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## Computers: Yesterday, today, tomorrow...



Nowadays we are living in a digital age. But if we have a look at the past we can see that not too many years ago, computers were very different.

Computer science is really young but it has changed a lot. Computers have become essential for our lives, and we can't imagine a future without them.

Let's talk about past, present and future of computers!

## Computer History



Javier is looking at his computer and thinking about buying a new one. For a while, he remembered his first computer he bought some years ago, and how he came in the technology world. Then he started to think about the beginning of computers, and started a time travel in his mind.



## Have a look at the history!

## History of computers



To Know more...

[History of the computer hardware \(wikipedia\)](#)

## Popular People



Almost everyone uses computers these days for everything from shopping to working to playing games. But have you ever stopped to think about where all this amazing technology came from? Who invented it all? Well, behind every company, programming language or piece of software, there is a person - or sometimes a team of people - who turned ideas into reality.

## Von Neumann Architecture



The term Von Neumann architecture, and the Von Neumann model, derives from a computer architecture proposal by the mathematician and early computer scientist John von Neumann and others, dated June 30, 1945, entitled First Draft of a Report on the EDVAC.



This describes a design architecture for an electronic digital computer with subdivisions of a processing unit consisting of an arithmetic logic unit and processor registers, a control unit containing an instruction register and program counter, a memory to store both data and instructions, external mass storage, and input and output mechanisms. The meaning of the term has evolved to mean a stored-program computer in which an instruction fetch and a data operation cannot occur at the same time because they share a common bus. This is referred to as the Von Neumann bottleneck and often limits the performance of the system.

The design of a Von Neumann architecture is simpler than the more modern Harvard architecture which is also a stored-program system but has one dedicated address and data buses for memory, and another set of address and data buses for fetching instructions.

A stored-program digital computer is one that keeps its programmed instructions, as well as its data, in read-write, random-access memory (RAM). Stored-program computers were an advancement over the program-controlled computers of the 1940s, such as the Colossus and the ENIAC, which were programmed by setting switches and inserting patch leads to route data and to control signals between various functional units. In the vast majority of modern computers, the same memory is used for both data and program instructions.



True or False

1. Von Neumann architecture is a model based on memory program store.

Verdadero Falso

2. Von Neumann model describes a design architecture for an electronic digital computer with subdivisions of a processing unit consisting of an arithmetic logic unit and processor registers, a control unit containing an instruction register and program counter, external mass storage, and input and output mechanisms

Verdadero Falso

**Bill Gates**



William Henry "Bill" Gates III (born October 28, 1955) is an American business magnate, investor, philanthropist, and author. Gates is the former CEO and current chairman of Microsoft, the software company he founded with Paul Allen. He is consistently ranked among the world's wealthiest people and was the wealthiest overall from 1995 to 2009, excluding 2008, when he was ranked third, in 2011 he was the wealthiest American and the second wealthiest person. During his career at Microsoft, Gates held the positions of CEO and chief software architect, and remains the largest individual shareholder, with 6.4 percent of the common stock. He has also authored or co-authored several books.



Gates is one of the best-known entrepreneurs of the personal computer revolution. Gates has been criticized for his business tactics, which have been considered anti-competitive, an opinion which has in some cases been upheld by the courts. In the later stages of his career, Gates has pursued a number of philanthropic endeavors, donating large amounts of money to various charitable organizations and scientific research programs through the Bill & Melinda Gates Foundation, established in 2000.

Gates stepped down as chief executive officer of Microsoft in January 2000. He remained as chairman and created the position of chief software architect. In June 2006, Gates announced that he would be transitioning from full-time work at Microsoft to part-time work, and full-time work at the Bill & Melinda Gates Foundation. He gradually transferred his duties to Ray Ozzie, chief software architect, and Craig Mundie, chief research and strategy officer. Gates' last full-time day at Microsoft was June 27, 2008. He remains at Microsoft as non-executive chairman.



To know more...

