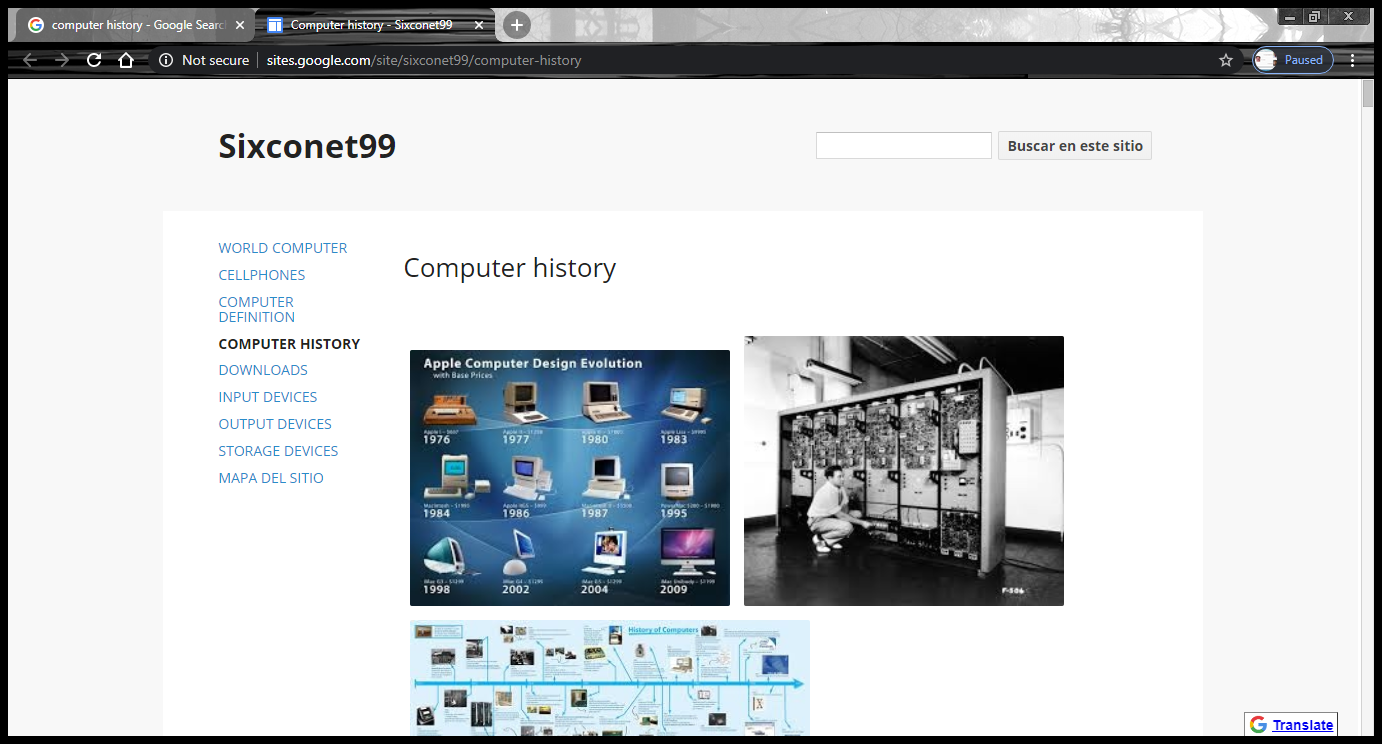
**HISTORY OF COMPUTING**

Since the creation of man, a significant amount of human activities has been ascribed to organizing and processing information so that it could be more easily presented for easy comprehension. Many devices have been used in the past before the advert of computer. It is then necessary to vividly look into their evolution.



Early computing machines:

1.Abacus (-2500BC): This is a hand- held device made of beads stung on rods in a frame. The rods correspond to positions of the digits while the beads correspond to the digits.

2.Napier’s Bone (2500BC): This was invented by John Napier’s (1550 - 1617). This consists of

small rods with appropriate markings on them. It is a mechanical aid to computation that consists of nine such rods (called bones) with one for each digit 1 through 9. He also invented logarithms which made possible to do division and multiplication by performing addition and subtraction.

3.Slide Rule (1600AD) by William Oughtred (1575 - 660): He invented it in 1622 but announced it in 1632 this consist of rules on which markings represent logarithms of numbers and also permits calculation involving exponents, trigonometric functions, etc.

4.Pascal mechanical calculator (1600) or Numerical wheel calculator:-Blaise Pascal (1623 -1664) in 1642 invented the first adding machine called Pascaline. The brass rectangular box used eight moveable dials to add and sum up of eight figures long using base 10. It can perform all the four arithmetic operation with previous unheard speed.

5.Leibnitz mechanical multiplier (1600): In 1694 Gottfried Wilhem Von Leibnitz (1646-1716)

improved upon the pascaline by creating a machine that can also multiply using a system of dials and gear.

6.Colmar’s Calculator (1820) by Charles Xavier Thomas de Colmar: This presented a more practical approach to computing.

7.Punched-Card machine (Jacquard’s loom) (1801): Joseph Marie Jacquard.

8.Mechanical computer: Charles Gabbage (1792-1871) Father of the computer. Difference engine powered by steam and large as locomotive the machine has a stored program and could perform calculations and print the result automatically. We also have Analytical engine credited to him.

9.Hermann Hollerith (1860-1929)

⎫ Hollerith’s system punch-card reader machine:-for counting census result in 1890 in US.

⎫ formed tabulating machine company in 1896(TMC)

⎫ Automatic Tabulating Machine (ATM)-1900

⎫ TMC was renamed to International Business Machines Corporation (IBM) in 1924 after series of mergers.

