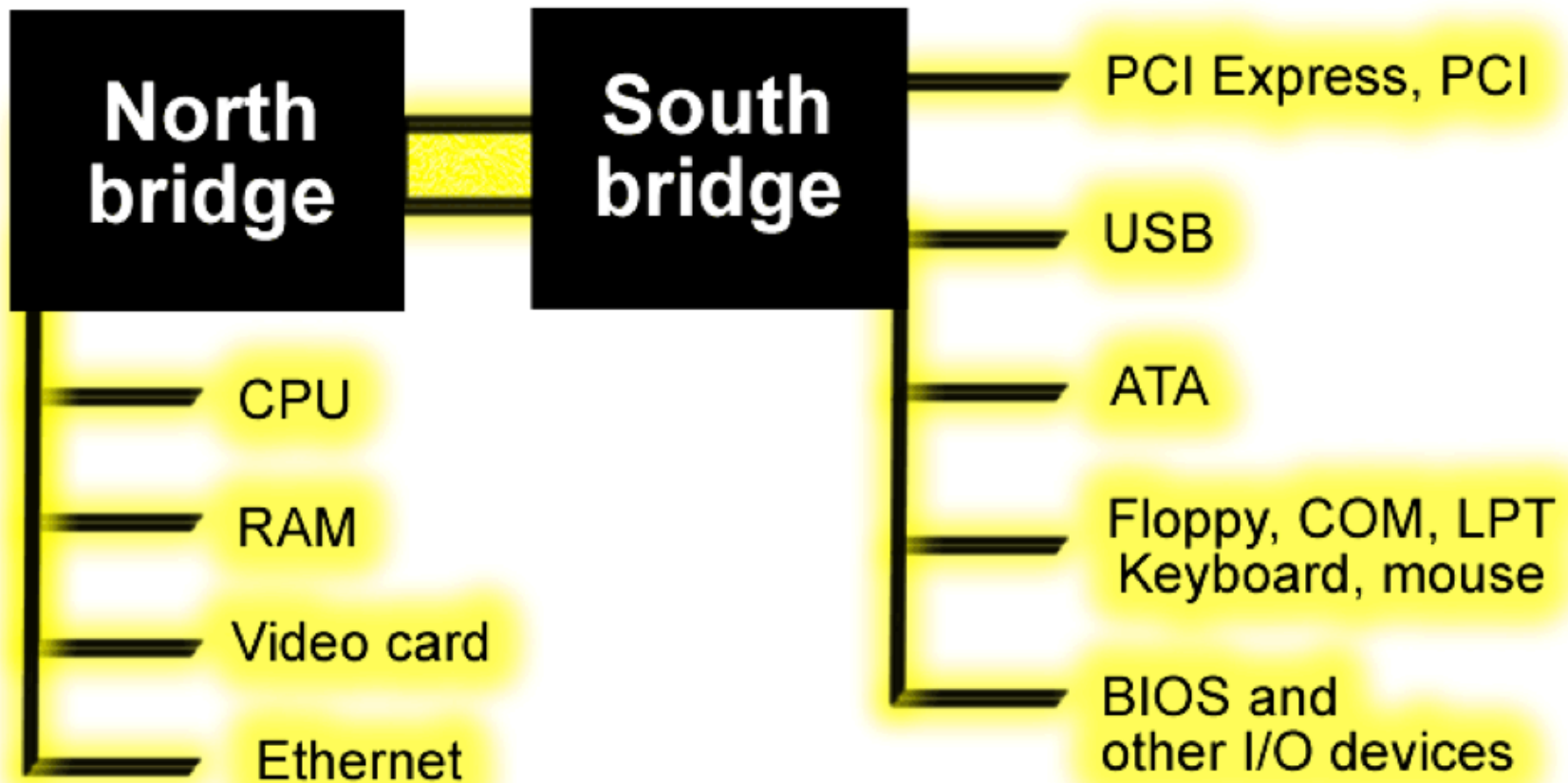


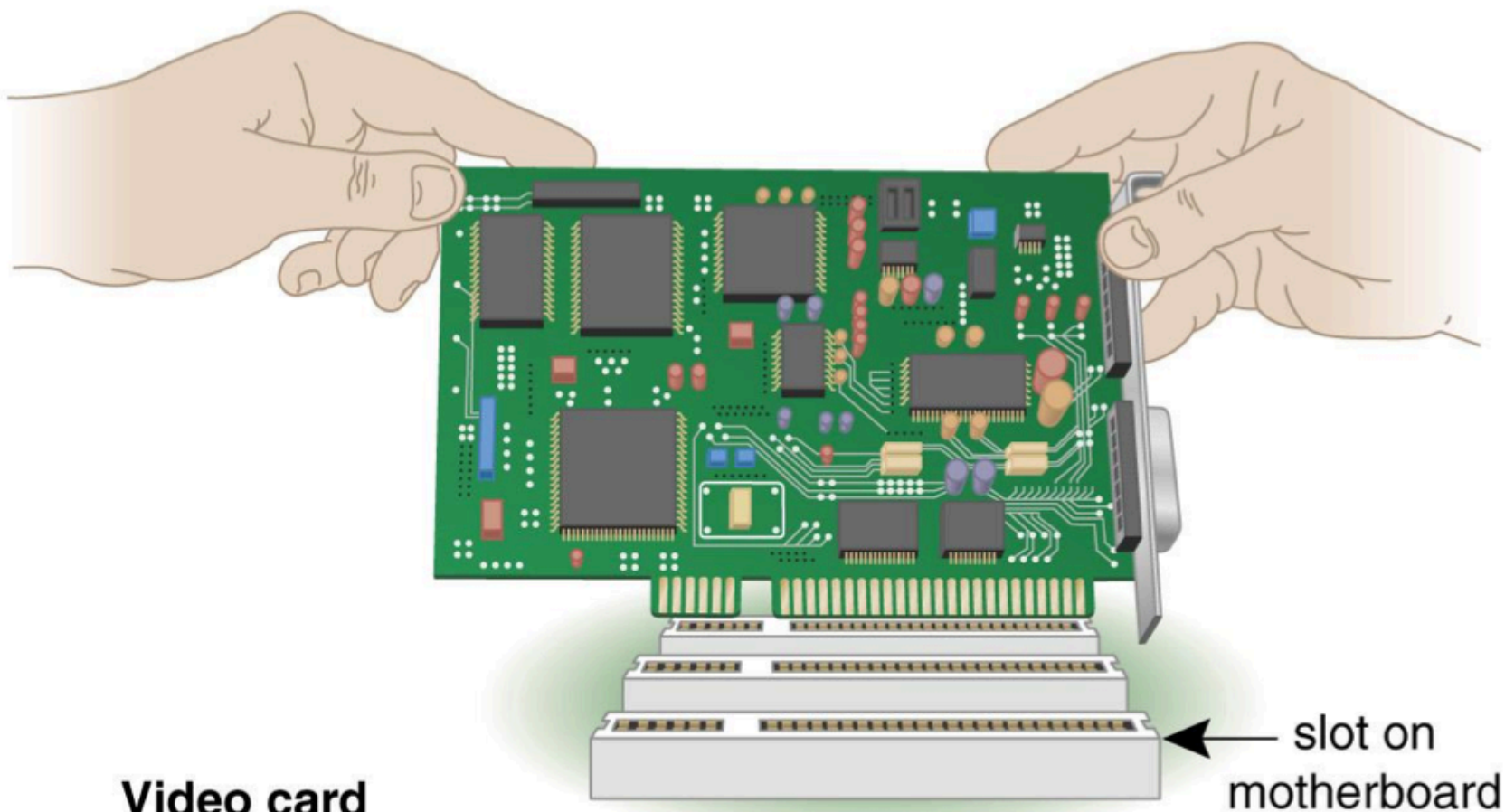
Chipset

The South Bridge

