

COMPUTER SYSTEMS + HARDWARE

By Sarah Coyle

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Monitor.

- A **monitor** or **display** (also called **screen** or **visual display unit**) is an electronic visual display for computers. The monitor comprises the display device, circuitry, and an enclosure. The display device in modern monitors is typically a thin film transistor liquid crystal display (TFT-LCD) thin panel, while older monitors use a cathode ray tube about as deep as the screen size.



Keyboard.

- a **keyboard** is a typewriter-style keyboard, which uses an arrangement of buttons or keys, to act as mechanical levers or electronic switches. Following the decline of punch cards and paper tape, interaction via teleprinter-style keyboards became the main input device for computers.



Speakers.

- **Computer speakers, or multimedia speakers,** are speakers external to a computer, that disable the lower fidelity built-in speaker. They often have a low-power internal amplifier. The standard audio connection is a 3.5 mm (approximately 1/8 inch) stereo jack plug often color-coded lime green (following the PC 99 standard) for computer sound cards. A plug and socket for a two-wire (signal and ground) coaxial cable is widely used to connect analog audio and video components. Rows of RCA sockets are found on the backs of stereo amplifier and numerous A/V products. The prong is 1/8" thick by 5/16" long.



Computer.



- As you know, a **computer** is a programmable machine designed to automatically carry out a sequence of arithmetic or logical operations. The particular sequence of operations can be changed readily, allowing the computer to solve more than one kind of problem.

USB connections.

- **Universal Serial Bus (USB)** is an industry standard developed in the mid-1990s that defines the cables, connectors and communications protocols used in a bus for connection, communication and power supply between computers and electronic devices.
- USB was designed to standardize the connection of computer peripherals, such as keyboards, pointing devices, digital cameras, printers, portable media players, disk drives and network adapters to PCs, both to communicate and to supply electric power. It has become commonplace on other devices, such as smart phones, PDAs and game consoles. USB has effectively replaced a variety of earlier interfaces, such as serial and parallel ports, as well as separate power chargers for portable devices.



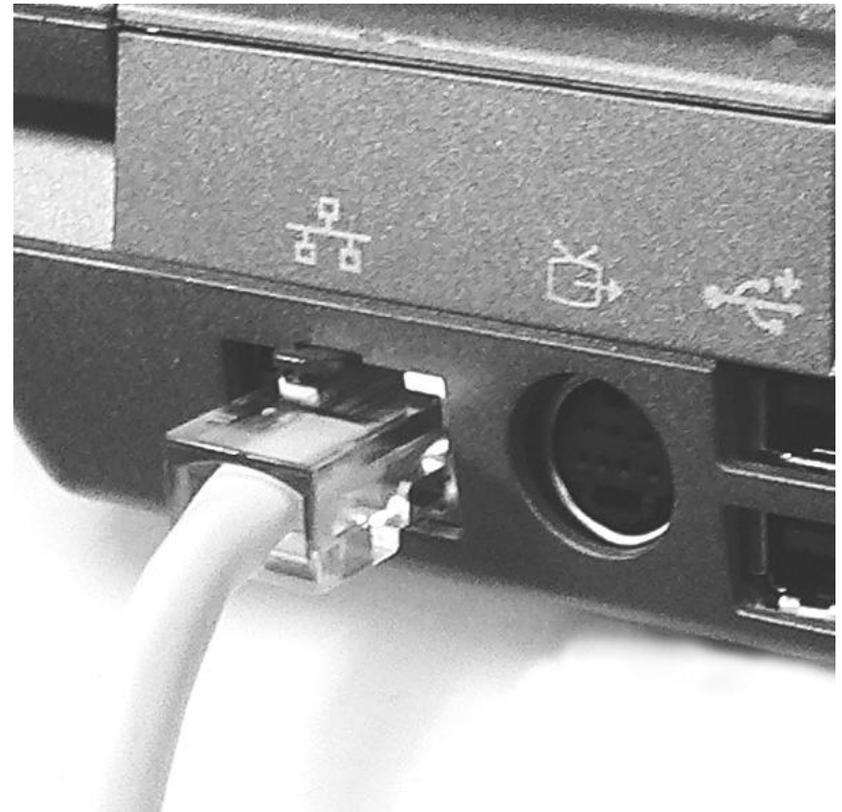
Input jacks.