In summary, the history of computing began with an analog machine. In 1623 German scientist Wilhelm Schikard invented a machine that could add, and with the aid of logarithm tables, multiply and divide. Since then the development has pass through a lot of stages such as the invention of punched cards to program patterns to create woven fabrics by Joseph-Marie Jacquard a French inventor in 19th century

**GENERATIONS OF COMPUTERS**

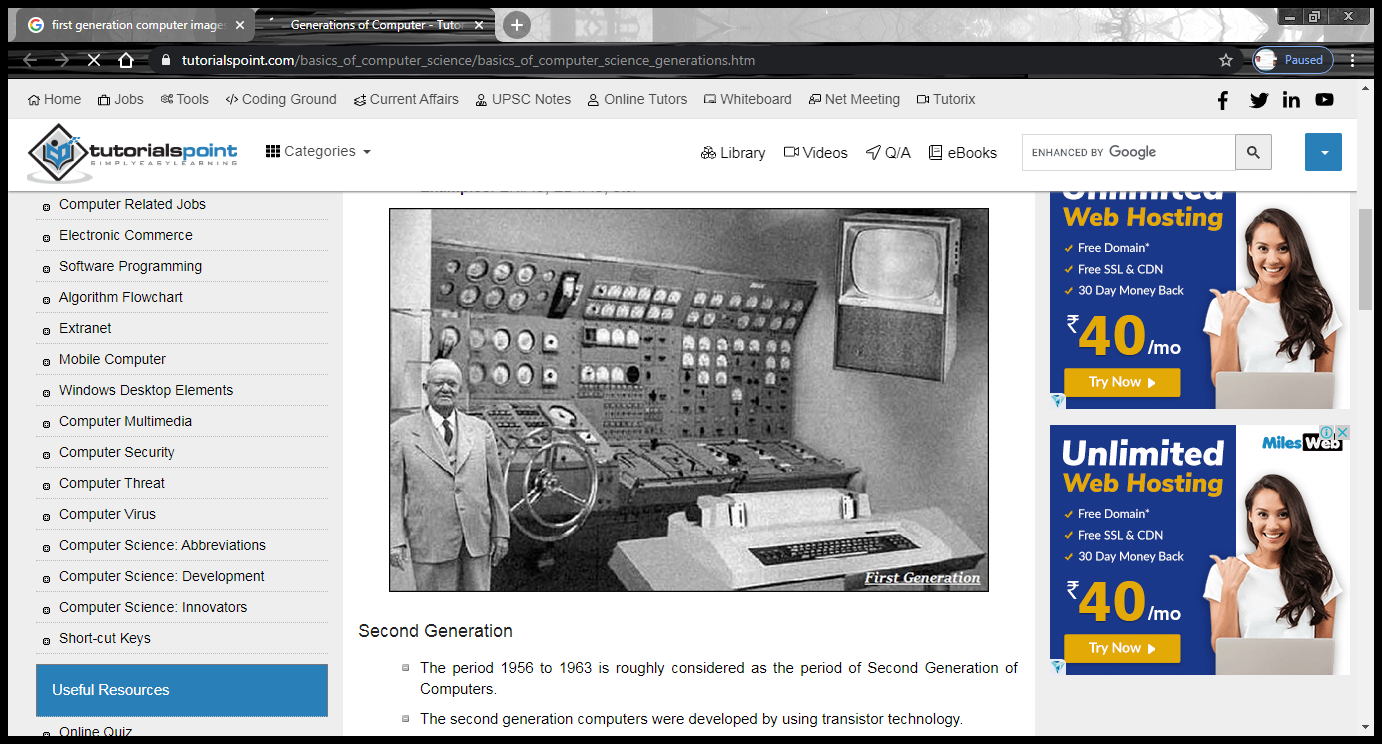
The history of computer development is often referred to in reference to the different generations of computing devices. Each generation of computer is characterized by a major technological development that fundamentally changed the way computers operate, resulting in increasingly smaller, cheaper, more powerful,

efficient and reliable devices.

