UNILAB NETWORK

Handout

ECDL
Full Standard

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MODULE 1: COMPUTER ESSENTIALS

ICT= Information and communication Technology
It comprises the study of methods to store, elaborate, share information through computer sciences

HARDWARE = includes the physical part of the ICT device
e.g. keyboard, screen, mouse
Computers can be either desktop PC, laptop, tablet, phablet
Other mobile devices are smartphone, media players, digital cameras

COMPONENTS:

- PROCESSOR (CPU = Central processing unit); executes the calculations and the operations required and also controls all the internal processes and the peripheral devices.
  It is made up by
  - ALU (Arithmetic and Logic Unit): accomplishes all logical and mathematical operations
  - CU (Control Unit): coordinates processes
  - CACHE MEMORY: super-quick temporary memory in which the ALU saves data
  - PROCESSOR REGISTER: it is the component in which addresses, instructions and values are stored
  - BUS: it allows communication between the external and internal parts of the computer

The power of the device is defined in terms of velocity of the processor
Such velocity is calculated on the base of an internal CLOCK in the computer that emits signals regularly
The clock's frequency measured in Hertz (Hz) corresponds to the number of operations that the processor brings about in 1 second.
At the moment, devices can run up to 3GHz, that is 3 billion cycles per second

- RAM MEMORY (central memory): it is the quick access memory, "random access" and volatile That means, when data are no longer necessary, or when the computer is shut down or when blackouts occur, data are deleted
  It does not have mechanical parts – all components have the same access velocity. This allows to maximise efficiency
  Current capacity: 2-4 -8 -16 GB (Pc)
  1-2 GB (Smartphone)

- MASS STORAGE = type of memory in which data and programs are permanently stored (until the user does not delete them or supports are damaged). Several types exist. These include: HARD DISK, PEN DRIVE/USB, MEMORY CARD, CD, DVD

- PERIPHERALS = devices connected to the computer that allow the user to interact with it
  They allow to insert data (input) obtaining a result (output)
  Can be both integrated or external. That makes the classification quite shallow, as integrated devices can often be multifunctional.
  INPUT: keyboard, mouse, touchpad, scanner, webcam, microphone, trackball, touchscreen
  OUTPUT: screen/monitor (either LCD = liquid-crystal display or CRT = cathode-ray tube), printer, speakers, docking station (used to cool down the PC or increase the number of doors), touchscreen

MEMORY = support through which the computer stores data
2 types of memory are present

- CENTRAL, which is divided in
  - ROM (Read Only Memory = the part of the PC in which it is stored the component of the OS that is necessary when starting the computer)
  - RAM (Random Access Memory = memory of the computer where data that can be useful in a specific moment are used
- MASS STORAGE = supports on which files and programs can be saved permanently

RAM and Mass storage memory have an impact on the device's performance: the greater the RAM, the greater the velocity. The access to data in the mass storage memory depends on the type of support. These can come in two forms:

HDD = Hard disk drive. It has mechanical components and a low velocity of access
SSD = Solid state disk. It is made by a chip of flash memory such as RAM. However it doesn't automatically deletes when the electricity is cut off. It has a high access velocity

PORTS are both of input and output. E.g. ports on desktop PC are parallel, serial (rather slow, substituted by the USB), PS/2 (used for keyboard and mouse), USB, video, network
The most common are:

- USB (Universal serial bus): it allows for a rapid transfer if data (600 Mb per second). 3 types are available – standard, mini, macro
- HDMI (High definition multimedia interface): transfer of audio and video in HD through DVD players/ blue-ray, decoders, tv in HD, computers

SOFTWARE

= untouchable part of the computer. It is the set of procedures and instructions that allows the device to work and perform specific actions. It is a set of several programs:

- OPERATING SYSTEM (OS) = it is vital for the functioning of the device and its hardware components. It is usually installed locally on the device,
  It controls the basic operations as well as all resources
  It is loaded on the RAM when the computer starts
  It is made up by a central part, known as the KERNEL (for basic activities) and several other programs: FILE SYSTEM (interacts with mass storage devices), VIRTUAL MEMORY MANAGER (manages the spaces in the RAM memory), PERIPHERALS MANAGER, SPOOLER (used to direct printing processes), SCHEDULER (multitasking), SHELL (user interface)
  User interacts with the OS through an interface. In modern computers it is a GUI = Graphical User Interface
  Main operating systems:
  - ⇨ Computer: WINDOWS, macOS, LINUX, UNIX
  - ⇨ Mobile devices: WINDOWS PHONE, iOS, ANDROID, SYMBIAN, BLACKBERRYOS
- APPLICATIONS (Used to pursue the actions the user choices. Can be available both online and locally.)
  e.g. word processor, spreadsheets, presentations, database
  browser (internet explorer, Google Chrome, Mozilla Firefox, Apple Safari, Opera)
  mail, communication (telephony, instant messaging)
  multimedia (iTunes, Quick Time, Windows Media Player)
  Social networks, videogames, antivirus, specific applications

EULA = end-used license agreement
License contract is viewed on the screen when an application is installed. That includes use limitations, warranties, responsibility
TYPES OF LICENSE

- PROPRIETARY LICENSE: users buy it to use the software. It excludes all rights for the user. Examples are TRIAL VERSION, SHAREWARE LICENSE (Spotify), FREEWARE APPLICATIONS (free)
- OPEN SOURCE SOFTWARE: the software can be used and edited as it is completely accessible. Modified/improved versions can be redistributed freely

STARTING – desktop: icons, directories, files, windows explorer, network, trash
Drag and drop mode is available (left click)
If the screen is not integrated it is necessary to turn on the monitor
During the computer starting, the OS is loaded in the memory (BOOT PHASE)
User account is selected

DESKTOP

Icons: can choose order, dimensions, order automatically, align functions

TASKBAR

- Windows button / Start Menu
- Active applications
- ENG button (to change the keyboard settings)
- Bar of messages

RESOURCE LINK: right click in any part of the desktop. Select the function. Specify the file's position.
If the link is deleted the resource is not deleted as well
Follow the path: right click – delete/CANC button – move into the Trash folder

WINDOWS
TITLE BAR (in the upper part): application name and file name
MENU BAR (in the upper part, below the title): a series of menus available (e.g. file, edit, layout, view)
STATE BAR (in the bottom): e.g. in Notes and Words it shows the number of words, lines
FLIP BAR (can be both vertical and horizontal)
APPLICATIONS BAR (can only be found in Office applications): set of buttons
Windows can be downsized as desired

Online guide can be accessed anytime: START – Guide

CONTROL PANEL

- SYSTEM: hardware and software characteristics of the PC (can be accessed from icon COMPUTER, right click, properties)
- AUDIO
- SCREEN
- TIME AND DATE (or click on the desktop's clock)
- KEYBOARDS AND LANGUAGE
- PROGRAMS and functions – accessed to de-install an application

TASK MANAGER – when an app doesn't work properly access this – right click on the application bar

Connect and disconnect USB

- File explorer – computer. See what devices are connected
- Notification bar – secure removal

SCREENSHOT of the active window

- SNIPPING TOOL (Windows application): follow the path Start – program list – accessories
- COMBINATION: STAMP (all the background is selected) or ALT+STAMP (active window)

It is possible to paste the image or can be saved on the device

TXT EXTENSION – opened with NotePad

Copy: CTRL+C
Paste: CTRL+V

Print: Start Menu – Printers and devices. In Windows you already have pre-set printers. Can install the driver.
De-install a printer: right click
Manage the PRINT SPOOLER: select the printer, view the prints in wait, suspend, resume, cancel

FILE MANAGER

Windows expolorer application (application bar/start menu/all programs – accessories/computer applications)
Can distinguish one disk from another through the capital letter followed by a column
STARRED/FAVOURITES: section along with desktop, download, local files, libraries
Can show icons viewing all details
Right button – Properties (More information on the file) – READ ONLY mode applied: file cannot be modified
It is possible to rename files or create a new directory

File manager – NAME button – can order the list in ascending fashion (alphabetical, type, dimensions, last edited)

Select more contiguous files: select a file, MAIUSC, browse down
Select several non-contiguous files: select a file, CTRL, select another file
DRAG AND DROP mode (if you move one file on another disk, it is copied)
Cancel a file: right click – Delete/CANC

Data are developed as sequences of BIT (binary digits 0,1)
8 BIT make up a BYTE
Byte is the unit of measurement of the file's dimension and the memory capacity. A byte can be combined in 256 (from 2 to 8 digits) different symbols and digits. Can have Kilo, mega, giga, tera, petabytes.