- In total, you get 6 Input jacks on a typical computer. With a laptop, you will only get 3. each jack is coloured different as they represent different things.
- **green** = stereo output, front channels.
black = stereo output, rear channels.
grey = stereo output, side channels.
gold = dual output, centre and subwoofer.
blue = stereo input, line level.
pink = mono microphone input.



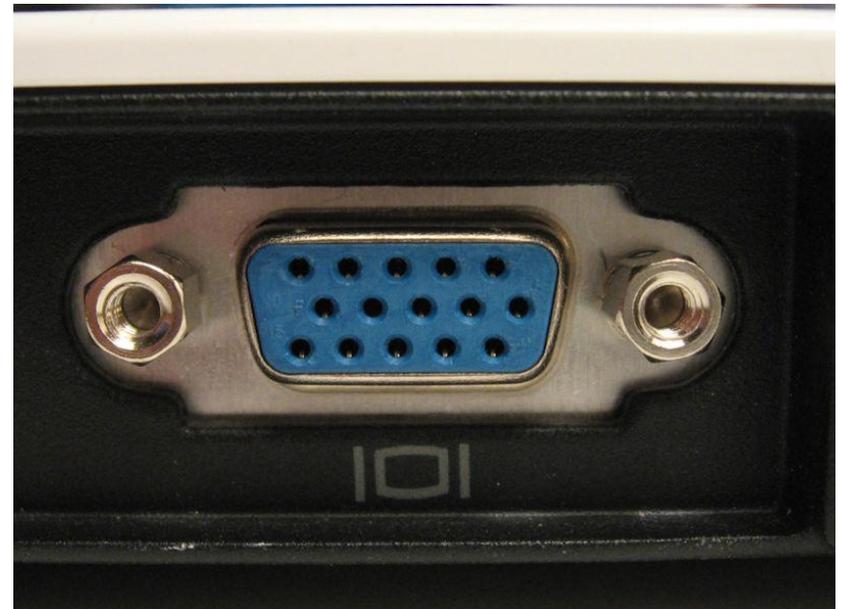
Ethernet connection.

- **Ethernet** is a family of computer networking technologies for local area networks (LANs) commercially introduced in 1980. Standardized in IEEE 802.3, Ethernet has largely replaced competing wired LAN technologies.
- Systems communicating over Ethernet divide a stream of data into individual packets called frames. Each frame contains source and destination addresses and error-checking data so that damaged data can be detected and re-transmitted.
- The standards define several wiring and signalling variants. The original 10BASE5 Ethernet used coaxial cable as a shared medium. Later the coaxial cables were replaced by twisted pair and fibre optic links in conjunction with hubs or switches. Data rates were periodically increased from the original 10 megabits per second, to 100 gigabits per second.



VGA port.

- A **Video Graphics Array (VGA) connector** is a three-row 15-pin DE-15 connector. The 15-pin VGA connector is found on many video cards, computer monitors, and some high definition television sets. On laptop computers or other small devices, a mini-VGA port is sometimes used in place of the full-sized VGA connector.



Serial Port.

- In computing, a **serial port** is a serial communication physical interface through which information transfers in or out one bit at a time (in contrast to a parallel port). Throughout most of the history of computers, data transfer through serial ports connected the computer to devices such as terminals and various peripherals.



Parallel port.

- A **parallel port** is a type of interface found on computers for connecting various peripherals. In computing, a parallel port is a parallel communication physical interface. It is also known as a **printer port** or **Centronics port**. The IEEE 1284 standard defines the bi-directional version of the port, which allows the transmission and reception of data bits at the same time.



Games port.

- The **game port** is a device port found on IBM PC compatible systems throughout the 1980s and 1990s. It was the traditional connector for joystick input devices until superseded by USB in the 21st century.
- Originally located on a dedicated expansion card, the game port was later integrated with PC sound cards.



PS/2 port.

- The **PS/2 connector** is a 6-pin Mini-DIN connector used for connecting some keyboards and mice to a PC compatible computer system. Its name comes from the IBM Personal System/2 series of personal computers, with which it was introduced in 1987. The PS/2 mouse connector generally replaced the older DE-9 RS-232 "serial mouse" connector, while the PS/2 keyboard connector replaced the larger 5-pin/180° DIN connector used in the IBM PC/AT design. The PS/2 designs on keyboard and mouse interfaces are electrically similar and employ the same communication protocol. However, a given system's keyboard and mouse port may not be interchangeable since the two devices use a different set of commands



CD-Rom drives.

