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FREE LEARNING NOTES FOR ZAMBIA

FORM 1 · TERM 3

Information and Communication Technology

Components of Computer Systems

Lesson notes for learners · Competence-Based Curriculum

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When you press a key and a letter appears on the screen, many parts of the computer work together in a fraction of a second. In this note you learn the main hardware parts of a computer, what each one does, and the three types of software that make the hardware useful.

AFTER THESE NOTES YOU SHOULD BE ABLE TO

- Identify the main hardware components of a computer
- Explain the function of the CPU, RAM, ROM, motherboard and storage devices
- Tell input devices from output devices
- Classify software as system, application or utility software
- Say what MS Word, MS Excel, MS PowerPoint and MS Publisher are used for

KEY WORDS

hardware	the physical parts of a computer that you can touch
CPU	the central processing unit, the brain of the computer, which executes instructions and performs calculations
RAM	random access memory, which temporarily stores data for active tasks and programs
ROM	read-only memory, permanent memory that stores the essential instructions the computer needs to start up
motherboard	the main circuit board that connects all the hardware components
storage device	hardware used to store data permanently, such as a hard drive or an SSD
input device	hardware used to send data to the computer, such as a keyboard or mouse
output device	hardware used to receive data from the computer, such as a monitor or printer

1 Hardware and the processing parts

Hardware refers to the physical components of a computer system. You can see and touch hardware, and it works together so that the computer can perform tasks.

The Central Processing Unit (CPU) is the brain of the computer. It processes instructions, executes commands and performs calculations. The speed of a CPU is described by its clock speed, which is measured in GHz.

Random Access Memory (RAM) temporarily stores data for the programs that are active. Its capacity is measured in GB. Read-Only Memory (ROM) is permanent memory. It stores the essential instructions that the computer needs to start up.

The motherboard is the main circuit board. It connects all the hardware components and allows them to communicate, so that they work together.

Component	What it does
CPU	Processes instructions; the brain of the computer
RAM	Temporarily stores data for active tasks and programs
ROM	Permanently stores the start-up instructions
Motherboard	Connects all the components so they can communicate

Figure 1. Four internal components and their functions

2 Input and output devices

Input devices send data to the computer. The keyboard enters text, numbers and commands. The mouse moves the pointer and selects items on the screen. The microphone inputs audio. The scanner converts physical documents into digital form. The webcam captures video and images and is often used for video calls.

Output devices receive data from the computer and show or produce the result. The monitor displays text, images and videos. The printer produces physical copies of digital documents. Speakers output sound from the computer.

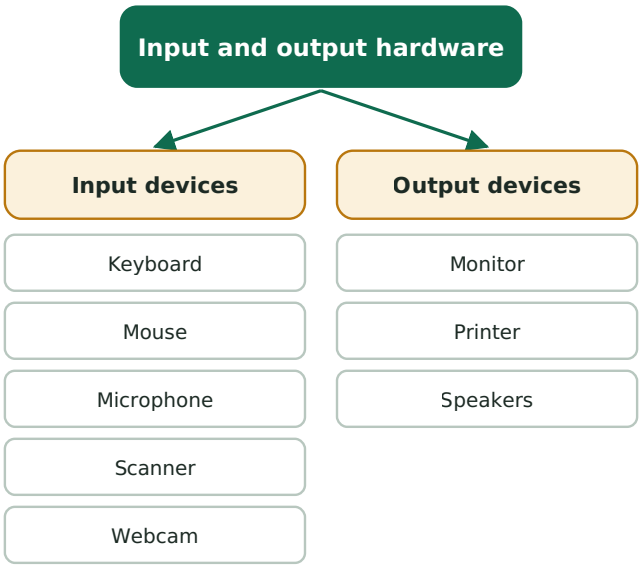


Figure 2. Common input devices and output devices

3 Storage devices

Storage devices keep data permanently. The Hard Disk Drive (HDD) and the Solid State Drive (SSD) store data, software and the operating system. When you switch the computer off, data in RAM is not kept for later use, but data saved on a storage device stays.

This is why RAM and storage are different. RAM is temporary and is used by active tasks. A hard drive or SSD is where your saved work and your programs are kept.

Memory or storage	Kept when switched off
RAM	Temporary storage for active tasks
ROM	Permanent start-up instructions
HDD or SSD	Permanent data, software and operating system

Figure 3. Temporary and permanent storage compared

4 Types of software

Software is a set of instructions that tell a computer how to perform tasks. It is written in a programming language.

