At the end of this chapter you will be able to:

1. Know the origin of computers.
2. Know each component included in a PC.
3. Discover similarities and differences between different PCs in order to choose the most adequate one according to your needs and the school’s.

THE PC

In this chapter you will find:

- How did the computers appear?
- Which components are necessary for making them work?
- Which kinds of PCs currently exist?
- Which similitudes and differences exist between the different kinds of PCs of the market?
- How can you choose a PC according to your needs?
INTRODUCTION TO THE CHAPTER

Nowadays it’s common to find electronic devices in every environment: cash registers in supermarkets, ATMs through which we can withdraw money and perform other bank operations, medical studies with even more complex equipment, school homework done in the PC and entertainment with videogames consoles... these are a few examples of the presence of technology in different life environments.

However, this massive presence of electronic devices takes place during only 60 years approximately – a short time if we consider the history’s global development!-, during which the digital systems that use the **binary code** appear.

It’s incredible, isn’t it? These technological elements that are so integrated to our daily tasks did not exist a few years ago. In this chapter you will be able to dig into this history and will learn what the PC features are today, and adapt them to your needs according to this knowledge.
CONCEPTUAL MAP
OF THE CHAPTER

Current PCs

- For what purpose have they been designed? For what purpose are they currently used? Features of the current PCs

Components of external hardware:
- CPU/ cabinet
- Monitor
- Mouse
- Keyboard
- Printer

Components of internal hardware:
- motherboard, RAM memory, hard drive, CD or DVD, network and sound cards, power supply, etc.

W7 Operating System (introducing programs and their purposes)

Difference between HW and SW

Components of external and internal HW

PC categories, Server (Windows Server) and PC concept, Usage for schools

Components of internal hardware:

- CPU/ cabinet
- Monitor
- Mouse
- Keyboard
- Printer

CONCEPTUAL MAP OF THE CHAPTER

8. Explore these educational guides for small scientists
The origin of PCs is not so ancient: it took place only 60 years ago approximately. At the beginning they were used to do complex calculations and specific tasks. They were very expensive and they could only be found at universities and governmental entities. They were different to the ones we know today, because they took too much physical space and could only perform some specific functions.

Historically, the computer started to be called "PC" (Personal Computer), referring to a medium-sized computer that was going to be used by only one user.

Their screens were black & white, or yellow, they stored little information because they had very limited memory space and they were extremely slow. Anyway, these first computers meant a great advance for that time and promised many possibilities of use in different areas in the future. Nowadays, PCs have turned in a daily use tool, there are even more possibilities to have access to them. In the market we can find computers that meet users’ economic and professional needs.

Did you know…?

…that in 1623, Wilhelm Schickard built the first mechanical digital calculator, thus turning into the father of the computing era?

1944

Will it be the only device that turns smaller when it grows?

2010
PC COMPONENTS

Hardware & Software

Before introducing the different PC elements, we must take into account the basic classification of two types of components:

Hardware
The tangible part that includes physical components is: the cabinet, the processor, the memory, the disks and the monitor.

Software
The programs (or software) installed in the PC, which include the Operating System and several applications that are installed for its operation.

Operating System
The operating system organizes the internal operation of every program installed in the PC, regulating the behavior of the PC’s physical and logical resources.
Hardware Components

When using the PC, several devices are connected to it, whether internally or externally.

**INTERNAL DEVICES**
- MICROPROCESSOR
- MOTHERBOARD
- HARD DRIVE
- RAM MEMORY

**OTHER COMPONENTS** (VIDEO, SOUND OR NETWORK CARDS)

In chapter 5 you will be able to know the hardware components of a PC in order to learn how to offer technical support in that matter.
Peripherals:
Those units that deal with input and output of data that is processed in the PC. According to their functions, peripherals can be classified into different groups:
• Input Units: those devices that capture information and enable data input into the PC in order to be processed.
• Output Units: devices that deal with the output of processed information.
INTERNAL AND EXTERNAL PORTS

Internal Ports are essential when using the PC because they do not allow to add and/or change cards or memories. We can identify the AGP port that is used for video, PCI port and PCI-Express, which enable the connection of video and other devices, and DIMM port, which is related to memories, etc.

External Ports are easier to recognize because, through them, we usually connect devices such as: mouses, keyboards, digital cameras, pendrives, mobile phones and other common-use components. Among the most popular ones, we can identify the USB port (Universal Serial Bus) that, as it uses energy, can perform other functions such as charging batteries or mobiles phones.
How do I choose a PC?

When buying a PC, certain elements must be considered to find the computer that better meets your needs.

01 How will you use the PC?
If you are a home user, you’ll have less requirements than if you need to work with lots of image or sound files. For instance, a graphic designer or a person that works in a company’s system area will need to work with a lot of information at the same time, so he/she will need more PC requirements.

Nowadays, most PCs have hardware and software so that the common user can use them to work, for entertainment, research or daily simple tasks, such as buying through Internet or simply writing a text.

Tip!
The following questions must be taken into account when deciding which PC is the most convenient for you.

01 How will you use it?
02 Who will use it?
03 Which tasks will you be performing in it?
04 Where will you use it?
05 Which is your budget in order to buy it?
Different current models

Desktops include CPU, a monitor and peripherals such as keyboard, mouse and speakers. These PCs need to be connected to the electrical network and they are used to perform tasks at offices, homes, schools or any other place where they can be installed.

