Infomation Technology Essentials
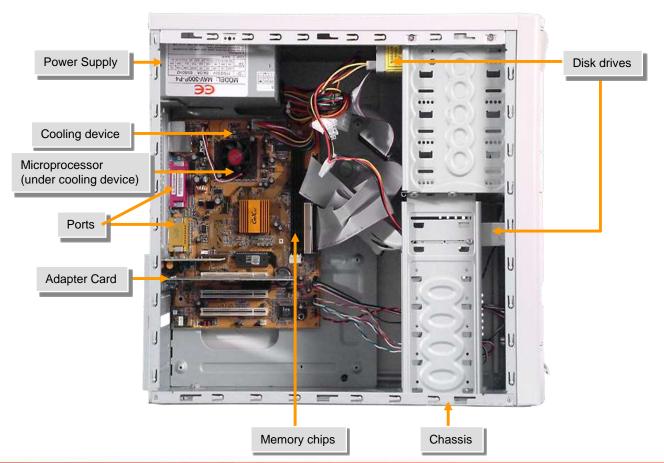
COMP106

Instructor :

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Chapter 1

Personal Computer Components

The System Unit

◆ A **system unit** is a personal computer component that houses other devices necessary for the computer to function.

Power Supply

Disk drives

Cooling device

Microprocessor
(under cooling device)

Ports

Adapter Card

Memory chips

Chassis

System Unit Components

◆ The system unit itself has several important sub-components, such as:

- ◆ System Board
- ◆ Central Processing Unit (CPU)
- ◆ Memory
- ◆ System Bus
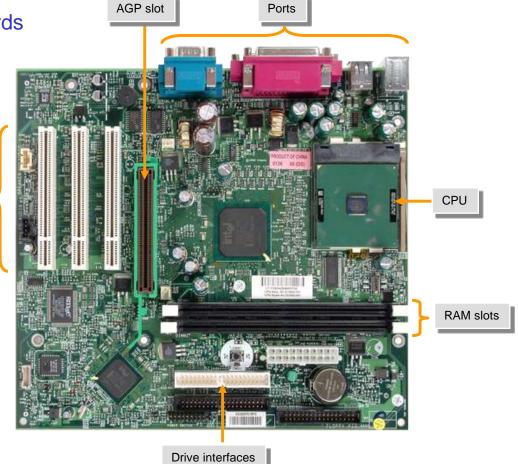- ◆ Storage devices

The System Board

◆ The **system board** is the personal computer component that acts as the backbone for the entire computer system.

Types of System Boards

•Nonintegrated

•Integrated

AGP slot

Ports

Expansion slots

CPU

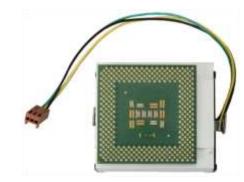RAM slots

Drive interfaces

The Central Processing Unit (CPU)

◆ The **central processing unit (CPU)**, sometimes called microprocessor or just processor, is the real brains of the computer and is where most of the calculations take place.
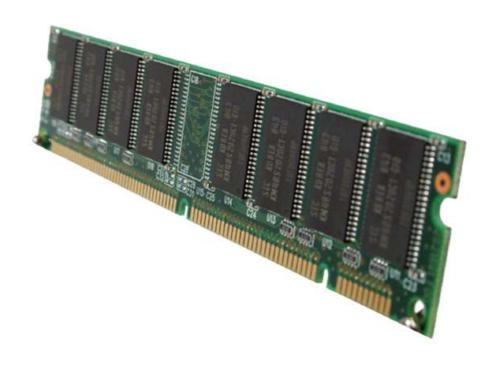