There are three types of software. System software manages the hardware. Application software performs tasks for the user. Utility software maintains the system.

Hardware and software need each other. The hardware is the physical machine, and the software tells it what to do.

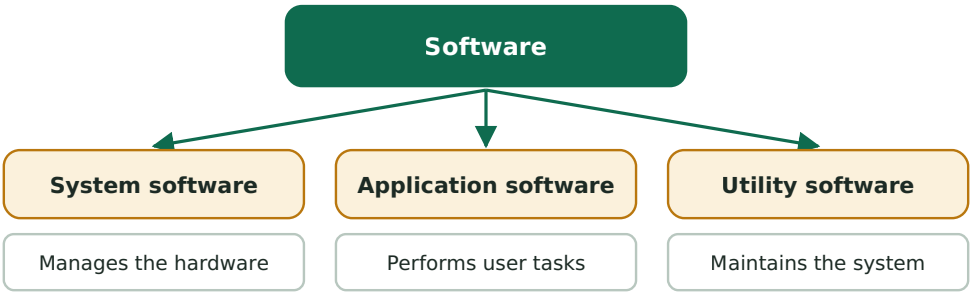


Figure 4. The three types of computer software

5 Productivity application software

Microsoft Word is used to create, edit, format and print text documents, such as letters, reports, resumes and essays. Editing tools copy, cut, paste and delete text. Formatting tools change the font style, size, colour and alignment.

Microsoft Excel organises data in rows and columns in a spreadsheet. It calculates with formulas and functions such as SUM and AVERAGE, it makes bar, line and pie charts, and it sorts and filters data. It suits budgets, timetables, marksheets and business records.

Microsoft PowerPoint creates and delivers slide-based presentations. Slides hold text, images and media. Themes and templates give ready-made designs, animations and transitions add effects, and slide show mode presents the slides full-screen.

Microsoft Publisher creates publications and print materials such as brochures, flyers, newsletters, business cards, posters and invitations. It offers templates, image tools and design tools.

Software	Used for	Examples of use
MS Word	Text documents	Letters, reports, essays
MS Excel	Spreadsheets and calculations	Budgets, marksheets, charts
MS PowerPoint	Slide presentations	Teaching, seminars
MS Publisher	Publications	Flyers, posters, business cards

Figure 5. Four productivity programs and what they are used for

TRY THIS

In groups, find pictures or real devices of a CPU, RAM, a hard drive, a keyboard, a monitor and a printer. Label each one on a poster, write one line on its function, and then mark it as input, output, processing or storage. Present your poster to the class.

REMEMBER

- Hardware is the physical components of a computer system.
- The CPU processes instructions, RAM provides temporary storage, and ROM stores the essential start-up instructions.
- The motherboard connects all the hardware components so they can work together.
- Input devices send data to the computer, while output devices display or produce results.
- Storage devices such as the hard drive and SSD store data permanently.
- Software is a set of instructions, and its main types are system, application and utility software.

? Check yourself

1. What is the function of the CPU.
2. Say how RAM is different from ROM.
3. What does the motherboard do.
4. Name two input devices and two output devices.

5. Name the three types of software and say what each one does.
6. A teacher at a school near Feira wants learners to type a letter, record their marks in rows and columns, and make a flyer for a school event. (a) Which program should they use for the letter. (b) Which program should they use for the marks and the totals. (c) Which program should they use for the f
7. A learner buys a computer for a small shop near Feira. It starts up, but the owner finds that a sales list typed but not yet saved is gone after a power cut, while the saved programs and the operating system are still there. (a) Which component stores the programs and the operating system permanentl

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ANSWERS

1. It processes instructions, executes commands and performs calculations. It is the brain of the computer.
2. RAM temporarily stores data for active tasks and programs. ROM is permanent memory that stores the essential instructions for starting up.
3. It is the main circuit board that connects all the hardware components and lets them communicate.
4. Input: any two of keyboard, mouse, microphone, scanner and webcam. Output: any two of monitor, printer and speakers.
5. System software manages the hardware, application software performs user tasks, and utility software maintains the system.
6. (a) MS Word, which creates, edits and formats text documents. (b) MS Excel, which organises data in rows and columns and calculates with functions such as SUM. (c) MS Publisher, which creates publications such as flyers and posters using templates, image tools and design tools.
7. (a) The hard drive or SSD, which stores data, software and the operating system. (b) RAM, which stores data temporarily for active tasks. (c) ROM, which stores the essential start-up instructions.

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