Also, we have the "laptops", such as notebooks and netbooks, which are also called mini-notebooks. These PCs are lightweight and their size does not exceed a work folder. Their advantages include their portability, their composition as a unique piece, their operation with batteries, their wireless access to Internet and their USB ports that allow to connect other devices.

Netbooks are the smallest current option. Unlike conventional notebooks, their weight is even lighter, their screen is smaller, they do not have CD or DVD drive and they generally include integrated 3G modems in order to explore the Internet from anywhere.

Servers are mega computers: they’re prepared to host a great amount of data and provide services to other devices.

Did you know…?
...that there are more than one billion computers worldwide?

An essential feature of this kind of devices is that they are assembled with redundancy in some of its components.

Redundancy
Redundancy means that these computers are dual-powered, for instance, so if one of them fails, a hot replacement (hot swap) can be done, ie, without the need to interrupt its use or temporarily suspend the service they offer.
Software Components

Programs are the logical resources that enable us to interact with the computer. The PC’s most important program is definitely the Operating System. It is the "director" in charge of controlling physical and logical resources, prioritizing those that are needed at the right moment. But besides the operating system, we can find different kinds of applications:

office applications, games, utilities and those that turn the PC into a daily-use tool, whatever our profession is or the work we perform.

There are different Windows editions that you need to install according to the use or operation of each PC:

In the following chapter you will learn more about the operating system and you will find a guide to successfully install Windows 7, the Microsoft’s most recent software.

Challenge yourself!

How many words associated to this chapter can you generate with the following letters? Write them down!

I O H I E A D R E X T
V S W P U O T R A M H
O I P F E S C K B N U
If you’re working with a desktop or a laptop (notebook or netbook), you must use a client operating system, such as Windows 7. Due to its features, services and requirements, Windows 7 will seamlessly work with the different types of the above-mentioned computers.

However, if you’re using a server, you need to install an operating system according to that function, such as Windows Server 2008 R2. Unlike the client operating system, we need to highlight that this kind of system focuses on providing a service to other netbook users, such as a website, email and space to host files.

Green Tip

Do you imagine what a green PC is? A green PC is a computer that is built with environmental materials and has certain features that help protect the environment. These specifications include low power consumption and components that generate less heat, thus reducing carbon emissions to the atmosphere. Besides, for these "green PCs" to be environmentally-friendly, they should be packaged with recyclable materials and also must be integrated into hardware reuse programs once their lifecycle ends for a user.

Multiple companies develop products that are even more energy-efficient and more environmentally friendly. This growing market of green computing products is based on the idea that these PCs protect the planet and, consequently, what is good for the planet is good for us. In this way, manufacturers make daily efforts to support the advance of green technologies.

Now that you know all this, choose green components for your PC as much as you can. Thus, you’ll be helping protect the environment.
Let's laugh at ourselves!

The power of knowledge...

How powerful the school PC is...
How much have you learned in this chapter?
Do the following exercises to review the subjects

A. Classify the following components by matching the words

- **INPUT PERIPHERALS**
  - MONITOR
  - MICROPHONE
  - SPEAKERS
  - JOYSTICK
  - WEB CAMERA
  - KEYBOARD

- **OUTPUT PERIPHERALS**

B. Define the following terms with your own words

**COMPUTER**

___________________________________________________________________________________________________________________________________________________

**DESKTOP**

___________________________________________________________________________________________________________________________________________________

**CLIENT OPERATING SYSTEM**

___________________________________________________________________________________________________________________________________________________

C. Complete the phrase with the missing terms

*Students use ________ PCs at the computing lab. Being end users, teams use a _________ system of _________ . The school’s helpdesk has installed Microsoft’s most recent operating system in every PC, ie., _________. Besides, they have installed in PCs different applications such as _________ and _________.*

D. Read the quick reference card and show how you have learned the indicated subjects. Which haven’t you achieved yet?

___________________________________________________________________________________________________________________________________________________

___________________________________________________________________________________________________________________________________________________

Chapter 2: The PC
Self-assessment
Show your PC knowledge.

1. In which decade of the 20th century was the first computer created?
   a. 1930
   b. 1940
   c. 1960

2. What is the binary code?
   a. A code computers use, in which numbers are represented by using only zero and one.
   b. A web programming language.
   c. A communication system between the PC and the end user.

3. What is hardware?
   a. Programs and applications installed in the PC.
   b. The operating system.
   c. The tangible part that includes PC’s physical components.

4. What is software?
   a. The operating system.
   b. The office applications and games.
   c. All the above options are correct.

5. The microprocessor is:
   a. An external device.
   b. An internal device.
   c. All the above options are incorrect.

6. How can the PC’s peripherals be classified?
   a. Internal and external.
   b. Input and output.
   c. Core and secondary.

7. Which of the following are types of ports?
   a. PCI and PCI-Express.
   b. AGP.
   c. DIMM.

8. Which of the following are "portable" PCs?
   a. Notebook.
   b. Desktop.
   c. Netbook.

9. What is the name of one of the most popular external ports that uses energy and allows to charge batteries and mobile phones?
   a. PCI-Express.
   b. USB.
   c. Serial.

10. If I have to work with a lot of information at the same time, I need less PC requirements.
    a. True.
    b. False.
    c. Indistinct.