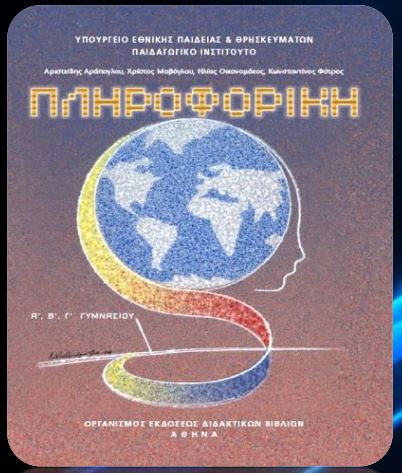
http://www.zioulas.gr

VCZ

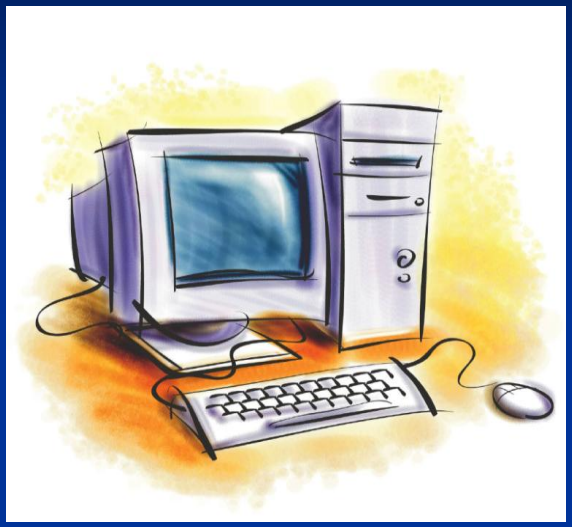
COMPUTER ARCHITECTURE

CHAPTER 2



EVANGELOS C. ZIOULAS (IT TEACHER)