Support devices (different storage capacity, access velocity, transportability):

- HARD DISK/Fixed disk/Rigid internal disk: dimensions of Terabyte order. Non transportable, optimal access velocity (especially if SSD)
- INTRANET: terabyte, non-transportable, access velocity linked to connection type. It is the hard disk of the server
- EXTERNAL HARD DISK (both mechanical or SSD): terabyte dimensions, transportable, good access velocity (especially if SSD) if connected through an USB 2.0, optimal if connected through a USB 3.0. Big dimension. Doesn't request a player
- PEN DRIVE: 128 Gb, portable, good (USB 2.0) or optimal (USB 3.0) access velocity
- DISKS: transportable, can be used through a plateyer
    - CD (compact disc) / CD-ROM: 650 or 700 Mb, sufficient access velocity. Can be re-written only if it is RW type
    - DVD (digital versatile disc)
    - BLU-RAY DISC (BD)
- MEMORY CARD: about 128 GB, transportable, can be used through a player, optimal access velocity. Magnetically based technology
- ONLINE STORAGE UNIT: storage such as cloud computing (allows to access several resources), decentralised, safe, easy to access

Verify the memory capacity of a support device to see how much space is left:
Windows explorer – computer – click on the support with the right click – properties

COMPRESS/ZIP one or more file: cluck with the right click – send to – compressed archive file (Windows 7 algorithm). If more files are compressed it is then necessary to rename the folder (there are several applications to compress)
EXTRACT FILES: Extract all files – OR – right click, extract all – then select the folder from which files are extracted
Extract a UNIQUE file from the compressed archive file: drag and drop the file on the desktop. A copy of the file is created

COMPUTER NETWORK = communication system between one or more electronic devices with the aim of:
- Share hardware/software resources or connectivity
- Access common data saved in a single place (avoid duplicates)

Risks: data safety, malware
Reduce the risks: only authorized users can access (USERNAME, PASSWORD)

NETWORK CLASSIFICATION

1) Connectivity type between devices and peripherals
   - WIRED connection based on cable, copper, optical fibre
   - WIRELESS connection: based on radio waves (WIFI, Bluetooth)

2) Based on hierarchical structure (i.e. the relationship between devices)
   - CLIENT-SERVER: powerful computer (server) that makes its resources available to other devices (client)
   - PEER TO PEER (PtP): network in which each computer can be either server or client, offering and using shared resources

3) Extension based (territorial, geographical)
   - WIRED connection
     LAN (Local Area Network): few computers in a limited area (class, office)
     MAN (Metropolitan Area Network): network connecting computers in one or more cities
     WAN (Wide Area Network): network extended on a huge geographical distance
   - WIRELESS connection
     WPAN (Wireless Personal Area Network): individual network, personal devices - Bluetooth smartphone
     Wireless LAN: LAN connected through Wi-Fi
     Wireless WAN: network realized through wireless technologies able to cover huge distances

INTERNET

= set of public access networks around the world and connected between different countries through phone lines and other technologies - digital data are sent and received
Services:
- WORLD WIDE WEB = Informational space made up of files and web resources connected through hyperlinks that can be found through the browser
- EMAIL - allows to exchange messages attaching several types of files
- INSTANT MESSAGING: System that allows to exchange short messages in real time
- VoIP (VOICE OVER INTERNET PROTOCOL): video/audio calls

INTRANET (firms or public services, offices In the same building)
VPN (Virtual private Network): used by firms that are decentralised. Data travel encrypted, as the VPN Is a private communication network that exploits a public infrastructure (internet)

Measuring network performance: BITxSEC (measure unit of velocity of data transmission)
Asymmetric connection (ADSL) has high DOWNLOAD velocity, slow UPLOAD velocity
ISP = Internet Service Provider
Provider of internet services. It is a society that sells on the market the access to the internet. A subscription is necessary to access services through a connection to the server
Before subscribing a contract, it is necessary to consider the costs (which can be flat = monthly fee to be paid even though the service is not used), maximum upload and download velocity guaranteed, limitations in the quantity of data that can be downloaded, type of connection

Connection to the Internet

- ⇨ FIXED PHONE LINE
- ANALOGICAL connection (modem dial up internal or external that transforms the digital signals of the computer in sounds to send them to ISP's phone number.
- ISDN connection (Integrated services digital network): faster modems that use digital data phone lines. Can run up to 64 kbit/sec - 128 kbit/sec
- ADSL (Asymmetric digital subscriber line): external modems that use a BROADBAND. Can run up to 640 kbit/sec - 20/30 megabit/sec
- ⇨ MOBILE TELEPHONY: mobile phones of at least second generation, pen drives, pc card
- 3G CONNECTION: third generation mobile phones, velocity similar to the ADSL (4-5 Mbit/sec)
- 4G CONNECTION: fourth generation mobile phones. Download can reach up to 3 Gbit/sec
- ⇨ WIFI HOTSPOT: wireless internet access. More and more frequent. Can be found in public places such as hotels, restaurants, bar, parks, malls
- ⇨ TV CABLE (much used in the USA) - can access the Internet through the TV cable
- ⇨ WiMax Connection: wireless connection, broadband, higher velocity and coverage of the Wi-Fi, almost non-existing in Italy. It allows to create broadband connections in those areas where it is not convenient for ISP's to use cables
- ⇨ SATELLITE connection: available on the entire planet, costly, used in those places which are isolated. It uses a special modem

It is easy to connect unauthorized devices to wireless connections.
Wireless connections can be OPEN (unprotected, accessible by everyone. no fee, no password) or PROTECTED/SAFE (access password required)

PROTECTION: Risks can come from unauthorized people accessing data, loss of data because of distraction, malfunctioning, malwares
To minimize risks:

- Password (Follow suggestions to make them safe)
- FIREWALL (Hardware or software device that monitors and controls the Internet traffic in order to avoid unauthorised access or malware intrusions. Personal firewalls are software available in the OS (e.g. Windows Firewall in Control Panel - System and Safety)
- Periodical backup: security copies. Firms backup is regulated by the Disaster recovery plans
- UPDATE the software: download antivirus, update the virus definitions. On windows, update management is in Control Panel

MALWARE

(malicious software)= malicious software, created in order to cause damage, get data or gain access to private systems. Viruses are a particular type of malware
Malwares can infect a device by:

- Executing files such as exe or bat
- Opening attachments to a mail
- Using Infected mass storage
- Downloading files or software from the internet

INFECTIOUS KIND OF MALWARES:
VIRUS: code parts that spread by being copied into programs or into the hard disk→ they run every time that the infected file gets opened. If you move the file to another device, the virus will spread there too.
WORM: programs that modify the operating system so that they run automatically using the internet. They don't need other files to spread. They use social engineering techniques or bugs in programmes.
TROJAN (trojan horse): software with licit purposes, but that contain dangerous information, unknown to the user
SPYWARE: software downloaded inadvertently, programmed to record and transmit personal data and information on the user's activity online. Doesn't show.

ANTIVIRUS SOFTWARE: it is specific; prevents, detects and removes malwares from folders, files and RAM memory. Must always be up to date. The updates follow the evolution of the malwares, otherwise protection cannot be 100% guaranteed. Sometimes antiviruses may detect "fake positives"; it is then necessary to download the updated version. Usually this happens automatically. Other software need to be up to date too.

Signals that the computer might be infected

- Initial page is different from the one that was set by the user
- Internet popups
- When the computer starts, browser or other programs are opened automatically
- Some windows are opened automatically
- Emails are sent to all contacts

If the antivirus doesn't solve the problem, it might be necessary to FORMAT THE DISK - delete the entire content

ERGONOMICS

It is the science that studies the way human body interacts with technology, machines and workplaces. It is useful to safeguard people's health
Ergonomics gives behavioural suggestions to realise USER FRIENDLY, SAFE, RELIABLE devices, so that negative effects are minimised, by examining critical factors.
Devices are not dangerous per se but can be if they are used badly: it Is necessary to have pauses (10 minutes per hour), move the eyes away about every 10 mins, do not stay seated during pauses, take care of airing, air-conditioning, light (possibly on the left) of the environment

SCREEN

Light and contrast (need to be set so that is possible to see the screen without effort for the eyes)
Quality (shall be an LCD screen), dimensions (15" at least), resolution (= quality of pixels that are visualized, points need not to be perceivable, but not too small)
REFRESH frequency shall be high (60-120 Hz)

POSTURE

Look at the screen perpendicularly
Seat needs to be adjustable and with a lumbar support for the back, as well as armrests
Keyboard shall be ergonomic and placed at the same height of elbow
Mouse should be ergonomic and at the same height of the keyboard

