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A-level ICT

SENIOR Five term 1

TOPIC 1/2: Introduction to ICTs

Competency: The learner operates a variety of ICTs to perform tasks in day-to-day life.

Information and Communication Technology, ICT

ICT, or Information and Communications Technology, encompasses a wide range of tools and platforms that facilitate the exchange of information among individuals and groups.

ICT Tools

The word “tool” refers to any device, application, or resource that helps people perform tasks related to information processing, communication, or data management.

It can be hardware (like a computer or smartphone), software (like Microsoft Word or Zoom), or online services (like Google Drive or WhatsApp).

ICT tools make it easier to **create, store, share, and communicate information**.

ICT tools used in daily life

- (i) **Smartphones:** Used for calls, messaging apps, browsing, mobile banking, and entertainment.
- (ii) **Computers & laptops:** Essential for work, study, gaming, and accessing online services.
- (iii) **Internet & Wi-Fi:** Provides global connectivity for research, streaming, shopping, and communication.
- (iv) **Social media platforms:** Facebook, Instagram, WhatsApp, and X (Twitter) for networking and sharing information.
- (v) **Email services:** Gmail, Outlook, and Yahoo Mail for professional and personal communication.

- (vi) **Online banking & mobile money:** Services like PayPal, Venmo, and mobile money apps for financial transactions.
- (vii) **E-learning platforms:** Google Classroom, Zoom, Coursera, and Khan Academy for online education.
- (viii) **Healthcare ICT tools:** Telemedicine apps, electronic health records, and wearable devices like smartwatches.
- (ix) **Entertainment platforms:** Netflix, YouTube, Spotify, and gaming consoles for leisure.
- (x) **Navigation tools:** GPS, Google Maps, and ride-hailing apps like Uber or Bolt.

ICT Tools by Category

Category	Examples	Daily Use
Communication	Smartphones, email, social media	Staying connected with family, friends, and colleagues
Education	E-learning platforms, digital libraries	Online classes, research, skill development
Finance	Online banking, mobile money apps	Paying bills, sending money, shopping online
Healthcare	Telemedicine, fitness trackers	Remote consultations, monitoring health
Entertainment	Streaming services, gaming consoles	Movies, music, games
Navigation	GPS, ride-hailing apps	Travel planning, commuting

ICT system

An ICT system is a structured combination of hardware, software, data, people, and communication networks that work together to collect, process, store, and share information. It's essentially the "ecosystem" that makes modern digital communication and information management possible

Core ICT Components

- (i) **Hardware:** Computers, servers, smartphones, routers, printers.
- (ii) **Software:** Operating systems, applications (Word, Excel, Zoom), databases.
- (iii) **Networks:** Internet, Wi-Fi, LAN (Local Area Network), WAN (Wide Area Network).
- (iv) **Data:** Raw facts and figures that are processed into useful information.
- (v) **People:** Users, IT specialists, administrators who operate and manage the system.

How They Connect to Form a System

- (i) **Input stage:** Users enter data using hardware (keyboard, scanner, smartphone). Example: A teacher uploads an assignment via a laptop.
- (ii) **Processing stage:** Software applications process the data. Example: A learning management system (LMS) organizes assignments.
- (iii) **Storage stage:** Data is stored in databases or cloud servers. Example: Google Drive saves the assignment securely.
- (iv) **Communication stage:** Networks transmit information between devices. Example: The assignment is shared with the students via the internet.
- (v) **Output stage:** Information is presented back to users. Example: The student views and does the assignment on their computer and upload back for the teacher to mark.

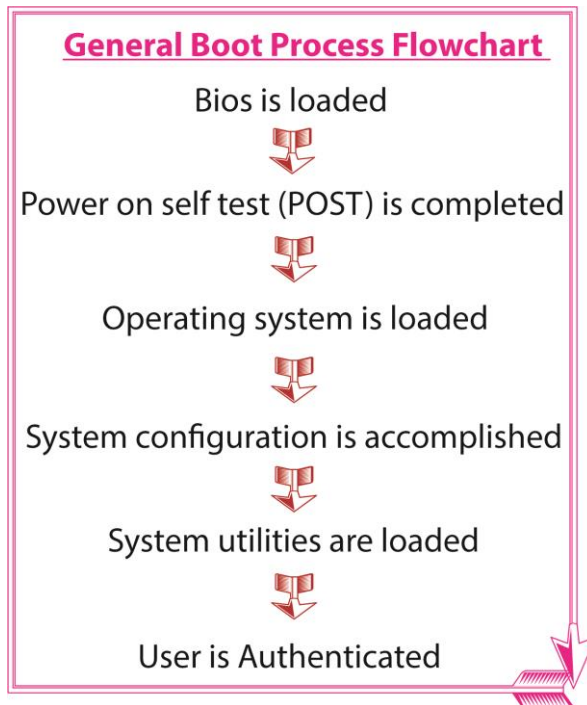
Example: ICT in Education System

Component	Role	Connection
Hardware	Laptops, tablets, projectors	Students and teachers use devices to access lessons
Software	LMS (Google Classroom, Moodle)	Manages assignments, grades, and communication
Network	Internet/Wi-Fi	Connects students and teachers across locations
Data	Assignments, grades, resources	Stored and retrieved from cloud servers
People	Teachers, students, IT staff	Operate and maintain the system

General Boot Process Flowchart (Applicable to all)

- (i) Press power on button
- (ii) Power On Self Test (POST): Hardware checks performed when the computer is powered on.
- (iii) Operating system is loaded (an operating system (OS) is system software that manages computer hardware and software resources, and provides a platform for users and applications to interact with the computer. It acts as the "bridge" between the machine and the user, ensuring that tasks run smoothly and efficiently)
- (iv) System configuration is accomplished (**system configuration** refers to the way a computer system or ICT setup is arranged and customized to meet specific needs.)

