Unit 1[A]

INTRODUCTION TO COMPUTER

INTRODUCTION

The word “computer” comes from the word “COMPUTE”.

Which means to calculate.

Computer is a calculating device that can perform arithmetic operation at enormous speed.

A computer can store process and retrieve data as &when desired.

BASICS OF COMPUTER

- DATA PROCESSING CYCLE
  - Data → process → information.
- INPUT ROCESSING OUTPUT
  - input → process → output.

CHARACTRISTICS OF COMPUTER

- Accuracy.
- Speed.
- Storage capacity.
- Versatility.
- Portable(small).
- Multitasking.
- Dumb Terminal.

USE OF COMPUTER

- Internet.
- Education.
- Personal use.
- Banking sectored.
- Railway ,Air ,Bus reservation system.
- Weather forecasting.
- Business computing.
- On-line billing and on-line shopping system.

CLASSIFICATION OF COMPUTER BY DATA PROCESSED

- - Analog Computers. - Digital Computers - Hybrid Computers

- **Analog Computers**
- In Analog Computers, data is represented as continuously varying voltage and operate essentially by measuring rather counting.
- As the data is continuously variable, the results obtained are estimated and not exactly repeatable.
- Voltage, temperature and pressure are measured using analog devices like voltmeters, thermometers and barometers.

DIGITAL COMPUTERS

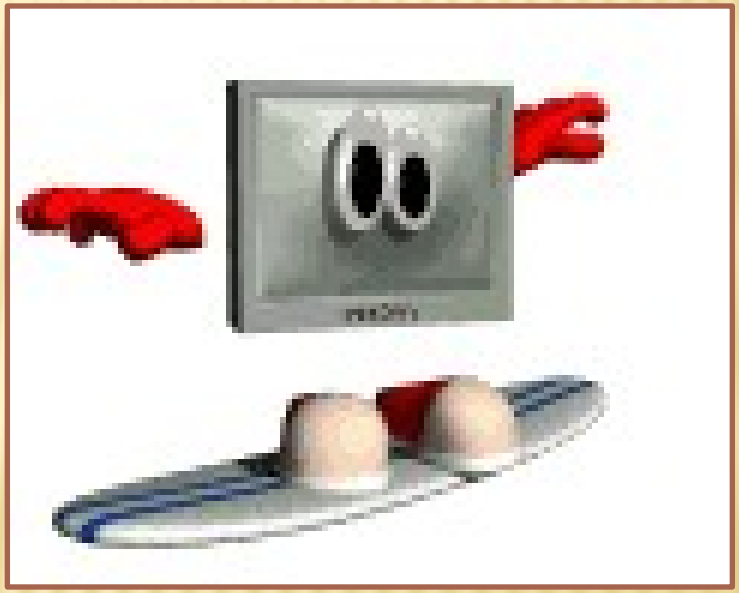
Digital Computers

- In Digital Computers, data is represented as discrete units of electrical pulses.
- The data is measured in group as either the ‘on’ or ‘off’ state.
- Therefore, the results obtained from a digital computer are measurable and precise.
- Virtually all of today’s computers are based on digital computers.

HYBRID COMPUTERS

- **Hybrid Computers**
- Hybrid Computers accept data in analog form and present output also in analog form.
- The data, however is processed digitally.
- Therefore, hybrid computers require analog-to-digital and digital-to-analog converters for output.

COMPUTER GENERATIONS



KEY FOR COMPUTER GENERATIONS

- Time Frame
- Circuit Components
- Elements per Component
- Internal Storage
- Memory Capacity
- Data Input
- Popular Computers and Companies at that time

FIRST GENERATIONS 1942- 1955

- **Technology:-**Vacuum Tubes
- Magnetic Drum
- 4,000 bits
- Hard Wire Programs in computers
- IBM 650, Univac I
- ENIAC

SECOND GENERATION 1955-1964

- **Technology:-** Transistors
- Magnetic Cores
- 32,000 bits
- Punch Cards
- CDC, GE, IBM

THIRD GENERATION 1964-1975

- **Technology:-** Silicon Chips (Integrated circuits)= IC
- Cores, IC's
- 128,000 bits
- Keyboard Entry
- IBM, NCR, Honeywell

FOURTH GENERATION 1975-1989

- **Technology:-**microprocessor
- Silicon Chips (Large scale integrated circuits)=LSI
- IC's, LSI's
- 100 million bits
- Read programs off disks
- Apple, Xerox, Texas Instrument, Hewlett-Packard

FIFTH GENERATION 1989-PRESENT

- **Technology:-**based on AI(artificial Intelligence)
- Silicon Chips (Very Large Integrated Circuits) VLSI
- LSI's, VLSI's
- Unlimited
- CdRom, Optical Disk
- NEC, Packard Bell, Compaq, Other Clones

CLASSIFICATION OF COMPUTER BY PROCESSING CAPABILITIES

TYPES OF CLASSIFICATION OF COMP.

- -Micro Computers
- - Mini Computers
- - Mainframe Computers
- - Super Computers

MICRO COMPUTERS

- Micro-Computers, commonly known as personal computers,
- refer to computer that make use of microprocessors as the central processor unit.
- Micro-Computers are characterized by features such as small size (small enough to fit onto the desktop),
- economical (easily affordable by the general public) and limited internal memory

MINI COMPUTERS

- The distinction between mini computers and micro computers had blurred in recent year because of the technological advances in micro computer technologies.
- Traditionally mini computers are medium size computers designed to support multi user access.
- While micro computers are used by end-users, the mini computers are meant for medium size business operations.
- The IBM AS400 is an example of a mini computer.

MAINFRAME COMPUTERS

- Mainframe computers are large computer systems usually supporting hundreds of users.
- Mainframe computers are characterized by features like large internal storage capacity
- and high processing speed (configured with host processor and subordinate processor).
- They are usually used in large scale operations like government offices and tertiary institutions.

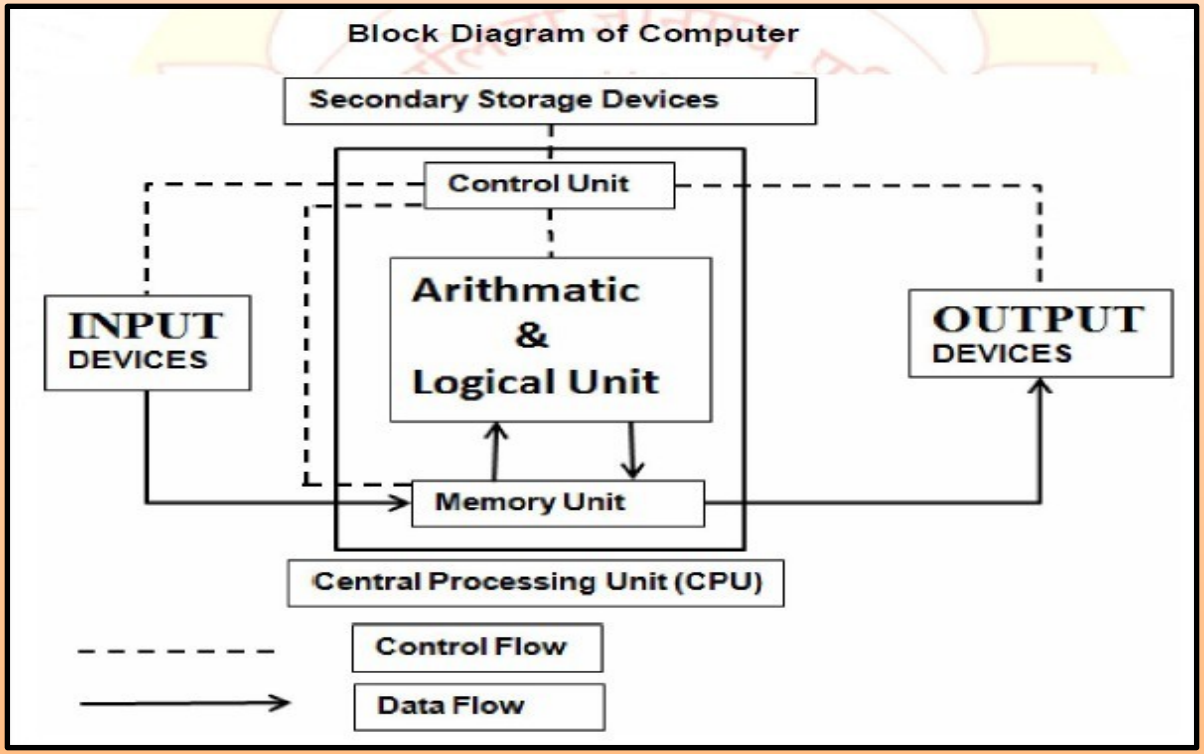
SUPER COMPUTERS

- Super computers are the fastest and most expensive of modern computers.
- They are designed for high precision based application and are not usually used for data processing but for intense mathematical calculations.
- Many research centers and government agencies with scientific or engineering functions make use of super computers.