Bill Gates biography

## Steve Jobs



Steven Paul Jobs (February 24, 1955 - October 5, 2011) was an American businessman and inventor widely recognized as a charismatic pioneer of the personal computer



revolution. He was co-founder, chairman, and chief executive officer of Apple Inc. Jobs also co-founded and served as chief executive of Pixar Animation Studios; he became a member of the board of directors of The Walt Disney Company in 2006, following the acquisition of Pixar by Disney.

In the late 1970s, Apple co-founder Steve Wozniak engineered one of the first commercially successful lines of personal computers, the Apple II series. Jobs directed its aesthetic design and marketing along with A.C. "Mike" Markkula, Jr. and others. In the early 1980s, Jobs was among the first to see the commercial potential of Xerox PARC's mouse-driven graphical user interface, which led to the creation of the Apple Lisa (engineered by Ken Rothmuller and John Couch) and, one year later, creation of Apple employee Jef Raskin's Macintosh.

After losing a power struggle with the board of directors in 1985, Jobs left Apple and founded NeXT, a computer platform development company specializing in the higher-education and business markets. NeXT was eventually acquired by Apple in 1996, which brought Jobs back to the company he co-founded, and provided Apple with the NeXTSTEP codebase, from which the Mac OS X was developed." Jobs was named Apple advisor in 1996, interim CEO in 1997, and CEO from 2000 until his resignation. He oversaw the development of the iMac, iTunes, iPod, iPhone, and iPad and the company's Apple Retail Stores. In 1986, he acquired the computer graphics division of Lucasfilm Ltd, which was spun off as Pixar Animation Studios. He was credited in Toy Story (1995) as an executive producer. He

remained CEO and majority shareholder at 50.1 percent until its acquisition by The Walt Disney Company in 2006, making Jobs Disney's largest individual shareholder at seven percent and a member of Disney's Board of Directors.

In 2003, Jobs was diagnosed with a pancreas neuroendocrine tumor. Though it was initially treated, he reported a hormone imbalance, underwent a liver transplant in 2009, and appeared progressively thinner as his health declined. On medical leave for most of 2011, Jobs resigned as Apple CEO in August that year and was elected Chairman of the Board. He died of respiratory arrest related to his metastatic tumor on October 5, 2011. He continues to receive honors and public recognition for his influence in the technology and music industries.



To know more ...

Steve Jobs short biography

## Today, we are living in the digital Age



Javier has realized that we are living in the digital age, cause computers have become an essential part of our lives. Young people have grown up with PCs and mobile phones, so they are called the digital generation. What Do We Use Computers For?

- Word Processing - Word Processing software automatically corrects spelling and grammar mistakes. If the content of a document repeats, you don't have to type it each time. You can use the copy and paste features. You can print documents and make several copies. It is easier to read a word-processed document than a handwritten one. You can add images to your document.

■ Internet - It is a network of almost all the computers in the world. You can browse through much more information than you could do in a library. That is because computers can store enormous amounts of information. You also have very fast and convenient access to information. Through E-Mail, you can communicate with a person sitting thousands of miles away in a few seconds. Chat software enables one to chat with another on a real-time basis. Video conferencing tools are becoming readily available to the common man.

■ Digital video or audio composition - Audio or video composition and editing have been made much easier by computers. It no longer costs thousands of dollars of equipment to compose music or make a film. Graphics engineers can use computers to generate short or full-length films or even to create 3D models. Anybody owning a computer can now enter the field of media production. Special effects in science-fiction and action movies are created using computers.

■ Desktop publishing - With desktop publishing, you can create page layouts for entire books on your personal computer.

■ Computers in Medicine - You can diagnose diseases. You can learn the cures. Software is used in magnetic resonance imaging to examine the internal organs of the human body. Software is used for performing surgery. Computers are used to store patient data.

■ Mathematical Calculations - Thanks to computers, which have computing speeds of over a million calculations per second we can perform the biggest of mathematical calculations.

■ Banks - All financial transactions are done by computer software. They provide security, speed and convenience.