The North Bridge









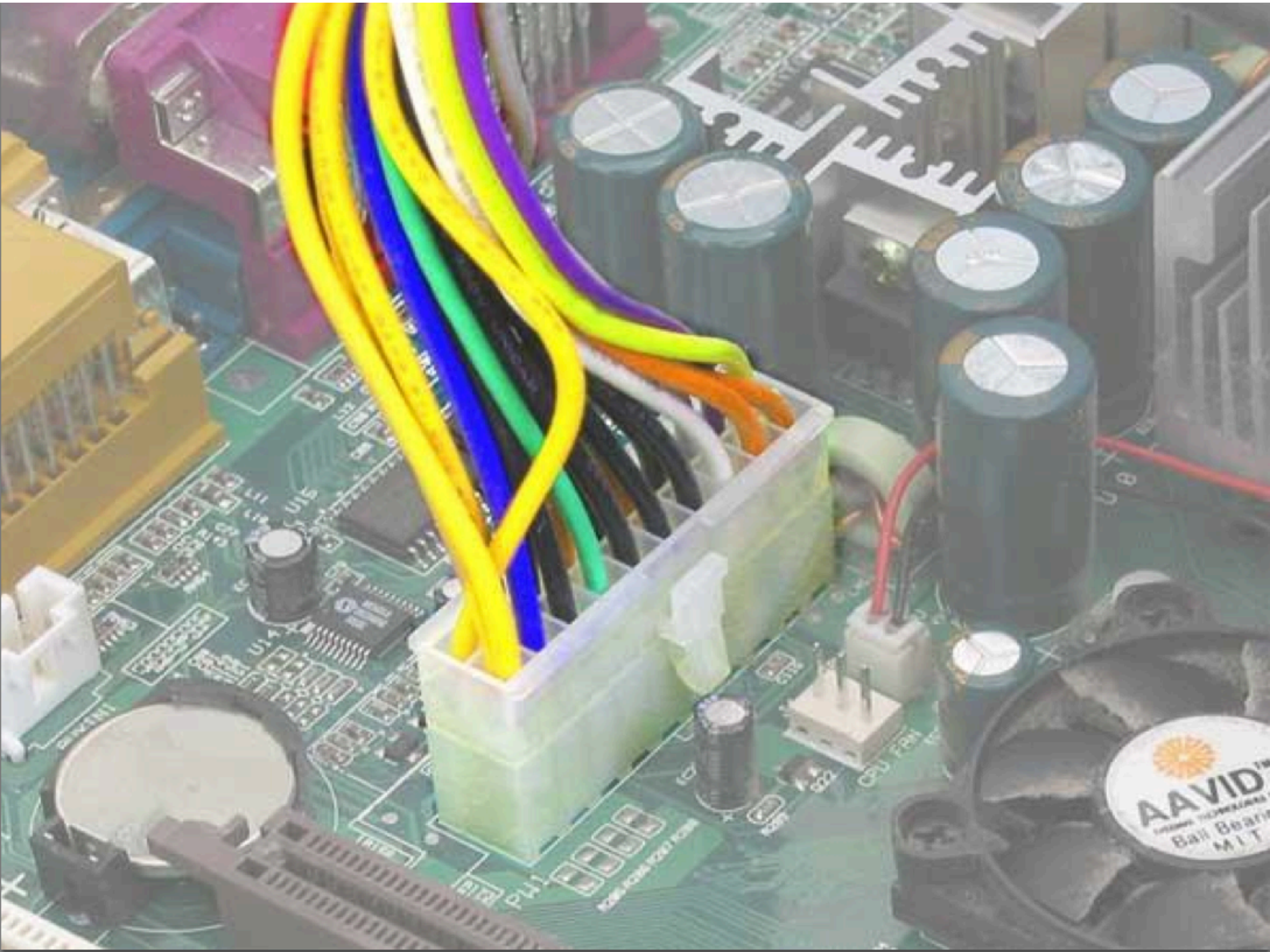
Sound card



How is the motherboard and other devices powered appropriately?

Power Supply

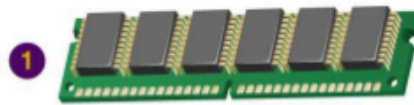






Where is the motherboard housed?