**First Generation** - 1940-1956: Vacuum Tubes

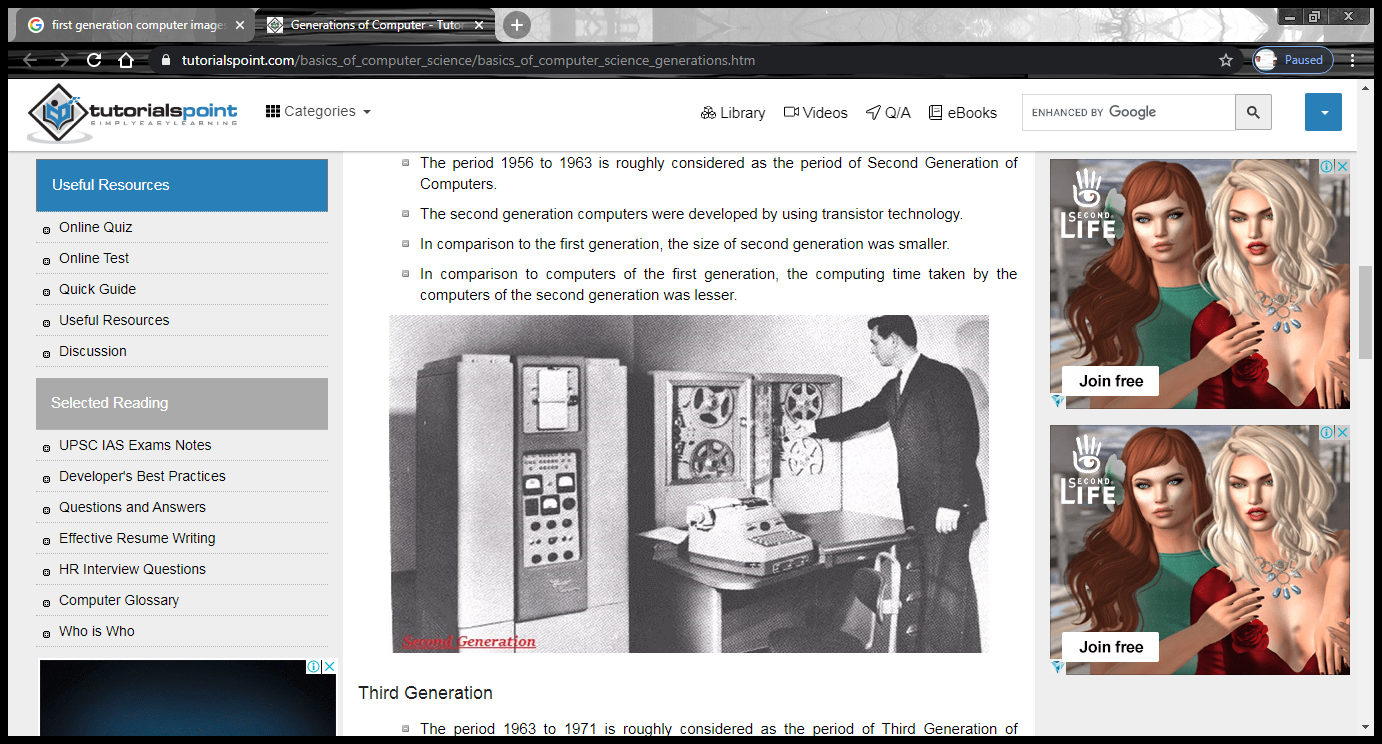
The first computers used vacuum tubes for circuitry and magnetic drums for memory, and were often enormous, taking up entire rooms. They were very expensive to operate and in addition to using a great deal of electricity, generated a lot of heat, which was often the cause of malfunctions. First generation computers relied

on machine language to perform operations, and they could only solve one problem at a time. Input was based on punched cards and paper tape, and output was displayed on printouts. The UNIVAC and ENIAC computers are examples of first-generation computing devices. The UNIVAC was the first commercial computer delivered to a business client. It was used in the 1951U.S. Bureau Census.



**Second Generation** - 1956-1963: Transistors

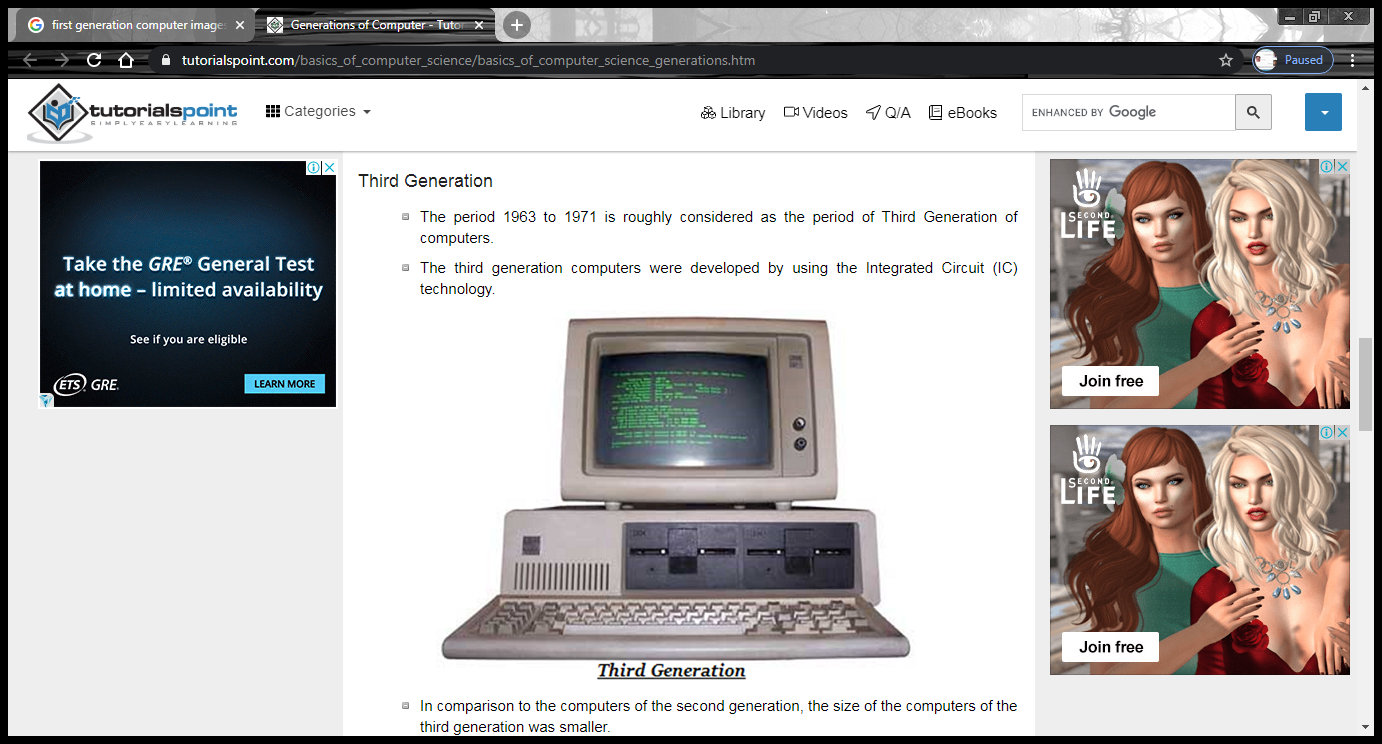
Transistors replaced vacuum tubes and ushered in the second generation of computers. The transistor was invented in 1947 but did not see widespread use in computers until the late 50s. The transistor was a vast improvement over the vacuum tube, allowing computers to become smaller, faster, cheaper, more energy-efficient and more reliable than their first-generation predecessors. Second-generation computers still relied on punched cards for input and printouts for output. Second-generation computers moved from cryptic binary machine language to symbolic, or assembly, languages, which allowed programmers to specify instructions in words. High-level programming languages were also being developed at this time, such as early versions of COBOL and FORTRAN. These were also the first computers that stored their instructions in their memory, which moved from a magnetic drum to magnetic core technology. The first computers of this generation were developed for the atomic energy industry.