A SIMPLE MODEL OF A COMPUTER

A SIMPLE MODEL OF A COMPUTER

- A simple computer system comprises the basic components like Input
- Devices, CPU (Central Processing Unit) and Output Devices as under:



DIGITAL COMPUTERS

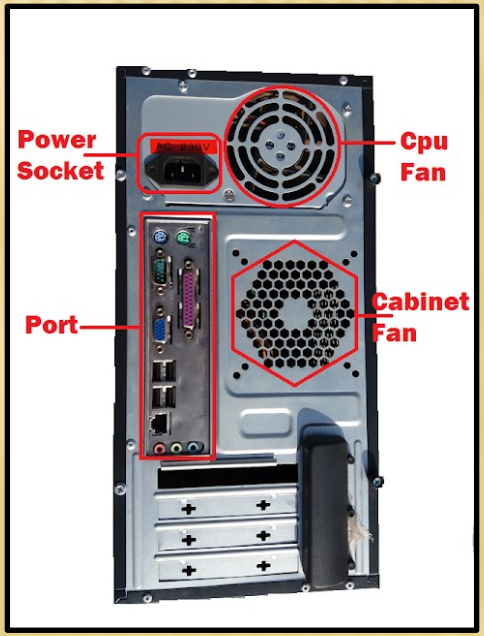
- Input Devices
- - Output Devices
- - CPU (Central Processing Unit)
- - Control Unit
- - ALU (Arithmetic & Logic Unit)
- - Internal Memory
- - Control Unit

SECONDARY STORAGE DEVICES

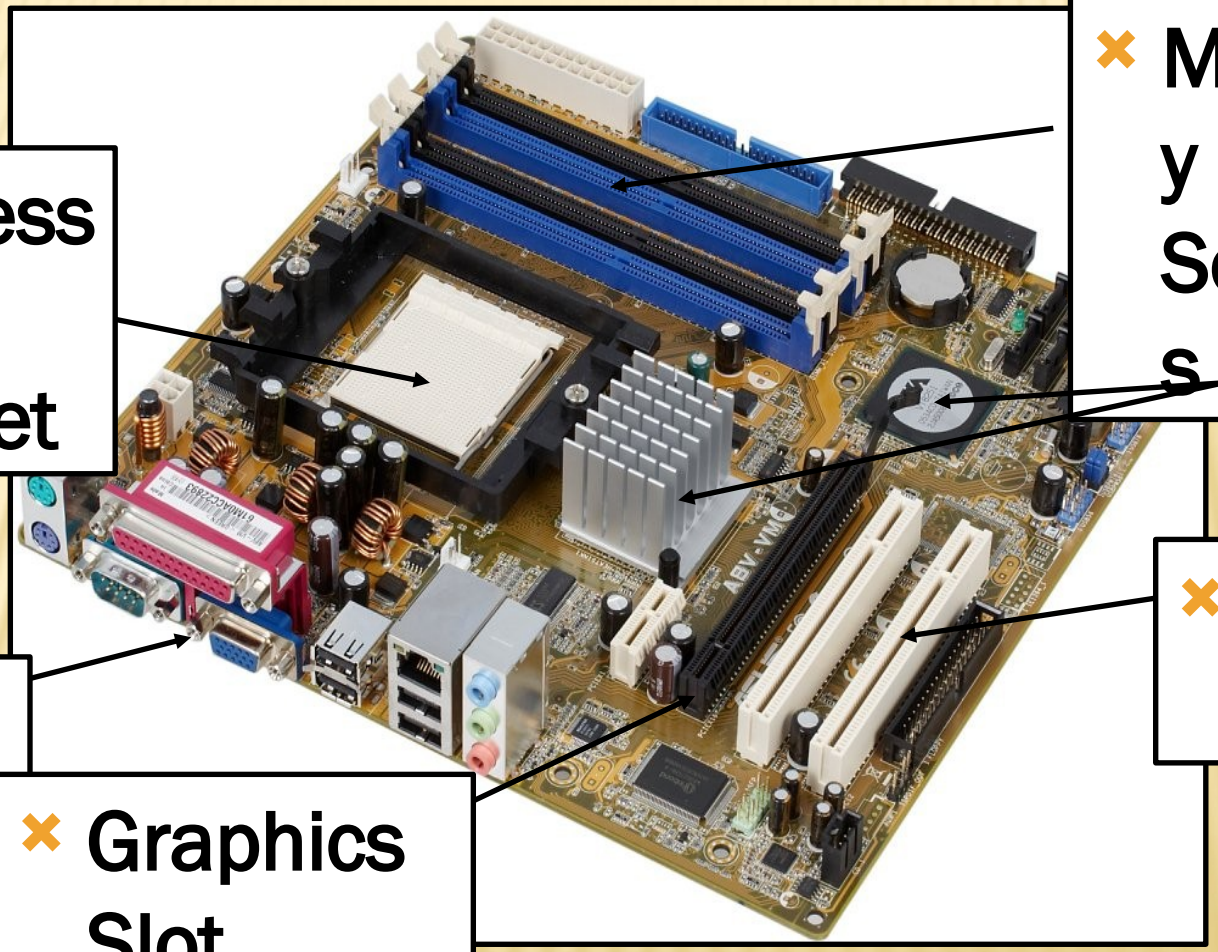
- Also referred as Secondary Memory consists of devices that allow more permanent storage of data;
- i.e. they are non-volatile.
- It is usually much higher in capacity than main memory.
- However, they are much slower then main memory.
- Magnetic Disk (Hard Disk), Floppy Disk, Optical Disks are the examples of secondary storage devices.

Unit-1 [B]

Internal/External parts used with Computer Cabinet



MOTHERBOARD

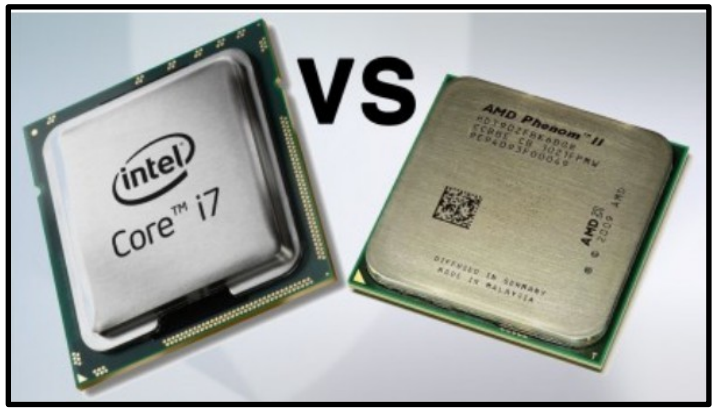


- Processor Socket
- Memory Sockets
- Chip set
- PCI Slots
- Ports
- Graphics Slot

PROCESSORS

PROCESSOR

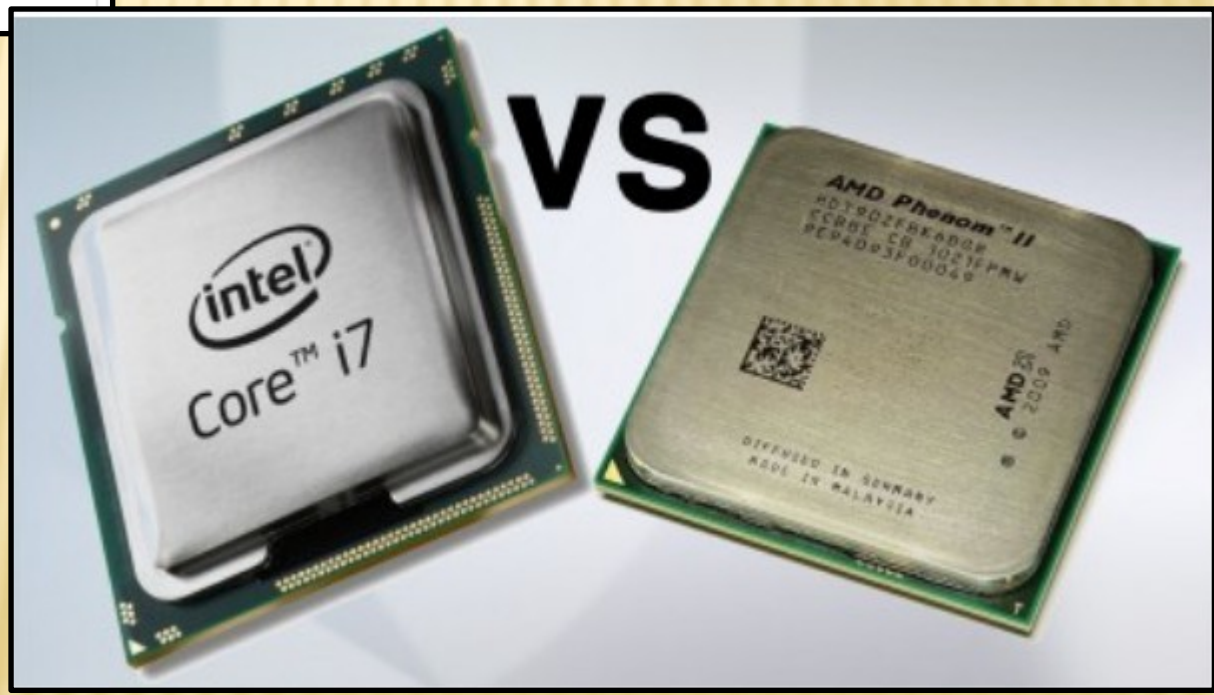
- A processor is a primary chip inside a computer.
- A processor executes all the program and the instructions inside the computer.
- Its measured in the Gigahertz(GHz).
- Higher speed measured in the Megahertz(MHz)
- The term *processor* is used interchangeably with the term central processing unit (CPU).



TYPES OF PROCESSORS

- There are mainly two types :
- →**Intel processor.**
  - The current performance and market leader at the time of this writing is intel.
- →**AMD processors.**
  - AMD(advance micro devices) is the second largest supplier of processor for personal computer.


AMD
Athlon
AMD
ATHLON
AMD
ATHLON
AMD
Athlon II
More images
Athlon
Microprocessor


intel
Core™ i7
VS
AMD Phenom™ II

- To day in general I will categorize all the processor as per 3 different types as per the usage of them.
- [1]High-End Processors.
- [2]Mid-Range Processors.
- [3]Economy Processors.

[1]TYPES OF HIGH-END PROCESSORS:

- High-End Processors:
  - →Intel core i7 /Intel core i7 mobile
  - →AMD Phenom 2X6
  - →Intel core i5 /intel core i5 mobile
  - →AMD Phenom 2X4
  - →Intel core i3 /intel i3 mobile
  - →AMD Phenom 2x2 and x3
  - →Intel core 2 QUAD.
  - →Intel core 2 Extreme.