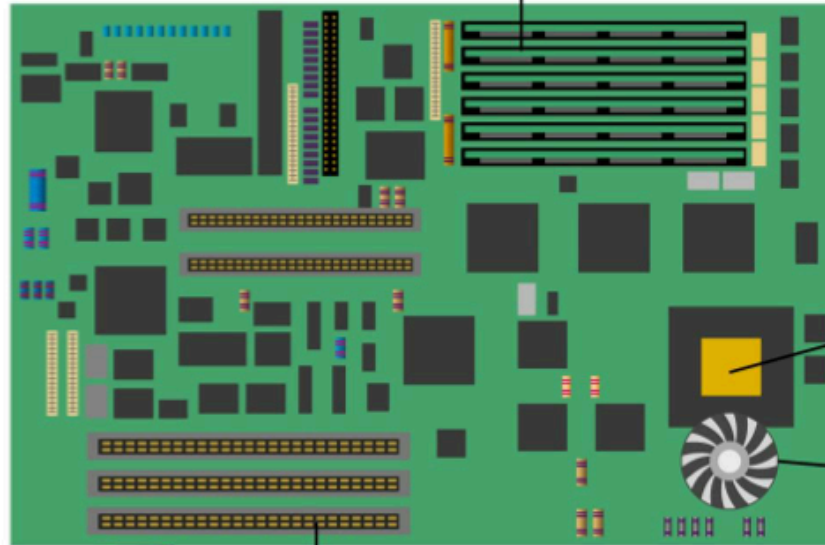
MOTHERBOARD



Plug memory chips into motherboard



Plug microprocessor chip into motherboard



Built-in fan to cool the microprocessor

Expansion slots

3 Attach motherboard to system cabinet

5 Connect wire to power switch

Hard-disk drive

4 Connect power supply unit (includes fan)

Floppy-disk drive

CD/DVD drive

Mouse

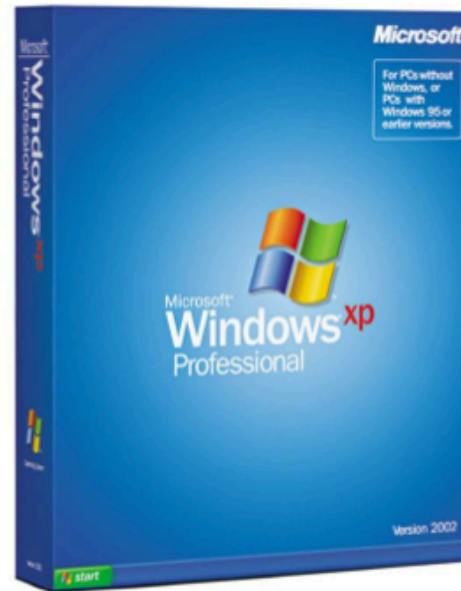
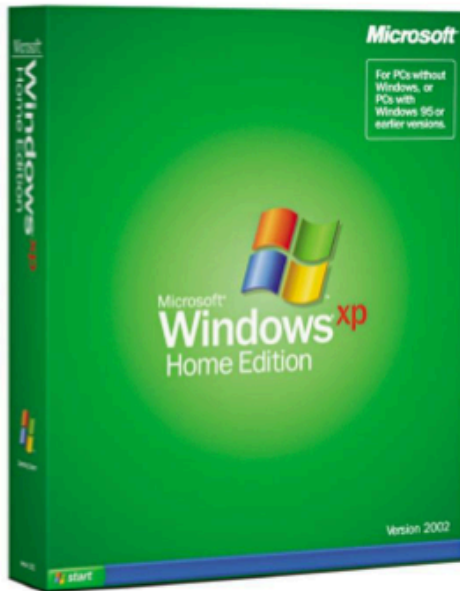
Power switch