SECC Single Edge Contact Cartridge
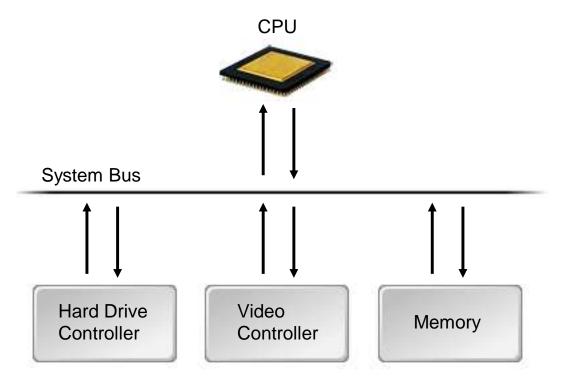

PGA Pin Grid Array

Memory

◆ **Memory** is the personal computer component that comprises the electronic storage areas in the computer. It can be considered either volatile or non-volatile.

The System Bus

◆ The **system bus** is the main communication path between the CPU and memory.

CPU

System Bus

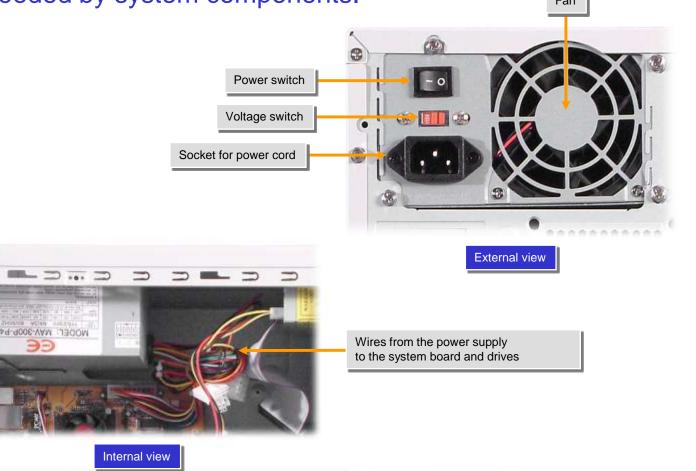| Hard Drive Controller | Video Controller | Memory |

Storage Devices

◆ A ***storage device*** is a system unit component, such as a hard drive, that enables users to save data for reuse at a later time, even after the personal computer is shut down and restarted.

Power Supplies
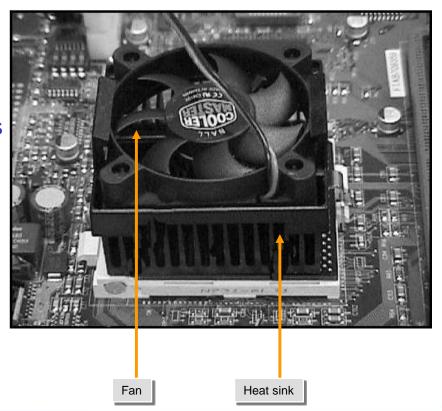
♦ A *power supply* is an internal computer component that converts AC power from an electrical outlet to the DC power needed by system components.

Fan

Power switch

Voltage switch

Socket for power cord

External view

Wires from the power supply to the system board and drives
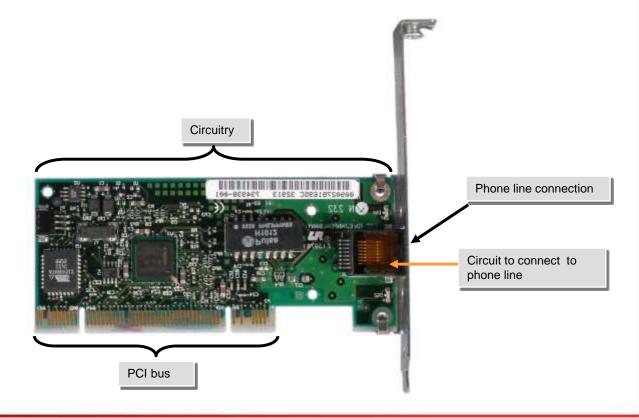
Internal view

Cooling Systems

◆ Computer systems contain several components that require cooling:

- The computer case
- The CPU
- The power supply
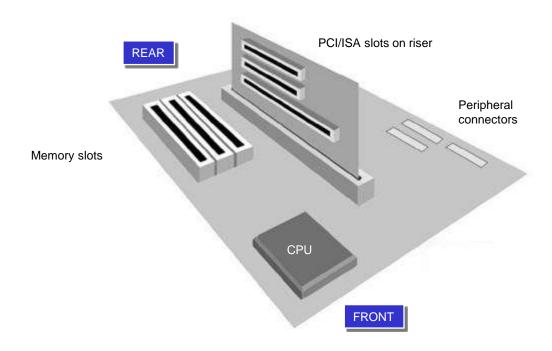- Some adapter cards
- Some hard disk drives

Fan

Heat sink

Adapter Cards

An ***adapter card*** is a printed circuit board that you install into a slot on the computer's system board to expand the functionality of the computer.

Circuitry

Phone line connection

Circuit to connect to phone line

PCI bus

Riser Cards

◆ A ***riser card*** is a board that plugs in to the system board and provides additional slots for adapter cards..

REAR

PCI/ISA slots on riser

Peripheral connectors

Memory slots

CPU
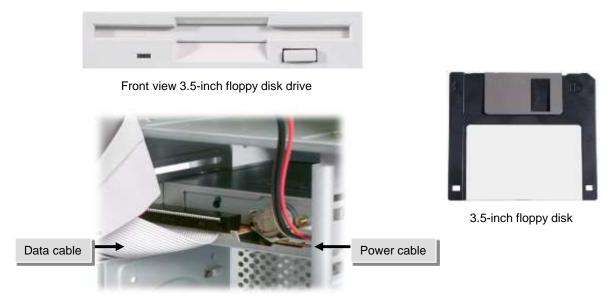
FRONT

System Board Form Factors

◆ The form factor describes the size and shape of the system board.

◆ Common System Boards are:

- ◆ Full size AT
- ◆ Baby AT
- ◆ ATX (Advanced Technology Extended)
- ◆ microATX
- ◆ LPX (Low-Profile Extended)
- ◆ NLX (New Low-Profile Extended)
- ◆ BTX (Balanced Technology Extended)

Storage Devices

- The various types of storage devices used in personal computers are:
  - Floppy Disk Drives (FDD)
  - Hard Disk Drives (HDD)
  - Optical Drives
  - Tape Drives
  - Solid State Storage devices

Floppy Disk Drives (FDD)

◆ **FDD** is a personal computer storage device that reads data from, and writes data to, removable disks made of flexible Mylar plastic covered with a magnetic coating and enclosed in a stiff, protective, plastic case.

Front view 3.5-inch floppy disk drive

3.5-inch floppy disk

Data cable → ← Power cable

Rear view of floppy disk drive

Hard Disk Drives (HDD)

◆ **HDD** is a personal computer storage device that uses fixed media, which means that the disk is built into the drive and the drives are not removed from the computer unless you are performing an upgrade or a repair.

Optical Disks

◆ An **optical disk** is a personal computer storage device that stores data optically, rather than magnetically.

An external DVD drive

A CD-R disc

An internal CD-ROM drive

An internal CD-ROM drive

Types of Optical Disks and Drives

◆ Optical disks and drives come in several types, such as:

- CD-ROM
- CD-R
- CD-RW
- DVD-ROM
- DVD-R
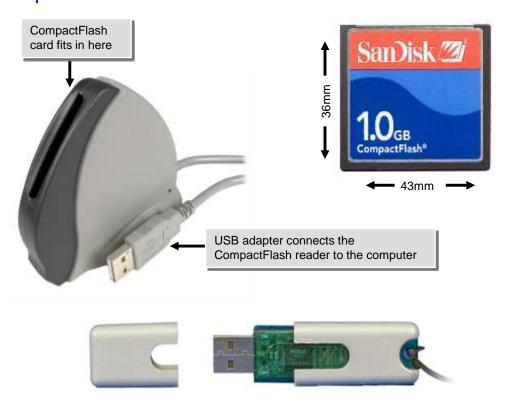- DVD+R
- DVD+R DL
- DVD-RW
- DVD+RW
- DVD-RAM

Tape Drives

◆ A tape drive is a personal computer storage device that stores data magnetically on a removable tape that is enclosed in a tape cartridge.

