Project Planning

- Handout Outline
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- Poster Example

Handout Outline

Motherboards – Outline

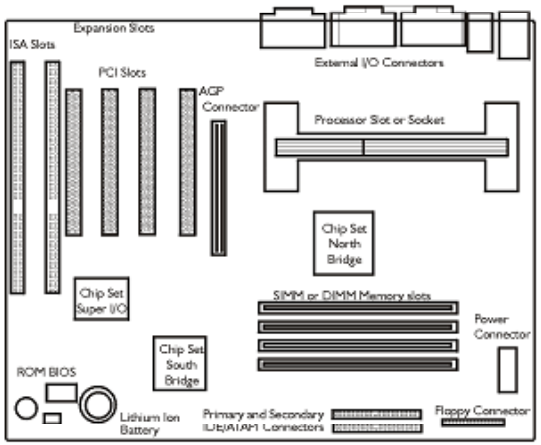
G. Snider

- The mainboard or motherboard connects the microprocessor to all the other components of the computer. (show diagram)
- The system clock generates a series of pulses known as a square wave. (Show picture)
- The unit of Frequency is the Hertz
- 1 cycle per second = 1 Hertz

- The BIOS is stored in ROM on the motherboard
- The BIOS is customized for each machine so that the operating system can complete the same tasks on different hardware. (include block diagram)
- The chip set is a group of chips which connect between the microprocessor and the rest of the devices connected to the computer.
- these chips include the clock generator, system timer, interrupt handler, DMA controller, CMOS RAM, real-time clock, and bus controller.

Example Handout

Motherboards

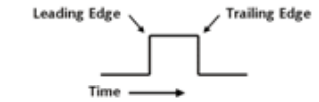


Components found on motherboard:
Memory modules
System clock
Expansion buses
Real-time clock
Disk Interfaces
Chip Set
BIOS
Input/Output Ports

The mainboard or motherboard connects the microprocessor to all the other components of the computer.

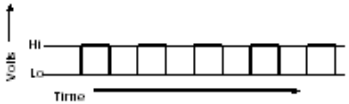
System Clock

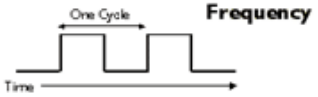
•All operations in the computer must be precisely synchronized. The system clock generates a series of pulses known as a square wave. The frequency of the pulses is controlled by the oscillations of a tiny sliver of quartz. Quartz crystals are used because they vibrate at a constant speed, which depends on the size and shape of the crystal.



Frequency Units

The unit of Frequency is the Hertz, named after a 19th century German physicist.
1 cycle per second = 1 Hertz
1 000 Hz = 1 kilohertz (kHz)
1 000 000 Hz = 1 Megahertz (MHz)
1000 000 000 Hz = 1 Gigahertz (GHz)

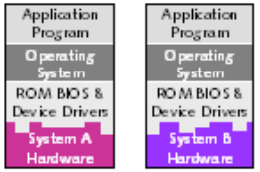




BIOS (Basic Input/Output System)

The BIOS is a set of device drivers, some stored in ROM on the motherboard or expansion card, others loaded by the operating system. The BIOS is customized for each machine so that the operating system can complete the same tasks on different hardware.

Hardware/Software Interface



Chip Set

The chip set is a group of chips which act as the interface between the microprocessor and the rest of the devices connected to the computer. The devices found in these chips include the clock generator, system timer, interrupt handler, DMA controller, CMOS RAM, Real-time clock, and bus controller.
The chip set also connects to the Super Input Output Controller chip, which interfaces with the basic input and output ports, for attaching external devices, including the floppy drive, keyboard, mouse, modem, and printer.