KEY WORDS



CENTRAL UNIT

POWER SUPPLY

MOTHERBOARD

CPU

SLOTS

RAM

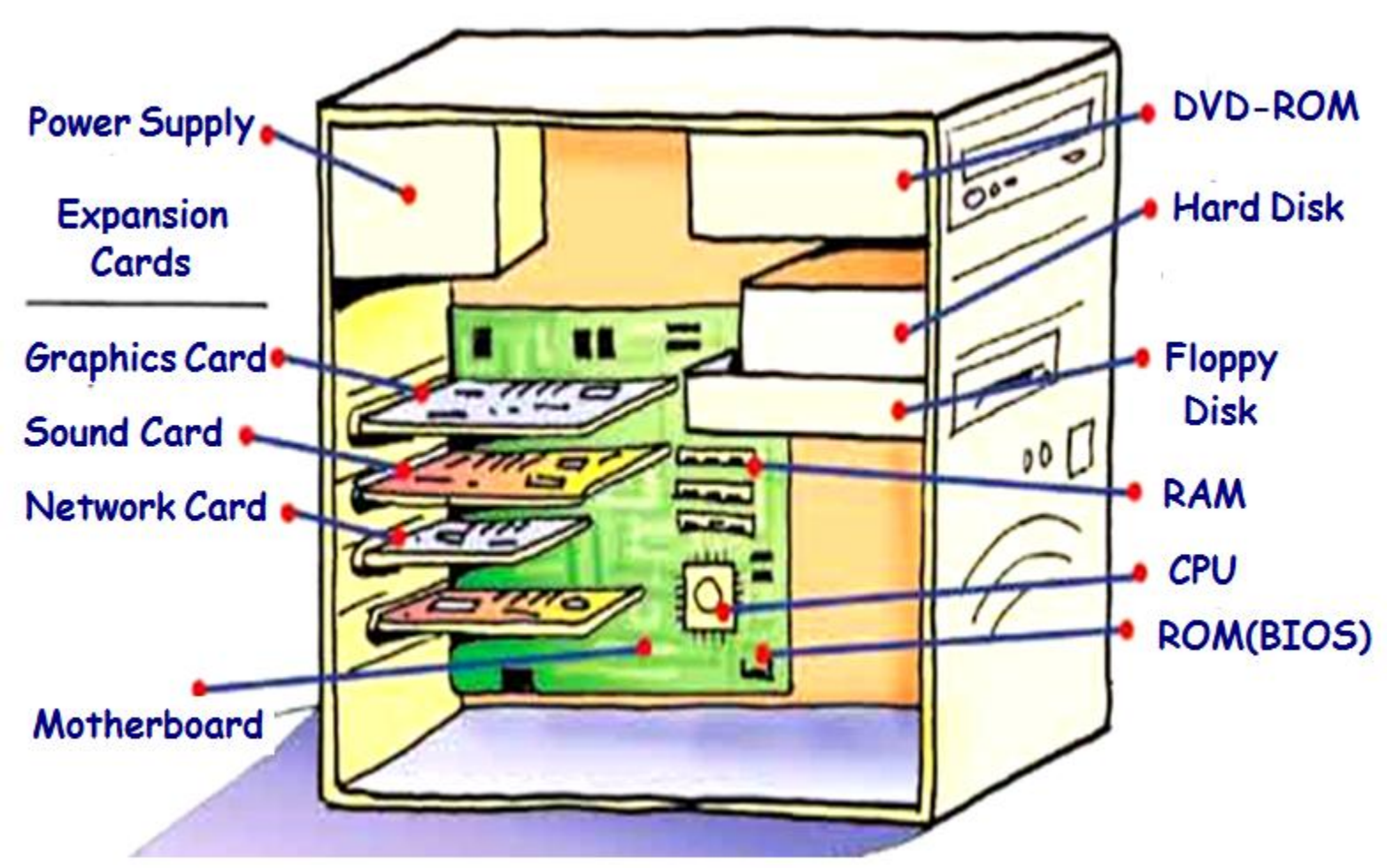
ROM

EXPANSION CARDS

PORTS