Solid State Storage

◆ ***Solid state storage*** is a personal computer storage device that stores data in special types of memory instead of on disks or tape.
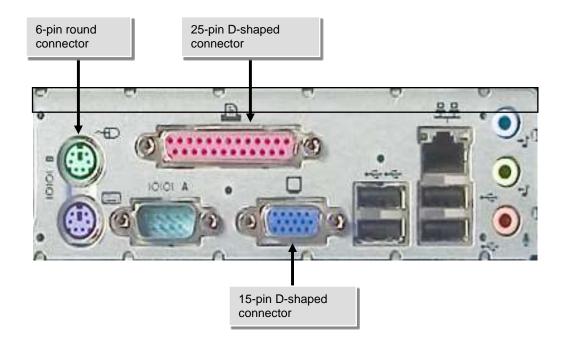
CompactFlash card fits in here

36mm

43mm

USB adapter connects the CompactFlash reader to the computer

Personal Computer Connection Methods

◆ The various PC connection methods are:

- ◆ Ports
- ◆ Personal Computer Connections
- ◆ Serial Connections
- ◆ Parallel Connections
- ◆ Universal Serial Bus (USB) Connections
- ◆ IEEE 1394 and FireWire Connections
- ◆ Small Computer Systems Interface (SCSI) Connections
- ◆ Parallel ATA (PATA) Connections
- ◆ Serial ATA (SATA) Connections

Ports

◆ A port is a hardware connection interface on a personal computer that enables devices to be connected to the computer.

6-pin round connector

25-pin D-shaped connector

15-pin D-shaped connector

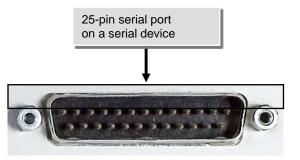Enable devices to be connected to a personal computer.

Personal Computer Connection

◆ A ***personal computer connection*** is a means by which a personal computer component is attached to other components to provide computing capabilities.
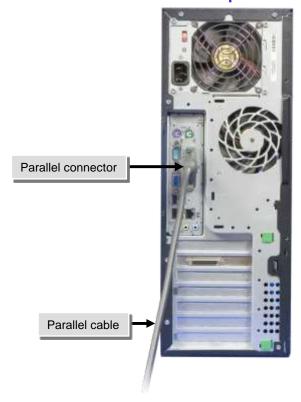

USB Connector

Cable

Serial Connections

◆ A *serial connection* is a personal computer connection that transfers data one bit at a time over a single wire.

25-pin serial port
on a serial device

25-pin end of serial cable connects
to modem and 9-pin end
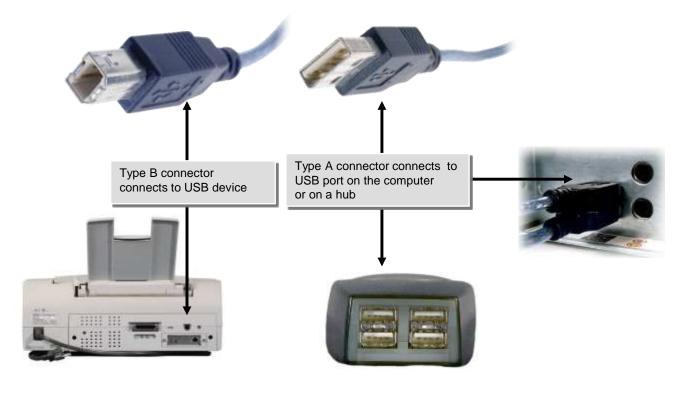connects to computer's serial port