ENVIRONMENT PROTECTION

Devices are considered as RAEE (Electrical and electronic machinery trash). These are dangerous contain potentially toxic substances and are not biodegradable
In Italy a tax has been put, starting from 2005
To recycle, it is necessary to bring the devices in the shops where they were bought

Manage energetic resources of the computer

Start - control panel - power management options - power management (reduces PC performances) or balanced (PC decides whether to use high performance setting or power management) or GRADUAL SHUTDOWN (after some time, can set a degree of luminosity based on the power source used, screen dimension, computer suspension)

AIDING people with hearing, eyesight, mobility problems

Start - control panel - Accessibility centre - Programs such as Vocal assistant, high contrast, magnifying glass, keyboard on screen (physical interface that can be used through voice recognition or other similar devices)

MODULE 2: ONLINE ESSENTIALS

INTERNET: network of worldwide informatic connections. Allows connection and communications. Many LAN networks connected→ wider networks (WAN) connected to even bigger networks (backbones), which are high speed lines.
HYPERLINK (LINK): hypertext link→ reference from a unit to another on a digital support. It is characterised by graphic signals (underlines). The link gets activated by a mouseclick, then gets visualized.
WORLD WIDE WEB (WWW): the whole of all the hypertextual and multimedial pages that you can surf through specific applications. Allows sharing.
UNIFORM RESOURCE LOCATOR (URL): sequence of characters that univocally identifies the address of a resource on the internet. You find it on a hot server.
WEB SITES: hosted on servers, when they have an IP address (internet protocol, a sequence of four numbers between 0 and 225 separated by a dot) you can reach them by the internet. The IP address identifies univocally any device connected to the internet.
DOMAIN NAME SYSTEM (DNS): service which associates an URL to any IP

WEBSITE ADDRESS:

made up by two parts: FIRST LEVEL DOMAIN (the website's kind of domain) + SECOND LEVEL DOMAIN (company, institution or topic of the site).
→ Examples of first level domains:

- it, fr, de, uk, es: state indicators
- com, biz: commercial organization
- gov: government institutions
- org: no profit organization
- info: information companies

BROWSER: application able to browse the hypertext pages on the web. Examples: internet explorer, mozilla firefox, google chrome, apple safari.

The web gives informations and provides services, for example:

- e-commerce
- home banking
- e- government
- distance learning

ONLINE PROTECTION TOOLS:

HTTPS PROTOCOLS: safe version of the http protocol→ before transmitting data to one device to another, it crypts them so that only the receiving website can read them.
When purchasing online, you must be sure that the website is safe; you can do that by reading other clients' feedbacks, and if there are none you must do a screening.
When you are done with a website you must log off.

DIGITAL CERTIFICATE: document that proves that the sender of an e-mail or a website owner really is who he claims to be. It is used together with the https protocol. When speaking of economic transactions, for example, it is compulsory.
You can view the digital certificate by clicking on https (website address bar)→security→view certificate.

The access to contents online may not be full→ minors cannot see certain websites (parental control: tecniques tha filter webpages contents); inside companies or institutions, if the network traffic is excessive it could make the whole system slower.

WEB NAVIGATION

To view a web page: access to a browser→ type the wanted webpage's address in the multitask bar.
To edit the home page (starting page of the browser): three dots icon in the top right corner→settings menu→start

ADVANCED SETTINGS: three dots icon in the top right corner→ settings menu→ show advanced settings→privacy→ content settings:
cookie (website settings, managing exceptions): file where nativating preferences are stored
pop up (website settings, managing exceptions): windows that show up when opening websites, ads
Window on the left, settings:
browser informations→ "get assistance" button→ online assistance
layout: to choose the settings to show in the multifunction bar
privacy: delete browsing history, downloads, cookies, pictures and cache files, permissions, data
CACHE: folder which temporarily stores files connected to the navigation. This allows for a faster navigation experience, but saturates the device's memory.

BOOKMARKS, FAVOURITES: bookmarks manager. On Google Chrome:
multifunction task bar: "add to favourites button" (star)
three dot icon on the top right corner: favourites→ favourites settings
folders menu→ new folder
new folder→manage

TO DOWNLOAD FILES AND TEXTS ON THE DEVICE:
FILE: save→ download/ right click→ save as
PICTURES AND TEXTS: copy and paste/ save (in a folder or on desktop)

SEARCH ENGINES (for example Google, Bing or Yahoo): allow you to reach websites without knowing their address.
The search engine can receive informations either in a passive way (by simply receiving data from websites developers) or actively (softwares called spiders: search for new pages to add to the database). The algorithm that selects the informations, also organizes the sites. Each search engine has its own algorithm.

TOOLS BUTTON: language, date.
CANCEL BUTTON: takes every research filter off
TO RESEARCH A QUOTE: write it under quotation marks

Since on the internet it is possible to write whatever comes to your mind, it is also easy to manipulate informations, so anything must be read with a critical mind.
Factors which allow for so many informations to be on the internet:
informations (newspapers)
entertainment
propaganda
commerce: companies websites, ad websites

TO VERIFY INFORMATIONS:
checking the author's authority
checking the sources
confronting informations on different websites
contents must be up to date

COPYRIGHT: laws that guarantee an author's rights→ an author has exclusive faculty of spreading what he did produce.

COPYLEFT (1984): free software.

On the internet, it is easy to download files→ this doesn't mean it always is licit. You always need to know the licence. It is a right protected by the law. In Italy: law 633, 1941: it's about intellectual products such as literature, music, figurative arts, architecture, theatre, cinematography, photogaphy, software, database, technical drawing products.
The only way to be sure something is free is for it to be stated in the licence. In order to be subjected to copyright, it is not necessary for a piece to be registered or to show the © symbol.

ONLINE/VIRTUAL COMMUNITIES

groups of people interacting thanks to services provided by the internet (for example forums, chats, games, social networks). Everyone can use his own identity or fake another.

- forum: board, message board, bulletin board, discussion groups→ informatic structure based on webpages that allow for interactions. They need a database and are accessible via browser or specific apps.
- online games
- chats: to communicate in real time
- social networks
- videoconferences

TO SHARE CONTENTS ONLINE:

- blog (web+log: online diary) → text, pictures, videos
- microblog: short text messages→ twitter: 140 characters
- podcasts (pod+ broadcast: personal on demand broadcast) → thanks to a subscription (RSS feed), and thanks to a program able to receive them (aggregator), authomatically downloads contents available online.
- pictures: social networks such as flickr
- audio clips
- video clips (Youtube)

PRIVACY

in virtual communities you don't know the other user's real identity. You must:
set your privacy settings so that only contacts/friends can see your data
using private messaging
never share your position or personal data
block and report unknown users

INSTANT MESSAGING: sharing in real time short sentences, files and audio. Sinchronic exchange. It is different from forums, e-mails and private chats.
You need an account and a client program who is able to interact with the server.
SMS: short message service→ characteristics: cheap, you can read again messages even after a long time, mobile phone based
MMS (multimedia message service)→ characteristics: files, expensive, mobile phone based

VOIP: voice over internet protocol→ transmitting the voice through the internet= calling other computers or phones through servers and iternet connection instead of using telephone lines. With the VOIP the phone call is converted in digital data and passes through data networks. Pros: cheaper.

NETIQUETTE: series of rules when communicating online:
short messages, in order to not waste time
accurately filing the object of a message, so it is easier to recognize its content
not sharing irrelevant details which could lead to the user's personal data
no inappropriate contents
checking the body of a message to avoid mistakes
check attachments
not sending CC messages to more than one person, so to not reveal other users e-mail addresses.

E-MAIL

Electronic mail. It allows you to comunicate, and comparing to traditional mail it is faster, free, it allows you to attach fine, you can check it by simply connecting to the internet from any browser.
E-mail address: username@address (domain name of the organization which provides the e-mail service; a server is connected to the domain).
Attached files: they not always get to the receiver because of size limitations→ to bypass this problem there are web spaces such as jumbo and yousendit.
Ways to specify the receiver:
to (only one receiver)
CC (no main receiver, the message is copied)
CCN (hidden copied, the receiver gets the message without the others' knowledge)

E-MAIL CONNECTED RISKS:
spam: unwanted ads; anti spam filters: may think legitimate messages are spam. Spam messages must be immediately deleted, withouth opening or answer.
Malwares: can be hidden in attachments

PHISHING: attempt to gain sensitive data from a user, faking a message from an institution with the user's credentials→ the user doesn't know it is a stranger.
How to recognize phishing:
no institution asks for data confirmation via email
often the language is not the same as the user's (or the translation is not good)
usually it contains a link identhical to that of the institution, the server, however, has a different domain nme.
The phisher doesn't know who is sending messages to, so a part of them gets to actual clients of that institution.