- A **CD-ROM**, or Compact Disc Read-only memory, is a pre-pressed compact disc that contains data accessible to, but not writable by, a computer for data storage and music playback¹
- CD-ROMs are popularly used to distribute computer software, including video games and multimedia applications, though any data can be stored (up to the capacity limit of a disc). Some CDs hold both computer data and audio with the latter capable of being played on a CD player, while data (such as software or digital video) is only usable on a computer (such as ISO 9660 format PC CD-ROMs). These are called enhanced CDs.



Optical disk drives.

- An **optical disc drive (ODD)** is a disk drive that uses laser light or electromagnetic waves near the light spectrum as part of the process of reading or writing data to or from optical discs. Some drives can only read from discs, but recent drives are commonly both readers and recorders, also called burners or writers. Compact discs, DVDs, and Blu-ray discs are common types of optical media which can be read and recorded by such drives. Optical drive is the generic name; drives are usually described as "CD", "DVD", or "Blu-Ray", followed by "drive", "writer", etc.
- Optical disc drives are an integral part of stand-alone consumer appliances such as CD players, DVD players and DVD recorders. They are also very commonly used in computers to read software and consumer media distributed on disc, and to record discs for archival and data exchange purposes



The Hard Drive.



- A **hard disk drive (HDD; also hard drive, hard disk, or disk drive)**^[2] is a device for storing and retrieving digital information, primarily computer data. It consists of one or more rigid (hence "hard") rapidly rotating discs (often referred to as platters), coated with magnetic material and with **magnetic heads** arranged to write data to the surfaces and read it from them.

Hard drive and computer.



Ribbon cable.

- **ribbon cable** (also known as multi-wire planar cable) is a cable with many conducting wires running parallel to each other on the same flat plane. As a result the cable is wide and flat. Its name comes from the resemblance of the cable to a piece of ribbon.
- Ribbon cables are usually seen for internal peripherals in computers, such as hard drives, CD drives and floppy drives. On some older computer systems (such as the BBC Micro and Apple II series) they were used for external connections as well. Unfortunately the ribbon-like shape interferes with computer cooling by disrupting airflow within the case and also makes the cables awkward to handle, especially when there are a lot of them; round cables have almost entirely replaced ribbon cables for external connections and are increasingly being used internally as well.



Power Supply Unit.



Antistatic wrist band.

- An antistatic wristband is an antistatic device used to safely ground a person working on very sensitive electronic equipment, to prevent the build up of static electricity on their body, which can result in electrostatic discharge (ESD). It is used in the electronics industry by workers working on electronic devices which can be damaged by ESD, and also sometimes by people working around explosives, to prevent electric sparks which could set off an explosion



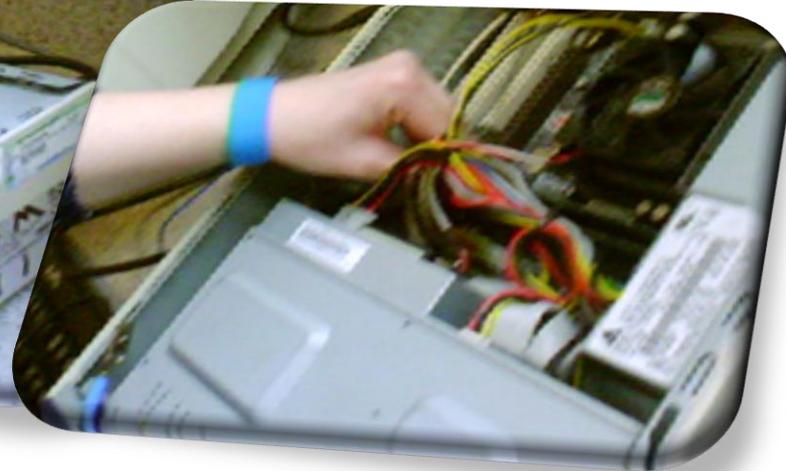
Using the antistatic wristband.



Step one: Remove the computer lid.



Step two: put on the antistatic wristband and remove the strut.