■ Travel - One can book air tickets or railway tickets and make hotel reservations online.

■ Telecommunications - Software is widely used here. Also all mobile phones have software embedded in them.

■ Defense - There is software embedded in almost every weapon. Software is used for controlling the flight and targeting in ballistic missiles. Software is used to control access to atomic bombs.

■ E-Learning - Instead of a book it is easier to learn from an E-learning software.

■ Gambling - You can gamble online instead of going to a casino.

■ Examinations - You can give online exams and get instant results. You can check your examination results online.



- Business - Shops and supermarkets use software, which calculate the bills. Taxes can be calculated and paid online. Accounting is done using computers. One can predict future trends of business using artificial intelligence software. Software is used in major stock markets. One can do trading online. There are fully automated factories running on software.
- Certificates - Different types of certificates can be generated. It is very easy to create and change layouts.
- ATM machines - The computer software authenticates the user and dispenses cash.
- Marriage - There are matrimonial sites through which one can search for a suitable groom or bride.
- News - There are many websites through which you can read the latest or old news.
- Classmates - There are many students websites through which you can regain contact with your classmates.
- Robotics - Robots are controlled by software.
- Electronic gadgets run with the help of computers. There are various software which are used to increase the efficiency of these devices. Timers, self-controlled switches - these ensure that the machines ask for minimum human effort.
- Planning and Scheduling - Software can be used to store contact information, generating plans, scheduling appointments and deadlines.
- Plagiarism - Software can examine content for plagiarism.
- Greeting Cards - You can send and receive greetings pertaining to different occasions.
- Sports - Software is used for making umpiring decisions. There is simulation software using which a sportsperson can practice his skills. Computers are also to identify flaws in technique.
- Airplanes - Pilots train on software, which simulates flying.
- Weather analysis - Supercomputers are used to analyze and predict weather.

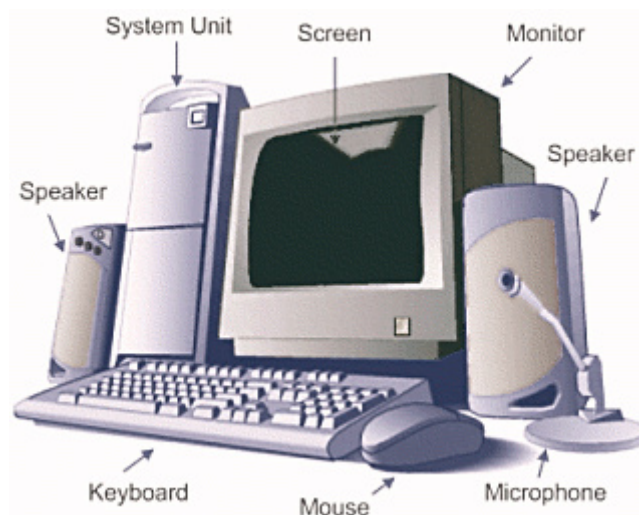
## What's a computer?





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. An important class of computer operations on some computing platforms is the accepting of input from human operators and the output of results formatted for human consumption. The interface between the computer and the human operator is known as the user interface.

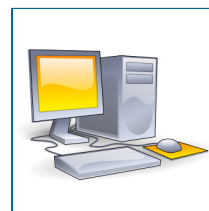
Conventionally a computer consists of some form of memory, at least one element that carries out arithmetic and logic operations, and a sequencing and control unit that can change the order of operations based on the information that is stored. Peripheral devices allow information to be entered from an external source, and allow the results of operations to be sent out.



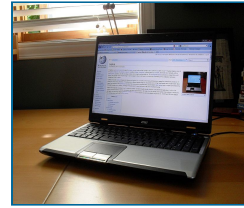
## Types of computer



A **desktop computer** is a personal computer (PC) in a form intended for regular use at a single location, as opposed to a mobile laptop or portable computer. Early desktop computers are designed to lay flat on the desk, while modern towers stand upright. Most modern desktop computers have separate screens and keyboards.