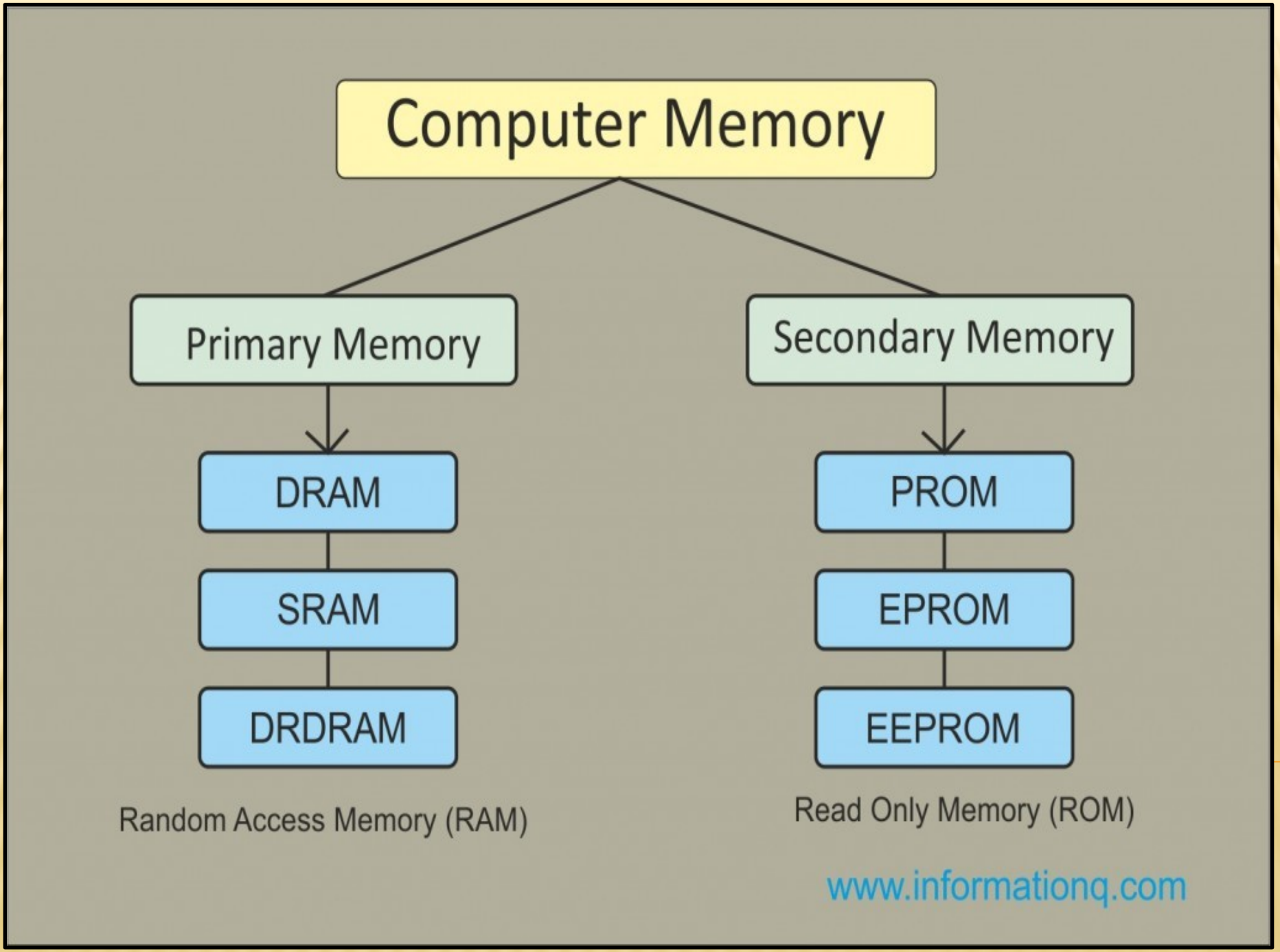
[2]TYPES OF MID-RANGE PROCESSORS:

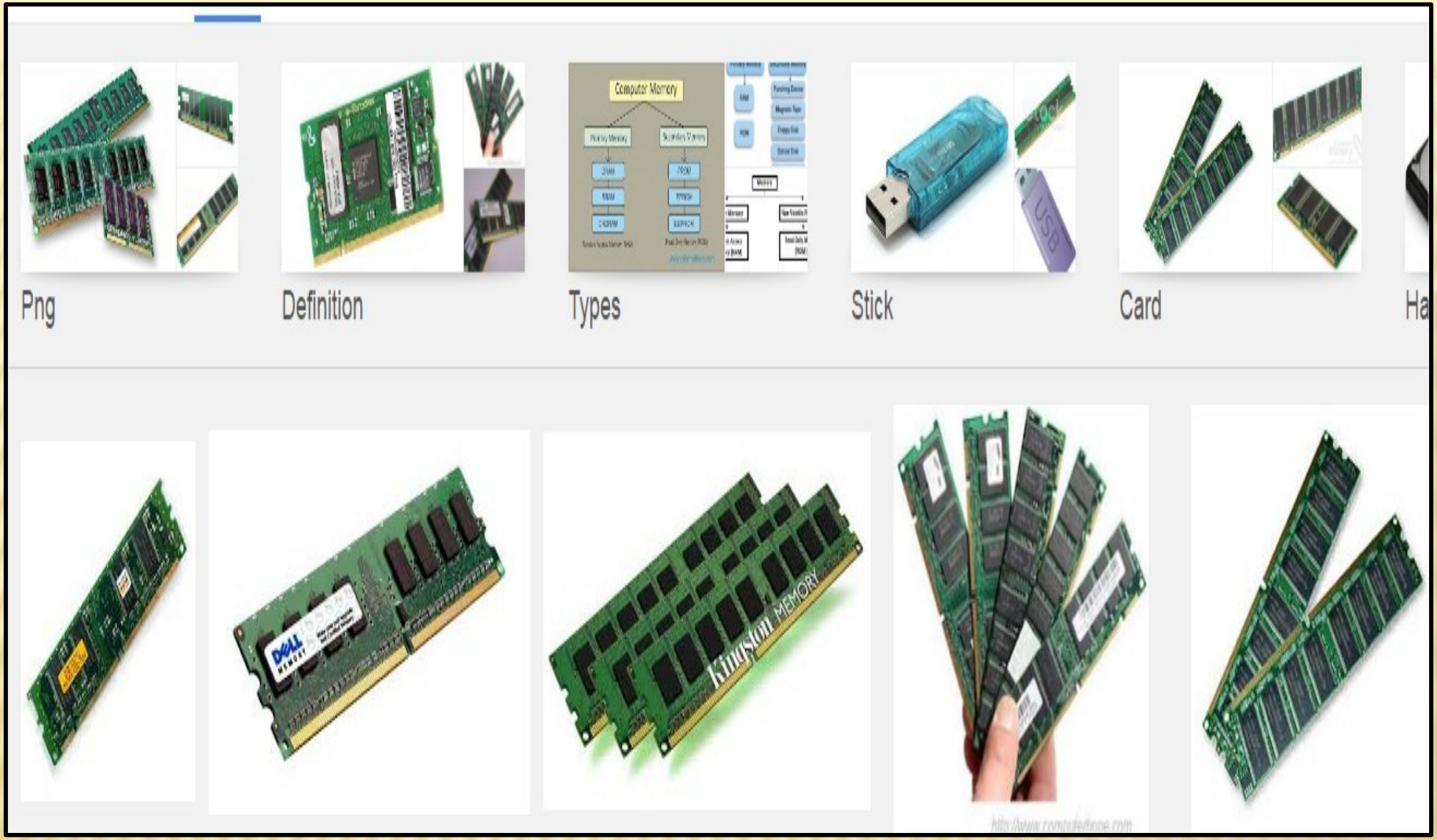
- Mid-Range Processors:
  - →Intel core2 Duo.
  - →AMD Phenom 1x3 and x4
  - →Intel pentium dual core
  - →AMD Turion 2ultra
  - →Intel core Duo /Intel core solo
  - →AMD Athlon 2x2

[3]TYPES OF ECONOMY PROCESSORS:

- Economy Processors:
  - →Intel Centrino /Centrino Duo.
  - →AMD Sempron.
  - →Intel Atom.
  - →AMD Athlon Neo /Neo x2.
  - →Intel Celeron.
  - →AMD Athlon 2x2

