

## Unit 3: Computer Science



**Autor: Guillermo Gómez**



## Contents

Prior knowledge.....	2
Keywords.....	2
Mindmap of the unit .....	2
3.1. The computer.....	3
3.1.1. Introduction .....	3
3.1.2. Hardware .....	3
3.1.3. Software.....	4
3.1.4. Working with files and folders .....	4
3.2. Word processor.....	7
3.3. Presentation .....	8
3.4. Internet.....	9

**Prior knowledge**

**Activity:** Summarize your general knowledge on this topic.

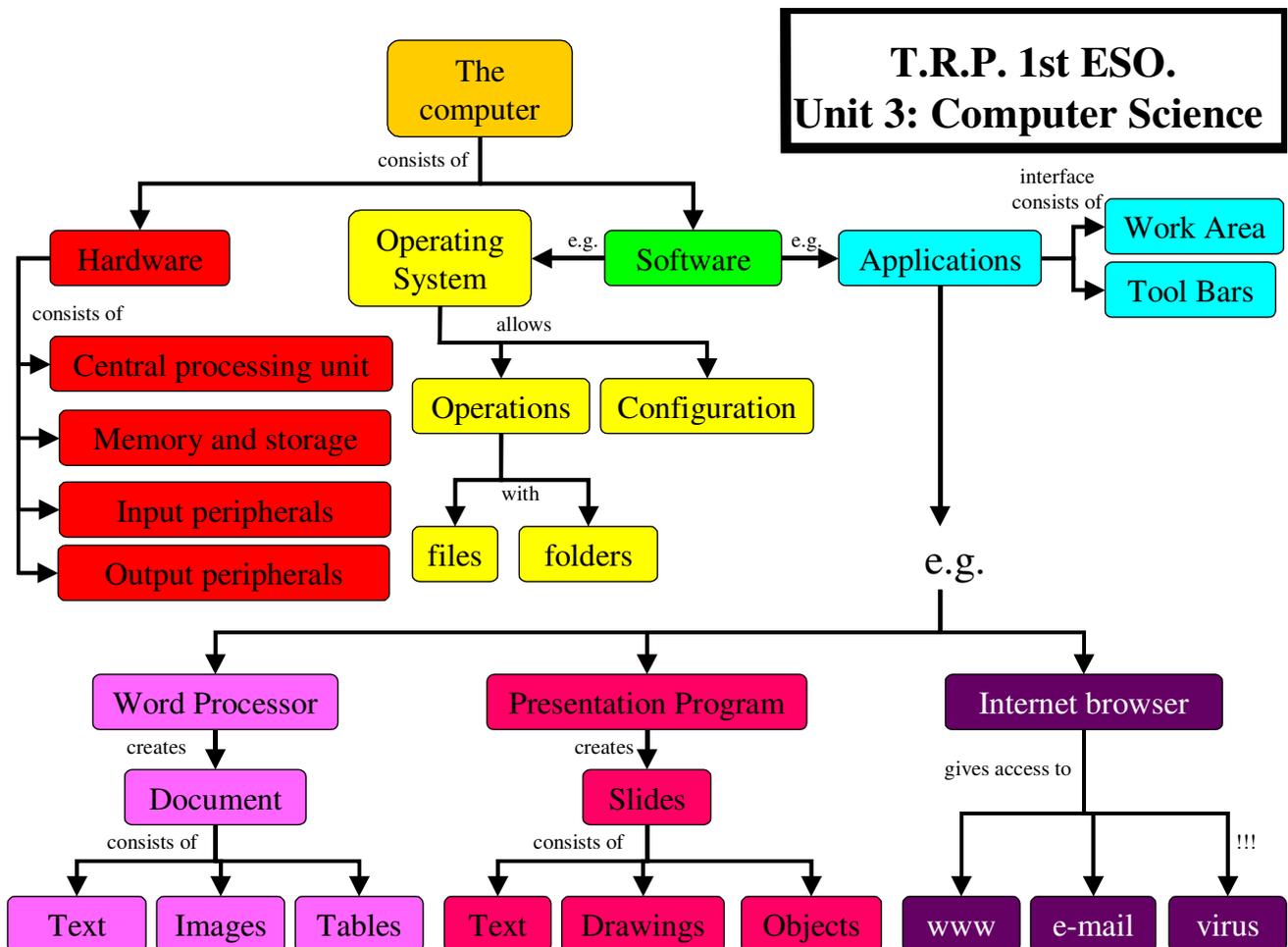
**Keywords**

**Activity:** Copy following keywords, explaining their meaning and translate them into Spanish.

- |                      |           |           |
|----------------------|-----------|-----------|
| Device               | Image     | Border    |
| Code                 | Animation | form      |
| Wiring               | Research  | log on    |
| Keyboard             | manage    | Frames    |
| enable               | Slide     | link      |
| erase,delete, remove | improve   | Extension |
| Button               | Interface | update    |
| drag                 | Browser   | Key word  |
| LCD                  | search    |           |
| CRT                  | Wizard    |           |