Parallel Connections

◆ A **parallel connection** is a personal computer connection that transfers data eight bits at a time over eight wires and is typically used to connect a printer to a system unit.
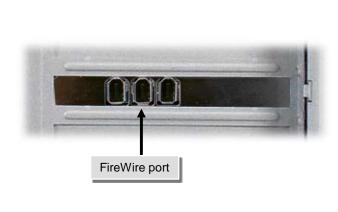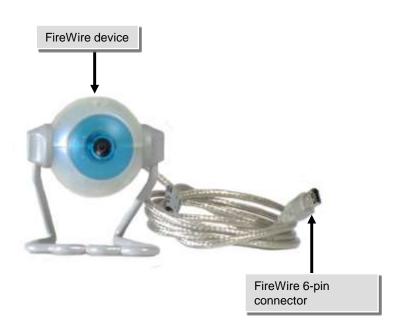

Parallel connector

Parallel cable

USB Connections

- A **USB connection** is a personal computer connection that enables you to connect multiple peripherals to a single port with high performance and minimal device configuration.

Type B connector connects to USB device

Type A connector connects to USB port on the computer or on a hub
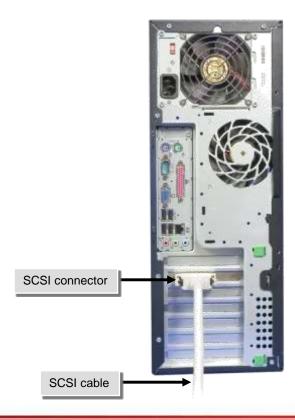
IEEE 1394 and FireWire Connections

◆ A **FireWire connection** is a personal computer connection that provides a high-speed interface for peripheral devices that are designed to use the IEEE 1394 standard.
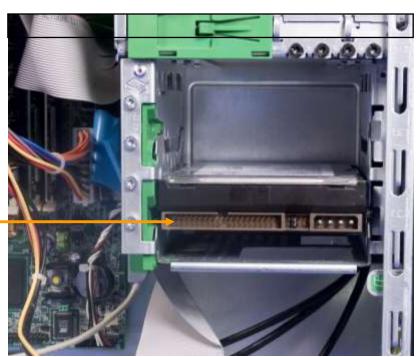
FireWire device

FireWire port

FireWire 6-pin connector

Small Computer Systems Interface (SCSI) Connections

◆ A **SCSI connection** is a personal computer connection that connects internal and external components to the system unit and provides for high-speed data transfer.

SCSI connector
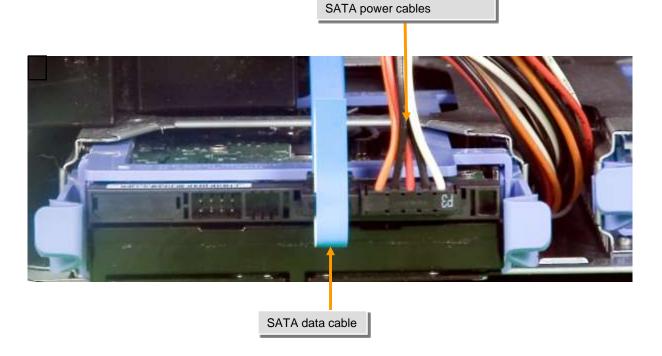
SCSI cable

Parallel ATA (PATA) Connections

◆ A **PATA connection** is a personal computer connection that provides a parallel data channel from a disk controller to the disk drives.

PATA connector

Serial ATA (SATA) Connections

◆ A **SATA connection** is a personal computer connection that provides a serial data channel between the drive controller and the disk drives.

SATA power cables

SATA data cable

Summary

◆ In this session, you learned that:

- ◆ The four primary components of a typical personal computer are system unit, display device, input devices, and external devices.

- ◆ The major components of the system unit are system board, CPU, memory, system bus, and storage devices.

- ◆ The various types of storage devices used in personal computers are FDD, HDD, optical drives, tape drives, and solid state storage devices.

- ◆ The various PC connection methods are ports, PC connections, serial connections, parallel connections, USB connections, IEEE 1394 and FireWire connections, SCSI connections, PATA connections, and SATA connections.