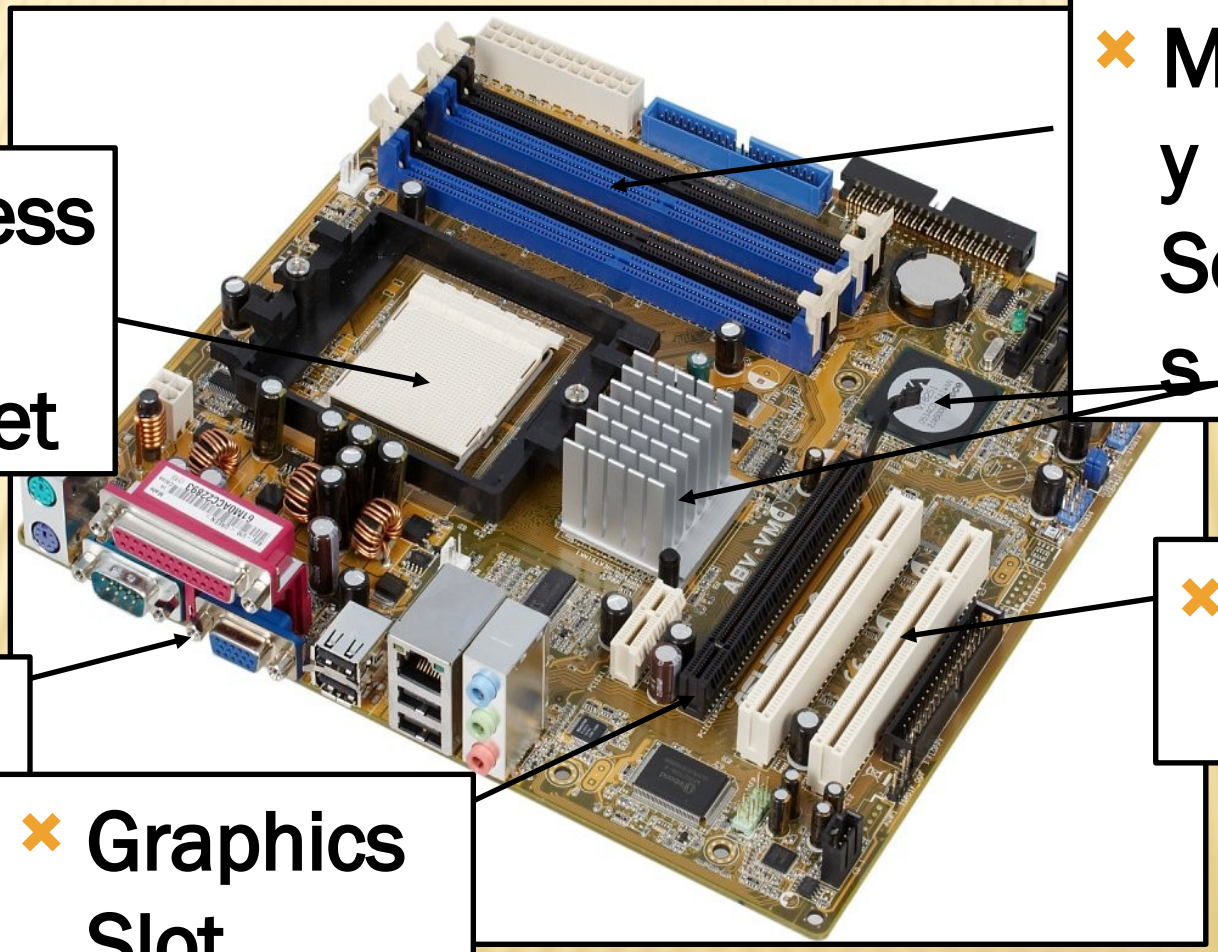
Computer memory


Computer Memory
Primary Memory
Secondary Memory
DRAM
SRAM
DRDRAM
PROM
EPROM
EEPROM
Random Access Memory (RAM)
Read Only Memory (ROM)
www.informationq.com


Computer Memory
Png
Definition
Types
Stick
Card
Ha
DELL
Kingston MEMORY

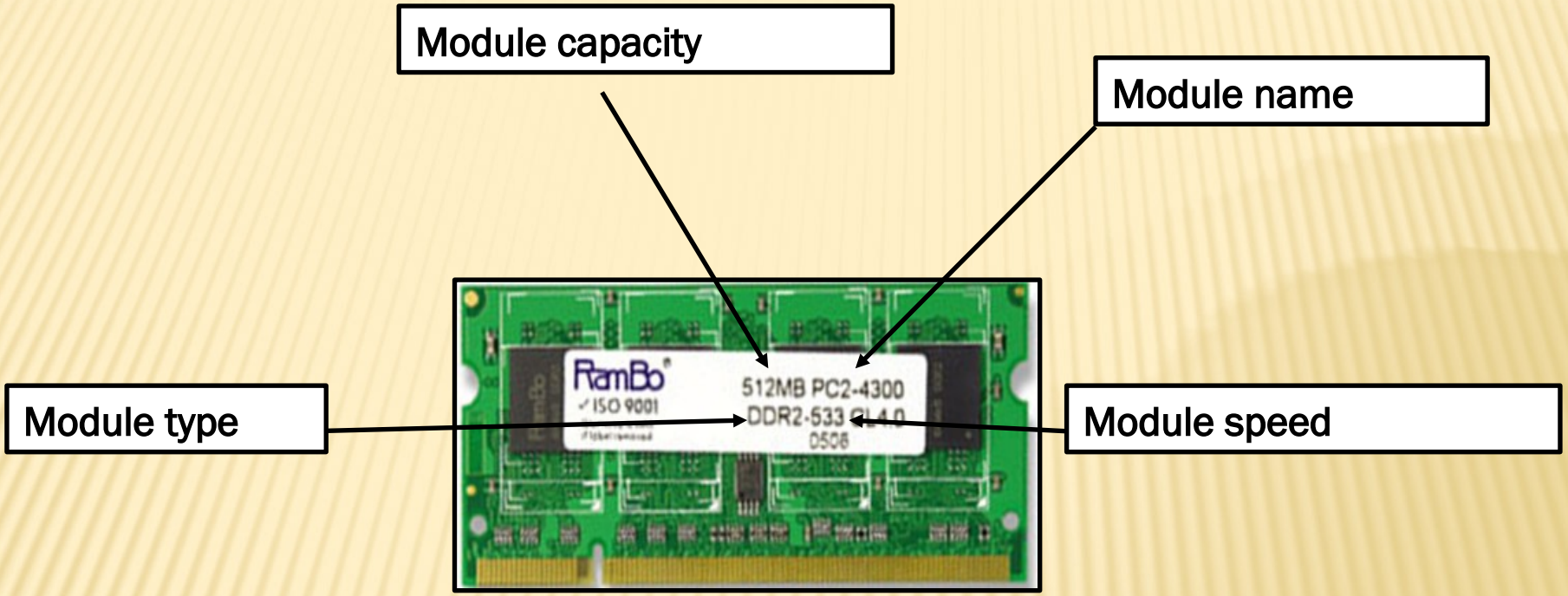
MEMORY

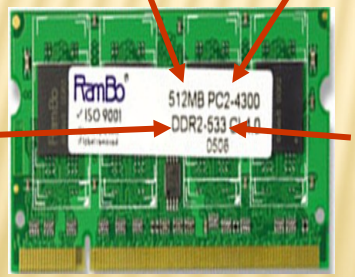
MOTHERBOARD



- Processor Socket
- Memory Sockets
- Chip set
- PCI Slots
- Ports
- Graphics Slot

MEMORY


Module capacity
Module name
Module type
Module speed
RamBo
ISO 9001
512MB PC2-4300
DDR2-533
0506

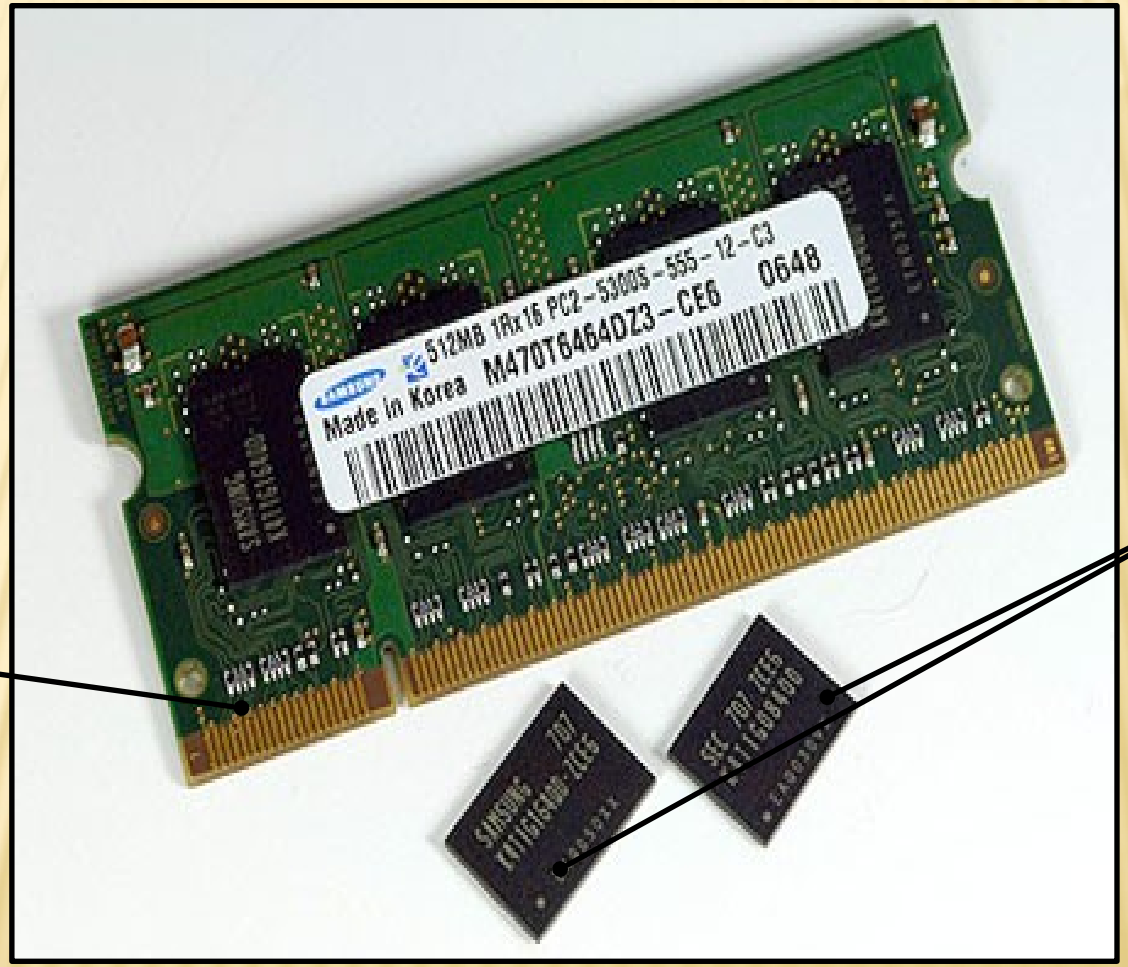

Module capacity
Module name
Module type
Module speed
RamBo
ISO 9001
512MB PC2-4300
DDR2-533