SENDING/ RECEIVING AN E-MAIL:
Settings button:
online guide
settings menu→ signature settings
settings menu→ to personalize labels
settings menu→ general settings→ to set an authomatic reply to messages

Tick sign on the message→ other: mark as unread/read/important

Settings button: settings→language, number of mail visualized on each page, show pictures, phone number.

On Gmail you can not order messages for name or date, you can only create labels→ folders, you add e-mails via drag&drop, you can change the colour of the lable or create underlabels)

Spam: doesn't open pictures.

GOOGLE CALENDAR:
create→new event. You can add invitations or be invited; you can choose whether you want to participate or not→ by saying yes the event is shown nowmally, by saying no it disappears.

MODULE 3: WORD PROCESSING

SAVE AS → extention:

- word document
- word document with macro activation
- word 97-2003 document
- word template (to take advantage of markers and formatting and use them in order to create similar documents)
- PDF
- rich text format (exporting while keeping all the formatting options)
- normal text (only save the text, extension is .txt)

Right click → makes the top ribbon collapse
icon in the top right corner → to hide the top ribbon and the title bar
view page: zoom commands
file → word options: username of the word application, saving page, help function (lightbulb icon), online guide (opens a webpage)

DIFFERENT WAYS OF VIEWING A DOCUMENT: three icons at the bottom left corner: printing layout (central one), reading mode (left one), web layout (right one)

- View page: different viewing modes:
- printing layout: default view
- reading mode: take anything that's not a reading element off, making the pake look similar to an e-book. You can't edit your document, it is only possible to highlight and write comments on it
- web layout mode: the text takes over the whole width of the page as if it was a webpage, occupying all the available space. This doesn't mean that everything will correspond exactly to the actual view on the website.
- structure view: focuses on the bigger components of the document→paragraphs, chapters, overall structure. To go back to the printing layout viewing mode, click on close
- draft

TO ADD SYMBOLS: click on the exact spot where you want it to be, insert menu→symbols dropdown menu
font: every symbol comes in all characters and formats
TO ADD SPECIAL CHARACTERS: insert→symbol menu→other symbols→special characters page

TO SHOW NON PRINTABLE CHARACTERS: home→paragraph options→paragraph symbol
non-printable characters: symbols added in the text just for technical purposes (s.a.: spacing) but will not be printed.
TO SELECT TEXTS:
right click→ selects word
three clicks→ selects the whole paragraphs
to select the whole document: home page→select→select all
alternative: click three times on F8
Instead of copying and paste a text, you can select it and move it in drag and drop mode
TO FIND TERMS:
home page→edit→find command→write the word you want to find
TO SWAP WORDS:
home page→edit→substitute command→ a window will open, write the term you want the program to fnd and the one you want it to be substituted with
The research start from the point your cursor's at

FORMATTING: home page→character command:
next to the the number which shows the character's dimensions there is an "A" with an arrow pointing either upwards or downwards→ makes the text of a selected part of the document grow bigger or smaller accordig to certain proportions
Under the character's dimensions there is an "x" with superscript/underscript→moves the selected character to superscript/underscript
"Aa" button→ turns your tect in caps lock

TO SEPARATE A SORD INTO DIFFERENT SYLLABLES: (at the end of a row)
layout→ page settings→ syllabation (none, authomatic, manual)

TO INTERRUPT A LINE (arrow pointing upwards to the left): character that gets added authomatically and makes you start a new line while staying in the same paragraph. Caps lock button+ send

TO CREATE INDENTATIONS:
home page→ paragraphs→ widen/reduce indentation
layout→paragraph→ you can manage the indentation by adding the exact indentation measures
triangles un the ruler at the top of the screen: slide in drag and drop mode. The left indentation is either a first row indentation, and protruding indentation
layout→paragraph→paragraph settings

VERTICAL SPACING: layout→ paragraph layout→ line-spacing

HIGHLIGTING:
home→ paragraph→ coloured background
home→ paragraph→ borders (background and borders window)

ALIGNMENT: TAB button
four different ways of aligning a text: to the right, to the left, central, according to the position of the comma
choose the kind of tab: symbol to the top left next to the vertical/horizontal ruler→click on it

Combinations of predefined formats: home page→style command

TABS:
add→ tab (adapt to the content/ to the page/ to a certain fixed width of the columns)
to see the horizontal extention of the columns:
ruler
select the column→layout→cell dimensions

TO ADD NEW ROWS OR COLUMNS:
layout→ rows and columns
place the cursor on the row/column
TO DELETE A CELL: move to the right/left/upwards/downwards
BACKGROUND AND BORDERS: projecting

→ The backspace button deletes the whole tab (if selected), the CANC button only deletes the content of the tab (if selected)

GRAPHICAL OBJECTS (pictures/shapes/graphs):
add→ illustrations
histogram: series= vertical axis; cathegory: horizonal axis

TO DELETE THE BLANK SPACE IN THE GRAPH: projecting→ select data

RESIZING WHILE KEEPING PROPORTIONS: select the object→ format→dimensions→ block proportions option or right click→ other layout options

MERGE PRINTING

to match a template to a name list
letters→ merge printing, six steps:

1. letters, email, cards, labels, lists
2. choose the preferred document
3. select the list of the recipients
4. write the letter: put the non-printable characters→ click on the inserting point→ click on "other"→ choose the fields to add Or letters→ insert fields→ insert merge field→ select the field
    a. To make it personal: top right: title, name, surrname, address, zip code, city
    b. beginning: opening, title, surname
    c. collecting point
5. letters→ result preview
6. to complete the merge:
    - printing→ does not create a new file but directly prints the original one
    - edit the single letters→ new document

LAYOUT→ page settings: orientation, borders

Top part of the document: HEADER, bottom part of it: FOOTER
insert→ header/footer

WORD FIELD: to add author, date, document's name
Once you add the header, if you go on projecting→add→date and time, it will automathically update to the one at the opening of the file
Footer: page number (insert or projecting)

Red dots (error): by right clicking on the word, the program will suggest corrections.
Language: revision→ language
Error correction: revision→ spelling and grammar (grammar mistakes and repetitions)

SHORTCUTS:

CTRL+ RIGHT/LEFT ARROW: to move one word away to the right/left
CTRL+ DOWNWARDS/UPWARDS POINTED ARROW: to move downwards/upwards of a paragraph
CTRL+ HOME/END: to get to the beginning/the end of the document
PAGE UP/DOWN: to go to the next/previous page
CTRL+ PAGE UP/DOWN: togo at the beginning of the previous/following page

GO TO COMMAND: home→ edit→find→go to
allows you to move into the document

HYPERTEXT LINK: insert→ link. To reach the web page or the file you need to push on CTRL and on the word
FRAMING PARAGRAPHS: home→ paragraph→ background and borders
INDENTANTIONS AND SPACING: home→ paragraph→ ruler
SAVING A DOCUMENT: SHIFT+F12

MODULE 4: SPREADSHEETS

When using Excel, files are called folders.
To open a file: file (top left corner)→ open→ browse
Folders can either overlap or justaxpose

TO SHOW ALL THE CURRENTLY OPEN TABS: ALT+ TAB→ I

TEMPLATE → predefined scheme that enables you to create other documents
On excel templates do not open as normal fils → if you double click on the name of the template, the program will open the file which used that template
To open a template:
file menu→ open→ browse
right click on the name→ open
DON'T double click, otherwise it will not open the template but the specific file

TASK BAR: file management and program's options. Everything that is set on default can be modified.
OPTIONS: save, writing layout (font, dimensions, general view, number of pages)

You can ZOOM on the page→ zoom button on the bottom right/visualization menu)
TO COMPRESS THE TASK BAR→ right click on the task bar

Every cell can contain only one kind of data
empty row that divides datas from the total:
insert the information in a cell→ words get aligned to the left, numbers to the right, dates to the right

The mouse on the cell becomes a white cross→ click with a white cross means selecting

- selecting adjacent cells→ left click and select
- selecting non adjacent cells→ CTRL button + left click. Keep clicking on the CTRL button only AFTER selecting the first cell
- to select a row→ select the numbers on the left
- to select a column→ select the column on top
- to select the whole→ top left triangle

FIND AND REPLACE: (home tab→ bottom left)

TO SORT OUT CELLS:

- home tab→ edit tab→ filter and sort
- data tab→ filter and sort tab
- to sort out you only need to select a cell, not the whole column

TO DELETE THE CONTENT OF A CELL:

- CANC
- home tab→ edit tab→ delete content

MOUSE SHAPE:

1. white cross→ selecting a cell
2. double cross - staying on the cell border→ moving a cell
3. viewfinder (automatic filling) - staying in the bottom right corner of the cell→ copying the cell

CUTTING AND COPYING A CELL'S CONTENT:

- go on the border, just selecting and moving
- cut button
- right click

When you click on the cut button, the cell's border becomes dotted→ to take the dotted border off, click on ESC

TO DUPLICATE A PAGE IN ANOTHER FOLDER:
Move/right click to cupy→ select the other file

TODELETE A ROW/COLUMN: select it→ right click/home tab→ cell group→ delete
TA ADD A ROW/ COLUMN: select TWO rows/columns→ right click→ a new row/column is added between the two previously selected
columns→ added to the left, rows→ added on top
You can add as many as you want, depending on how many you select.

