BASIC HARDWARE

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based upon

“Hardware bàsic de PC” Sergi Salas
Main Board or Mother Board

- It is the most important element. The whole PC architecture is build on the main board.
- All devices and peripherals are connected to mother board.
- If we have a look at its basic structure we can easily identify:

  1. Microprocessor Socket
  2. BIOS (and Battery)
  3. RAM memory slots (DIMM, DDR, ...)
  4. Card Slots (PCI, ISA, AGP, ...)
  5. Chipset
  6. Connectors
     - PS/2 (Keyboard, Mouse)
     - USB
     - IDE Bus
     - Serial and parallel ports (COM & LPT1)
     - Power supply (CN1)
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Mother board
BIOS
(Basic Input/Output System)

• It is a memory (ROM) keeping a group of routines needed to control system devices.
• It allows booting process.
• System configuration is saved in a CMOS memory needing a battery not to loose the information.

• Some of them allow to configure Microprocessor or bus clock speed above their recomended values. This process is called Overclocking.
Memory

• **Caché Memory (L1, L2)**
  - Placed between RAM and Microprocessor.
  - It is extremely fast but with low capacity and high cost.
  - L1 is built in the Microprocessor.
  - L2 can be found on the Main Board.
  - Volatile (loses data when turned off).

• **RAM (Random Access Memory)**
  - Stores data temporarily.
  - Higher capacity (Mbytes), cheaper and slower than Caché.
  - Need a refresh not to lose data.
  - Volatile (loses data when turned off).

• **ROM (Read Only Memory)**
  - No-Volatile
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RAM memory slots on mother board

RAM card assembly
**Microprocessor**

- Also known as CPU (Central Processing Unit).
- Processes the data arriving from storage units and peripherals.

- Modern Microprocessors work at two different speeds:
  - Internal: the speed at which data can be processed.
  - External: the speed used to communicate with Main Board.
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Microprocessor

Socket
Placed on mother board allows microprocessor connection
Microprocessor

• In order to have optimum performance, overheating problems must be avoided.
  • Thermic filling can help in heat dissipation.
Microprocessor

- Other cooling methods as a fan can also be helpful.
PCI Slots

- PCI cards can be connected to PCI slots placed on the mother board.
- This diverse purpose cards will appear perpendicular to the main board.
- Their external connectors will be accessible from the rear part in the PC tower.
AGP (Accelerated Graphics Port)

Graphic card

Graphic card connected to the AGP Port

Graphic card output
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±12 and ±5 Volts are used to feed devices
IDE Hard disk assembling

IDE BUS and connectors
**IDE Devices Setup**

- There are two IDE connectors on Mother Board.
- Two devices can be connected in each bus.
- It is necessary to specify who is master and who is slave in Primary and Secondary IDE ports.
- To decide so we can apply a hardware setup using jumpers.
- Each device will know its role.
Rear connectors

- Peripherals as mouse, keyboard, printer or speakers can be connected.

PS/2 and USB Ports

PS/2 mouse

Serial (COM 1 & 2) and Parallel (LPT 1) Ports

Games (Joystick, Pads) and audio ports (mic, speakers)
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