ULTRA
DDR MEMORY
512MB

MEMORY

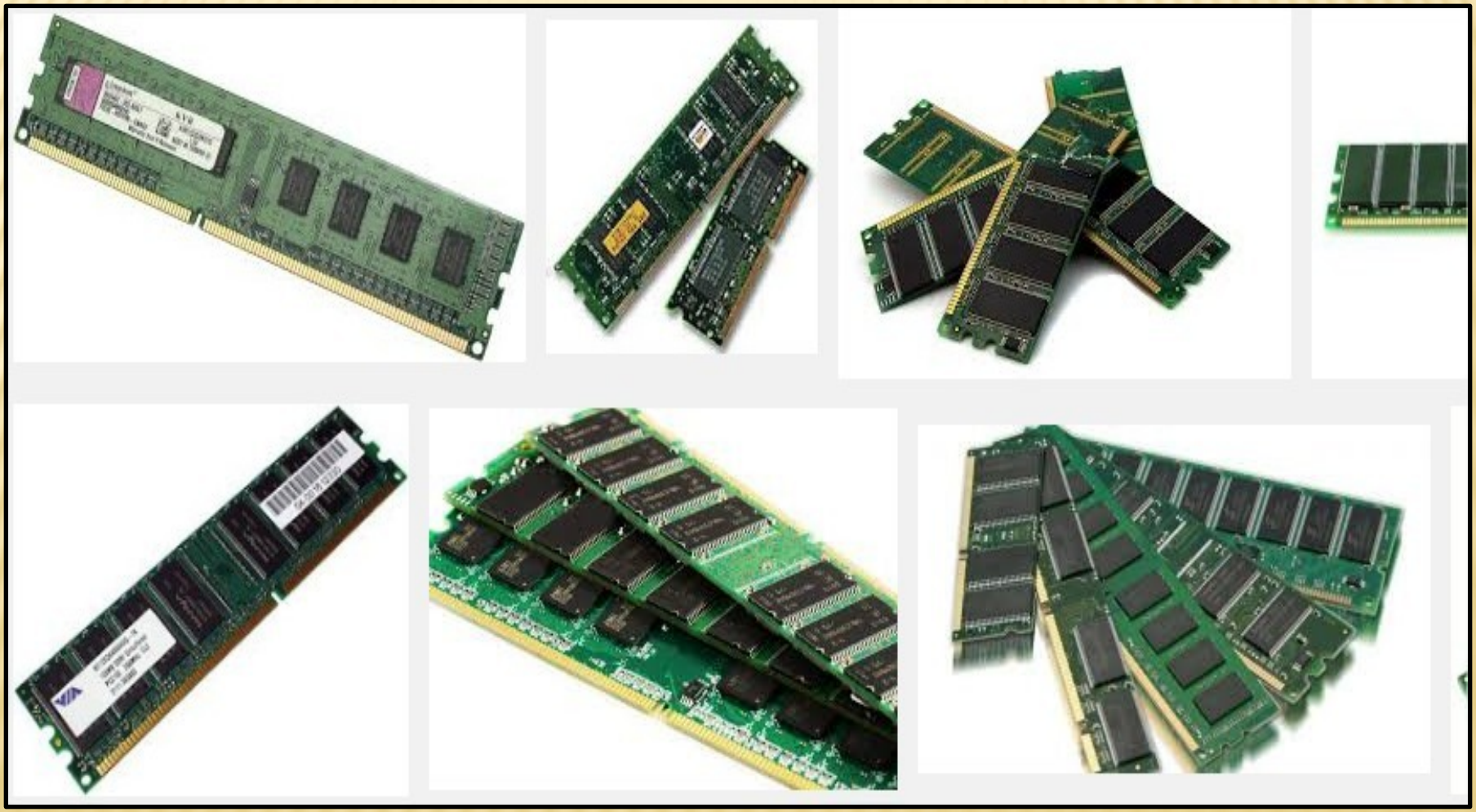
- It’s a temporary storage.
- It consists of some chips.
- The data & instruction are resided in this memory when the CPU executing programs.
- This memory can capable to store & retrieved data very speeds.
- Primary memory is only the memory that is directly access to the CPU.

- Memory
- Module



- IC's

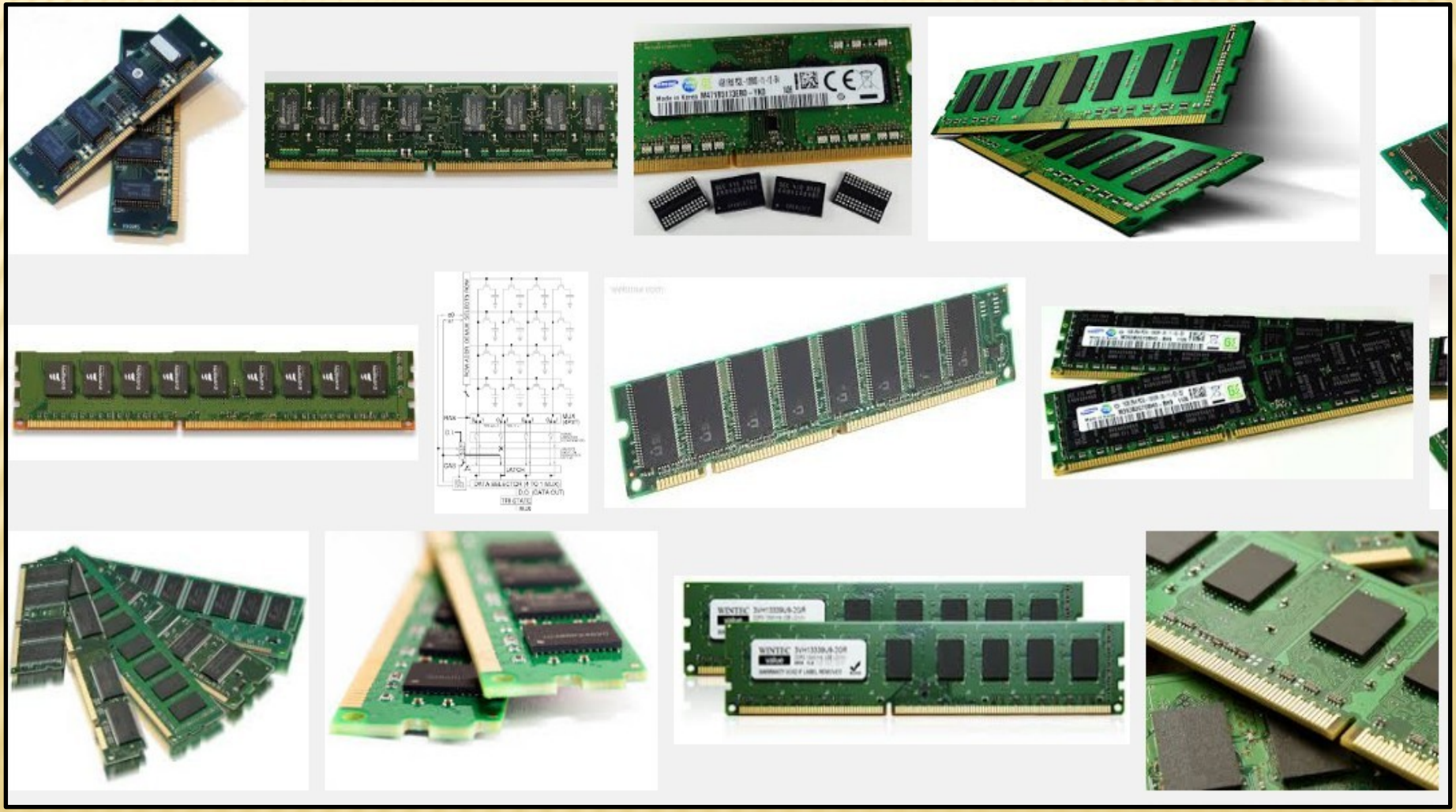
RAM



RAM

- RAM
- The complete name of RAM is random access memory which is also known as Primary memory.
- It is called read/write memory because data can be read as well as write in RAM.
- It is called random access because you can directly access any data from RAM if you know row & column cell.
- The RAM chip is fixed on the mother board & the mother board is designed in such a way that its memory capacity can be enhanced by adding more RAM chip.
- RAM is a VOLETILE memory.
- RAM chips are of two types:DRAM and SRAM.

DRAM



DRAM

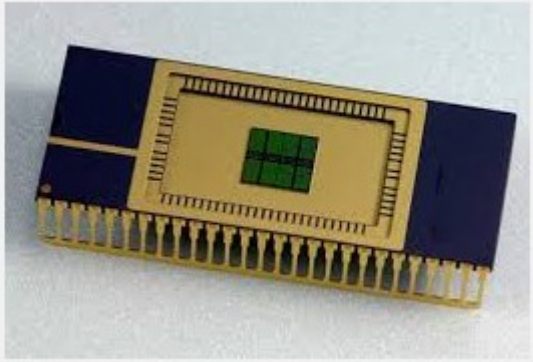
- **DRAM:**
- Dynamic Random Access Memory is a volatile memory that allows fast access to data and is ideal for use as the primary store of computer systems.
- However, the information is stored as electrical charges and the charges need to be continus refreshed in order for the data to be maintained.

SRAM


WINTEC
WINTEC


DIAMOND


SAMSUNG
SAMSUNG
http://www.DeviceLog.com

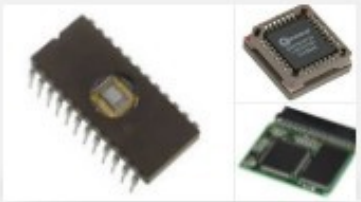


SRAM

- SRAM:
- Static Random Access Memory is also a volatile memory.
- Once data is written into the chip, it is maintained as long as power is supplied to it.
- it does not need refreshing.
- However, SRAM is slower than DRAM and it is also more expensive.

ROM

Read Only Memory



Computer

Cd

Chip

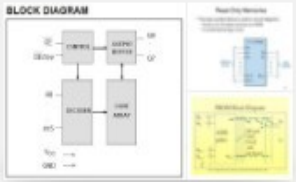
ROM

- The complete name of ROM is read only memory.
- The data stored permanently & can't be altered by the programmer.
- Data stored in RAM chip can be read & used but cannot be changed.
- This memory also known a field storage permanent storage or dead storage.
- It is basically used to store manufacturer programmed & user program.
- Most of the basic operations are carried out by electronic circuits which are known as micro programs.
- These programs are stored in ROM. For ex. System Boot Loader.

PROM

PROM


Electronically ...

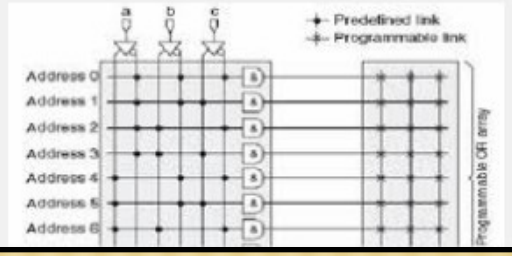


Block Diagram

Erasable Program...