**Third Generation** - 1964-1971: Integrated Circuits

The development of the integrated circuit was the hallmark of the third generation of computers. Transistors were miniaturized and placed on silicon chips, called semiconductors, which drastically increased the speed and efficiency of computers. Instead of punched cards and printouts, users interacted with third generation computers through keyboards and monitors and interfaced with an operating system, which allowed

the device to run many different applications at one time with a central program that monitored the memory. Computers for the first time became accessible to a mass audience because they were smaller and cheaper than their predecessors.



**Fourth Generation** - 1971-Present: Microprocessors. The microprocessor brought the fourth generation of computers, as thousands of integrated circuits were built onto a single silicon chip. What in the first generation filled an entire room could now fit in the palm of the hand. In 1981 IBM introduced its first computer for the home user, and in 1984 Apple introduced the

Macintosh. Microprocessors also moved out of the realm of desktop computers and into many areas of life as more and more everyday products began to use microprocessors. As these small computers became more powerful, they could be linked together to form networks, which eventually led to the development of the Internet. Fourth generation computers also saw the development of GUIs, the mouse and handheld devices.



**Fifth Generation** - Present and Beyond: Artificial Intelligence Fifth generation computing devices, based on artificial intelligence, are still in development, though there are some applications, such as voice recognition, that are being used today. The use of parallel processing

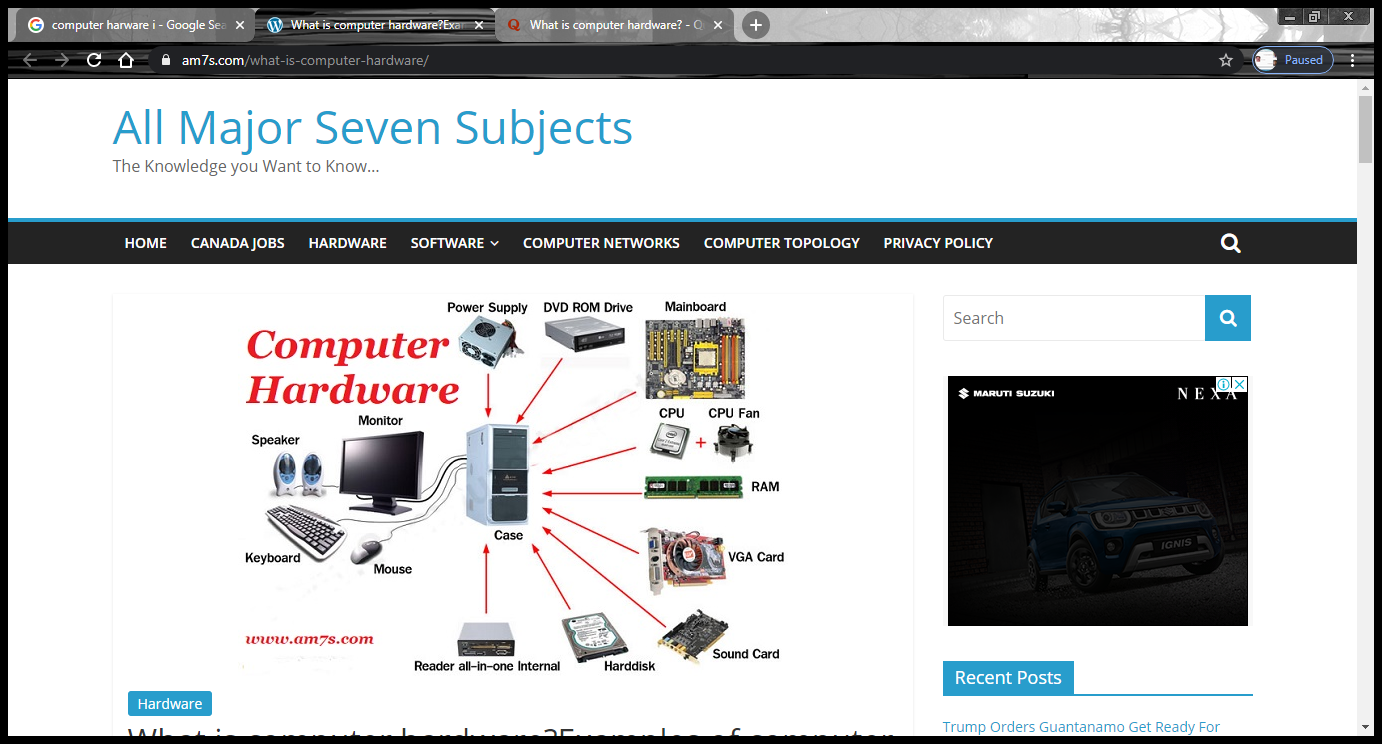
and superconductors is helping to make artificial intelligence a reality. Quantum computation and molecular and nanotechnology will radically change the face of computers in years to come. The goal of fifth-generation computing is to develop devices that respond to natural language input and are capable of learning and self-

organization.