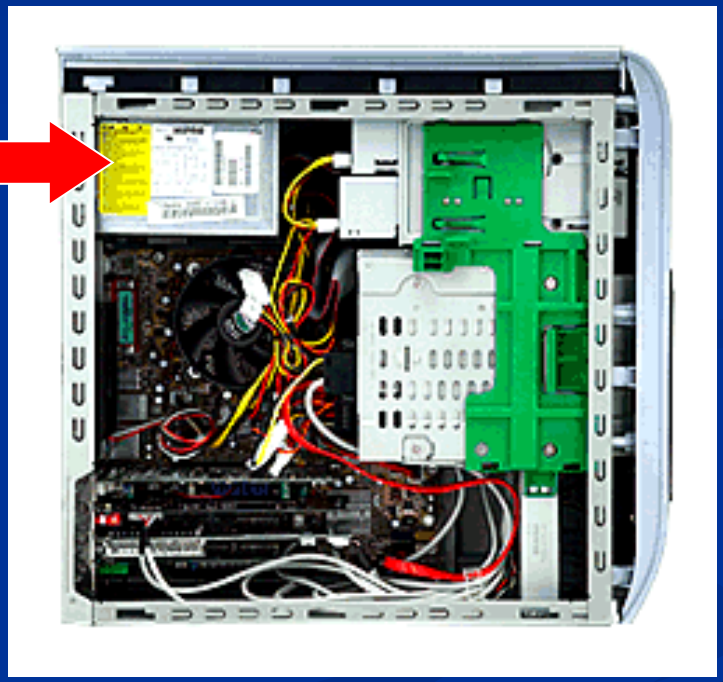
CONNECTORS

COMPUTER INTERIOR

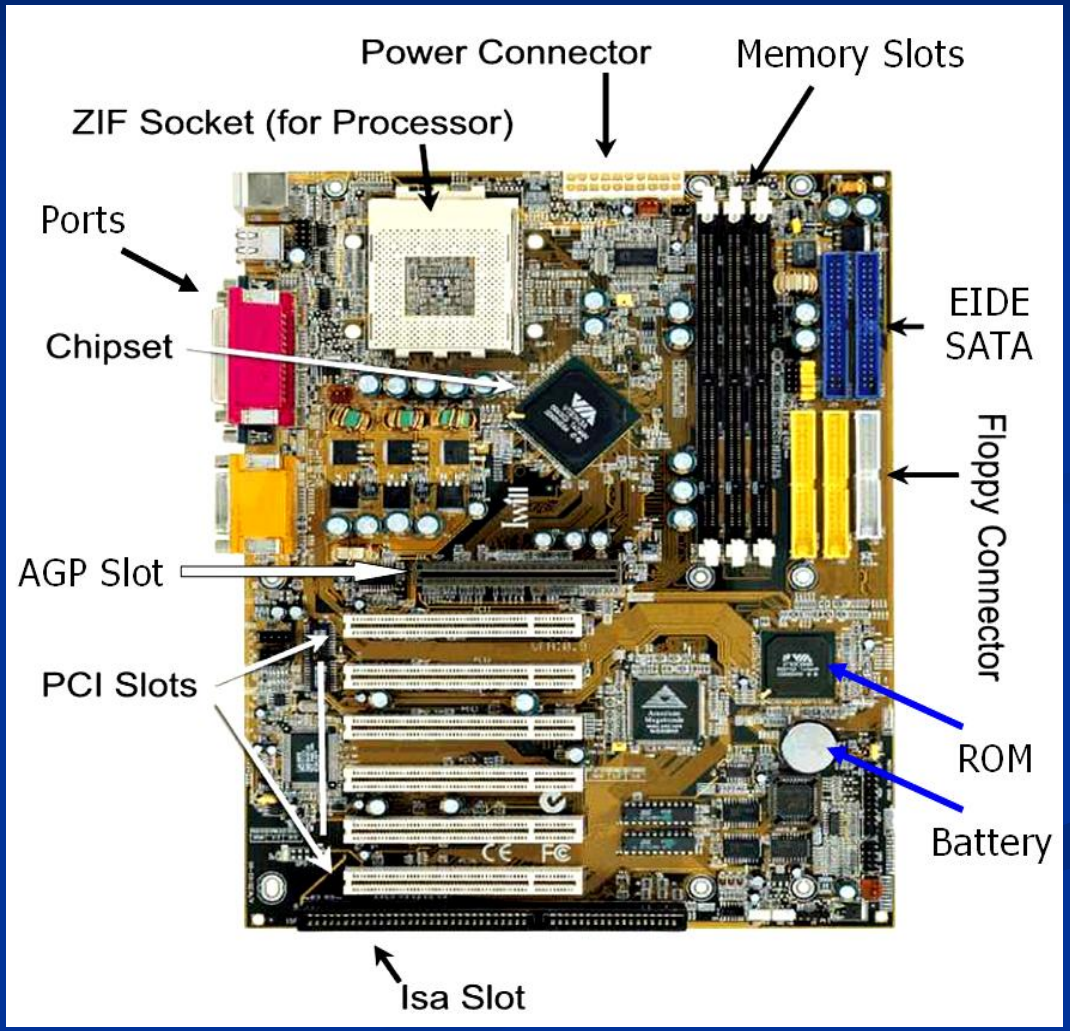


The most basic components inside central unit (case)