Motherboard

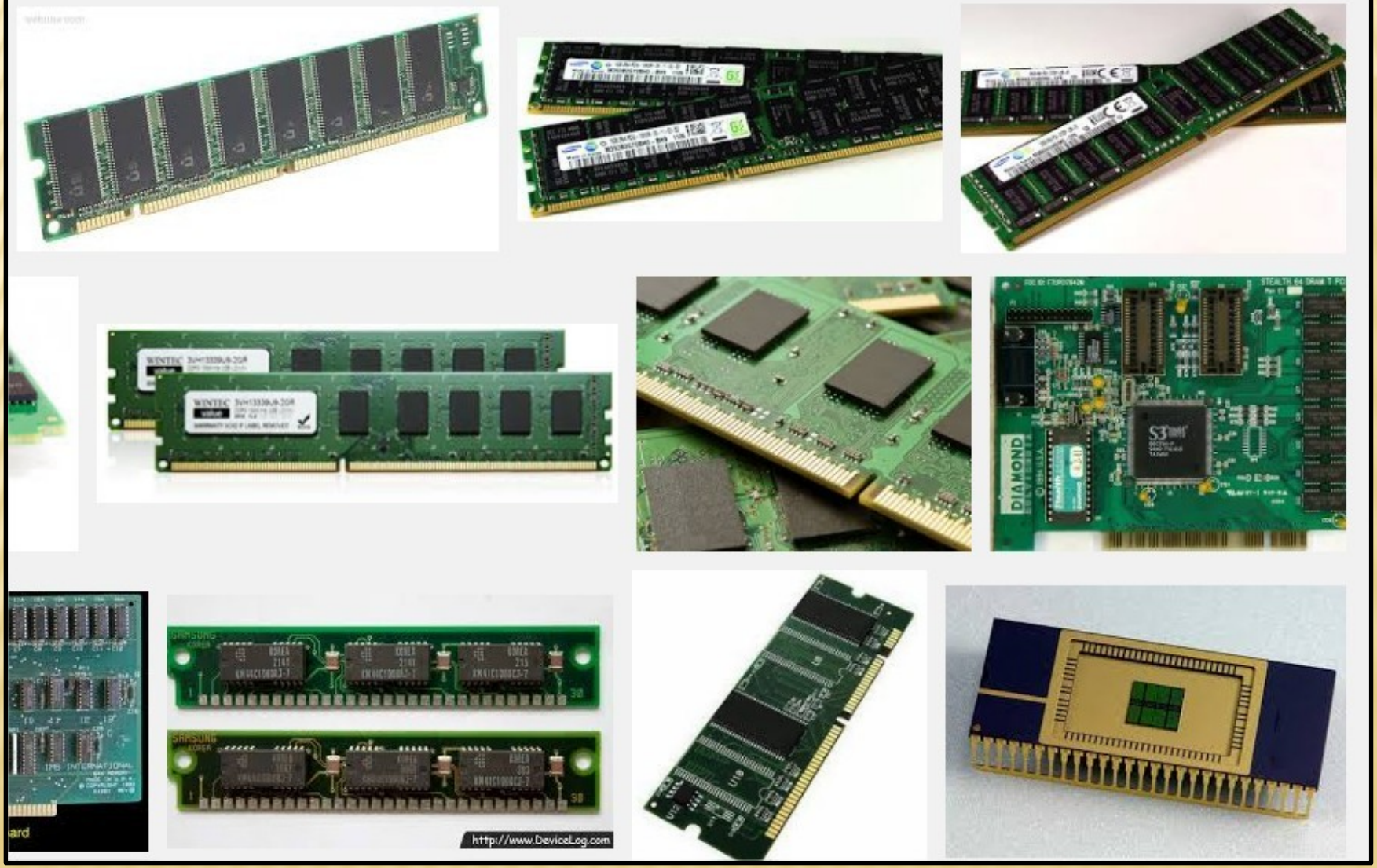
Showing results for ***programmable*** read only memory
Search instead for programble read only memory



PROM

- **PROM:**
- Programmable Read Only Memory is a non-volatile memory which allows the user to program the chip with a PROM writer.
- The chip can be programmed once, there after, it cannot be altered.

EPROM



EEPROM

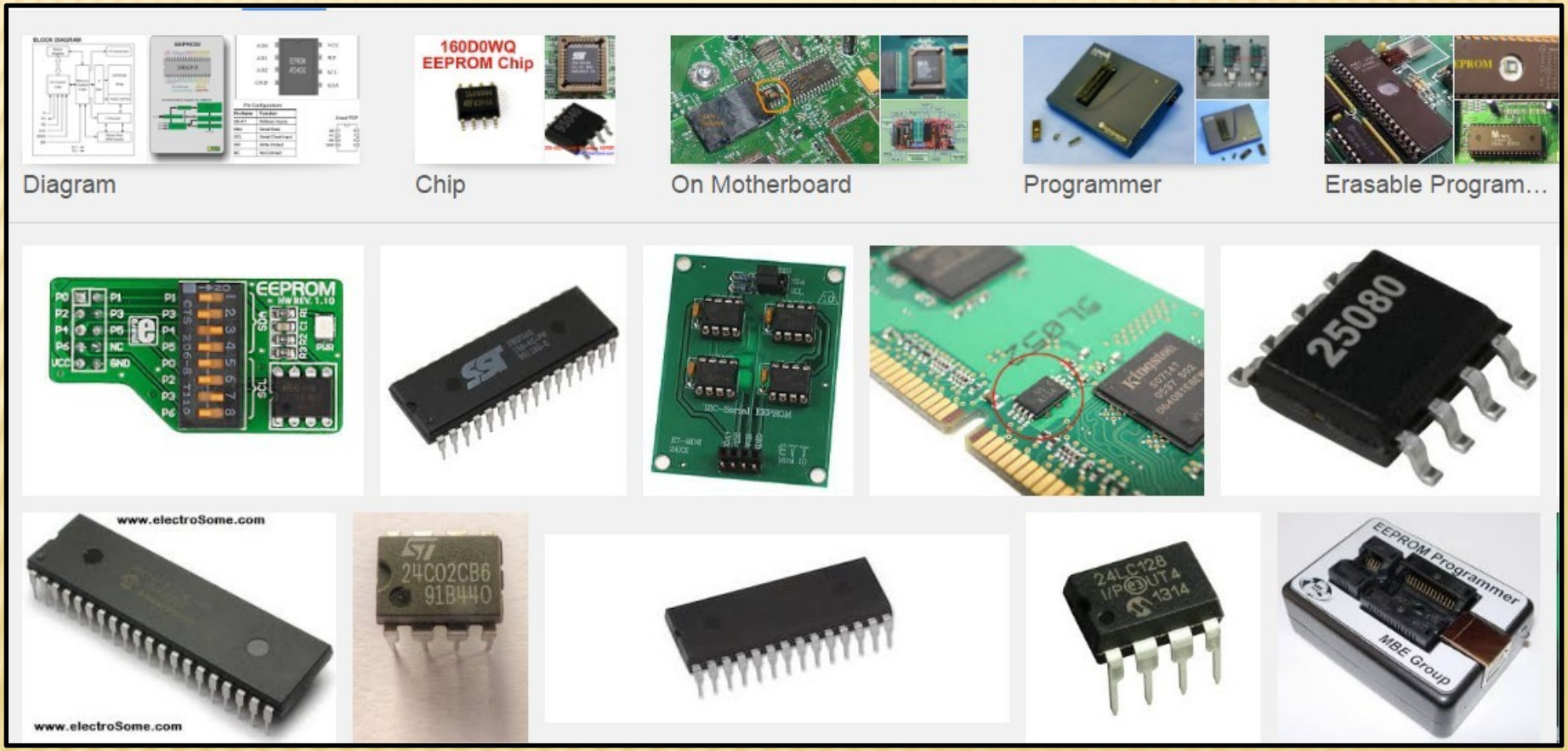


Diagram
160D0WQ
EEPROM Chip
Chip
On Motherboard
Programmer
Erasable Program...
EEPROM
25080
www.electroSome.com
www.electroSome.com
24C02CB6
91B440
24LC128
I/P 1314
EEPROM Programmer
MBE Group

EPROM & EEPROM

- EPROM & EEPROM
- Erasable Programmable Read Only Memory and Electrically Erasable Programmable Read Only Memory chips can be electrically programmed.
- Unlike ROM and PROM chips, EPROM chips can be erased and reprogrammed.

FLASH MEMORY

FLASH MEMORY

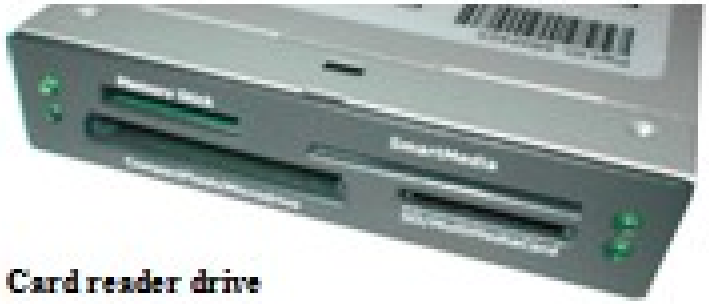
- Flash memory is a types of continue power.
- It is non volatile memory.
- Is erased and rewritten at the byte level,which is slower than flash memory updating.
- Different types flash memory :
  - Your computer BIOS chip.
  - Digital cameras.
  - Memory stick.
  - Memory cards for video games.