TO ADAPT THE CONTENT OF A COLUMN TO ITS WIDTH: double click on the line between adjacent columns→ adapt
OR select a column→ right click→ column width

TO WIDEN A BUNCH OF ROWS/COLUMNS UP TO THE SAME WIDTH/HEIGHT: select them all→ right click→ column width
Home bar→ cell group→ layout menu: same options to widen/heghten columns/rows

TO PREVENT ROWS/COLUMNS FROM SHIFTING:
view bar→ windows group→ stop frames button
blocking the upper row- keeps the upper row visible while the sheet shifts downwards
blocking the first column- keeps the first column visible as you shift left/right
blocking frames- keeps the row on top and the column to the left of the selected frame still

WORKSHEETS

(tabs on the bottom):
the new worksheet is added to the left of the selected one

TO RENAME A WORKSHEET:
- double click
- right click→ rename

TO MOVE A WORKSHEET:
- select and move it with drag and drop
- right click→ move or copy

TO DELETE A WORKSHEET: right button
- delete and add are in the home bar too→ cell group

TO DUPLICATE A PAGE:
- drag and drop whilst clicking on the CTRL button
- right click→ move or paste→ create a copy

FORMULAS AND FUNCTIONS

every formula starts with =
multiplication:*
division /

COPY AND PASTE FORMULAS WHILE READING A CELL'S COORDINATES: in the formula you must insert the coordinates which identify said cell
automating filling square→ copy the formula in the adjacent cells

TO CALCULATE RESULTS: click on SEND

ABSOLUTE REFERENCE (doesn't change row nor column)- RELATIVE REFERENCE (changes only one between row and column)

When a part of the formula must remain constant while the rest shifts: you must add the $ sign in front of the row/column that doesn't have to change
F$→ clicked on once automatically puts the $ sign in front of both the row and column, twice only in front of the row, three times only in front of the column, four takes all the $ off

GENERAL FUNCTION SYNTAXIS:
=functionname(argument 1; argument 2..)

the first argument is compulsory, the others are not

SUM:
home→ summation symbol→ automatic sum button→ sum, average, average, number count, max/min, other functions

PERCENTAGE:
=num1/num2
∗100 is applied automatically
home→ numbers→ number of decimal figures
If you don't put a reference for division, it could lead to errors: you cannot divide for zero→ error message

AVERAGE (arithmetic):
home→ edit→ summation→ average

MIN/MAX:
home→ edit→ summation→ min/max
Adding a column, it gets added with a formatting identhical to the others→ to delete such formatting:
home→ edit→ delete formatting

NUMBER COUNT:
authomatic sum button→ given a numeric area, it counts how many cells are filled by numbers (are not empty)

VALUE COUNT:
given a certain area, counts how many cells contain an alphanumeric value→ written =count.value(...)

OTHER FUNCTIONS:
authomatic sum button
f(x) button on the formulas bar
multifunctional formulas bar→ add → function button→ the guide opens (window)

ROUNDING OFF
it's a mathematical function

IF FUNCTION
it's a logical function, made by three arguments: question, if true, if false.
You cannot insert spaces or number separators
If you add a text as an argument→ in the formulas bar the text must be inserted between double quote marks, otherwise, if it's written in the "insert function" window it doesn't work

FORMATTING: you must first select the area you want to edit;

- group of numbers: multifunctional home bar→ group of numbers→ dropdown menu, currency symbol, percentage symbol, separator style (thousands, adding of two decimal figures)
- accounting: the Euro symbol is to the left
- currency: the Ero symbol is next to the ciphers
- font group: giving the same font format to other cells: COPY FORMAT command
- select the cell→ copy format→ select the other cells

- alignment group:
- to start a new line inside a frame: home→ alignment→ new line
- to centre the text (vertically): alignment group→ horizontal bars icons
- home→ alignment→ MERGE AND ALIGN TO THE CENTER butto (it ends up being a single cell)

GRAPHS (insert menu):
you must select the data you want to see in the graphs, other data can be added later.
  - cathegories axis: x
  - reference to the series: key

TO MOVE A GRAPH ON A DEDICATED PAGE: projecting menu→ move graph
TO CHANGE THE KIND OF GRAPH: projecting menu
button on the top right corner: adds elements (such as a title or labels)
Labels: if you want to change the value in the label, select it→ right click→ label format
KEY: can be moved either through drag and drop, either through→ right click→ key format
histogram: to change the colour of a single data: select the data→ right click→ data series format→ fill
pie chart: to change the colour of a single slice: double click to select it/right click/coordinate
DIFFERENT KINDS OF GRAPHS:
histograms: to confront different values or cathegories→ cathegories: x; values: y
bar graphs: to confront different values or cathegories→ cathegories: x; values: y
line graphs: to show tendencies/evolution of series of numbers
pie charts: to show how much a sieries of numbers contributes to the total. Every slice represents a single percentage of the total. This kind of graphs can only be used with a series of numbers at the time.
TO ADD ELEMENTS TO A GRAPH: + in the top right→ projecting→ add element to the graph

HEADERS and FOOTERS: page layout→ bottom left square→ page setting
header: date (it gets refreshed every time you open the file), time, name, page, file
GRAMMAR AND SPELL CHECK: multifunctional bar→ review→ formulas→ error check
TO DECIDE WETHER TO PRINT THE GRID OR NOT: page layout→ bottom left square→ page settings→ sheet
TO KEEP IN THE PRINTING CERTAIN ROWS/COLUMNS: page layout→ little square in the bottom right→ page setting→ sheet→ print titles→ select them from the file
file→ print→ printing preview settings→ print the whole file/only the selected part/only the graph
When opening excel, you get showed different templates. Templates cal also be download.
TO SAVE FOLDERS IN PDF/CSV FORMAT: save→ browse→ save as→ choose the format
Since CSV is a text only format, and it only saves one sheet at the time (the last one) you will lose all formatting

KEYBOARD SHORTCUTS:

CTRL+ arrow: moving toward the edge of the current area of the page
CTRL+shift+arrow: extending the selection towards the edge of the area
CTRL+END: moving to the last cell, in the bottom row of the column further to the left
CTRL+ HOME (or + inclined arrow): moving to the beginning of the page
CTRL+ PAGE DOWN: moving to the next page of the folder
CTRL+ PAGE UP: moving to the previous page of the folder

TO REACH A SPECIFIC CELL: home→ find and select→ GO TO tool
TO REACH A SPECIFIC CELL IN A RANDOM SHEET: PAGENAME! Cell reference

TO COPY/MOVE A PAGE IN ANOTHER FOLDER/ TO RENAME A PAGE:
right click on the name label→ move or copy/rename
home→ cell group→ format→ move or copy/rename

#VALUE! =message VALUE ERROR

TO DELETE: right button or cancel (NOT backspace)

MODULE 5: IT SECURITY

Data are numbers, pictures, words, simple/unrefined elements that represent facts or events
Informations are data which are already organized, processed and sintethised, in order to be understandable and meaningful to the user.

COMPUTER CRIME

illicit or illegal activity carried on by electronic instruments (it is prosecuted by the Italian legislation); examples of computer crimes are unauthorised access, cyberstalking/cyberbullying, catfish, manipulation.

HACKING

actions aimed at knowing, editing or controlling an hardware or software system, by bypassing or overcoming its limits and access controls.
The kind of hacker depends on its aim:

- BLACK HAR/CRACKER: who accesses a system in order to get some personal advantage; theft/damage: CRACKING
- WHITE DAMAGE: who, as a job, verifies a system's safety, resistance or reliability in order to make it better→ ETHICAL HACKING
- GREY HAT: people who violate the safety of a system, of a website or of a company in order to dicover its vunlerabilities, acting WITHOUT previous consent.

