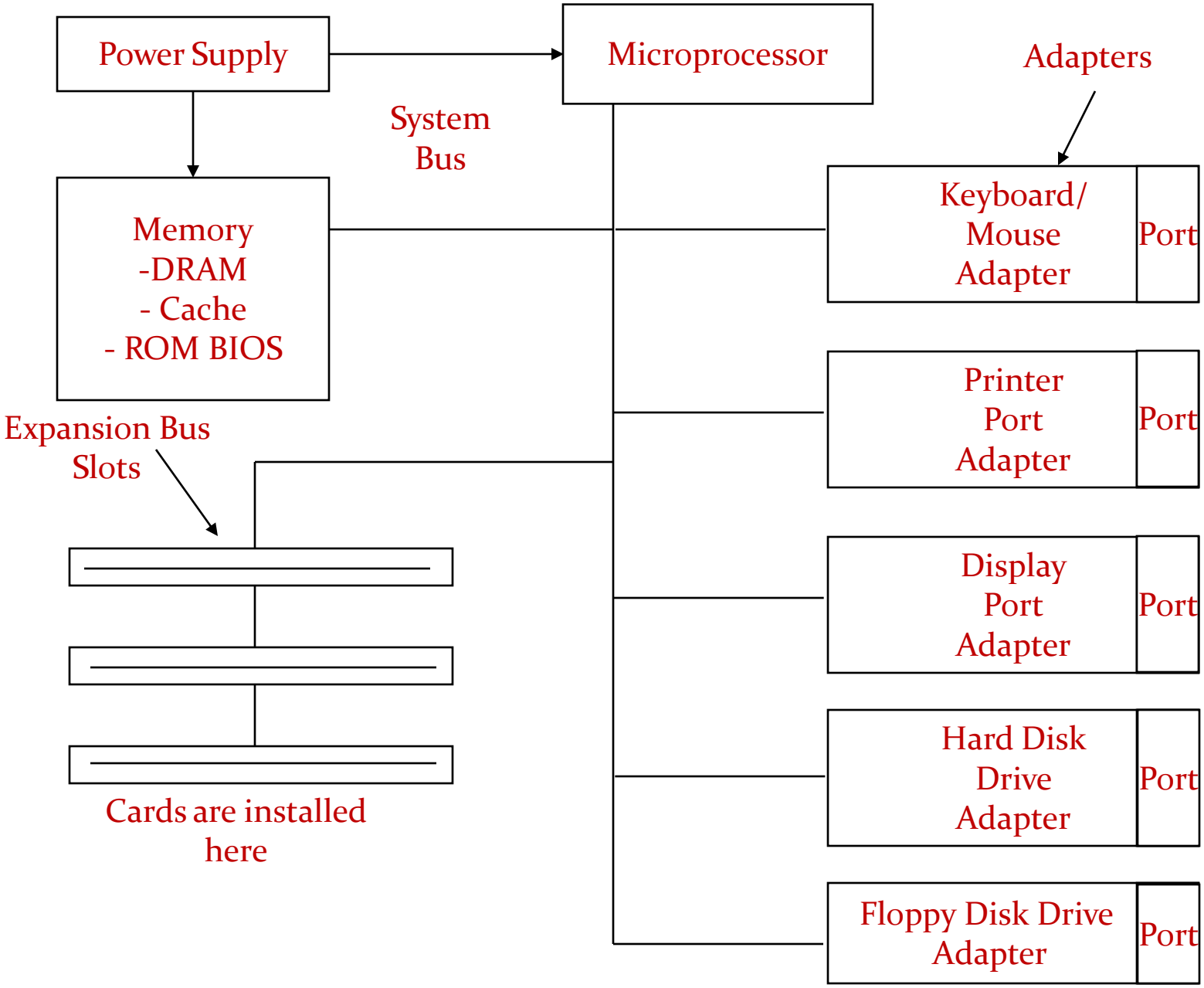
Hardware Organization of a Microcomputer


Power Supply
Microprocessor
Adapters
System
Bus
Memory
-DRAM
- Cache
- ROM BIOS
Keyboard/
Mouse
Adapter
Port
Printer
Port
Adapter
Port
Expansion Bus
Slots
Display
Port
Adapter
Port
Hard Disk
Drive
Adapter
Port
Floppy Disk Drive
Adapter
Port
Cards are installed
here

The Major Components of a PC

- Processor
- I/O devices
- Memory
- Bus
- Adapters
  - Allow processor to communicate with and control I/O or storage devices.
  - A set of hardware circuitry.
  - Connects to system bus.
  - Acts as an interface/bridge.
  - Example: serial port adapter, connects to system bus, and has a port where a modem could be attached.

The Major Components of a PC

- **Port**
  - Ports of adapters support attachment of I/O devices.
- **Expansion slots**
  - Physical connectors.
  - Can be used to attach extra adapters to allow support of various types of I/O devices.
- **Storage devices**
  - Hard disks and CD-ROMS.

The Major Components of a PC

- **Display**
  - Most common CRT
  - For laptops, LCD.
  - Picture quality much better than a TV because of higher refresh rate (frames per second) to avoid flicker.
  - Higher resolution. E.g. 1024 x 768 pixels. Pixels are the smallest element that can be displayed.
  - Needs the display adapter to attach the monitor.

The Major Components of a PC

- **Keyboard**
  - Has an 8-bit processor inside.
  - Used to detect key presses/releases.
  - The adapter itself has an 8-bit processor that gets keystroke reports from the keyboard processor.
- **Printer**
  - Attached to parallel port. 8 bits data transfer at a time.
  - Keyboard- serial mode transfer, bit-by-bit.
  - Sometimes called Centronics printer port.
  - Parallel port adapter is normally integrated into the computer motherboard.
  - 3 popular printers: dot-matrix, laser, ink jet.

The Major Components of a PC

- **Mouse**
  - Preferred input device.
  - Used to be connected through serial port.
  - Can be connected using PS/2 mouse port, USB port.
- **Other ports and adapters**
  - Most computers have 2 serial ports called COM ports.
  - Has data rate 115 kbps.
  - Can be of 9 or 25 pins.
  - Uses the RS-232-C standard.
  - Can have PS/2 mouse port, USB port, parallel port etc.

The Major Components of a PC

- **Power supply**
  - Converts standard 220v AC to DC for all the components of the computer. +5v, -5v, +12v and –12v.
  - Sometimes supplies AC voltage directly to monitor.
- **Cooling**
  - A fan – to keep the power supply cool.
  - CPU also has a separate cooling fan.
  - Large and powerful computers may need cooling for each individual adapters and the motherboard.

The Major Components of a PC

- **Floppy disk drives (FDD)**
  - Needed to support floppy disks.
  - Floppy is a magnetic storage medium.
  - Early floppy size = 5.25” in diameter and stored 160KB of data.
  - Now floppy size = 3.5” in diameter and stores 1.44MB of data.
  - PCs today have FDD adapter built-in.
- **Hard disk drives (HDD)**
  - They attach to computer through IDE (intelligent drive electronics) adapter port.
- **CD-ROM drives**
  - Can store 700MB of data. 5” in size.
  - Suitable for distributing large software.
  - They attach to computer through IDE (intelligent drive electronics) adapter port.