System Devices

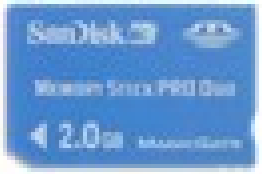
Card readers

Replaces floppy drives in new computers. They can read media cards from most digital cameras:

- **Microdrive**:
- **Smartmedia**:
- **SD memory card**:
- **Memory stick/Duo/Pro**:
- **xD picture card**:



Card reader drive



Difference between RAM & ROM

RAM	ROM
VOLATILE MEMORY	NON VOLATILE
Data in ram is not permanently written when power off, data deleted	Permanently, not erased
Ram: DRAM & SRAM	ROM: PROM & EPROM
It requires flow of electricity to retain data	It does not requires electricity to retain data
Ram is the memory available for the operating system programs and process to use when the computer is running	Rom is the memory that comes with your computer that is pre-written to hold the instructions for booting up the computer

The Differences between RAM and ROM

RAM	Differences	ROM
❖ stores during and after processing	**Data and Program**	❖ stored by manufacturer
❖ stores information temporarily	**Content**	❖ stores information permanently
❖ very fast but uses a lot of power	**Processing Time**	❖ fast but uses very little power
❖ volatility	**Volatile**	❖ non-volatile

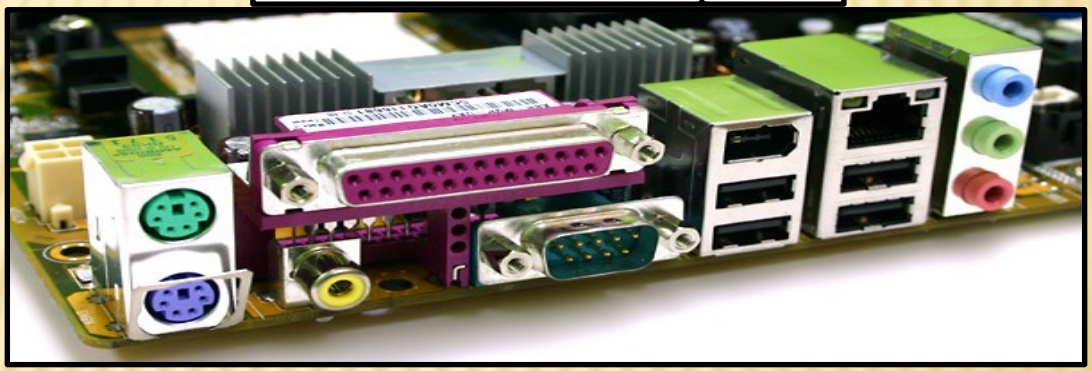
PORT'S

SYSTEM DEVICES

Ports

Computer ports are interfaces between peripheral devices and the computer. They are mainly found at the back of the computer but are often also built into the front of the computer chassis for easy access.

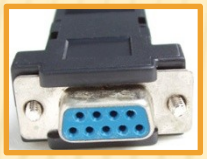
Ports at the rear of the computer



Ports at the front of the computer

SYSTEM DEVICES

- **Serial port** - a 9-pin port. Often called Com ports - Com1, Com2 etc. external modems were connected to these ports. They are **turquoise** in colour. (70% blue and 30% green color)

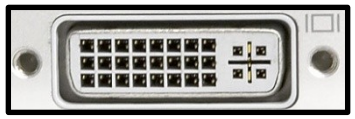


- **Parallel port** - a 25-pin port used to connect printers, scanners, external hard disks, zip drives etc. to the computer. **Burgundy** (dark **red**)in colour, they are often called LPT ports - LPT1, LPT2 etc.

SYSTEM DEVICES

- **Video port** - used to connect a monitor to the computer system. There are two types:
  - **VGA port** - (Video Graphics Array)This is a 15-pin port and is **blue** in colour. It is an analogue port and is being replaced by the DVI port. The 15-pin **VGA connector** is found on many video cards, computer monitors, and high definition television sets.

  - **DVI port** -(**Digital Visual Interface**) **white** in colour, it is a digital port. This means that no conversion is necessary between the computer and the monitor and that means that images can be produced more quickly on the monitor



SYSTEM DEVICES

- **PS/2 port** - (Personal System/**2**)used to connect keyboards and mouse to the computer. The keyboard port is **purple** and the mouse port is **green**

- **Modem port** - used to connect a modem to a telephone line. **RJ11(**Registered jack) is the technical term for the port.
- **used** for telephone line connections may be **used** for **RJ11**,

SYSTEM DEVICES

- **USB port** - intended to replace Serial, Parallel and PS/2 ports with a single standard. 127 devices can be connected to a single USB port. **Hot swappable** - devices can be connected and disconnected while the computer is on

There are different USB standards in use:

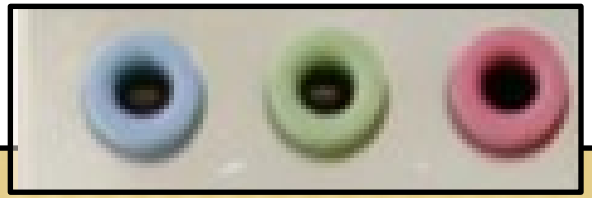
- **USB 1** - original standard - transfer data of **1.5MBps.**
- **USB 2** - current standard - transfer rate of **60MBps.**
- **USB3** - future standard (2009) transfer rate of **600MBps.**

SYSTEM DEVICES

- **Ethernet port** - used to connect to a network. Known as **RJ45**, it is larger than a modem port.

- **Audio ports** - used to input and output audio from the computer. Three mini jack ports but there may be more:

  - **Light blue** - Line in - connect external devices
  - **Lime** - Connect the speakers to this port.
  - **Pink** - Connect a microphone to this port.

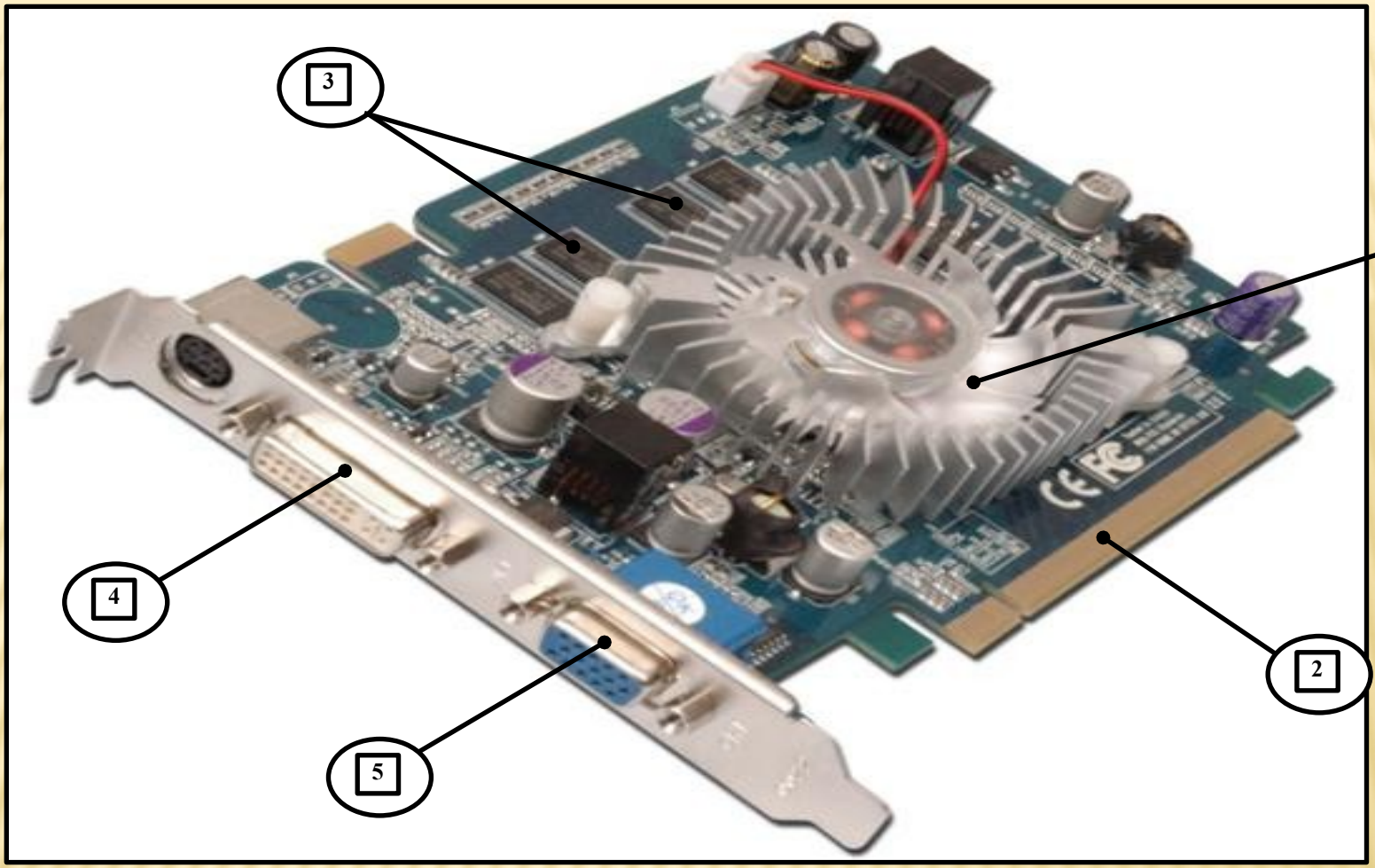


Power Supply

A computer power supply has a number of functions:

- Converts **Alternating current** (AC) **Direct current** (DC)
- Transforms mains voltage (240 Volts) to the voltages required by the computer. The main voltages are:
  - **12 volts** for the disk drives as they have motors
  - **3.3** and **5 volts** for the circuit boards in the computer