A **laptop** is a personal computer for mobile use. A laptop integrates most of the typical components of a desktop computer, including a display, a keyboard, a pointing device (a touchpad, also known as a trackpad or pointing stick) and speakers into a single unit. A laptop is powered by mains electricity via an AC adapter, and can be used away from an outlet using a rechargeable battery.



Portable computers, originally monochrome CRT-based and developed into the modern laptops, were originally considered to be a small niche market, mostly for specialized field applications such as the military, accountants and sales representatives. As portable computers became smaller, lighter, cheaper, more powerful and as screens became larger and of better quality, laptops became very widely used for all sorts of purposes, by all sorts of people.

A **tablet computer**, or a **tablet**, is a mobile computer, larger than a mobile phone or personal digital assistant, integrated into a flat touch screen and primarily operated by touching the screen rather than using a physical keyboard. It often uses an onscreen virtual keyboard, a passive stylus pen, or a digital pen.



The term may also apply to a variety of form factors that differ in position of the screen with respect to a keyboard. The standard form is called slate, which does not have an integrated keyboard but may be connected to one with a wireless link or a USB port. Convertible notebook computers have an integrated keyboard that can be hidden by a swivel joint or slide joint, exposing only the screen for touch operation. Hybrids have a detachable keyboard so that the touch screen can be used as a stand-alone tablet. Booklets include two touch screens, and can be used as a notebook by displaying a virtual keyboard in one of them.



Your company is considering replacing all PCs with laptops. Write an email to your boss explaining the benefits for the employers and the company.

## Have a look inside!



### Motherboard

The motherboard is probably the most important part of the computer. Now you ask what the motherboard actually is. The motherboard connects all of the hardware together and makes everything work. It allows interaction with other parts like the video card, sound card, and other parts. The motherboard is mostly made of integrated circuits and sometimes coprocessors. The coprocessors are like the main processor, but they take load off the main processor. It also speeds up things greatly. The motherboard also contains ROM, which contains software like the BIOS (Basic in/Basic out). This software allows the other hardware to work together. It also provides settings, like power settings so hardware won't get overloaded.

Today we have many different companies that make good quality motherboards. When buying a motherboard, be sure to look at the specifications so you know what are you are buying. It is also a good idea to get a motherboard that can be upgraded, so you don't need to keep buying motherboards every year.

### Processor

The processor is the brain of the computer. It also is know as the CPU or central processing unit. Processors are silicon chips that perform mathematical equations and coordinate all the hardware in the computer. It is one of the most important parts of any PC. There are two main processor used in our country. They are Intel and AMD. These two kinds of processors are the most used in PC's today.

Intel has been making processors for most of the computer age, which you can see in our timeline. They make high-performance processors such as the Pentium 4. AMD also has high-performance processors, but they are sold considerably cheaper so people can afford them.

In PCs, the CPU isn't the only processor. There are also coprocessors on the video card, sound, and many other parts of your

computer. These coprocessors take stress off the main processor and make things a lot faster. Taking burden of the main processor makes the processor last longer and will save you a lot of time and hassle.

## Memory

All data is either stored permanently on ROM (Read Only Memory) or temporally on RAM (Random Access Memory). RAM and ROM are primary storage. Many people mistaken a hard drive as primary, but RAM and ROM are primary. ROM is used to store permanent programs used to boot up the computer and detect hardware. One kind of program stored on ROM is the BIOS (Basic In/Basic Out).

RAM stores programs that are running on your computer. RAM is not permanent, it is temporally meaning when power is turned off everything is wiped out. Programs are taken from the hard drive and stored on RAM to make everything faster. When users work on a something like a report, if they don't save it will stay in the RAM. When the computer is turned off, RAM is wiped out and so is the report. So it's a good idea to save your work to a floppy disk or the hard drive.

## Storage

Storage devices are such things as hard drives, CD-Burners, floppy drives, DVD Burners, zip drives, and tape. All these devices store data in different ways.