**Mindmap of the unit**

**Activity:** Analyze and try to understand following mindmap



## 3.1. The computer

### 3.1.1. Introduction

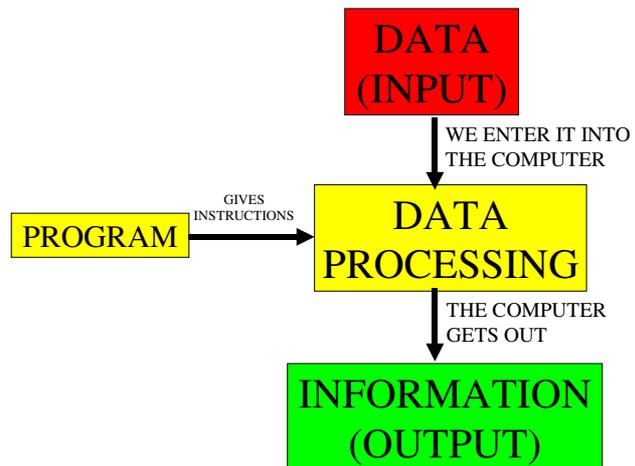
#### Definition:

Computer science is the science that studies the development of machines and methods in order to process information automatically (**Informática = información + automática**).

Computer process the data we enter (INPUT). The processed data are then sent out automatically by the computer as information (OUTPUT).

Computers have two elements:

- ✓ HARDWARE (machinery)
- ✓ SOFTWARE (programs)



### 3.1.2. Hardware

The hardware is the physical components of the computer: CPU, memory, storage devices and peripherals.

#### Central Processing Unit (CPU)

The CPU is the main component in a computer, its 'brain'. It contains the electronic components that process data and instructions.

#### Memory

Stores the DATA and INSTRUCTIONS.

There are two types of memory:

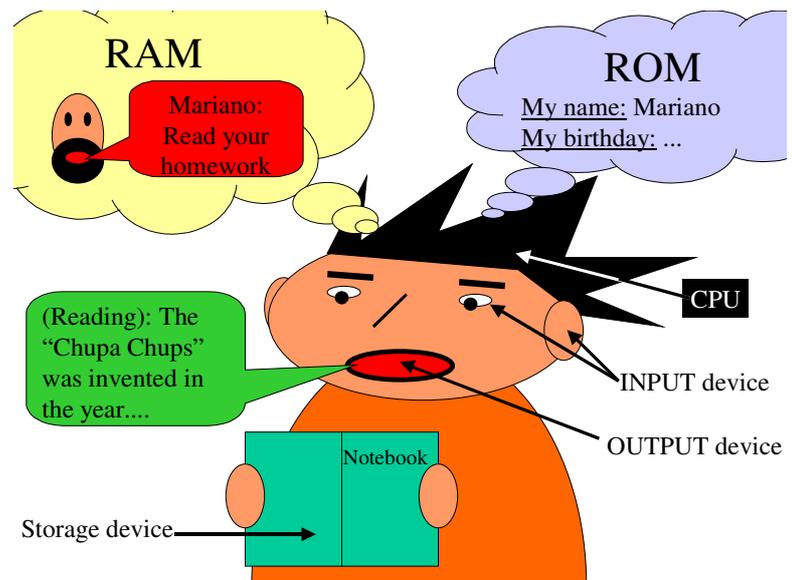
- ✓ ROM (Read Only Memory): Enables the computer to start. It is not erased.
- ✓ RAM (Random Access Memory): Stores only temporarily until we turn off the computer.