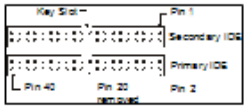
Common Expansion Buses

An expansion bus is a slot which will accept add-on circuit boards such as the video card, sound card, or internal modem. The constantly increasing power and speed of the microprocessor has created a need for improved buses to connect external components. Some, such as IBM's MCA and the VESA local bus, proved to be dead ends. The most common buses still in use are:

•ISA (Industry Standard Architecture)
16-bit, 8MHz (soon to be history)
•PCI (Peripheral Component Interconnect)
32-bit, 33MHz
•AGP (Accelerated Graphics Port)
32-bit, 66/133/266 MHz
•Processor Bus
64-bit, 66/100/133 MHz

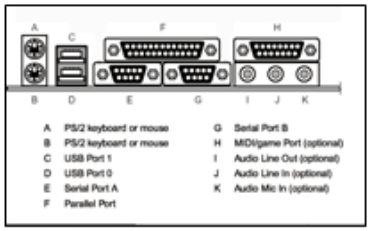
IDE Interface

There are normally two IDE connectors on the mainboard designed to accept the 40-conductor cables which connect the hard drives and CD-ROM drives.



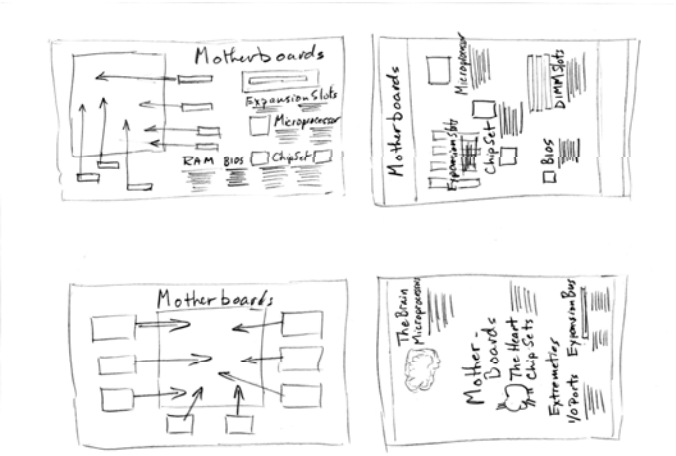
Input/Output Ports

At the back of the computer, and usually connected directly to the mainboard are a variety of ports which can be used to connect external devices to the computer. A serial port is a connection which transmits data one bit at a time. The parallel port transmits eight bits of data at one time over eight parallel wires. The keyboard and mouse ports are also serial connections. The Universal Serial Port (USB) can connect several devices, and provides a much faster connection than older standards.