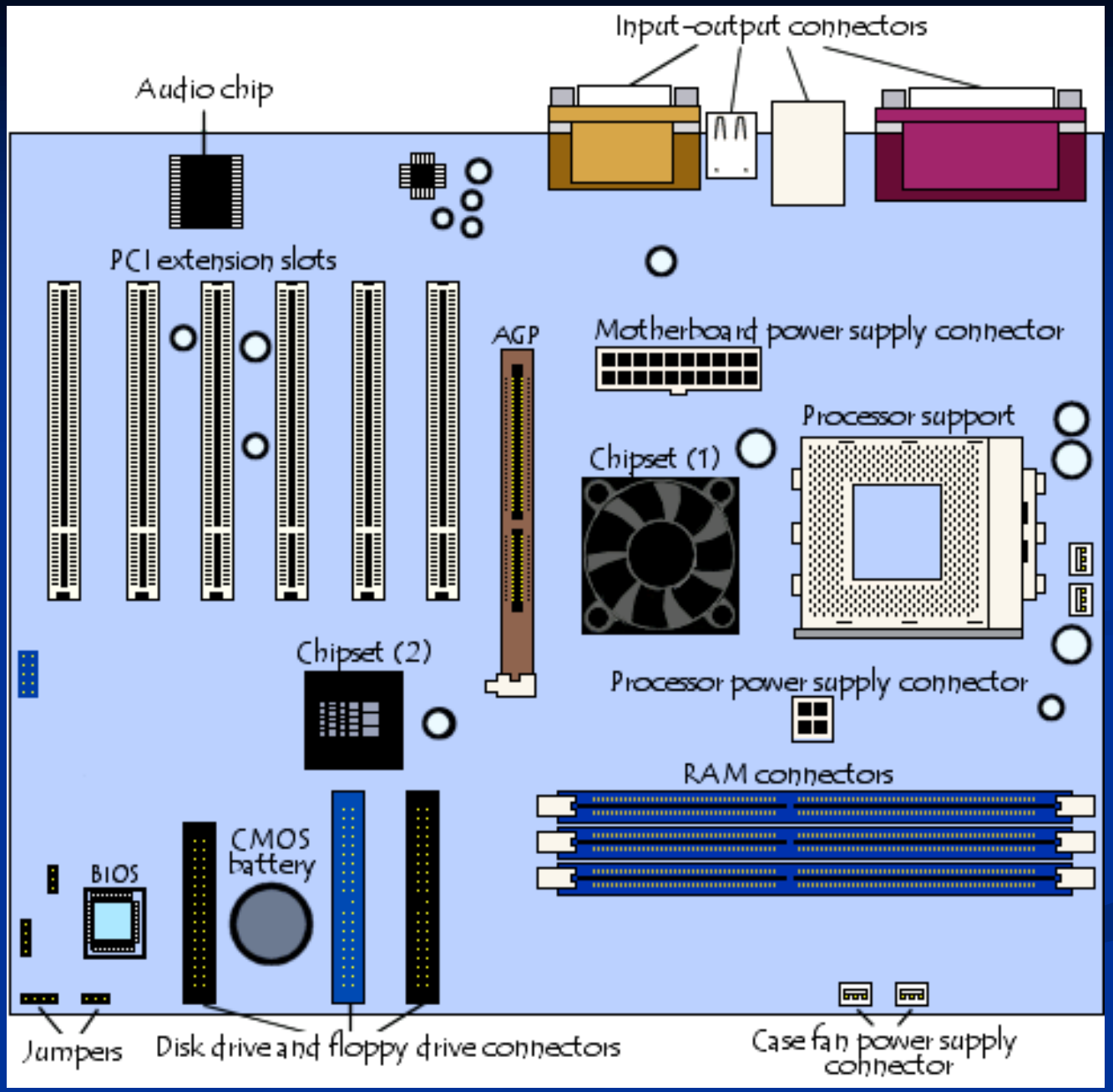
POWER SUPPLY



MOTHERBOARD



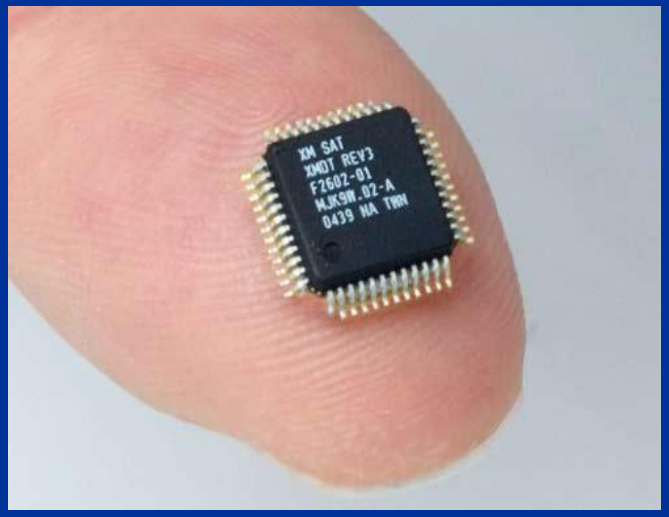
MOTHERBOARD

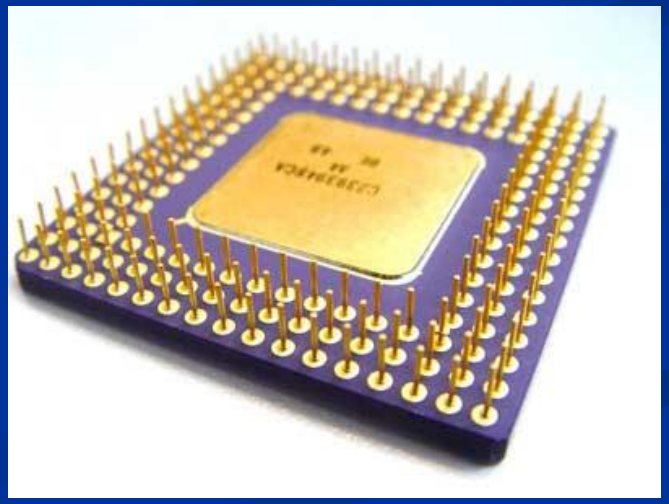


CENTRAL PROCESSING UNIT (CPU)

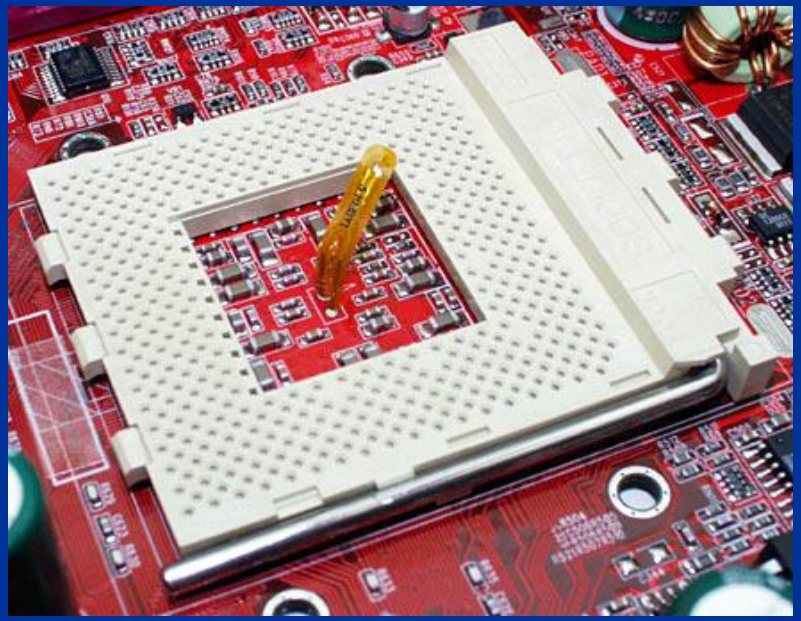
- It is the faster and most important component of the computer (computer brain).
- It accesses data of RAM directly and executes them.
- It is placed permanently on the **CPU socket** of motherboard.
- Because it is easily heated, it has a fan (heatsink) which cools its surface as it works.