#### Storage Devices

Store INFORMATION indefinitely until erased.

There are several types of storage devices:

- ✓ Magnetic: Hard drives (disco duro) and portable hard drives (disco duro externo).
- ✓ Optical: CD-ROMs, DVDs, Blu-ray Discs (BD).
- ✓ With transistors: USB memories (thumbdrive or pendrive), flash memory cards.



### Peripherals

Allow the CPU to receive INPUT and send OUTPUT. They are connected to ports.

- ✓ INPUT devices: Keyboard, mouse, scanner, web camera, touch screen, joystick,.. etc.
- ✓ OUTPUT devices: Monitor (LCD or CRT), printer, speakers, ...etc.
- ✓ INPUT / OUTPUT devices: Modem, PDA, mobile phones, smartphones, digital cameras,...etc.

### 3.1.3. Software

SOFTWARE are the programs. SOFTWARE instructs the HARDWARE perform specific operations. They are classified as operating systems and applications.

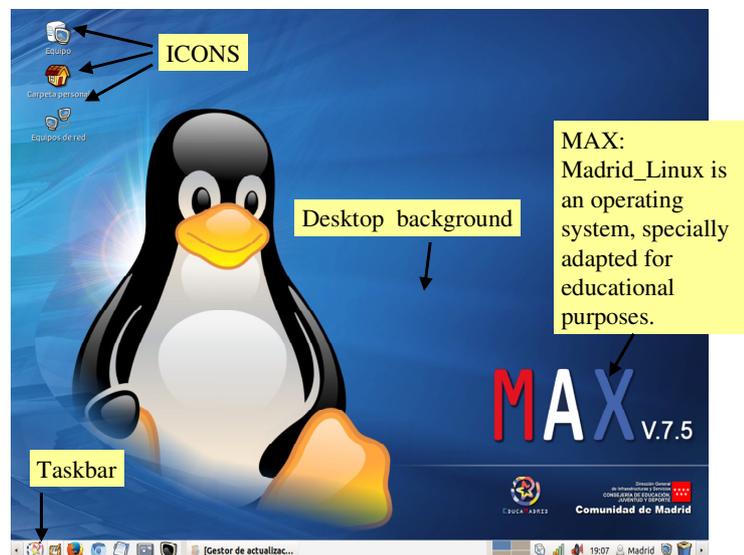
#### Operating systems (OS)

The most popular are Windows (Microsoft), Linux (**free**) and Mac OS (Macintosh).

The OS has the instructions for basic functions (start the system, configure it, manage and organize data, maintenance tasks...etc). The OS also allows applications to function.

It allows you to see a screen called the desktop (escritorio), where you will find:

- ✓ the Desktop background
- ✓ the Taskbar (in Linux you open 'panels', in Windows 'windows')
- ✓ the Icons for applications folders or files



#### Applications

°Word processors, spreadsheets (hoja de cálculo), presentations, databases (bases de datos), graphics and multimedia programs.