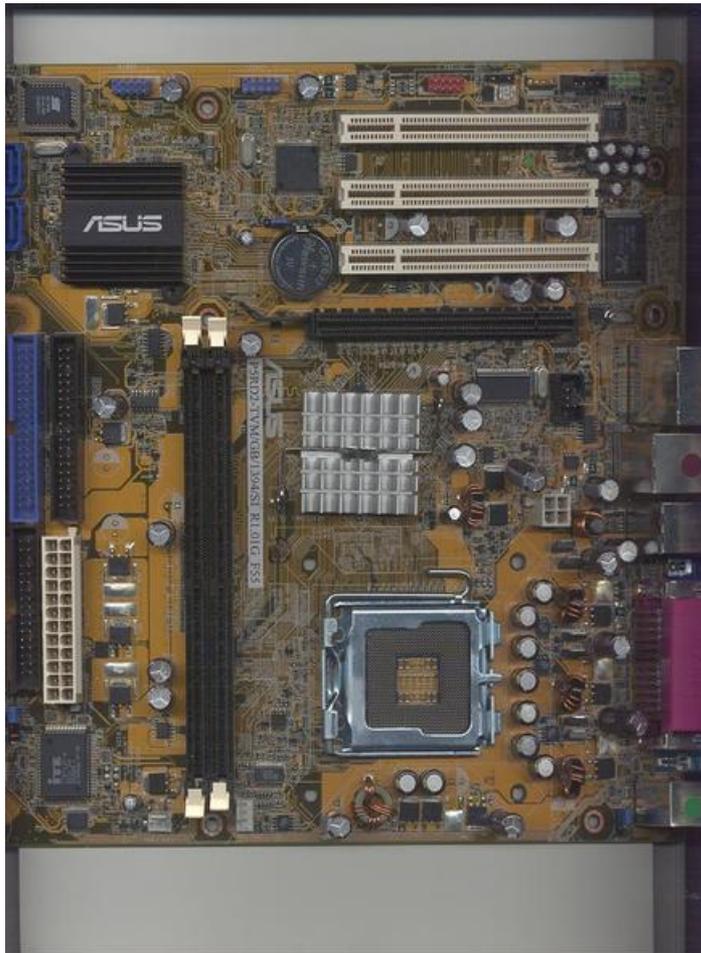
Step three: Insert ram while attached to the antistatic wristband.

The fan.

- A **computer fan** is any fan inside, or attached to, a computer case used for active cooling, and may refer to fans that draw cooler air into the case from the outside, expel warm air from inside, or move air across a heatsink to cool a particular component



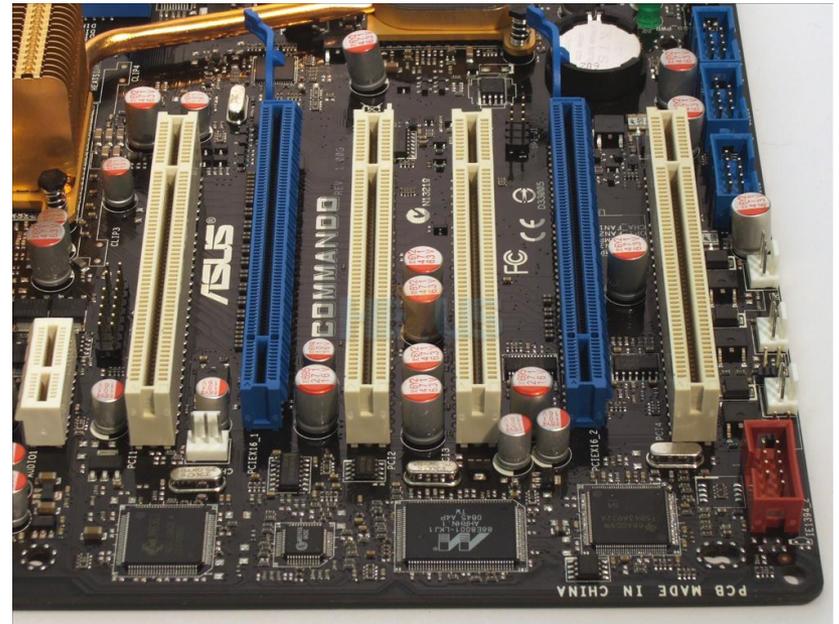
Motherboard.