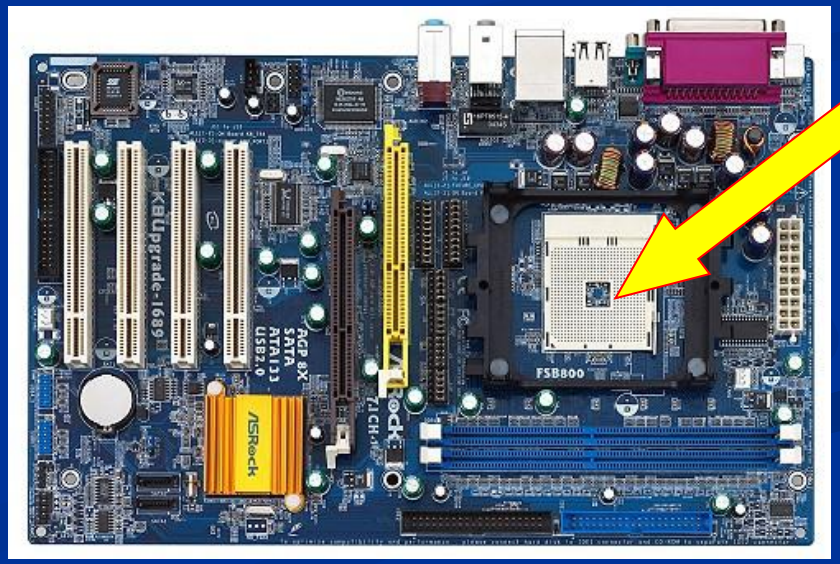
CPU types






HardwareZone




FSB800

RANDOM ACCESS MEMORY (RAM)

- It retains temporarily data and commands of running programs before they are sent to CPU for execution.
- It **saves temporarily** all the active applications and processes of computer.
- It is installed on RAM slots of motherboard as an **expansion card (RAM module)**.
- Each memory module has a capacity that is measured in **GB** (e.g. 4GB, 8GB).
- It loses its data without stable power supply.

ROM (READ ONLY MEMORY)

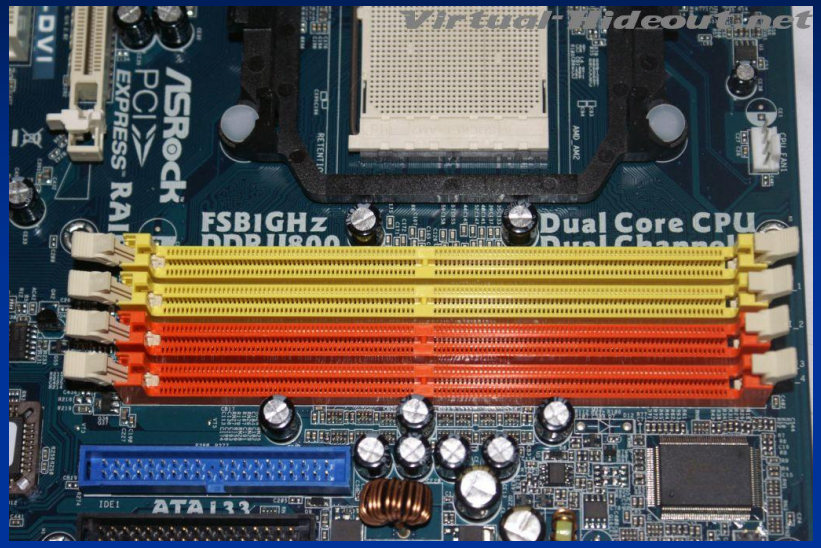
- It is a small capacity memory which is **readable only** by the microprocessor.
- Its data have been set by the manufacturer so the user cannot change them.
- It is printed on the motherboard as an integrated circuit.
- It holds all the necessary data for supporting computer **boot**.