**SOFTWARE AND HARDWARE**

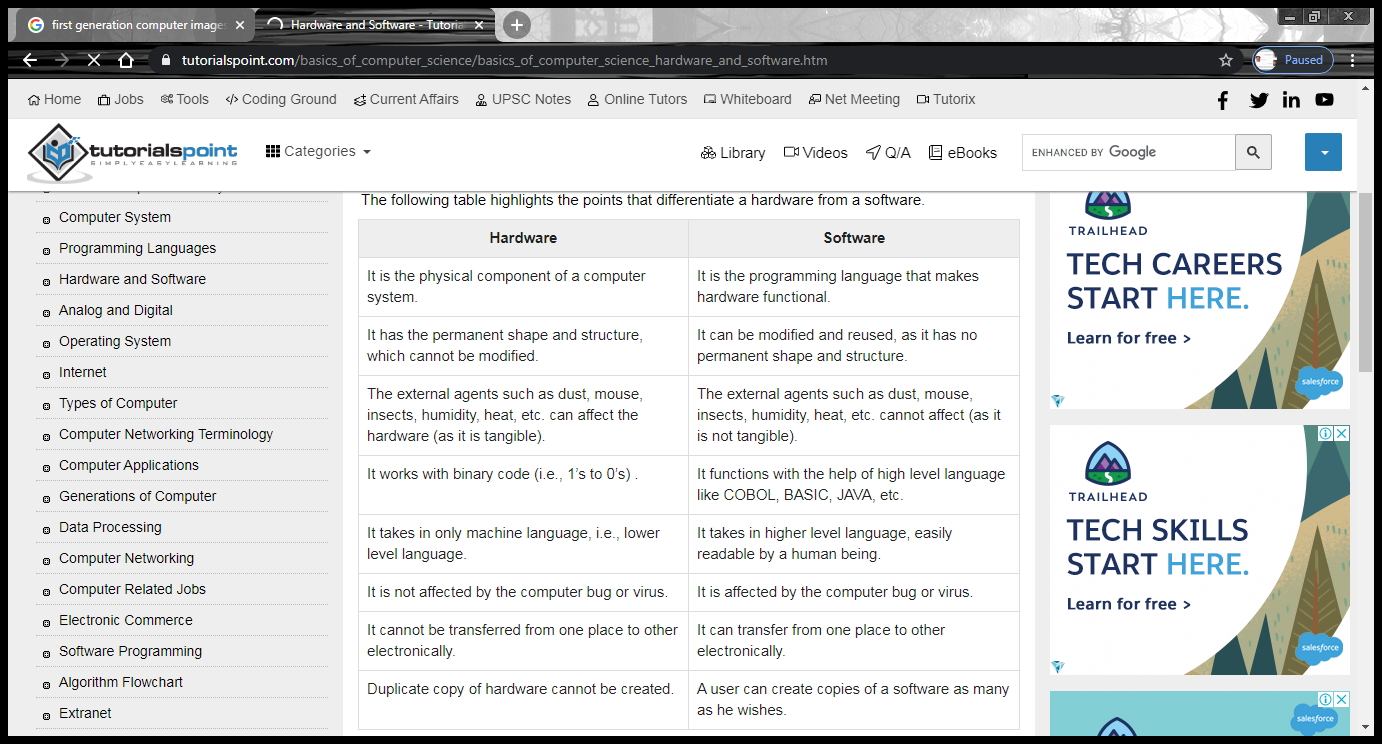
Hardware is the term given to the physical components of a computer: e.g. keyboard, monitor, system box or floppy disk drive. Software, on the other hand, is electronic information: files, operating system, graphics, computer programs are all example of software. The difference between hardware and software reflects the duality between the physical and mental worlds: for example, your brain is hardware, whereas your mind is software.



Software is the stuff that makes your computer do things for you. The computer without software would be like a home entertainment system with no tapes, CD’s, or movies - you have the machine, but there’s nothing to play on it. Software is continually developed. Each time the software maker (Microsoft, Adobe, Corel, etc) develops a new version of their software they assign it a version number. Before Microsoft Word 7, there was Microsoft Word 6.0.1, and before that Word 6.0. The larger the developments made to the software, the larger

the version number changes. Usually a large change will result in a whole number upgrade; a small change may result in a tenth of a decimal place.

Hardware are those components or physical pieces (things you can touch) that make up the computer. The different pieces of the computer’s hardware are monitor, speakers, mouse, CDROM, floppy drive, hard drive, keyboard, CPU, RAM, Processor, etc. Each piece plays a role in the operation of a computer.



**DIFFERENT PARTS OF A COMPUTER AND THEIR USES**

The standard computer consists of a monitor, a keyboard, a mouse and the system unit. One can attach accessories such as printers and scanners by means of ports. Increasingly in the workplace, computers are connected to printers and other computers by means of a network.