In computers a **motherboard** is the central printed circuit board (PCB) in many modern computers and holds many of the crucial components of the system, providing connectors for other peripherals. The motherboard is sometimes alternatively known as the **mainboard**, **system board**, or, on Apple computers, the logic board. It is also sometimes casually shortened to **mobo**.

Expansion slots.

- Nearly all personal computers except portables contain expansion slots for adding more memory, graphics capabilities, and support for special devices. The boards inserted into the expansion slots are called expansion boards, expansion cards, expansion cards, add-ins, and add-ons.



Expansion cards.

- The **expansion card** (also *expansion board, adapter card or accessory card*) in computing is a printed circuit board that can be inserted into an **expansion slot** of a computer motherboard or backplane to add functionality to a computer system via the expansion bus.
- One edge of the expansion card holds the contacts (the edge connector) that fit exactly into the slot. They establish the electrical contact between the electronics (mostly integrated circuits) on the card and on the motherboard.



Graphics Card.

- A **graphics card**, is an expansion card which generates output images to a display. Most video cards offer various functions such as accelerated rendering of 3D scenes and 2D graphics, MPEG-2/MPEG-4 decoding, TV output, or the ability to connect multiple monitors (multi-monitor).
- The graphics card is often integrated into the motherboard, however all modern motherboards provide expansion ports to which a video card can be attached. In this configuration it is sometimes referred to as a *video controller* or *graphics controller*. Modern low-end to mid-range motherboards often include a graphics chipset manufactured by the developer of the northbridge



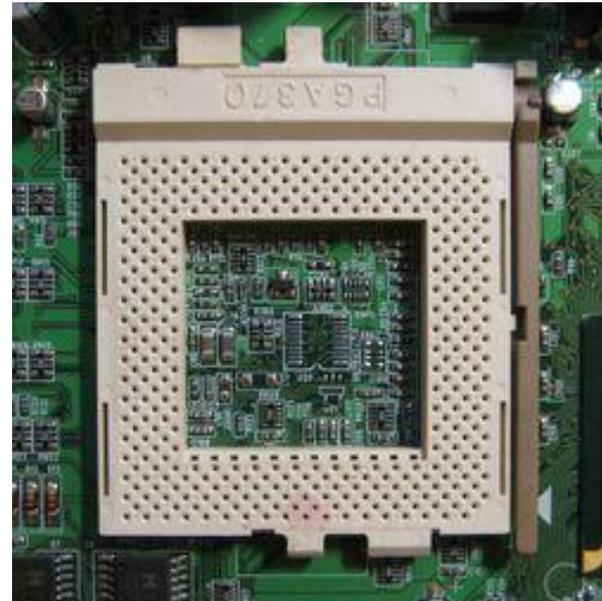
Sound card.

- A **sound card** (also known as an **audio card**) is an internal **computer** expansion card that facilitates the input and output of audio signals to and from a computer under control of computer programs. The term *sound card* is also applied to external audio interfaces that use software to generate sound, as opposed to using hardware inside the PC. Typical uses of sound cards include providing the audio component for multimedia applications such as music composition, editing video or audio, presentation, education and entertainment (games) and video projection. Many computers have sound capabilities built in, while others require additional expansion cards to provide for audio capability.



CPU Socket

- A **CPU socket** or CPU slot is a mechanical component that provides mechanical and electrical connections between a microprocessor and a printed circuit board (PCB). This allows the CPU to be replaced without soldering.
- Common sockets have retention clips that apply a constant force, which must be overcome when a device is inserted.



The Northbridge.

- The Northbridge has historically been one of the two chips on a PC motherboard, the other being the Southbridge. Increasingly, the functions have migrated to the CPU chip itself, beginning with memory and graphics controllers.
- Separating the different functions into the CPU, Northbridge, and Southbridge chips, is due to the difficulty of integrating all components onto a single chip.