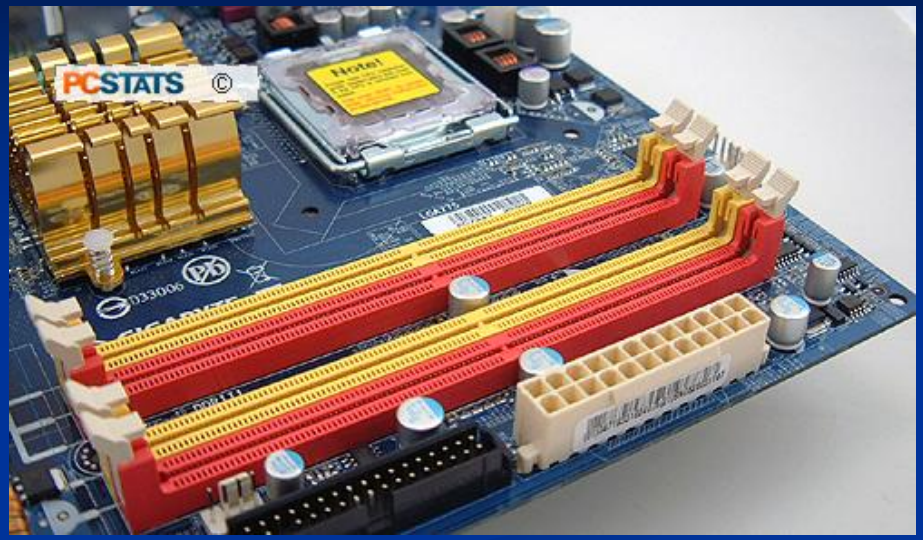
MAIN MEMORY

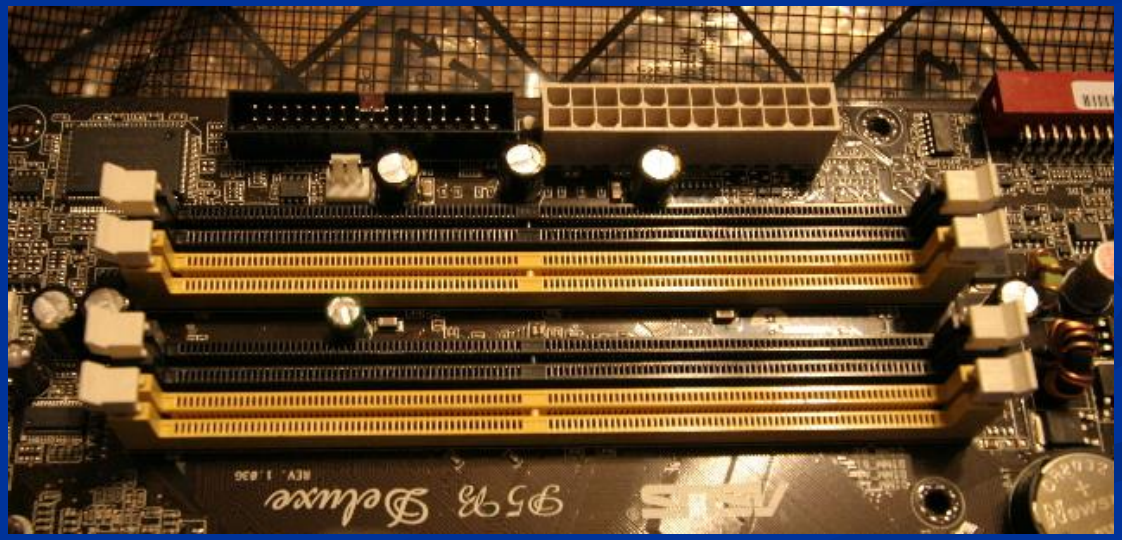
ROM
(Read Only Memory)

RAM
(Random Access Memory)

Ram Slots


ASRock
PCI EXPRESS
DVI
FSB1GHz
Dual Core CPU
ATA133


PCSTATS ©



Expansion cards

- **Graphics Card**

  It processes the **video signal** that is sent to computer screen.
  It has its own processor (accelerator) and RAM memory to relax computer from heavy tasks increasing the processing speed

- **Sound Card**

  It processes the **audio signal** that is sent to computer speakers .
  It also accepts signal from audio input devices such as microphone or musical instruments (through MIDI port) and digitalizes it.