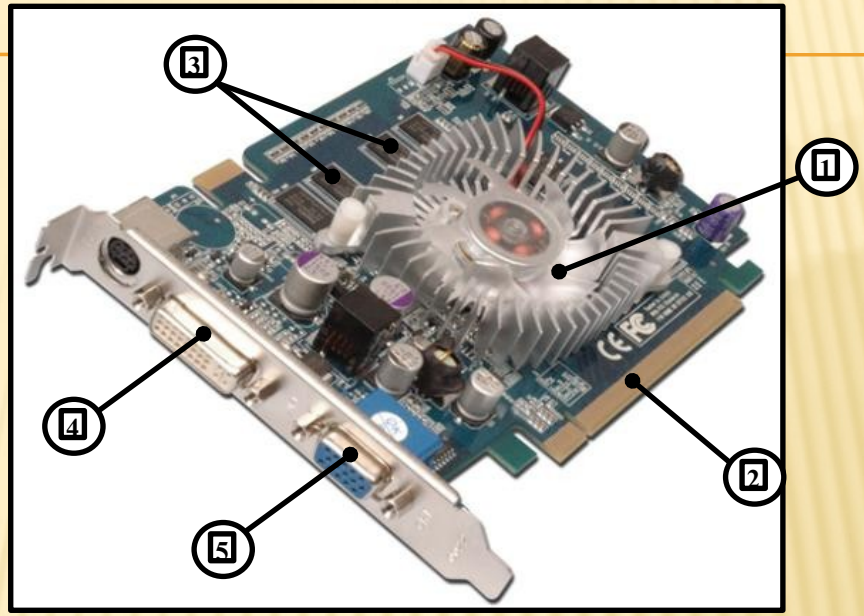
Graphic card



CARD'S

SYSTEM DEVICES

Graphics card



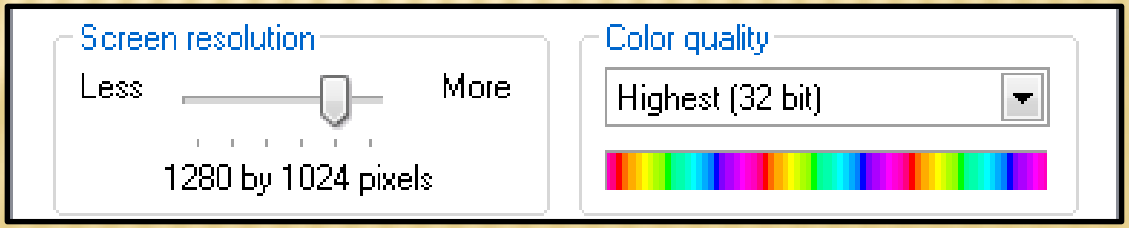
1	Processor and fan	Graphics card handles it's own processing making it almost independent of the processor.
2	Board connector	AGP or PCI-Express
3	Memory	Graphics card has it's own memory. This makes it much faster. Most new cards use DDR3 memory.
4	DVI connector	Digital output is supplied through this port.
5	VGA connector	Analogue output is provided through this port.

SYSTEM DEVICES

Graphic card - screen images are made up of dots called **pixels** (picture elements). The graphics card must process each of these pixels to create the image.

The resolution of a screen is the number of pixels being displayed. Typical resolutions include:

- **800 x 600** - 480,000 pixels
- **1024 x 768** - 786,432 pixels
- **1280 x 1024**: - 1,310,720 pixels
- **1600 x 1200**: - 1,920,000 pixels



SYSTEM DEVICES

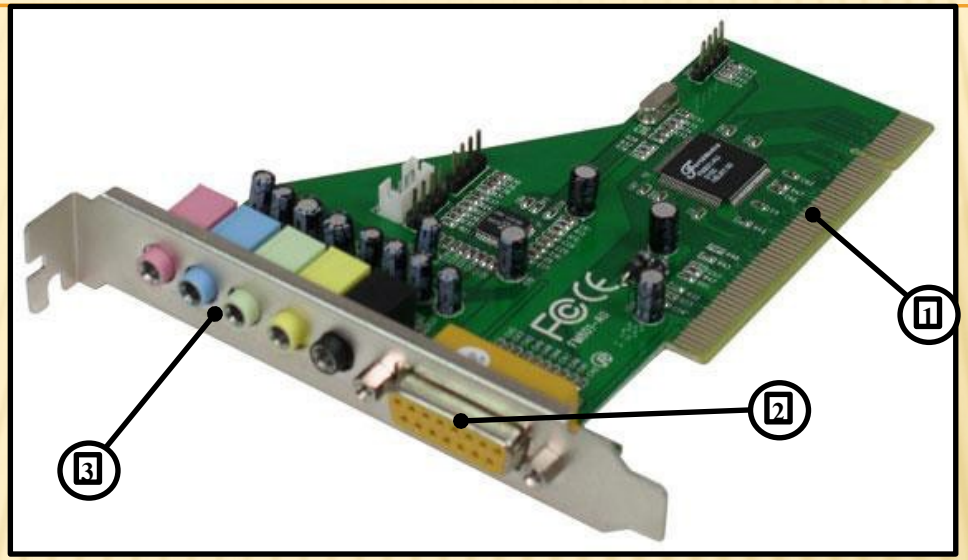
There are two types of graphic card available:

- **AGP** (advanced graphics port) - the older technology but still available. It can output in analogue or digital or both.
- **PCI-Express** (peripheral component interconnect) - the newer technology - faster than AGP. Allows for two graphics cards to improve the performance - called **Scalable Link Interface** (SLI). PCI-Express can also output in analogue or digital or both.
- These cards are mutually exclusive and the choice is made according to the graphics slot on the motherboard.

Sound card

SOUND CARD

Sound card



1	PCI connector	Connects the sound card to a PCI slot
2	MIDI socket	Musical Instrument Digital Interface port is used to connect digital musical instruments to the computer.
3	Audio jacks	These are used to connect microphones, speakers, stereo systems etc to the computer.

SYSTEM DEVICES

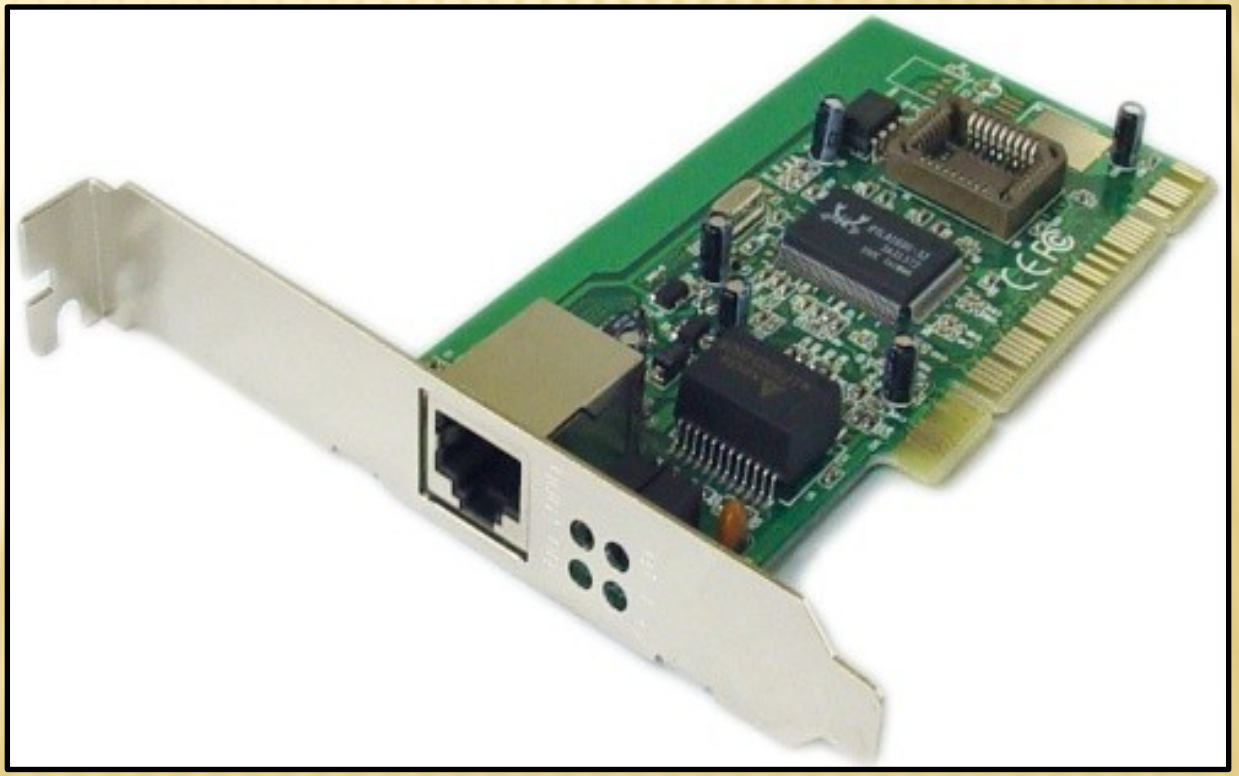
The main functions of a sound card are:

- To use a **DAC** (digital to analogue converter) to prepare audio for speakers etc.
- To use an **ADC** (analogue to digital converter) to convert the audio coming into the computer.

A sound card can be connected to the following:

- Analogue input devices - Microphone, Radio, Tape deck, Record player etc
- Headphones and speakers
- Output to tape etc.

Network card



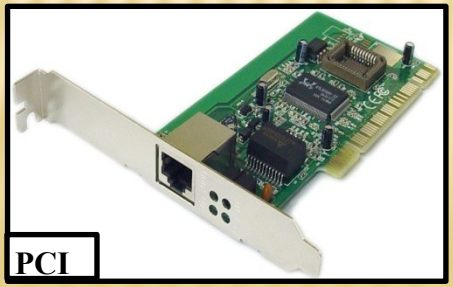
SYSTEM DEVICES

Network card

- allows computers join a network. Can be wired or wireless. The standard used is called **Ethernet** - covers wired and wireless networks.

The wired standards include:

- **Fast Ethernet** - transmission speed of **100Mbps**.
- **Gigabyte Ethernet** - transmission speed of **1000Mbps**.


PCI

PC card


USB

SYSTEM DEVICES

The **wireless** standards include:

- **The B standard** - introduced in 1999, it has a transmission rate of **11Mbps** and a range of **30 Metres.**
- **The G standard** - introduced in 2003, it has a transmission rate of **54Mbps** and a range of **30 Metres.**
- **The N standard** - introduced in 2006, it has a transmission speed of **540Mbps** and a range of **50 metres.**


PCI

PC Card


USB

Modem

- Internet access using a telephone line.
- Converts the digital computer data to analogue (**Mo**dulation) before transmission over the telephone line and converts the analogue data to digital (**DEM**odulation) before transmission to the computer. The device gets it's name from these two terms.

- The standard transmission speed of a modem is **56Kbps**.

PCI

USB