1. A central processing unit (ALU and CU)

2. Input unit

3. Output unit

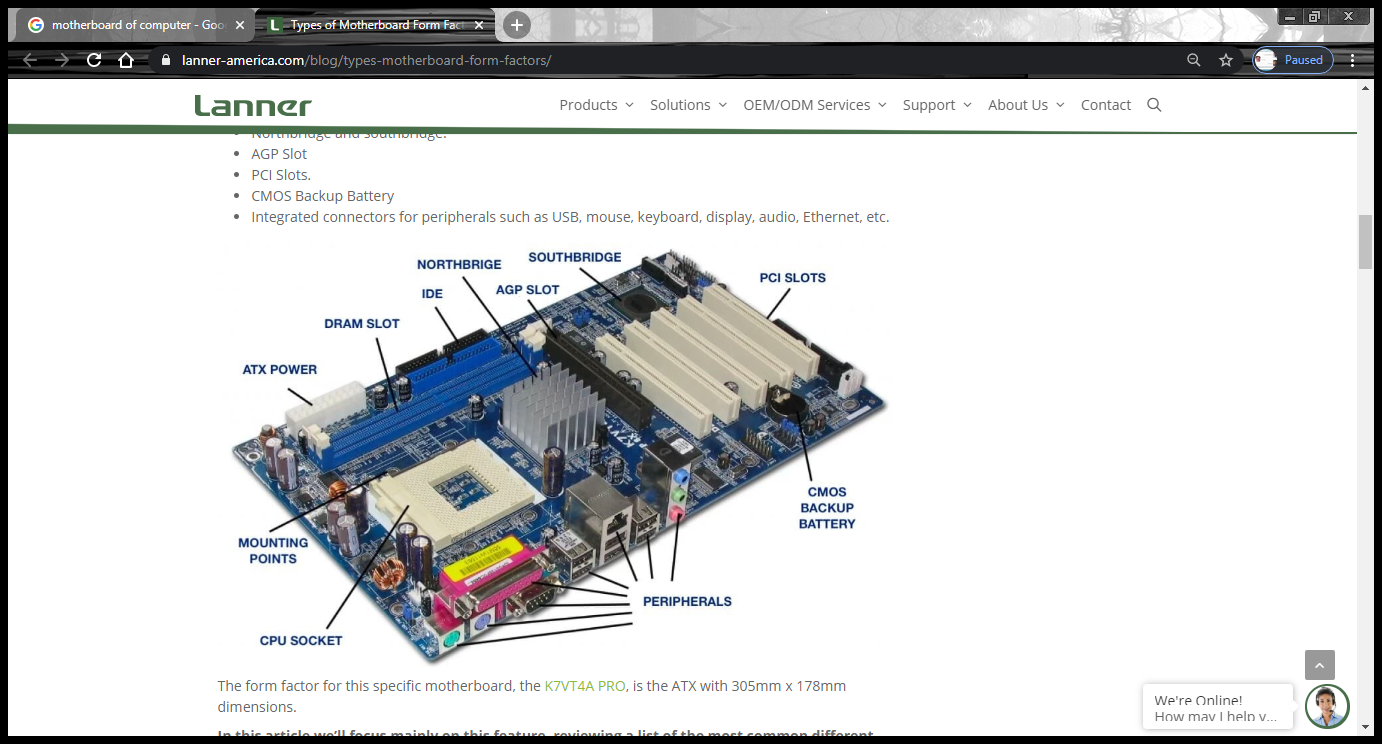
4. Storage unit (Internal and Auxiliary)

5. The communication network; “Bus” that links all the elements of the system, and connects

6. External world. (Cables and Cords)



**MOTHERBOARD**: The motherboard is a printed circuit board that connects other components through the use of traces, or electrical pathways. The motherboard is indispensable to the computer and provides the main computing capability. Personal computers normally have one central processing unit (CPU) on the motherboard.

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**THE CENTRAL PROCESSING UNIT (CPU)**

This is the main brain of the computer that accepts data, performs operations on the data and sends out the result.Information from an input device or from the computer’s memory is communicated via the bus to the Central Processing Unit (CPU), which is the part of the computer that translates commands and runs programs.

It consists of ALU and CU, and a single chip or series of chips that performs arithmetic and logical calculations and controls the operations of the other elements of the system.

Most CPU chips are composed of four functional sections:

**1.ALU:** Calculating ability either arithmetical or logical operations.

**2.Registers:** Temporary storage areas that hold data, keep tracks of instruction, and hold the location and results of these operations.

**3.Control section**: Times and regulates the operation of the entire computer system, by using its instruction decoder to read patterns of data in a designated register and translate the patterns into activities, such as addition or comparison. It also uses its interrupt input to indicate the order in which individual operations uses the CPU and regulates the amount of CPU time allotted to each operation.

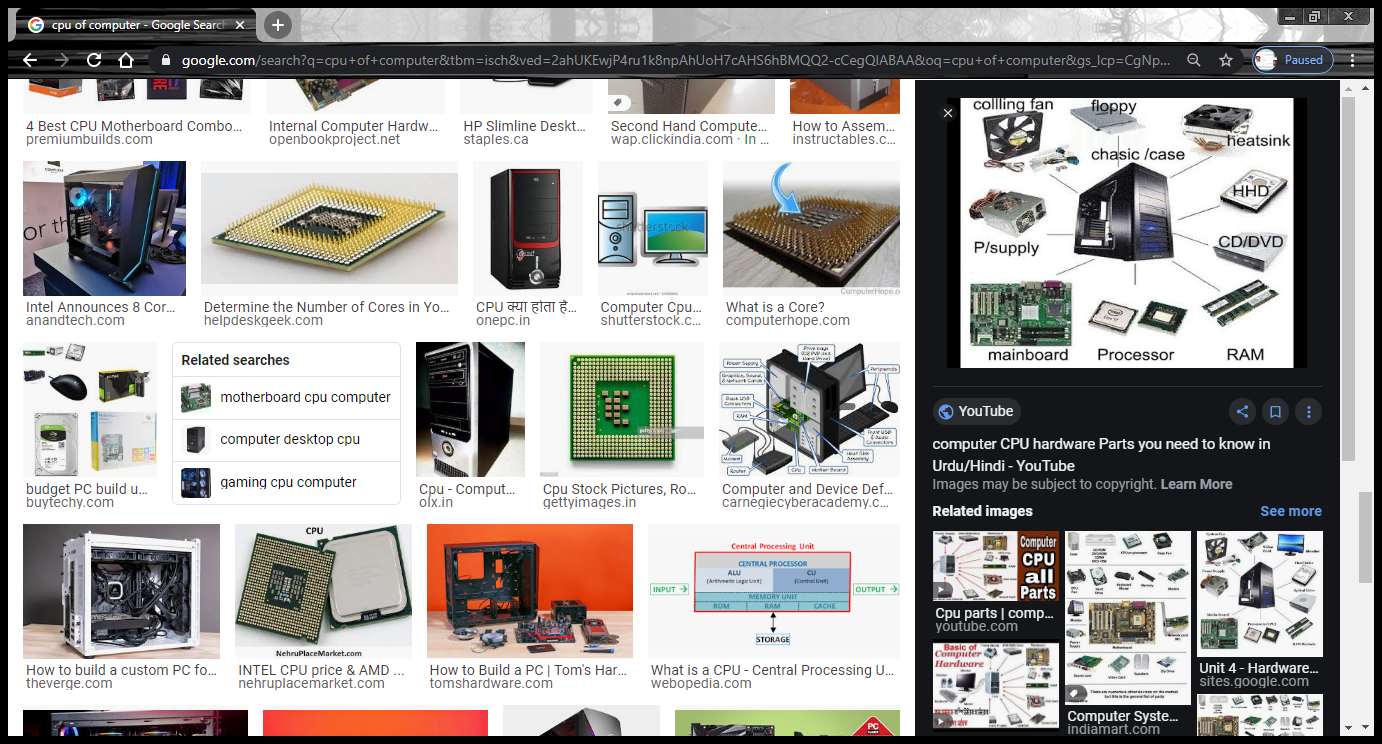
**4.Internal Bus**: Network of communication lines that connects the internal elements of the processor and also leads to external connectors that links the processor to the other element of the computer. The main functions of the microprocessor (CPU clips) includes the following.