Hard drives use magnetic drives that store permanent data. They are in mostly every PC you buy today. They hold such things as the operating system, programs, and your files. Hard drives are secondary devices. RAM is a primary storage device. Hard drives must be formatted before use. An operating system that controls hard drives is DOS (Disk Operating System).

CD-Burners and DVD Burners use lights to read and write to plastic discs. This is less clumsy than magnetic drives. The use of CD has become popular because they can hold a good amount of data. Up to 650MB to be exact. DVD-Burns can hold up to 17GB of data. Though the DVD (digital video disk)-Burners are expensive, they're used primarily to put movies on.

Floppy and Zip drives are work the same way hard drives do. They are magnetic drives. Every PC today must have at least a 3 ½ floppy drive. This device is needed for aide in the installation of operating systems and drives.

Tape drives are primarily used to backup information. This good for making copies of your work in case your hard drive fails. Tape drives are very slow and sometimes expensive to.



### Fill in the gaps

Read the paragraph below and fill in the missing words.

The connects all of the hardware together and makes everything work.

The is the brain of the computer. It also is known as the or central processing unit.

All data is either stored permanently on

RAM is not , it is temporally meaning when power is turned off everything is wiped out.

There are also on the video card, sound, and many other parts of your computer

Tape drives are primarily used to information

Hard drives use drives that store permanent data

-Burners and Burners use lights to read and write to plastic discs

## Computers in the future

<https://www.youtube.com/embed/y87n7xBAOik?feature=related>

## Computer Trends



## Computer Trends.

1. Computers will become powerful extensions of human beings designed to augment intelligence, learning, communications, and productivity.
2. Computers will become intuitive---they will "learn," "recognize," and "know" what we want, who we are, and even what we desire.
3. Computer chips will be everywhere, and they will become invisible-embedded in everything from brains and hearts, to clothes and toys.
4. Computers will manage essential global systems, such as transportation and food production, better than humans will.
5. Online computer resources will enable us to download applications on-demand via wireless access anywhere and anytime.
6. will become voice-activated, networked, video-enabled, and connected together over the Net, linked with each other and humans.
7. Computers will have digital senses-speech, sight, smell, hearing-enabling them to communicate with humans and other machines.
8. Neural networks and other forms of artificial intelligence will make computers both as smart as humans, and smarter for certain jobs.
9. Human and computer evolution will converge. Synthetic intelligence will greatly enhance the next generations of humans.
10. As computers surpass humans in intelligence, a new digital species and a new culture will evolve that is parallel to ours.

In last 40 years computers have changed a lot. They have become essential for our lives, and they are smaller, faster and cheaper than many years ago.

How do you think computers will be in 2050?

You have to imagine a computer in 2050. Describe its appearance (height, weight, peripherals, uses...)

## Nanotechnology



Nanotechnology (sometimes shortened to "nanotech") is the study of manipulating matter on an atomic and molecular scale. Generally, nanotechnology deals with developing materials, devices, or other structures possessing at least one dimension sized from 1 to 100 nanometres. Quantum mechanical effects are important at this quantum-realm scale.

Nanotechnology is very diverse, ranging from extensions of conventional device physics to completely new approaches based upon molecular self-assembly, from developing new materials with dimensions on the nanoscale to investigating

whether we can directly control matter on the atomic scale. Nanotechnology entails the application of fields of science as diverse as surface science, organic chemistry, molecular biology, semiconductor physics, microfabrication, etc.

There is much debate on the future implications of nanotechnology. Nanotechnology may be able to create many new materials and devices with a vast range of applications, such as in medicine, electronics, biomaterials and energy production. On the other hand, nanotechnology raises many of the same issues as any new technology, including concerns about the toxicity and environmental impact of nanomaterials, and their potential effects on global economics, as well as speculation about various doomsday scenarios. These concerns have led to a debate among advocacy groups and governments on whether special regulation of nanotechnology is warranted.

## Imagine!



Imagine how computers will be in our life in 50 years  
Write a 250 words essay , about computer science in 50 years.