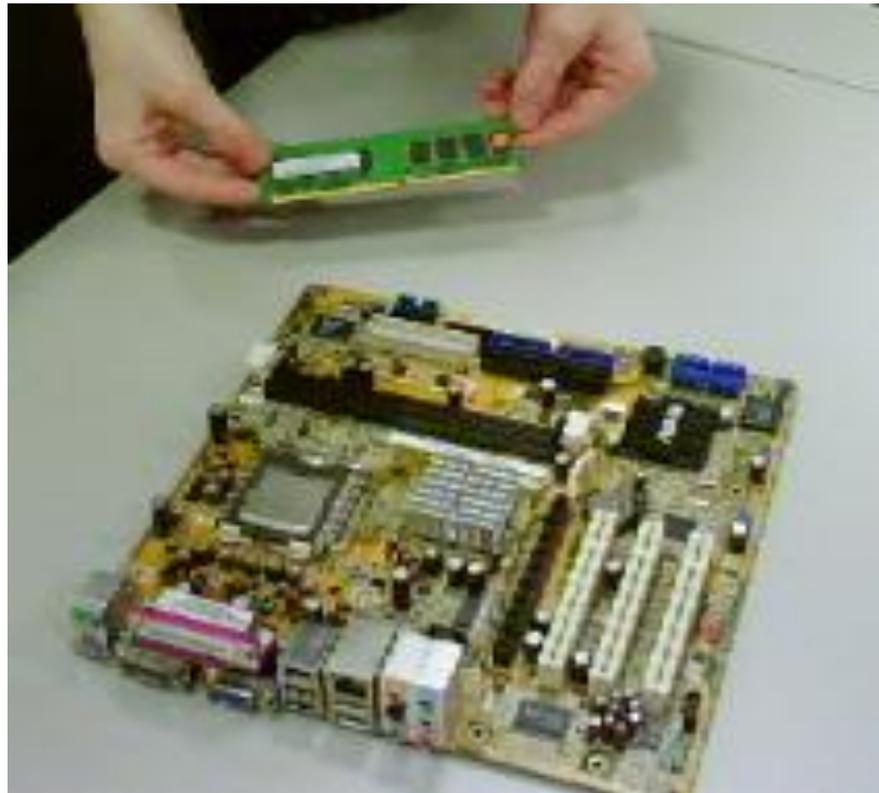


Ram

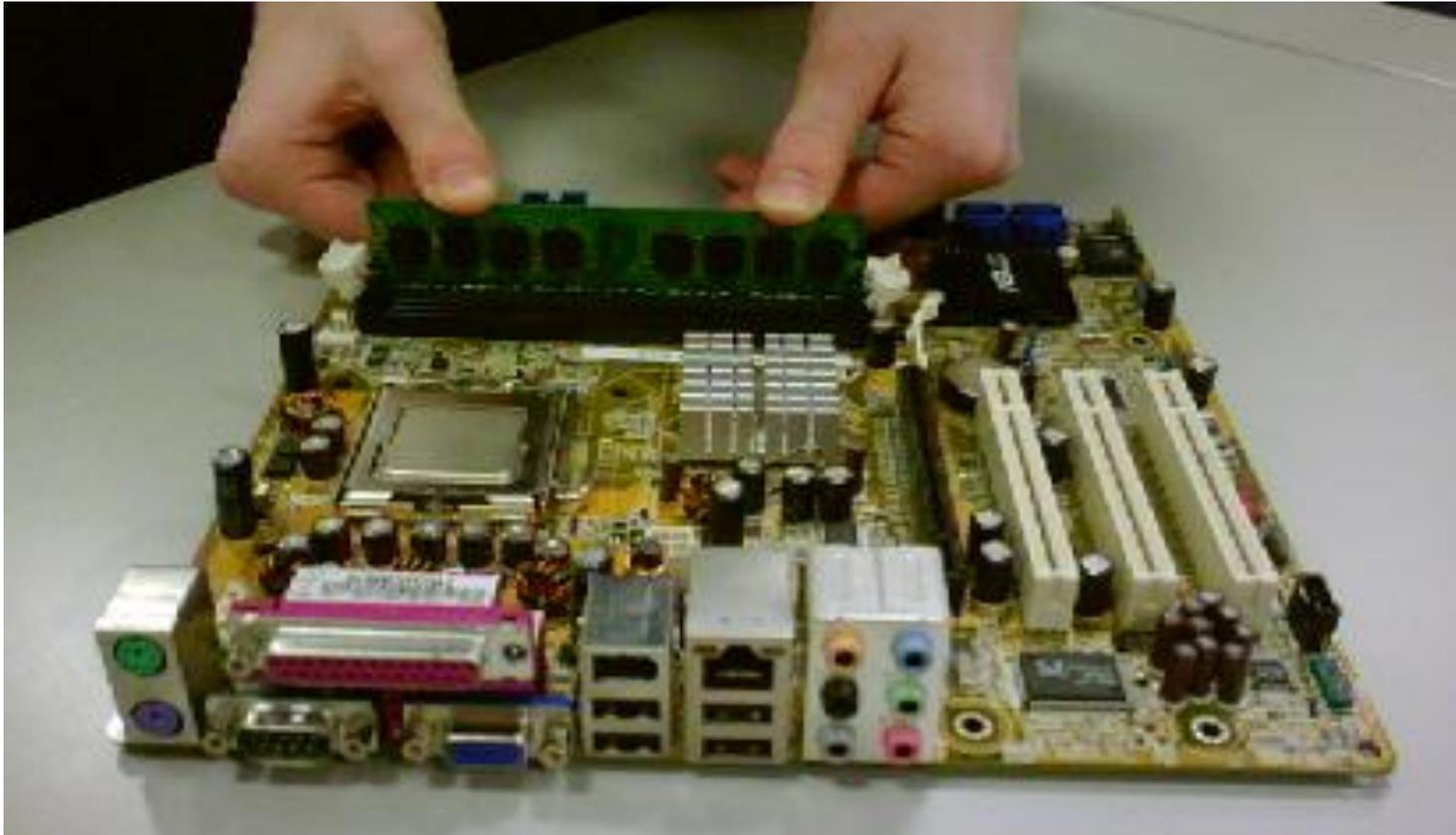
- **Random access memory (RAM)** is a form of computer data storage. Today, it takes the form of integrated circuits that allow stored data to be accessed in any order with a worst case performance of constant time. Strictly speaking, modern types of DRAM are therefore not random access, as data is read in bursts, although the name DRAM/ RAM has stuck. However, many types of SRAM, ROM, OTP, and NOR flash are still random access even in a strict sense. RAM is often associated with volatile types of memory (such as DRAM memory modules), where its stored information is lost if the power is removed.