### 3.1.4. Working with files and folders

The DATA is stored as files. Files are identified by a file name followed by a dot and an extension. The extension indicates the type of file:

- ✓ Program files: contain programs that allow you to work with data files (extension: exe,com).
- ✓ Data files: contains texts, numbers or graphics.

miproyecto.odt  
 { File name } { extension }  
 (Open Office Writer)

miproyecto.doc  
 { File name } { extension }  
 (Microsoft Office Writer)

Type of file	Extension
Program file	exe, com
Text document	txt or text
Graphic file	bmp, gif, jpg
Pdf document	pdf
Web page	Htm, html

Type of file	Extension	
	Open Office (free)	Microsoft Office (pay)
Word processor	Writer → <b>odt</b>	Word → doc, docx
Presentation	Impress → <b>odf</b>	Power Point → ppt, pptx
Spreadsheet	Calc → <b>ods</b>	Excel → xls, xlsx

Files are organised in folders. Folders can also contain other folders. To see all the files or folders stored on the drives **click on 'Equipo'**.

Operations with files and folders:

Orders are transmitted to the computer through the pointer that appears on the screen and is controlled by the mouse, which usually has two buttons and a scroll wheel.

*Activity: Practice with 'Max' and/or 'Windows' in your computer room with the operations described below.*

Operation	Sequence of INPUT	Practice
Opening a file or folder	<u>Double click</u> on it.	1. Open 'Documentos' situated in 'Equipo/Carpeta personal'
Creating a new folder	<u>Right clickt</u> on the background of the panel/window → <u>click</u> on 'new (file)' → write the folder's name → press [Enter]	2. create in 'Carpeta personal' a new folder with the course's name (e.g. '2015/16'), 3. create inside this last folder a new one with the group's name (e.g. '1 <sup>st</sup> ESO F') 4. create inside this last folder a new one with your names (e.g. 'Marina & Jorge') 5. create inside this last folder 11 new ones with the names 'folder 1' 'folder 2' ..... 'folder 11'
Deleting a file or folder	A) Drag the object to the waste basket B) <u>Right click</u> on the file or folder → <u>click</u> on 'delete' → press [Enter]	6. delete 'folder 1' by dragging to the waste basket and 'folder 11' by right clicking. (the remaining nine folders are 'folder 2' to 'folder 10')
Selecting files or folders	A) <b>Only one:</b> <u>Click</u> on it. B) <b>Multiple and consecutive:</b> Press down on <u>SHIFT</u> key and <u>click</u> on the first and last item. C) <b>Multiple and non consecutive:</b> Press down on <u>Ctrl</u> key and <u>click</u> on each item.	7. select consecutive folders 'folder 2' to 'folder 5' and delete them (the remaining five folders are 'folder 6' to 'folder 10') 8. select non consecutive folders with even numbers 'folder 6', 'folder 8' and 'folder 10'
Copying / moving files or folders	A) <u>Select</u> them → <u>right click</u> on the selection → <u>click</u> on 'copy' / 'move' → open the desired destination → <u>right click</u> on the background of the window → <u>click</u> on 'paste'. B) Drag it to the desired destination (it moves it).	9. move the previous selection to 'folder 9' 10. erase 'folder 9' with its content 11. rename the remaining 'folder 7' with the name '2 <sup>nd</sup> term'
Searching for files or folders	<u>Click</u> on Search → write the name of the file or folder → press [Search]	12. Exit and enter 'Equipo' Search your folder (e.g. 'Marina & Jorge'). (It should content the folder '2 <sup>nd</sup> term').

Activities: Copy following exercises and solve them in your notebook

1) Match the order to each sentence and to each word

Save photo in 'Imágenes'	output	1
Print the photo	input	2
Copy the photo from the digital camera	process	3

2) Name 3 different ways to achieve OUTPUT.

--	--	--

3) What is a computer drive and what types are there?

4) Fill in these sentences:

\_\_\_\_\_ memory permanently stores information

\_\_\_\_\_ memory temporarily stores programs or data that are being used

5) Match each device with its corresponding definition:

Monitor	Device that connects computers to the Internet through telephone lines
Web camera	Small computer with a touch screen
Barcode reader	Computer screen
PDA	Device that displays the image of a person who is talking on an Internet connection
MODEM	Device to read the label of a product in a supermarket

6) Draw and label these objects: digital camera, smartphone, touch screen, web camera, scanner.