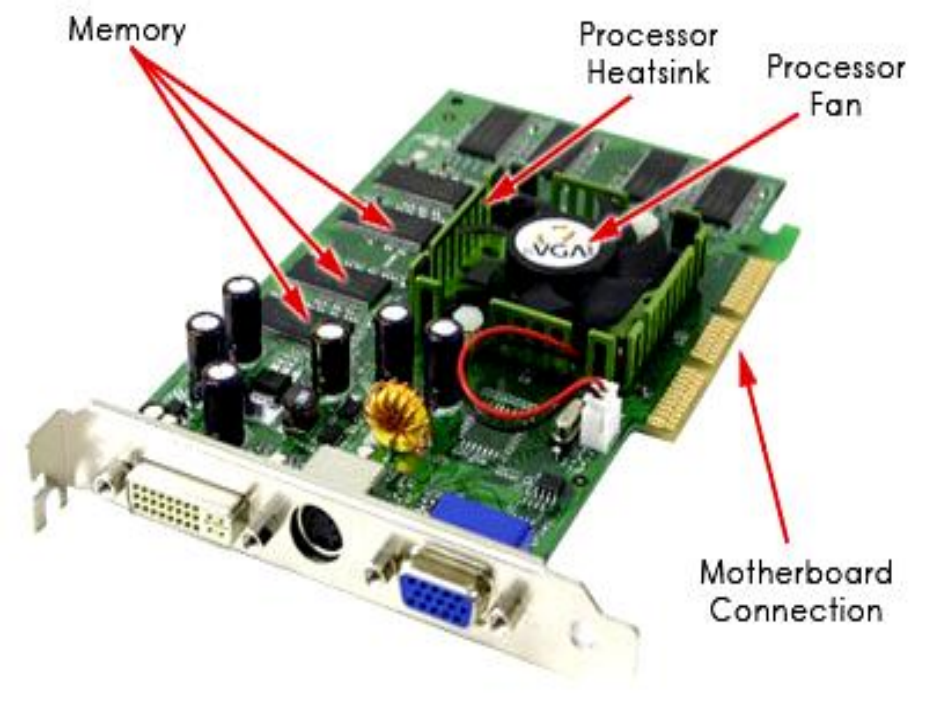
- **Network Card**

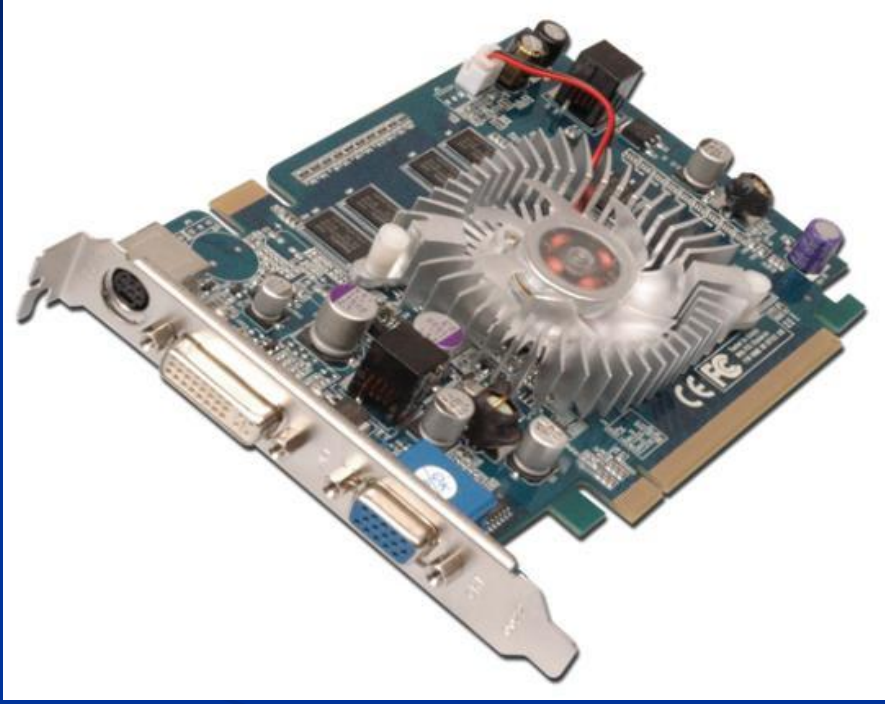
  It supports computer **connection with other computers** inside a local area network.
  The connection might be **wired** (ethernet cable) or **wireless** (antenna).

- **Other expansion cards**

Radio card	for listening to radio stations
TV card	for managing TV channels
Video card:	for processing video movie files
Modem card:	for connecting to the Internet through a telephone line

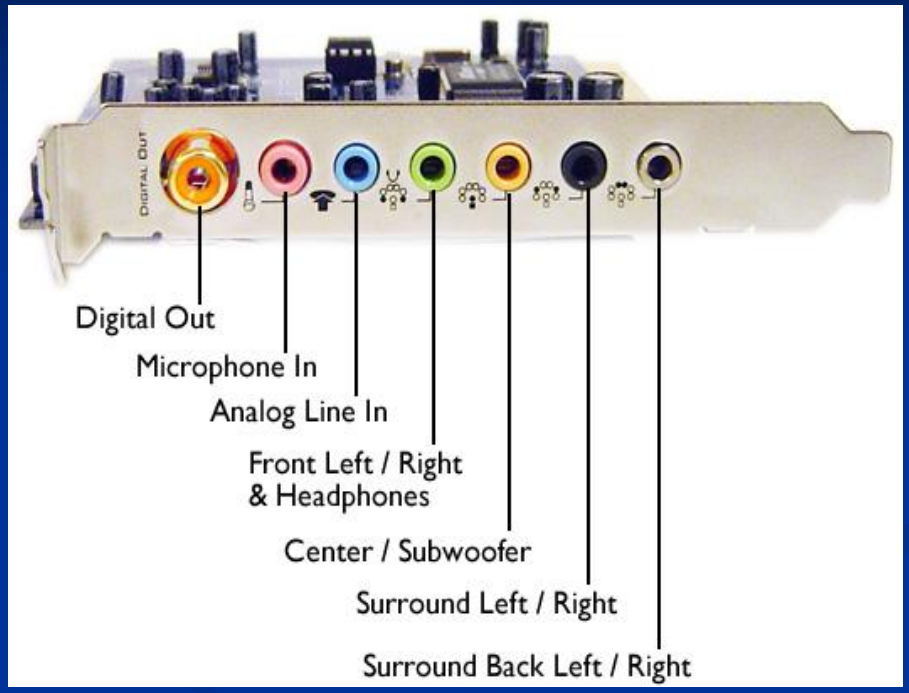
Graphics Card





Sound Card


MIC IN
LINE IN
AUDIO OUT
5.1CH OUT
GAME
Genius


DIGITAL OUT
Digital Out
Microphone In
Analog Line In
Front Left / Right
& Headphones
Center / Subwoofer
Surround Left / Right
Surround Back Left / Right