Ram + the motherboard.



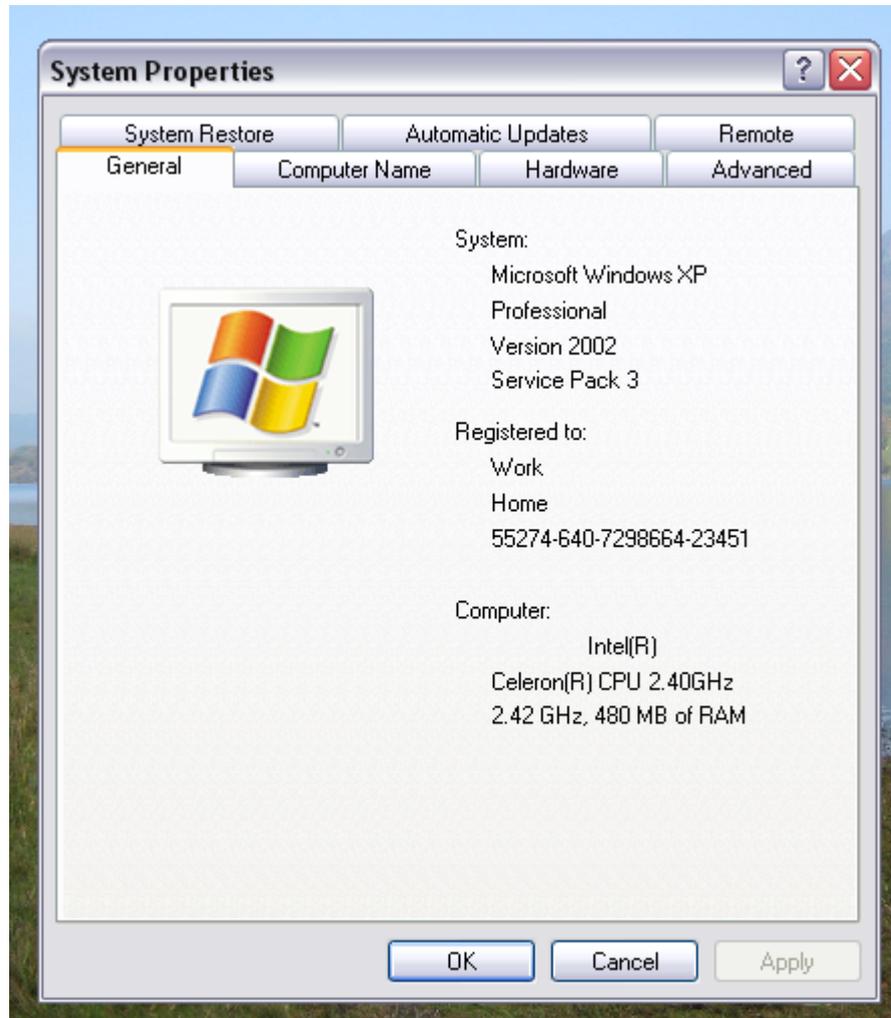
Inserting ram into the motherboard.