7) What are these words in Spanish? File, folder, desktop, icon, spreadsheet, software.

8) Could a computer work without an operating system? Why / why not?

9) Sort the following words according to the table below: playing DVDs, creating presentations, printing information, processing graphics, recording information on a disc, using spreadsheets, producing videos, displaying characters on a screen, word processing.

Applications	Multimedia	Operating systems

10) Explain what hardware and software is on a computer.

### 3.2. Word processor

Word processor programs enable us to write and format texts.

The interface consists of the writing area and bars. You may also find tabs (fichas).

*Activity: In your notebook, draw the interface of a word processor program and label the writing area, bars and rulers.*

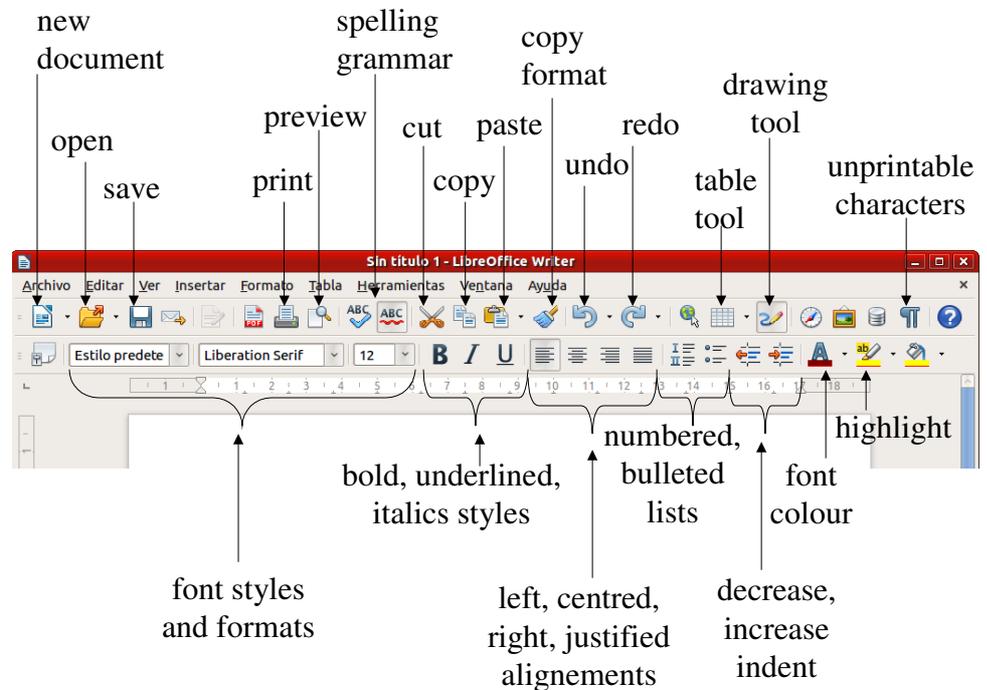
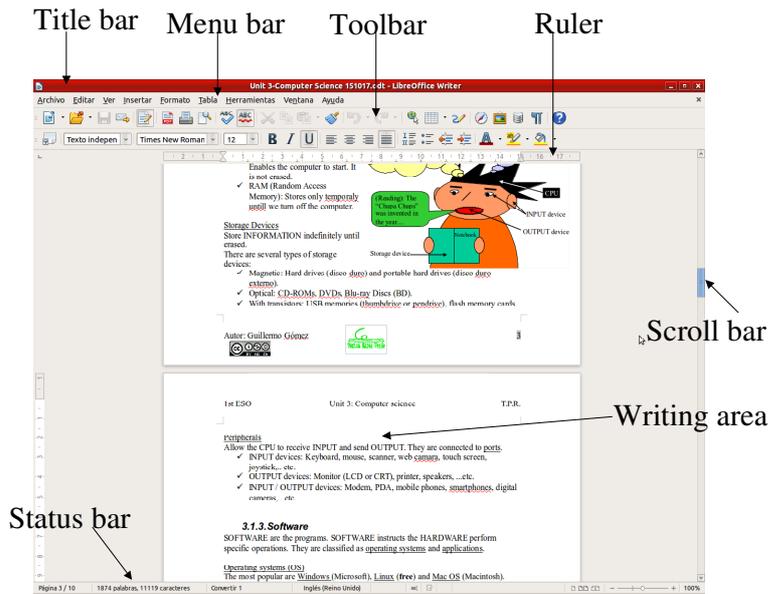
On the toolbar you find buttons for different tasks.

