Computer Peripheral & Interfacing (Introduction)

Computer Hardware Organization

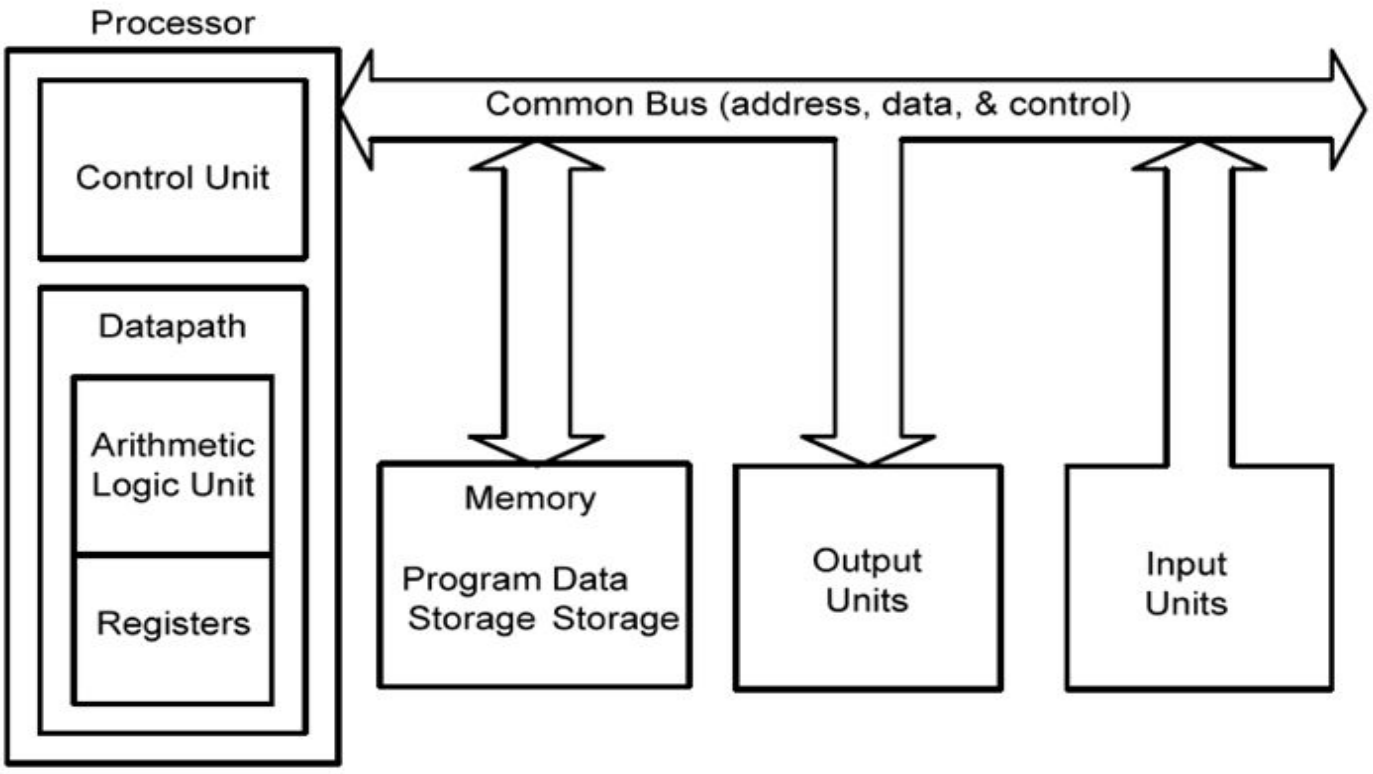
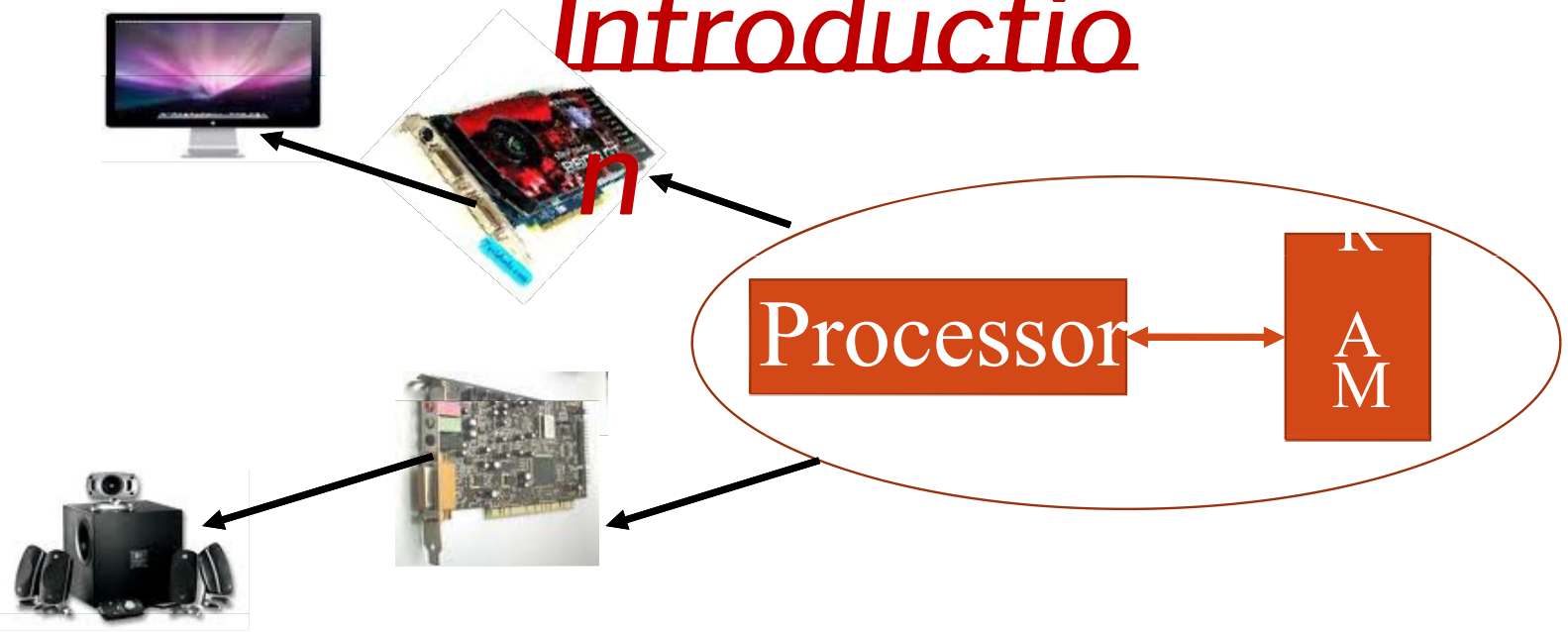