- (v) System utilities are loaded (**Utilities** are special types of system software designed to help manage, maintain, and optimize computer resources. They provide support functions that keep the operating system and applications running smoothly)
- (vi) User is authenticated (**Authentication of a user in ICT (Information and Communication Technology)** refers to the process of verifying the identity of a person or system before granting access to digital resources, networks, or services. It ensures that only authorized individuals can use ICT systems securely.)



Cold and warm booting

Cold booting starts a computer from a completely powered-off state, performing a full hardware check (POST) and initialization, making it thorough but slower

Warm booting restarts a powered-on computer without cutting power, reloading the OS faster by skipping some hardware checks, ideal for software issues.

Importance of proper booting of computer

- (i) **System readiness:** Ensures the operating system and applications are loaded correctly so the computer is usable.
- (ii) **Hardware check:** During booting, the POST (Power-On Self-Test) verifies that hardware components (RAM, CPU, storage, etc.) are functioning properly.
- (iii) **Data integrity:** Proper booting prevents corruption of files and ensures the file system is mounted safely.

- (iv) **Security:** Booting processes like Secure Boot protect against malware or unauthorized operating systems being loaded.
- (v) **Performance:** A clean boot ensures system resources are allocated efficiently, avoiding crashes or slowdowns.
- (vi) **User access:** Provides authentication (login screen) so only authorized users can access the system.

Shut down process of a computer

The **shutdown process of a computer** is the sequence of steps the operating system follows to safely power off the system while protecting data and hardware.

Steps in the Shutdown Process

- (i) **Shutdown Command** – User clicks *Shut Down* or presses the power button.
- (ii) **Close Applications** – The operating system signals programs to stop, prompting to save unsaved work.
- (iii) **Terminate Processes** – Background services and tasks are safely ended.
- (iv) **Save System State** – Logs and settings are updated; data in memory is written to disk.
- (v) **Unload Drivers** – Hardware drivers are disconnected properly.
- (vi) **Kernel Shutdown** – The operating system halts its core functions.
- (vii) **Power Off** – Firmware (BIOS/UEFI) sends the final signal to cut power, turning the machine off.

In short: **shutdown ensures all programs close, data is saved, hardware is safely disengaged, and then power is cut.**

Importance of proper shutdown of the computer

- (i) **Prevents data loss** – ensures all files and programs are saved and closed correctly.
- (ii) **Protects hardware** – avoids sudden power cuts that can damage components.
- (iii) **Maintains system stability** – closes processes cleanly, preventing corruption of the operating system.
- (iv) **Enhances security** – ends user sessions and clears temporary data.
- (v) **Extends lifespan** – reduces wear on hardware by powering down safely.

*In short: **proper shutdown keeps your computer safe, secure, and reliable for future use.**

Computer directories

A **computer directory** (commonly known as a **folder**) is a digital container used to store, organize, and separate computer files and other directories (subdirectories) within a hierarchical structure on a storage device. It acts like a filing cabinet for digital information.

Features of Directories

- (i) **Containment:** Can hold files and other directories (subdirectories).
- (ii) **Path identification:** Each file or directory has a unique path (e.g., C:\Users\Documents\file.txt).
- (iii) **Navigation:** Users can move between directories using commands or graphical interfaces.
- (iv) **Access control:** Permissions can be set on directories to control who can read, write, or execute files.

Analogy

Think of a physical office filing cabinet.

- (i) The entire cabinet is the **file system**.
- (ii) Each drawer is a top-level **directory** (e.g., the C: drive in Windows).
- (iii) Manila folders inside the drawers are **subdirectories** (e.g., a "Taxes" folder).
- (iv) The individual pieces of paper inside the folders are **files** (e.g. document).

By using this structured system, data is kept organized, secure (through permissions), and easily searchable, which would be nearly impossible if all files were in a single, unorganized list.

Functions of computer directories

- (i) **Organize files** – keep data structured in folders and subfolders.
- (ii) **Provide paths** – give each file a unique location (e.g., C:\Users\Docs\file.txt).
- (iii) **Enable navigation** – allow users to move easily between files and folders.
- (iv) **Support access control** – set permissions for who can read, write, or execute files.
- (v) **Facilitate management** – make it easier to copy, move, delete, or search files.

In short: **directories act like digital filing cabinets, helping computers and users manage files efficiently and securely.**

Tasks

- (i) Create a folder with a path: **C:\Users\Documents\school store/ cutlery**.
- (ii) Create words file of list of school **cutlery and utensils** and save files in in the **cutlery** folder

Thank You

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