*Activity: In your notebook, draw the icons of the different button, indicating their function.*

#### Editing the text

Editing the text consists of changing its characteristics:

- 1<sup>st</sup>: Move through the text, using the mouse or the keyboard.
- 2<sup>nd</sup>: Select the text by highlighting with the mouse or several clicking.
- 3<sup>rd</sup>: Change the characteristics by clicking on the specific button.



Moving with the keyboard		
Type of keys	Keys	Moves the cursor to the ...
Direction keys	←, →	previous, next <b>letter</b> ;
	↓, ↑	previous, next <b>line</b>
Edition keys	inicio, fin	beginning, end of the <b>line</b>
	repág, avpág	one ' <b>window</b> ', up or down
Ctrl key + direction keys	←, →	beginning ( <b>end</b> ) of the <b>word</b>
	↓, ↑	beginning ( <b>end</b> ) of the <b>paragraph</b>
Ctrl key + edition keys	inicio, fin	beginning, end of the <b>document</b>
	repág, avpág	(beginning of previous or next <b>page</b> ; in MS Word)

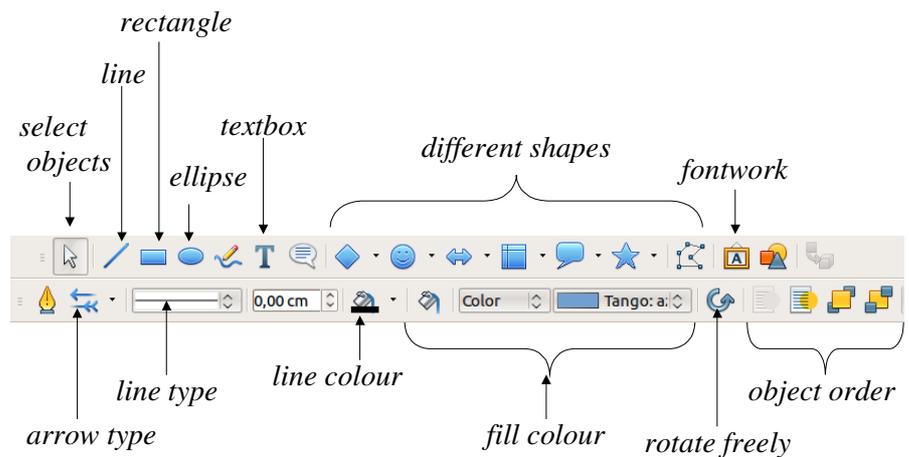
Selecting with clicking			
Number of clicks	Writer (Open Office)	Word (Microsoft Office)	
	On the text	On the text	Left of the text
simple	-	-	a line
double	a word	a word	a paragraph
triple	a sentence	a paragraph	the document
fourfold	a paragraph	-	-

Activity: Copy and edit your final report; don't forget to save it.

**Graphics**

There is a toolbar for drawing.

Activity: . In your notebook, draw the icons of the different buttons, indicating their respective function



Activity: Use the drawing tools to include a sketch of your project in the design section of your final report.

**Tables**

The tables consist of cells (celdas), arranged in rows (filas) and columns (columnas). In these cells we can introduce written information and even pictures.

Activity: Use the tables tools to include the cost estimate of your project in the planning section of your final report.

