Experiment 01

Experiment no :1 Case Study: Study of PC Motherboard Technology (South Bridge and North Bridge), Internal Components and Connections used in computer systems.

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LO Mapped	LO1: Demonstrate various components and peripheral of computer system

Aim: Case Study: Study of PC Motherboard Technology (South Bridge and North Bridge), Internal Components and Connections used in computer systems.

Introduction:

Motherboard referred to as the mb, mainboard, mboard, mobo, mobd, backplane board, base board, main circuit board, planar board, system board, or a logic board on Apple computers. The motherboard is a printed circuit board and foundation of a computer that is the biggest board in a computer chassis. It allocates power and allows communication to and between the CPU, RAM, and all other computer hardware components.

Theory:

A motherboard provides connectivity between the hardware components of a computer, like the processor (CPU), memory (RAM), hard drive, and video card. There are multiple types of motherboards, designed to fit different types and sizes of computers. Each type of motherboard is designed to work with specific types of processors and memory, so they don't work with every processor and type of memory. However, hard drives are mostly universal and work with the majority of motherboards, regardless of the type or brand.

A computer motherboard is located inside the computer case and is where most of the parts and computer peripherals connect. With tower computers, the motherboard is on the left or right side of the tower and is the biggest circuit board.

Motherboard components:

1. Keyboard and mouse
2. Universal Serial Bus (USB)
3. Parallel port
4. CPU chip
5. RAM slots
6. Floppy Controller
7. IDE controller
8. PCI slot
9. ISA slot
10. CMOS Battery

11. AGP slot
12. CPU slot
13. Power supply slot

North Bridge :
The North bridge is also called the Host Bridge. The north bridge is directly connected to the Central Processing Unit(CPU) for processing tasks that need the highest performance. These chipsets act as a medium for communication between the CPU and parts of the motherboard thereby, Memory Controller Hub, being the other name for North Bridge.
Features :
A north bridge communicates with processors via Front Side Bus or FSB for short. It controls the interaction with motherboard parts such as Accelerated Graphics Port (AGP), Peripheral Component Interconnect (PCI), and other crucial parts.
Advantages :
Easy communication is being established between parts of the motherboard via North Bridge. Faster data transfer due to easy communication access.
Disadvantages :
There are no major disadvantages.

South Bridge:
The motherboard has a logical chip set comprising two chips namely North and South bridge. It is named South bridge as it sits in the South direction of the Peripheral Component Interconnect or PCI bus of the motherboard. Unlike North bridge, this chip is not directly connected to the CPU. North bridge acts as a medium of communication between South bridge and Central Processing Unit. South bridge controls all the Input and Output activities via CPU. Thereby it is also named as I/O Controller Hub as it acts as a hub for all the I/O processing and functionalities.
Features :
The South bridge supports various components of a motherboard such as: Peripheral Component Interconnect (PCI) – South bridge supports the old and new versions of PCI bus as well. PATA and SATA – PATA and SATA are known to store and transfer chunks

of data via CPU. These buses are responsible for connecting hard drives and this is only possible via South bridge. Clock – It provides a time quantum for each process and checks whether every process gets the time limit for execution or not. Power Management – Controls the power and uses whenever necessary otherwise the power is saved for further uses.

Advantages :

Many of the input and output processing can be simultaneously controlled via South bridge making it a huge advantage. Without this bridge, the IO controlling would not be possible.

Disadvantages :

There are no major disadvantages regarding South bridge. With the rapid increase in development of technology, motherboards too are being replaced with many new components. According to some sources, the North and South bridge is being replaced by a new component named IHA or Intel Hub Architecture which will be discussed in the further articles.

Connection:

A connection is a term that describes the link between a plug or connector into a port or jack. For example, your monitor, mouse, and keyboard all must connect to the computer before they work.

Connections on the back of the computer

- AT
- BNC
- Composite
- DisplayPort
- DVI
- eSATA
- FireWire (IEEE-1394)
- HDMI
- MIDI
- Modem (RJ-11 aka telephone)
- Network (RJ-45)

- Parallel port
- PS/2 port
- RCA
- S-Video
- S/PDIF
- SCSI
- Serial port (RS-232)
- Sound card (sound out or line out, sound in or line in, microphone, and MIDI (joystick).
- USB
- VGA/SVGA

Conclusion:

We have successfully studied PC Motherboard Technology (South Bridge and North Bridge), Internal Components and Connections used in computer system.