SOURCES OF THREAT FOR DATA: fraudolent or accidental:

PEOPLE (individuals, service providers, organizations) → editing or cancelling, theft, unauthorised access
UNPREDICTABLE EVENTS→natural events (ex: fires), deliberated attacks (vandalism, terrorism, war)
CLOUD COMPUTING→data given to third parties in order to achive them on remote servers (control on data, privacy loss)

FUNDAMENTAL ELEMENTS OF THE INFORMATIONS' SAFETY:
INTEGRITY: informations must be integral, complete, coherent, reliable and without differences from the original.
PRIVACY/CONFIDENTIALITY: the informations must not be spread out to unauthorised people, and access should only be granted to authorised individuals.
AVAILABILITY: informations must be available when needed.

You should protect both your personal informations and your work informations. Companies are responsible for their clients' data.

PRINCIPLES FOR DATA PROTECTION, CONSERVATION AND CONTROL

(defined by european regulations)
TRANSPARENCY: the user has the right of being informed on their data.
LEGITIMACY: the purpose of the use of datas must be explicit and legitimate. Data can't be further processed.
PROPORTION OF THE MEASURES COMPARED TO THE DAMAGE: safety protocols must be proportioned to the real risk of losing data.

DATA CHECKER: whoever processes someone else's data.
INTERESTED SUBJECTS: people whose data gets processed.

PRINCIPLES THAT GET APPLIED:
TO CHECKERS: data must be obtained and treated fairly, stored for specific and legitimate purposes, NOT be used or divulged in a way that is excessive compared to the effective purpose.
TO SUBJECTS: right to be informed and to receive clear informations, to know the source/finality/mode of data treatment, informations on the checker or third parties who could receive the data, in order to

cancel/update/edit/integrate data, or to legitimately go against the use of their data. If the checker doesn't act legitimately, the subject can act legally.

The guide lines fix minimum standards on user's conduct and on measures to adopt when managing data. The law asks companies to create disaster recovering datas→written policies that the interested subjets need to know. This kind of policies can be about organizations, informations or logistics, with the purpose of reducing the risk of loss, unauthorised acces, unauthorised treatment.

TECNIQUES TO GAIN ACCESS TO PERSONAL INFORMATIONS:

- HACKING
- SOCIAL ENGENEERING: studying someone's behaviour in order to gain useful and reserved informations. It bypasses hardware/software informations systems. Can be carried out through:
    - PHONE CALLS: disguised as anonymous surveys, often promising prizes.
    - PHISHING: deceptive mails
    - SHOULDER SURFING: spying the user's credentials by controlling him through lenses or cameras.

IDENTITY THEFT

illicit appropriation of credentials to access to a service (in order to gain some sort of advantage or to commit computer crimes such as fraud or thefts). Other tecniques not related to electronic devices:

- INFORMATION DIVING: to look in the rubbish or on desks, looking to gain informations thanks to objects or notes
- SKIMMING: cloning credit cards (using mobile payments devices in an illicit way)
- PRETEXTING: creating a situation (for example, pretending to be someone else) in order to steal informations→ phishing

MACRO: set of informations or commands written in a programming language (such as VBA= visual basic for application) which can be used to make long procedures shorter when using programs such as spreadsheets. They could contain malwares, if you are not sure of their source, you must turn on the ones you are certain of, and deactivate the other ones. The level of security can be set so the application will warn you if the file contains macros, and ask wether you want to activate them or not.

CRIPTOGRAPHY/CYPHRING: a way to enhance the safety of a file and protect the data: it is based on an algorithm that through a KEY converts the information bits. Makes all the data unreadable if you do not have the key.
Without the right key, it may take months to de-cypher the file.
If you lose the key, you lose the data.
If the cryptography process gets interrupted, data may get lost.
The application can cypher the data.
You can crypt a whole disc unit: control panel→ security system →disc cryptography command
You can cypher a folder or a file from EXPLORE RESOURCES

PASSWORD

it is a milder form of protection than cryptograph. The file can be protected by unwanted accesses of unwanted edits → writing password/editing password

MALWARE (malicious software)= malicious software, created in order to cause damage, get data or gain access to private systems.
Malwares that can hide in a computer:

- TROJAN (trojan horse): software with licit purposes, but that contain dangerous information, unknown to the user
- ROOTKIT: software that takes control of the operating system, allowing someone else to access as admin; it also hides files or system information

- BACKDOOR: programs that allow unauthorised access, bypassing every security check. They can be created by the developers of a program in order to have the chance of logging in at all times, or they can be explicitly created.

INFECTIOUS KIND OF MALWARES:

- VIRUS: code parts that spread by being copied into programs or into the hard disk→ they run every time that the infected file gets opened. If you move the file to another device, the virus will spread there too.
- WORM: programs that modify the operating system so that they run automathically using the internet. They don't need other files to spread. They use social engeneering tecniques or bugs in programmes.

MALWARES USED TO STEAL DATA:

ADWARE: advertising-supported software. Software downloaded when surfing the internet or when downloading a free software→ unrequired ad messages appear
RANSOMWARE: malware that limits the access to the infected devide (either blocking it or cyphering it); to end the limitation there is a ransom request.
SPYWARE: software downloaded inadvertently, programmed to record and transmit personal data and informations on the user's activity online. Doesn't show.
BOTNET: software that takes control of a network of devices→ the botmaster then uses them from remote to carry out unauthorised activities
KEYLOGGER (keystroke logging): software that intercepts and sends to a remote server the typed characters> SNIFFING
DIALER: software that changes the modem connection, going to another phone company which is more expensive. The phone number gets changed-
PHARMING

ANTIVIRUS SOFTWARE: it is specific; prevents, detects and removes malwares from folders, files and RAM memory. Must always be up to date. The updates follows the evolution of the malwares, otherwise protection can not be 100% guaranteed. Sometimes antiviruses may detect "fake positives"; it is then necessary to download the updated version. Usually this happens automathically. Other softwares need to be up to date too.

ONLINE TOOLS TO PROTECT FROM MALWARES:

- operative system websites
- antiviruses developers' websites
- web browser developers' websites
- autorithies' websites

MICROSOFT SECURITY ESSENTIALS:
with an antivirus you can do specific scansions of more than one unit.
You can also use it from explore resources: select the elements→ right click→ analize with Microsoft Security Essentials-
To plan a periodic analysis: settings→ planned analysis

Fake positives:to be sure they don't get authomatically deleted you can put them in "quarantine" (specific folder managed by the antivirus, they are made unusable)

INFORMATIC NETWORK

more devices that work togheter in order to share informations.
Connection: risks for the security of data:

- malwares
- unauthorised acces (due to bugs in the security system)
- difficulties in the defence/privacy of the data

KINDS OF NETWORKS:

- LAN: local area network→ local and limited
- WLAN: wireless local newtork→local but wireless
- WAN: wide area network→ geographically very extended (ex: internet)
- VPN: virtual private network (intranet): virtual private network that in order to work uses a public network. It allows to connect in a safe way devices that are very far geographically. Through a VPN data gets crypted and need authentication

NETWORK ADMINISTRATOR (position in a company): makes the network safe and efficient, implementing policies concerning access to the resources
manages the authentication, authorization and assignation of accounts to the users of the network
verifies and installs upgrades
checks the network's traffic (exchanged data)
handles malwares

FIREWALL: hardware or software device that checks the network traffic (usually between the LAN and the Internet), using rules set by the admin in order to avoid undesired intrusions. Limitations:
rules must be set precisely; otherwise it will not work efficiently
if the attack comes from inside the LAN it will not work
if it's not well programmed it may keep the users from legitimate actions

The Windows 7 operating system already has a firewall installed.
On Windows 7: safety system commands→windows firewall
advanced settings→ allows you to manage in a more dinamic and personalised way the stream of data through the firewall

DIFFERENT KINDS OF CONNECTIONS TO A NETWORK:
WIRE (copper, fibre optic)→ cabled network, wire: more safe and efficient when transmitting data
RADIO WAVES→ wireless networks, wifi: pros= cheaper (doesn't need cables), can go even where wires can't reach; cons= unauthorised devices can get connected too (you need a password)
two kinds of wireless networks: open (unprotected, accessible by anyone) or protected (by a password)

RISKS CONNECTED TO UNPROTECTED NETWORKS:

- EAVESDROPPING: intercepting conversations
- NETWORK HIJACKING: connect you to a dangerous site making you believe is the one you actually wanted to gain access to
- MAN IN THE MIDDLE: violating private conversations= someone secretly transmits or modifies the conversation between to parties who genuinely believe they are communicating with each other