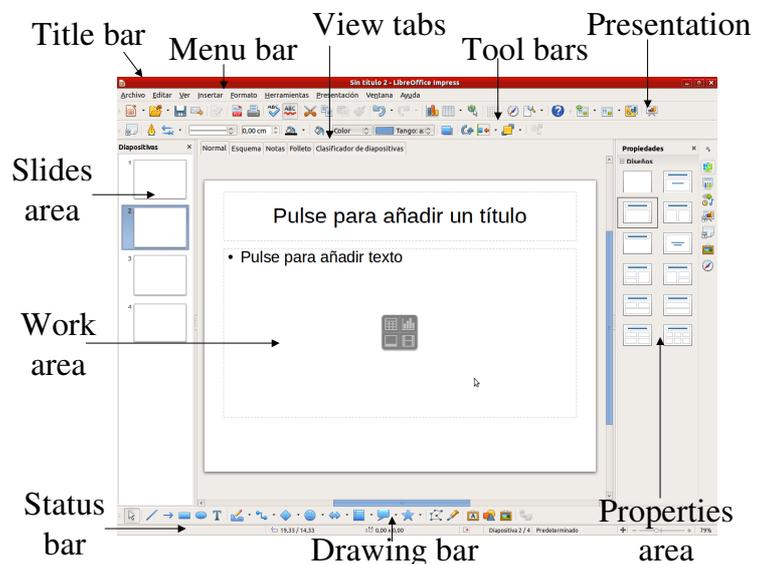
**3.3. Presentation**

A presentation is a set of slides.

Impress is Open Office program (free) and Power Point is Microsoft program for creating presentations.

The interface consists of a work area and bars.

The most important views are: Normal, slide sorter and presentation.



Creating a presentation

1. Start from a blank slide or from a template.
2. Include text, objects, drawings...etc.
3. Animate the different objects
4. Once you finish a slide, add a new slide
5. Once you finish all the slides, establish the correct order in the slide sorter view
6. Choose the transitions between slides
7. Check the whole presentation with the presentation view button

*Activity: Create a presentation of the different tools used in the workshop..*

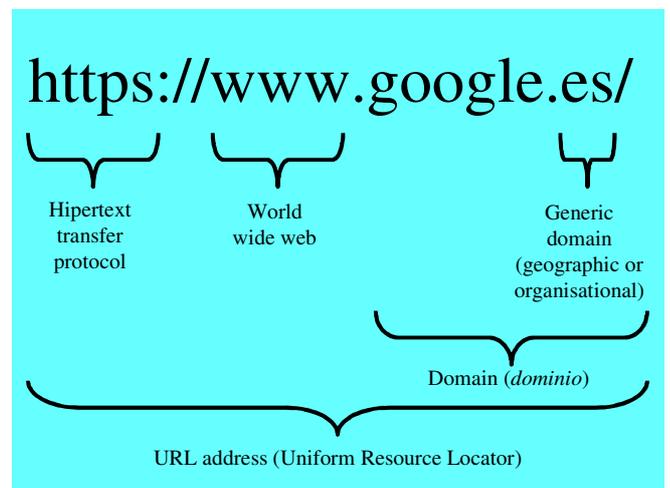
**3.4. Internet**

A network (*red*) is two or more computers connected to one another that can share documents, files, printers, etc.

The internet is a huge network of networks, interconnected worldwide.

On the internet you can access the World Wide Web (= enormous collection of websites).

A browser (*navegador*) (i.e. Internet Explorer, Mozilla Firefox, Google Chrome,...) is a program that finds and opens the web sites or web pages. The **URL address** of a web site indicates its exact location.



A search engine (*buscador*) (i.e. Google, Yahoo, Ixquick, ...) is a web page resource that enables us to find contents of web pages according to key words.

Internet services include:

- ✓ Web sites or web pages
- ✓ Search engines
- ✓ Electronic mail or email
- ✓ Virtual community and social networks
- ✓ Chats
- ✓ Videoconferences