SYSTEM CABINET



System Software

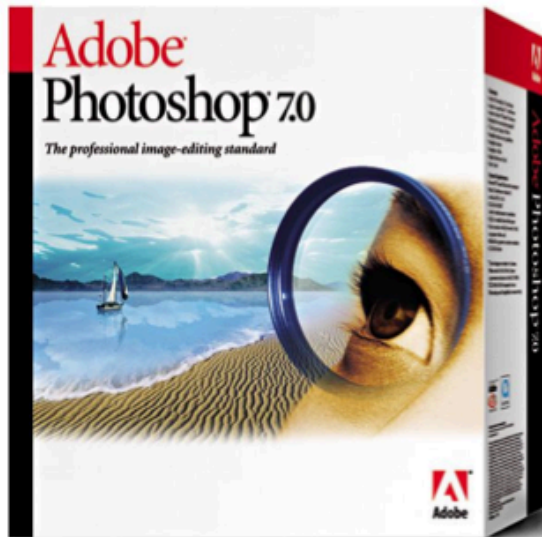
Computer
Software



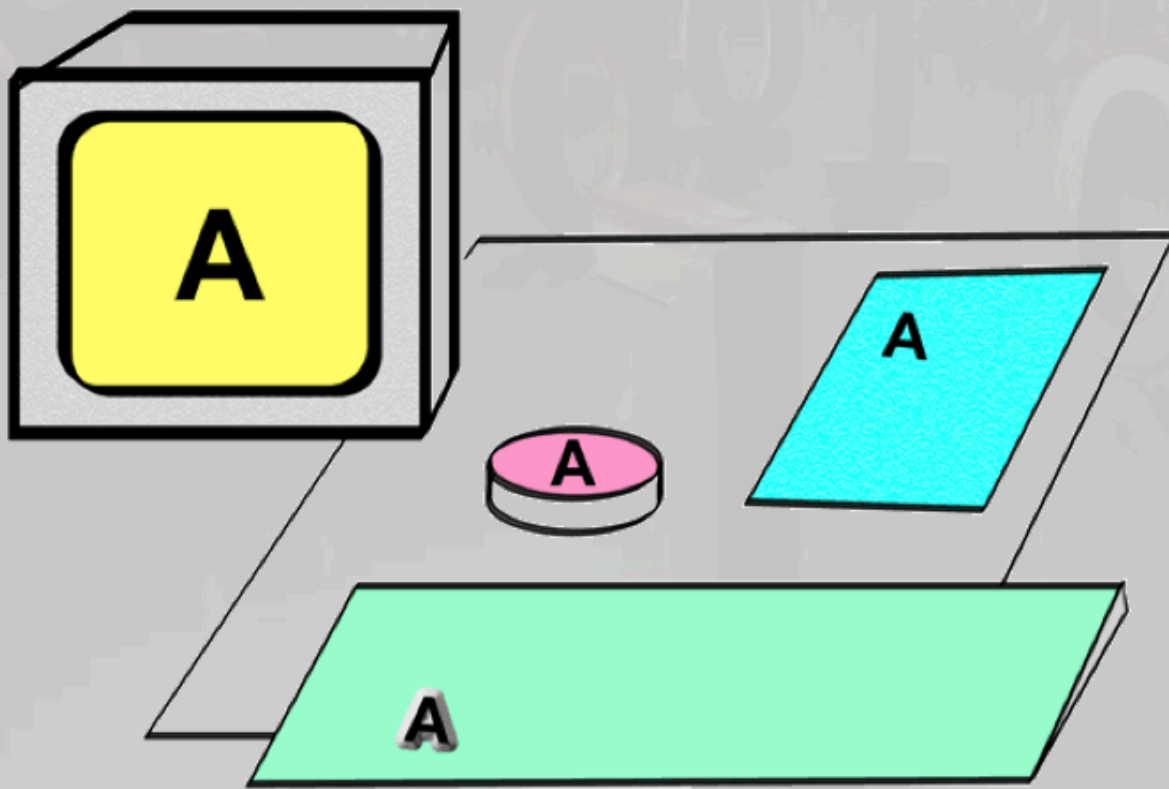
1) Operating systems 2) device drivers

Application **Software**

**Computer
Software**



**Computer
data**



**Computer
users**

Can computers think?

**Even the most powerful
supercomputers require
human interaction!**

Why??

- 1. Setting up the system**
- 2. Installing software**
- 3. Running programs**
- 4. Managing files**
- 5. Maintaining the system**

“Userless” embedded computers



Lecture Summary

1. **Operations of Computer**
(input, processing, storage, output)
2. **Components of Computer**
 - a. **Hardware**
 - b. **Software**
 - c. **Data**
 - d. **Users**