CRYPTING ALGORITHMS FOR DATA SENT BY WIRELESS NETWORKS:
WEP (1999, wired equivalent privacy)= privacy security level equivalent to the one offered by wired networks→ inefficient because the key is too short
WPA (2003, wifi protected access)= protected access to wireless networks
WPA2(2004): totally dafe
OTHER FORMS OF PROTECTION OF WIRELESS NETWORKS ACCESS:
MAC FILTER: mac address= media access control, specific address of the board which isolates a device. 12-cyphers code
SSID HIDING: hiding the SSID code (service set identifier, name with wich the network appears to the user), low protection

HOTSPOT: wireless access point (wifi) that devices use in order to connect to the internet.
TETHERING: action of connecting one device to another in order to share the connection to the interner (personal hotspot). The connection can take place through: WLAN (wifi), bluetooth, cable (USB port)

TO AVOID UNWANTED ACCESS:
- username
- strong passwords
- PIN= personal identification number
- cyphring/crypting
- many authentication factors

NETWORK ACCOUNT: shown name, secret password → purpose:
identifying who within the network access to what (either software/hardware resources or data)
defining at a central leven the privileges (authorizations) that concern accessing/reading/editing
tracking activities
The access to the network is granted after an authentication procedure. For safety reasons it is better to block or disconnect when the device is not in use; it is also better if the password gets typed every time

PASSWORD CRACKING: activity of identifying passwords for illegal purposes. Softwares may be used.
Guidelines to create strong passwords:
- do not use words, names, dates
- at least eight characters (very strong beyond fourteen)
- mix capital and non capital letter (passwords are case sensitive) and special characters. Avoid repetitions and accented letters
- do not share them or leave them around
- change them regularly
- different passwords for different accounts

PASSWORD MANAGER: using password managing softwares, they handle the organization of passwords. They are stored in a crypted database and are only accessible through a particularly strong master password.
- Online password manager (web app's cloud)
- offline password manager (stored on the local device)
- manager integrated in the web browser.

LIMITATION: if someone manages to get access to the password manager gets all the passwords.

OTP: one time password, valid between thirty seconds and ten minutes. Used especially when transmitting financial data through the internet. Then can be:
- generated previously (disposable codes card)
- created on the spot by a disposable hardware device= token
- generated by an app on the smartphone
- sent by sms

BIOMETRIC RECOGNITION TECNIQUES: used to check accessess to devices and places: system based on physical characteristics of the users - examples:
- handprints
- iris/retina scansion
- face recognition
- hand shape/geometry

A public network doesn't only get used for consultations, but for financial activities too (such as shopping or home banking)
To check if the website you are surfing is free, you must check if it uses the HTTPS transmission protocol (hyper text transfer protocol secure), and that there is the closed lock symbol (digital certificate)
https: data are transmitted crypted, SAFE TRANSMISSION
digital certificate: electronic document which clearly identifies the website author. SAFE AUTHOR

PHARMING (malware): it is an illegal tecnique which makes sure than, when typing a licit web address, you get directed to another one, graphically identhical but illicit. If the illicit website requires for personal data, they get sent. Pharming does so that an URL address matches a different IP address. The server which

normally translates an URL in the matching IP is called DNS (domain name system). The only way a user can spot pharming happening is by checking the digital certificate of the website.

TO CHECK A WEBSITE'S AUTHENTICITY:
https
digital certificate
contents' and informations' quality
last update (must be recent)
URL validity
clear informations on the owner
safety certificate
website validation by the owner

PREVENTATIVE WAYS TO CHECK THE NAVIGATION:
Internet filter: applications made to avoid the use of certain websites or the dowload of certain types of files.
Internet use restrictions
Parental control: planning when the children can have access to the devices and which applications they can use. It can be enabled by the control panel.

HOW TO PROTECT FROM POTENTIALLY DANGEROUS E-MAILS:
- cypherig emails: only sender and receiver can see them
- digitsl signature: code that gets added to the email to identfy the sender. It needs a digital certificate issued by a certifying authority that is legally recognized and crypting slgorithms (to avoid forgeries)
- do not open unknown attachements (malwares hidden in a macro)
- do not answer to spam (to avoid showing that your address exists and is active)

PHISHIG: fraudolent messages that pretend ti be from banks and other institutions in order to gain sensitive informations. Characteristics:
- use of the name of real companies and real people
- fake brands
- email addresses not coherent with the sender
- spelling and synthactical mistakes
- language not coherent with the style
- link to fake websites, graphically identhical to the original one
- esortation to divulge personal informations (through promise of prizes or of threats)

Phishing attempts can be denounced to the involved companies or to the authorities.

NEVER show on social networks: address, work phone number, reserved informations on your job, financial informations, pin, passwords

RISKS RELATED TO SOCIAL NETWORKS:
- cyber-bullying
- grooming
- divulgation of personal data
- fake identities or appropriation of someone else's identity
- fraudolent behaviours or phishing

VOIP (voice over IP) AND INSTANT MESSAGING VULNERABILITIES: due to the Internet=
- malwares
- backdoor
- third partiess access to files shared on these apps
- eavesdropping

TO ENSURE THE CONFIDENTIALITY OF INFORMATIONS:
- using applications that allow cyphring
- do not divolge informations

- limiting the sharing of files
- using an antivirus to check wether the file contains a virus before opening it
- blocking unknown or undesired senders

Mobile application may or may not be authorised to do certains operations→ "terms and conditions" acceptance: informations that apps could be authorised to know: contacts, positions history (GPS), photos or videos, browser history and bookmarks, data belonging to the user the device or the operating system.

RISKS RELATE TO THE DOWNLOAD OF UNOFFICIAL APPS:
- malwares
- apps who use the rources of the device in an unnecessary/unauthorised way
- low quality/no warranty
- hidden expenses

IN CASE YOUR DEVICE GETS LOST OR STOLEN: precautional measures:
- remote deactivation (PIN)
- remote data cancellation
- geolocation of the device

PHYSICAL SECURITY OF THE DEVICES:
"census": keeping track in order to immediately verify if anything's missing and to testify the initial possession
stardand kensington security lack (cables to avoid thefts)
checking the access to computer rooms

TO RETRIEVE DATA: making security copies (on a business level, this is part of the disaster recovering plans).

BACKUP COPIES:
- partition of the disk unit/local device
- external unit: USB, hard disk
- cloud

→ PROS: immediate access, support dimention's scalability, storage in protected places, delocation of the safety copy
→ CONS: in case of loss/theft you lose the copy too, it must be connected to the original one in order to be kept up to date, data control and management, privacy related risks, internet connection

Every backup software has reactivation procedures: starting from the backup copy, it allows you to transfer data to the original location

WAYS TO DESTROY DATA IN A SAFE AND EFFICIENT WAY:
- physical destruction of the documents
- physical destruction of mass memories
- demagnetizing= degaussing (not for cds or dvds, since they are optical supports)
- cancellation softwares; when the mass memory needs to be used again→overwriting datas so they are unretrievable. These kind of programs can be free.

MODULE 6: PRESENTATION

Opening view: to open a pre-existing project you need to go to Open – Browse – Docs. It is possible to also choose a new model from the list shown on the opening page

If it is necessary to see more than one presentation together need to go to View – Window – Change windows.

Change the settings: file – settings
Generals – Username or Initials
Save – OK

View the presentation. View:

- Normal view
- Structure view – titles
- Slides
- Notes
- Read view

Change the type of slides
Home – slides – layout
Project view

- THEMES: backgrounds and themes of slides (if selected, changes all the slides)
- VARIATIONS: change the colours (changes all the slides)
- BACKGROUND: keeps the theme chosen but changes the background (changes only the background of the selected slide. To edit all the slides need to do "Apply to all")

Copy e double slides between different presentations
Need to follow the path: File – New file – View – show everything
The two presentations will be shown next to each other on the screen

It is possible to edit the general layout and to insert an object on all the slides without having to modify them one by one. That is done through the **SLIDE MASTER**
The slide master shows the general layouts of all the slides. No content is shown. By editing one of them and then closing the view all the slides will be edited in the same way.
It can be used e.g. to insert a logo, a shape, a trademark
The great advantage is that with the normal view, it is not possible to edit or delete the inserted object. That can only be done through the slide master functionality
To edit the typing style and the colours, but don't change the model: Home

FOOTNOTE

- **View** – slide master (view the Master (that is, the first slide with the general template))
- **Insert** – footnotes – apply/apply to all

In power point the content is written within textboxes. That can be included following the path (Insert – textbox, within the text group of commands).
There in another way to add a text: view – outline layout view

Tables: they can be designed so to maintain the layout of the slides.
To edit them, need to access the layout tab.

