Unit B – Computer Hardware

• Storage Technology
• Input Devices
• Display Devices
• Printers
• Other Computer Hardware
  – Expansion slots, Cards, and Ports
Storage Technology

• Storage technology [36]
  — enables computers to store and retrieve data and programs

• Storage Medium
  — Disks, CDs, Floppy disk, Memory Card

• Storage Device
  — Disk Drive, Flash Readers, CD Drive

• Random Access Memory (RAM)
  — Volatile
Storage Representation

• Computers are Binary Digital Systems

• Computers use Binary Numbering System

• Only understand 0 and 1
  – Humans understand Text/Images/Video.. etc
Comparing Storage Technologies

• Magnetic Storage [38]
  — Uses magnetic particles on disk
  — Has a Read/Write head
  — Not very durable
  • Magnetic Fields, dust, smoke
  — Eventually will lose magnetic charge
  — Examples:
    • Hard disk, Floppy disk, Tape
Comparing Storage Technologies (continued)

• Optical Storage
  — Pits and Lands
  — Uses laser
  — More durable than magnetic media
  — Examples:
    • CDs and DVDs
Comparing Storage Technologies (continued)

• **Solid State Storage**
  – Non-volatile, erasable, low-power chip
  – Fast access because no moving parts
  – Very durable, high cost

• **Examples:**
  – Flash Memory, USB Flash Drives
Comparing Storage Media and Devices

• Speed
  • Access Time – Average time to locate and read data
  • Data Transfer Rate – How much data can be transferred

• Storage Capacity
  • Amount of data stored
    • KB = KiloByte = 1,000 Bytes
    • MB = MegaByte = 1,000,000 Bytes
    • GB = GigaByte = 1,000,000,000 Bytes
    • TB = TeraByte = 1,000,000,000,000 Bytes
Hard Disk Technology

• Platter \(^{[42]}\)
• Speed
  – Revolutions Per Minute (RPM)
• Capacity
CD/DVD Technology

• Use optical storage technology
  • Compact Disk (CD)
  • Digital Video/Versatile Disk (DVD)

• Types
  – Read Only Memory (CD-ROM/DVD-ROM)
  – CD Digital Audio (CD-DA)
  – DVD-Video
  – Recordable (CD-R and DVD±R)
  – ReWriteable (CD-RW and DVD±RW)
Solid State Storage

- Data stored in erasable, non-volatile chips
- Flash Memory
  - Read by a card reader
- Types
  - USB Flash drives
  - Compact Flash (CF)
  - Multimedia Cards (MMC)
  - Secure Digital (SD)
  - Smart Media
- Why use Solid State?
Input Devices

• Keyboards [48]

• Pointing Devices
  • Mouse
  • Pointing stick
  • Touch pad/Track pad
  • Trackball
  • Joystick
Display Devices

• Graphics Card
  – Connects the monitor to the computer

• Monitors
  – CRT (Cathode Ray Tube)
  – LCD (Liquid Crystal Display) / Plasma
Display Devices (continued)

- Monitors
  - Resolution
  - Screen Size
Printers

• Resolution
  • Measured using Dots Per Inch (DPI)
• Speed is measured in Pages Per Minute (PPM)
Printers (continued)

- Types [52]
  - Inkjet Printer
  - Photo Printer
  - Laser Printer
  - Dot Matrix Printer
  - Solid Ink/Thermal Wax Printers

- Which one is best for you?
Expansion Slots, Cards, and Ports

- Motherboard
  - Expansion slot: Expansion card
    - Graphics card, modem, sound card... etc
    - Notebooks: PCMCIA (PC Card)
  - Expansion ports
    - USB port
Peripheral Devices

- Computer projection device
- Scanner
- Multifunction device
- Digital camera
- Graphics Tablet
- Webcam

- Plug and Play
- Device driver: software required by peripheral devices to work
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