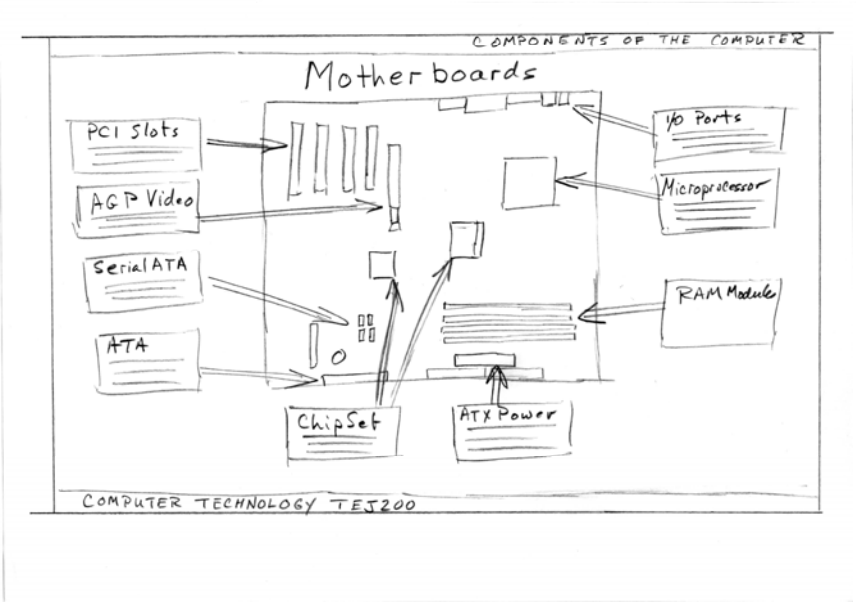


Planning the Poster

- Thumbnail Sketches



- Mockup



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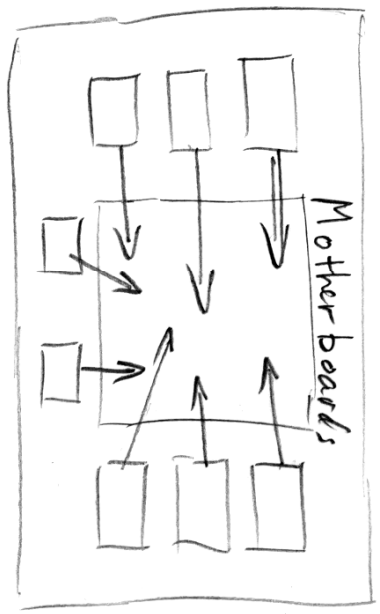