a. Control use of the main storage in storing data and instructions (i.e the ROM).

b. Control the sequence of operations.

c. Give commands to all parts of the computer system.

d. Carry out processing.



**INPUT DEVICES**

Input unit consists of external devices—that is, components outside the computer’s CPU. It provides or fetches information and instructions to the computer. These include keyboard, mouse (mechanical/ opto-mechanical/ opticals), light pen, joystick, scanner, microphones (voice recognition modules), Optical Character Reader (OCR), Magnetic Ink Character Reader Recognition (MICR), bar code reader, badge reader, digitizer,

touch screen and optical mark reader (OMR).

**A. Light pen:** This is a stylus with a light sensitive tip that is used to draw directly on a computer’s video screen or to select information on the screen by pressing a clip in the light pen or by pressing the light pen against the surface of the screen. The pen contains light sensors that identify which portion of the screen it is passed over. It is mostly used with Laptop.

**B. Mouse:** This is a pointing device designed to be gripped by one hand. It has a detection device (usually a ball) on the bottom that enables the user to control the motion of an on-screen pointer, or cursor, by moving the mouse on a flat surface. As the device moves across the surface, the cursor moves across the screen. To select items or choose commands on the screen, the user presses a button on the mouse.

**C. Joystick** is a pointing device composed of a lever that moves in multiple directions to navigate a cursor or other graphical object on a computer screen.

**D. Keyboard**: Keyboard is typewriter-like devices that allows the user to type in text, numeric and execute commands with the aid of the functional keys on the keyboard.

**E. Optical Scanner:** This is light-sensing equipment that converts images such as a picture or text into electronic signals that can be manipulated by a computer. For example, a photograph can be scanned into a computer and then included in a text document created on that computer. The two most common scanner types are the flatbed scanner, which is similar to an office photocopier, and the handheld scanner, which is passed manually across the image to be processed.

**F. Microphone:** This is a device for converting sound into signals that can then be stored, manipulated, and played back by the computer. A voice recognition module is a device that converts spoken words into information that the computer can recognize and process.

**G. Modem**: It stands for modulator-demodulator, is a device that connects a computer to a telephone line or cable television network and allows information to be transmitted to or received from another computer. Each computer that sends or receives information must be connected to a modem.

**OUTPUT DEVICES**

Output devices consists of hardware that transfer information from the computer’s CPU to the computer user. This includes the monitor, Printer, plotters, or speaker.

**Video Graphic Adapter:** This is a device that converts information generated by the computer into visual information called Monitor. It looks similar to a television set. Information from the CPU is displayed on the screen of the monitor.

**Printers:** Information and graphics processed or produced with the aid of computer are printed out as hardcopy with the aid of printer. There are different types of printers; Dot-matrix printers, Laser printers, Inkjet, etc.

**Plotters:** Computer output to microfilm or fiche (COM) which process information on rolls of film (drum plotter) or slide of film (flatbed plotter).

**STORAGE DEVICES**

Storage devices provide permanent storage of information and programs for retrieval by the computer. The two main types of storage devices are disk drives and memory. There are several types of disk drives:

hard disk drive, floppy disk, magneto-optical, and compact disk.

**Hard disk drives** store information in magnetic particles embedded in a disk. Usually a permanent part of the computer, hard disk drives can store large amounts of information and retrieve that information very quickly. The disks are of different sizes such as 1G, 10G, 40G, etc.

**Floppy disk** drives also store information in magnetic particles embedded in removable disks. Floppy disks store less information than a hard disk drive and retrieve the information at a much slower rate. It is of 2 type 51/4 floppy disk and 3floppy disk.

**Magneto-optical** disc drives store information on removable discs that are sensitive to both laser light and magnetic fields. They can typically store as much information as hard disks, but they have slightly slower retrieval speeds.

**Compact Disc** Drives store information on pits burned into the surface of a disc of reflective material such as CD-ROM. CD-ROMs can store about as much information as a hard drive but have a slower rate of information retrieval.

**Digital Video Disc** (DVD): This is similar and works like a CD-ROM but can store more than 15times as much information.

Flash drives work as floppy disks but more sensitive as a hard disk that must be ejected logical before final removal from the computer system. It has more memory than floppy disks.