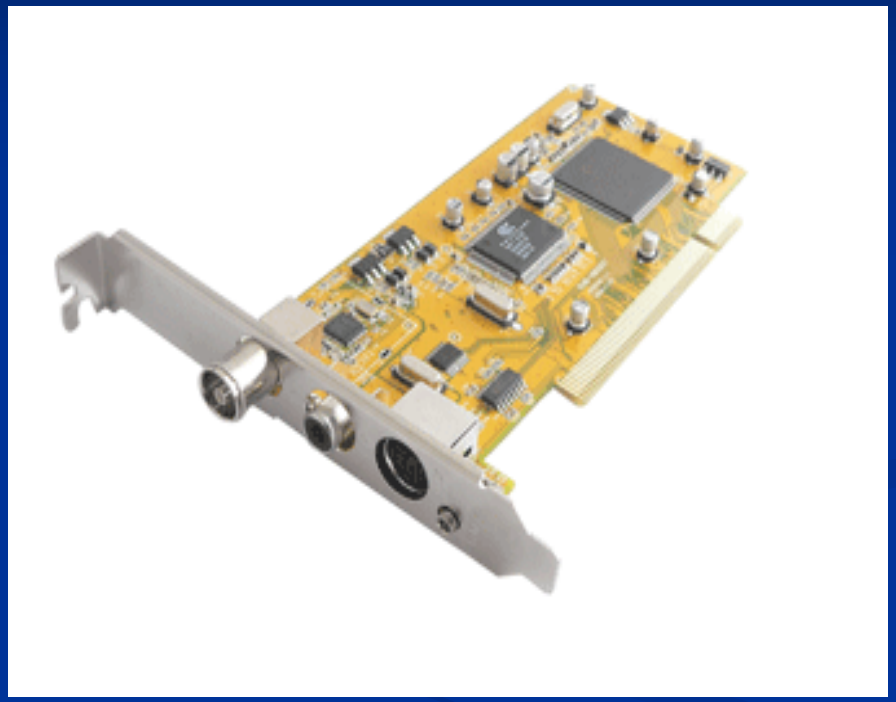
Network Card (NIC)

TV Card


The best TV for your PC
WinTV
NTSC/NTSC-J
26552
Assembled in Malaysia
452


The best TV for your PC
WinTV
WinTV-HVR-3000
Hauppauge

Radio Card

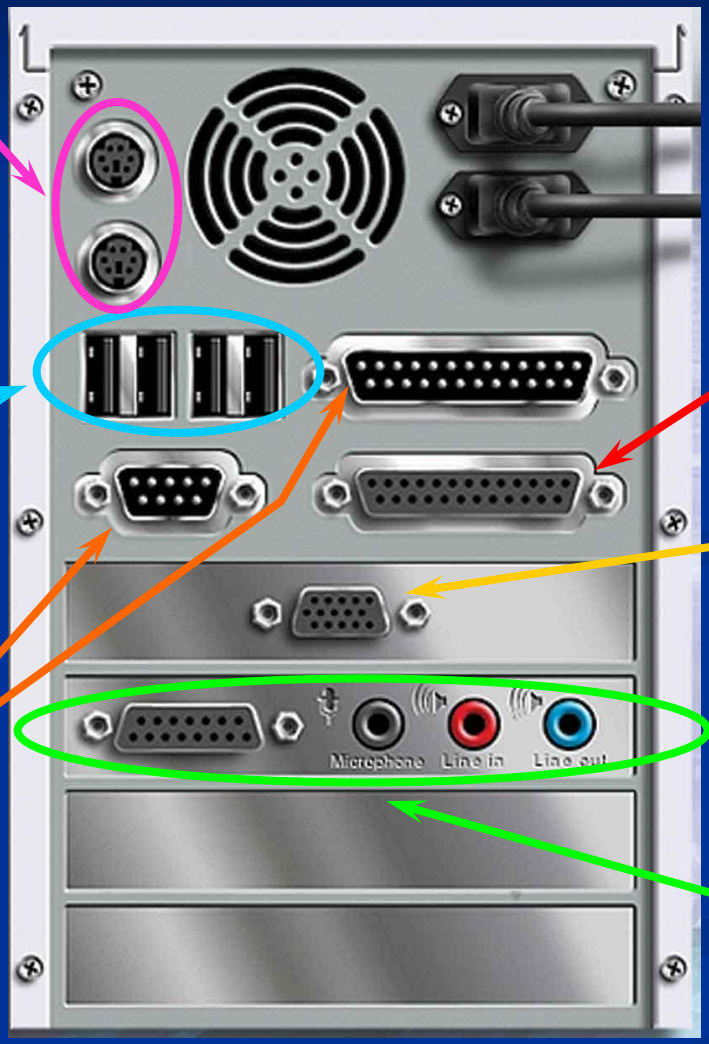


Connectors and Ports

PS/2: older interface used to connect keyboard and mouse to computer.

USB: it connects a variety of peripherals (keyboard, mouse, printer, scanner, external hard disk) and has high transmission rate. It also supplies with electric power the devices connected to it.

Serial Port: older interface used to connect slow peripherals with low speed requirements (mouse, modem), Today it has been abandoned.



Parallel Port: older interface used to connect fast peripherals with high speed requirements (monitor, scanner). Today it has been replaced by USB. It is 8 times faster in data transmission than serial port.

VGA Port: it connects computer monitor to graphics card. Today it has been exceeded by faster interfaces (DVI, HDMI)

Sound Card Ports: MIDI (for connecting external musical instruments), microphone (for connecting microphone device), line in and line out (for connecting external devices for sound input or output).

Computer ports

DVI port

HDMI port