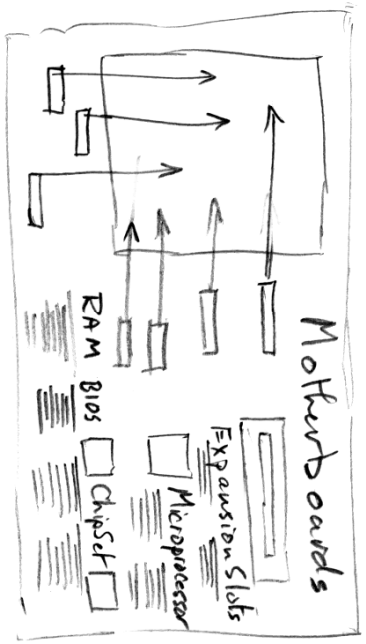

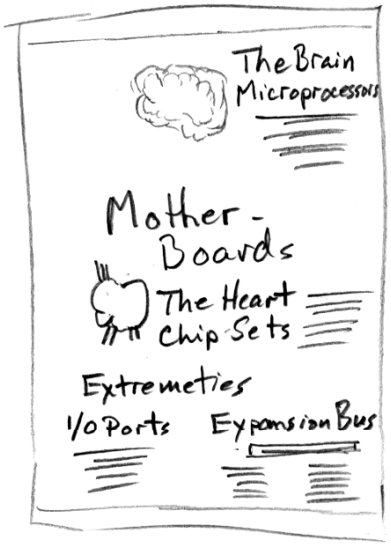

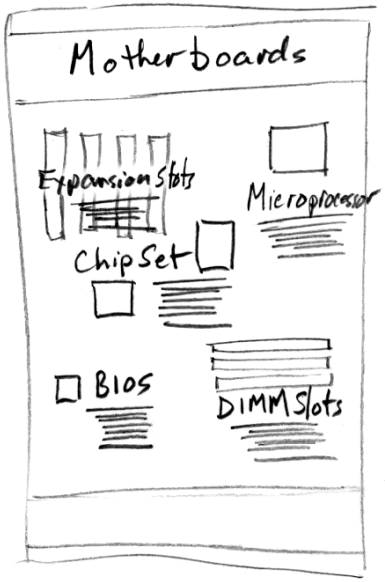

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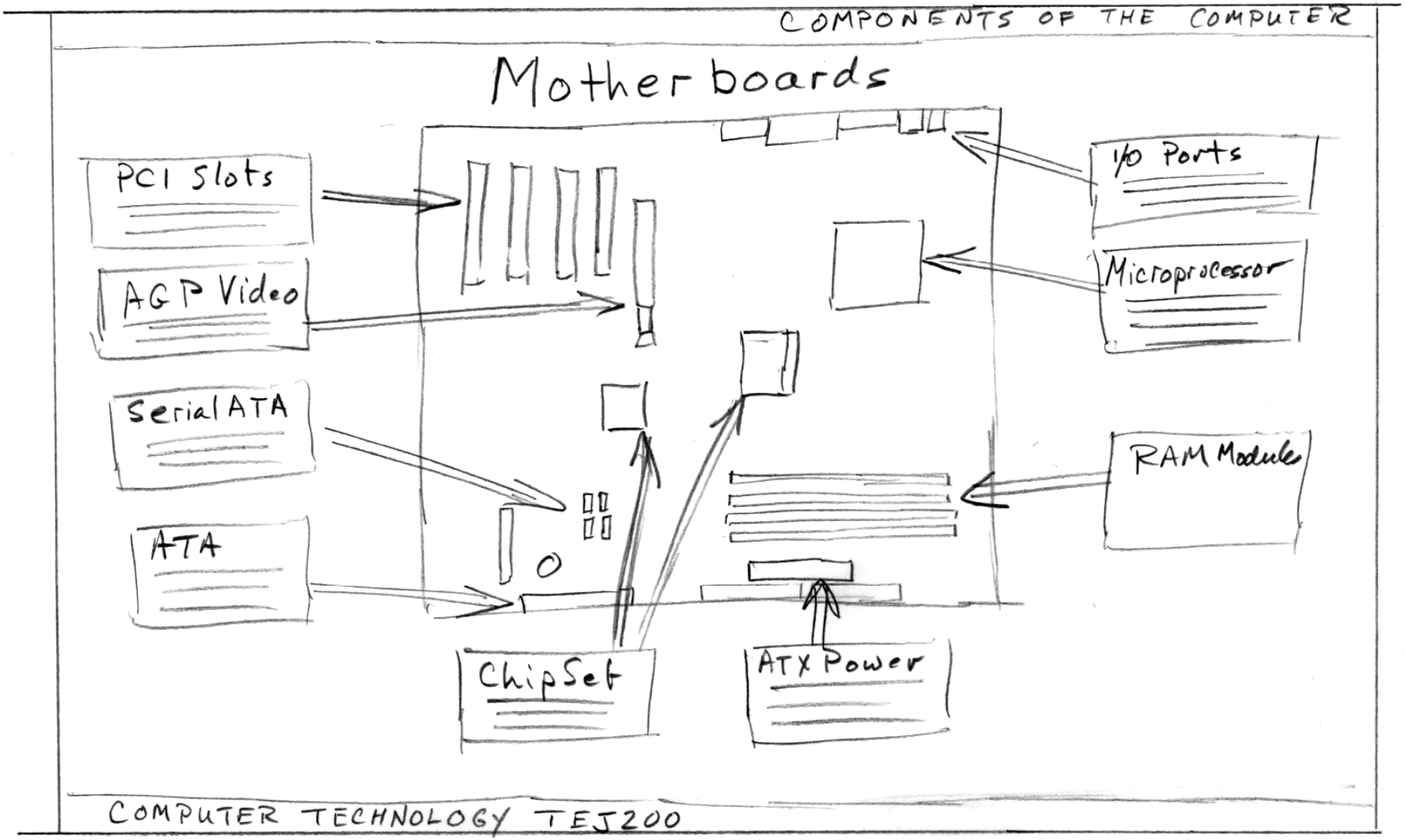
COMPONENTS OF THE COMPUTER
Motherboards
PCI Slots
AGP Video
Serial ATA
ATA
I/O Ports
Microprocessor
RAM Modules
ChipSet
ATX Power
COMPUTER TECHNOLOGY TEJ2O0

Example Poster

Components of the Computer

Motherboards

PCI Expansion Slots

Boolean algebra, named after the English mathematician George Boole (1815-64), is a system of symbols and procedural rules for performing certain operations on numbers, letters, pictures, objects--whatever. (Leibniz inaugurated the search for such a sys-

AGP Video

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Serial ATA Connectors

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ATA Connectors

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Chip Set

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ATX Power Connector

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Input/Output Ports

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Microprocessor

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Chip Set

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RAM Modules

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Computer Technology TEJ2O0