Figure Computer Organization

Computer Systems

- Computer Systems
  - Internal (processor + memory (RAM)
  - Peripheral (Disk, Display, Audio, Eth,..)

Introduction



Peripherals : HD monitor, 5.1 speaker

- Interfaces : Intermediate Hardware
  Nvidia GPU card, Creative Sound Blaster card
- Interfaces : Intermediate Software/Program
  Nvidia GPU driver , Sound Blaster Driver software

Peripheral

- A peripheral is a device that is connected to a host computer, but not part of it. It expands the host's capabilities but does not form part of the core computer architecture. It is often, but not always, partially or completely dependent on the host.

Types:

- Input, used to interact with, or send data to the computer
- Output, which provides output to the user from the computer
- Storage, which stores data processed by the

Interfacing

- The technique by which we can add additional devices with the main processor called interfacing.

Interface

- An interface is the point of interaction with software, or computer hardware, or with peripheral devices.

Types

- Hardware interfaces
- Software interfaces

Hardware interfaces

- Hardware interfaces exist in computing systems between many of the components such as the various buses, storage devices, other I/O devices.

Types:

- Parallel Interface
- Serial Interface

Software Interfaces

- Software interfaces (programming interfaces) are the languages, codes and messages that programs use to communicate with each other and to the hardware. Examples are the Windows, Mac and Linux operating systems, SMTP email, IP network protocols and the software drivers that activate the peripheral devices.

Example

- Suppose, you have a document open in a word processor, when you click to save the document the word processor will communicate with the operating system (software-software interface). The operating system would then use a software-hardware interface to communicate with the hard drive (or other storage device) and carry out the task.

Bus

- A bus is a communication system that transfers data between components inside a computer, or between computers.

- This expression covers all related hardware components (wire, optical fiber, etc.) and software, including communication protocol.

Types:

- Internal bus
- External bus

Internal Bus

- The internal bus, also known as internal data bus, memory bus, system bus or Front-Side-Bus, connects all the internal components of a computer, such as CPU and memory, to the motherboard.

- Internal data buses are also referred to as a local bus, because they are intended to connect to local devices.

External Bus

- The external bus, or expansion bus, is made up of the electronic pathways that connect the different external devices, such as printer etc., to the computer.

References….

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- Intel Microprocessors 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, Pentium Processor, Pentium II, III, 4 By Barry B. Brey
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