Memory Cards work as flash drive but with an additional device called the card reader. This is very effective and more durable than the flash drives. Some devices serve more than one purpose. For example, floppy disks may also be used as input devices if they contain information to be used and processed by the computer user. In addition, they can be used as output devices if the user wants to store the results of computations on them.

**SYSTEM MEMORY**

Memory refers to the computer chips that store information for quick retrieval by the CPU. They are basically divided into two ROM and RAM.

**Random Access Memory (RAM)** is used to store information and instructions that operate the computer’s programs. Typically, programs are transferred from storage on a disk drive to RAM. RAM is also known as volatile memory because the information within the computer chips is lost when power to the computer is turned off or the computer hanged.

**Read-Only Memory (ROM)** contains critical information and software that must be permanently available for computer operation, such as the operating system that directs the computer’s actions from start up to shut down. ROM is called non-volatile memory because the memory chips do not lose their information when power to the computer is turned off.

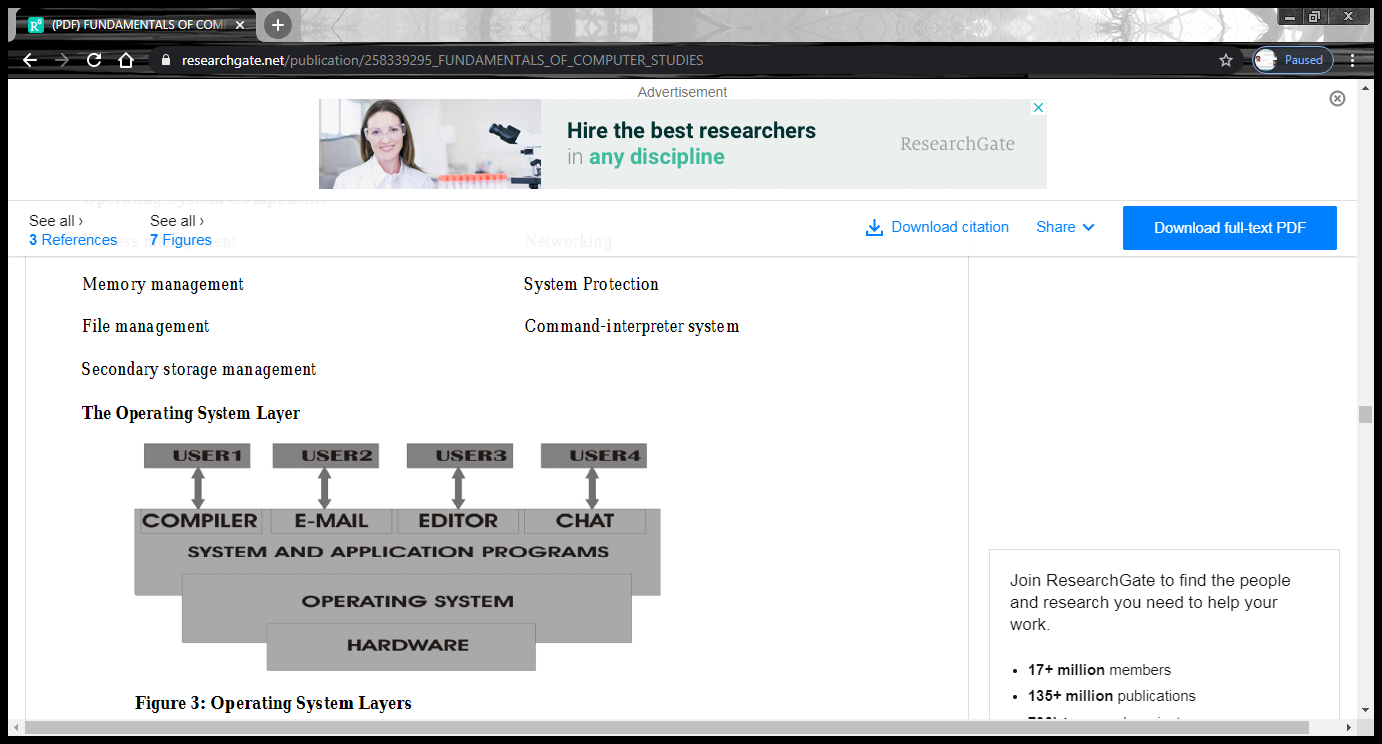
**Operating System**

An operating system is a program that acts as an intermediary between the application programs and the computer hardware.You cannot directly use computer applications (or programs) with computer hardware without a translation system between the hardware and the applications. This translation system is called the operating system (OS). The Windows or Mac OS works “behind-the-scenes” to run your computer (i.e. the software and the hardware). It tells the computer what to do when it starts up and keeps track of your documents, files, and other software. It also provides the standard user interface component (like menus and the desktop) that you see when you look at your computer screen. Both the Windows and the Mac OS operating systems use a graphical interface (pictures or icons instead of text) that allow you to immerse yourself in multitasking (accessing multiple applications and files simultaneously). You work with “windows” in this interface. These windows are a series of boxes, which can be opened and closed as needed. We shall be using Microsoft Windows Operating System as it is the most common on the personal computers. There are various types of Microsoft Windows.

A type of Microsoft Windows is referred to as a version.

Examples of versions are Microsoft Windows 3.3, Microsoft Windows 95, Microsoft Windows NT Workstation, Microsoft Windows NT Server, Microsoft Windows 98, Microsoft Windows 98 Second Edition, Microsoft Windows Millennium, Microsoft Windows 2000 Professional, Microsoft Windows 2000 Server,

Microsoft Windows XP Home Edition, Microsoft Windows XP Professional, and Microsoft Windows Server 2003.



**Components of operating system**

Process management

Memory management

File management

Secondary storage management