Graphs: When choosing what type of graph to use a preview is shown automatically

- Edit the type of data – need to follow path: design – edit data
- Change the type of graph: design – change the type of graph

- Could use a combined graph if the scales for different data are different from each other
- Change the legend: right click – axes layout
- Labels: right click – labels layout – e.g percentage or similar
- Change the graph colour: design
- Change the colour of a single set of data: double click on the set itself
- Change the background colour: right click – graph layout

Organograms: "Insert SmartArt element" – hierarchies – organograms
Design – can raise or decrease the level of the members of the organogram. It is also possible to add new shapes
SHAPE: can be put either up, down, before, after, at the same level of someone else (in that case it will be an assistant)
Layout – fill: allows to change the colour of the selected shape (not of all the others as well)

GRAPHICAL OBJECTS – insert images
PowerPoint automatically downsizes the images at the dimensions of the textbox
Align the image: layout – position – align

Insert other objects: insert – shapes
Gather together in a single block more than one shape: select all of them – right click – collect
To separate them: right click – separate

TRANSITIONS

between the slides
Several groups of transitions:

- Preview
- Transitions to the slide
- Interval

ANIMATIONS

of single objects in the slide can be directed from animations panel
Advanced animations can be worked out from the animations window that opens on the right

Footnotes – can be viewed in the presenter view
Layout – slides dimensions: allows to set the layout of the slide
Hide a slide: right click on the slide and select "Hide" so that it is not viewed in the presentation

Spell check: right click on the wrong work/repeated word – the correction box opens up
Control the language (down – left)
Press on the button with the dictionary and the X next to the language in the lowest part of the document: the list of all mistakes will be shown

Print the presentation: file – print

INTEGRATION

Save the presentation in a different format: file – browse – presentations can be saved in pdf
Options – can decide whether or not to include the frame of the slides, the hidden slides, the comments, notes and how many slides to print for page

Hyperlink: Select the word – insert – link
To delete an hyperlink need to put the mouse on the word and follow the path: insert – hyperlink – delete
OR right click – delete

It is possible to downsize a graphical object maintaining its proportions

That is done by clickin on the shape – drawing tools – layout – dimensions – small square – tick on "block proportions"

Align the objects:

- Drag and drop mode
- Select the objects – drawing tools – layout – align

Layout types

- Title only
- Empty
- Title and subtitle
- Title and content
- Section heading: it is used to create various sections or to divide the presentation in more parts, especially if they are particularly long
- Compare: title – two headings – two textboxes
- Content with description – two areas next to each other. To the left there is the title, to the right the content
- Picture with description

MODULE 7: ONLINE COLLABORATION

ICT = Information and Communication Technologies
Services available:

Exchanging files with other people through a remote connection

- Working simultaneously on the same files
- Communicating through Instant Messaging (IM) or Voice over Protocol (VoIP) apps

Cloud computing
by accessing the Internet it is possible to store information in a virtual space where all files are stored safely

- Storage space on remote servers – either free of charge or not
- Option to access web-based applications that do not require the installation on the device

Mobile technologies allow to use tools such as:

- Productivity suites (word processors, spreadsheets, presentation)
- Social media
- Online calendars

Mobile technologies – allow to use online meetings (e.g. chat video) and online education programs.
The main aim is to have several users connected simultaneously, reaching a global diffusion.
Simultaneous accesses also allow more people to work on the same resource.

Advantages:

- more users
- reduced travel costs
- availability of several tools that make communication easier
- possibility of teamwork
- possibility of working from anywhere.

Risks:

- Possibility of access by unauthorized users
- Some users could damage others' collaborators job (e.g. delete data by another collaborator)
- Malware
- Ransomware
- Cyber crimes
- Interruption/instability of internet access

Property rights are guaranteed by copyrights and licenses

CLOUD COMPUTING

Allows more authorized users to access shared files and documents. These are available at any moment and can be accessed anywhere, both from mobiles and non-mobiles devices, providing an Internet access is guaranteed.
Several applications enjoy the benefits of cloud computing, making communication easier between users: email, instant messaging, videoconferencing.
Cloud computing also allows you to work even if the software is not installed on the device (Office online).
Advantages

- No costs required for the installation of an hardware
- Possibility to work from any device
- Possibility to decide how much space and which apps to use according to personal needs, therefore, users are no longer limited by the device's capacity
- Constant updates by the app's producers

Risks

- Services are available only if an internet connection is available
- Unauthorised accesses could occur
- Malware could lead to loss of data and thefts

Cloud computing offers several services through the browser; it is important, however to keep the browser constantly updated to avoid malware.

ADDITIONAL PLUG-Ins = softwares that complete the browser's functions. Examples are Java and Flash. Plug-ins do require updates as well.

It might be the case that it is requested to install specific applications in order to use some services
In some cases it is also demanded to install a specific hardware: e.g. webcam, microphone, speakers

FIREWALL = software that allows to limit access to the device for security reasons
It might include settings that limit the use of data for some applications
It is also possible to edit such settings

User account: to make use of collaboration instruments online it is necessary to have an account and some access credentials – to obtain an account might be necessary to subscribe or pay depending on whether the service is free or not.

ONLINE STORAGE

Online collaboration services offer the users the possibility to save files on remote servers. The only limit is that it requests internet access
Such services are offered either for free (access through registration) or not and offer some limited services:

- Limited storage space (5 GB)
- Limited file dimensions
- Limited possibilities to share the file
- Time limits

If the user accepts to pay a fee, such limits can be overcome

GOOGLE DRIVE:
Several services offered
Google docs (online version of Word), Sheets (online version of Excel) and Slides (online version of PowerPoint). Files can be shared with more people though the "Share" button. It is also possible to share the file through a link or via email.
Files are saved automatically online and can be shared also in read-only mode
ONE DRIVE: Drive online by Microsoft. Includes online versions of Word, Excel, ecc

It is always possible to recover previous versions of the file
That can be done through "google drive" – file history OR CTRL ALT + Maiusc + H

GOOGLE CALENDAR
It is possible to create an event: "Create" button on the left of the page or by double-clicking on the date chosen

3 defaults calendar are chosen: Google Account, Birthdays, Reminders
Clicking on the small arrow on the right of the calendar's name, it is possible to:

- Share the calendar: it is possible to edit the settings and the authorizations (edit, read-only, etc.)
- Settings (e.g. time zone)
- Trash folder
- See only one calendar or others

It is also possible to associate Google Drive's files to an event

If the event is repeated more than once it is possible to select the button "Repeat" on an event
Button "AGENDA"
Button "MORE" – can print the calendar

SOCIAL MEDIA

- **Networks:** Facebook, Google+. Linkedin
- **Wikis:** Wikipedia
- **Discussion groups:** forums often related to specific topics
- **Content sharing:** Flickr, Picasa
- **Blogs:** e.g. on travels, literature, politics
- **Microblogs:** Twitter

ONLINE MEETINGS: such as GoToMeeting
Plan a meeting: "schedule" button – can send a mail to guests
"Start the meeting" button
Possible to decide rights of access for each guest
It is possible to share the screen trough the respective button
"Change presenter in" – transfer organization control to some other guest
"Share keyboard & mouse with" – allow other members to control the mouse and the keyboards on the screen shared

ONLINE LEARNING

Two different types:

- VLE = Platform that makes content available, communication instruments (e.g. mail, chat, video meetings) and online collaboration instruments (e.g. forum, wiki)
- LMS = application web based that gives tools to run online classes (e.g. Moodle)

Moodle

Calendar, wall, chat, judgement registration. It is necessary to login (in some cases it is possible to create classes for which no registration is necessary)
Upload a file on Moodle: file – upload on server – Browse – Select the file to upload
Download a file from Moodle: link – download

Availability of Quizzes and forums on online classes

MOBILE DEVICE: can be used making the most of all functionalities even when moving
Tablet, smartphone, phablet
Main characteristics:

- Integrated processor
- Communication devices (webcam, microphone, speakers)
- Touchscreen display to view and insert data (display is the output and input)
- Internet connection – can use mobile data (subscription, SIM card)
- Can download applications

Main operating systems: Android, iOS, Windows Phone
Android is an OPEN SOURCE licence

BLUETOOTH = technology that allows to exchange data in a safe way on short distances. It also allows to have different devices communicate between each other (e.g. headphones, speakers, keyboard, etc.)
Can also be used to transfer data

Internet connection

- WLAN
  No costs. However, it is necessary to stay in the span of the connection.
- Mobile data connection (3G/4G)
  Can be used also when moving. Very used and covers the entire territory. Not free.

Protect the device – PIN, fingerprint
Can share files between devices – mail, MMS, whatsapp, social media, Bluetooth, apps
SYNC: same data can be viewed in the same way and on different apps/devices

IN COLLABORATION WITH