Before Memory Install.



After Memory install.



Computer Interfaces.

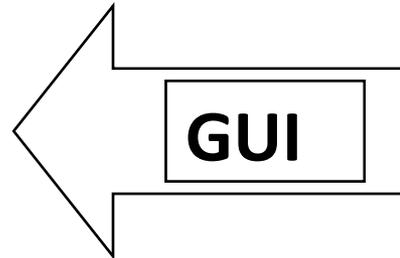
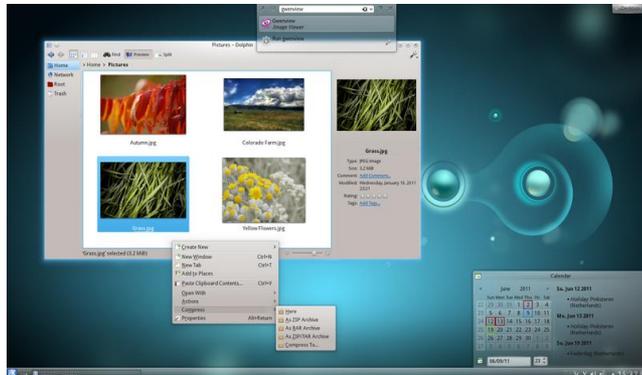
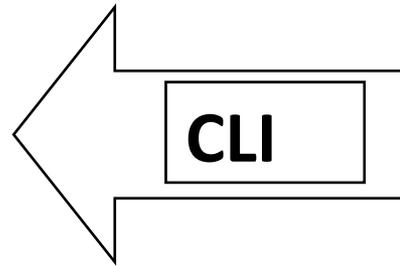
```
PS G:\> Get-Childitem 'MediaCenter\Music' -rec |
>> Where < -not $_.PSIsContainer -and $_.Extension -match 'onaimp3' > |
>> Measure-Object -property length -sum -min -max -ave
>>
Count           : 1387
Average         : 5491276.89563887
Sum             : 7174977857
Maximum        : 22985267
Minimum        : 3235
Property       : Length

PS G:\> Get-UniformObject CIM_BIOSElement | select bios*, man*, ser* | Format-List
BIOSVersion : (TOSCP1 - 6040000, Ver 1.00PARTBL)
Manufacturer : TOSHIBA
SerialNumber : M821116H

PS G:\> <fsmisearcher-ig'
>> SELECT * FROM CIM_Job
>> WHERE Priority > 1
>> 'EX-get< | Format-Custom
Class ManagementObject#root\cimv2\Min32_PrintJob
<
Document = Monad Manifesto - Public
JobID = 6
JobStatus =
Owner = User
Priority = 42
Size = 1827800
Name = Epson Stylus COLOR 740 ESC/P 2, 6

PS G:\> $rssUrl = 'http://blogs.mdn.com/powershell/rss.aspx'
PS G:\> $bing = [xml](New-Object System.Net.WebClient).DownloadString($rssUrl)
PS G:\> $bing.rss.channel.item | select title -first 3
title
-----
RSS: What's Coming In PowerShell U2
PowerShell Presence at RMS
RSS Talk: System Center Foundation Technologies

PS G:\> $host.version.ToString().Insert(0, 'Windows PowerShell: ')
Windows PowerShell: 1.0.0.0
PS G:\>
```



Computer Interfaces (2).

- **GUI**
- **CLI**
- A command-line interface (CLI) is a mechanism for interacting with a computer operating system or software by typing commands to perform specific tasks. This text-only interface contrasts with the use of a mouse pointer with a graphical user interface (GUI) to click on options.

Helpful websites.

- <http://www.pccomputernotes.com/>
- <http://www.tomshardware.co.uk/>
- <http://www.bbc.co.uk/bitesize/>