

Computer Components: Functions and Compatibility

1. Motherboard

The motherboard is the main board in a computer. It connects all the parts together. It has slots for the CPU, RAM, storage, and more. When choosing a motherboard, make sure it matches the type of CPU and RAM you want to use.

2. CPU (Central Processing Unit)

The CPU is the brain of the computer. It does all the thinking and runs the programs. It must fit the socket on the motherboard, and the motherboard must support its brand and model (like Intel or AMD).

3. RAM (Random Access Memory)

RAM is the short-term memory of a computer. It stores the data the computer is using at the moment. The type of RAM (like DDR4 or DDR5) must match what the motherboard supports.

4. HDD and SSD (Hard Drives)

These are used for long-term storage. HDDs are slower, and SSDs are faster. They store your files, games, and system. Most use SATA cables, but some SSDs use special M.2 or NVMe slots on the motherboard.

Ciobanu Budău Daria Rihanna- Day 2, 15/04/2025

Peripheral Devices: Installation and Usage

1. Monitors

Monitors display what the computer is doing. To install, plug the monitor into the computer using an HDMI, VGA, or DisplayPort cable. Then plug in the power cable. Most monitors work right away, but you can adjust screen settings in the computer's display settings.

2. Keyboards

Keyboards are used to type and give commands. To install, connect the keyboard using a USB port or use Bluetooth for wireless models. Most keyboards work automatically without needing extra software.

3. Mice

A mouse lets you move the cursor and click on things. Like keyboards, it connects with a USB cable or wirelessly with Bluetooth. It usually works as soon as it's plugged in.

4. Printers

Printers make paper copies of digital files. They connect by USB, Wi-Fi, or Bluetooth. To install, plug in the printer and follow the setup steps on your computer. You may need to install a driver (a small program) to make it work properly.

Ciobanu Budău Daria Rihanna- Day 3, 16/04/2025

Computer Assembly: Steps to Build a PC

1. Prepare Your Workspace

Make sure you have a clean, flat surface. Gather all your parts and tools (like a screwdriver).

2. Install the CPU

Open the CPU socket on the motherboard, place the CPU gently in the right position, and lock it in place.

3. Add RAM

Find the RAM slots on the motherboard. Push the RAM sticks in until they click.

4. Install the Motherboard

Place the motherboard into the case and screw it in tightly using the case standoffs.

5. Mount Storage (HDD/SSD)

Put the HDD or SSD into its slot in the case and connect it to the motherboard with cables.

6. Install Power Supply (PSU)

Place the power supply in the case. Connect power cables to the motherboard, CPU, and other parts.

7. Install Graphics Card (if needed)

Insert the graphics card into the correct PCIe slot on the motherboard and secure it with a screw.

8. Connect Cables

Connect all cables: power cables, data cables, and front panel buttons.

9. Close the Case

Once everything is connected, close the case with screws.

10. Turn It On

Connect your monitor, keyboard, and mouse. Plug in the power and press the power button. If everything is done right, your PC will start!

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Hardware Maintenance: Best Practices

1. Cleaning

Dust can build up inside your computer and cause it to overheat. Use a can of compressed air to clean fans, vents, and other parts. Do not use a vacuum or water. Clean every few months.

2. Thermal Paste

Thermal paste goes between the CPU and its cooler. It helps transfer heat. If you remove the cooler, clean off the old paste with alcohol and apply a small amount of new paste before putting it back.

3. Safe Handling

Always turn off the computer and unplug it before touching inside. Touch a metal part or wear an anti-static wrist strap to avoid damaging parts with static electricity. Handle parts by the edges and avoid touching the metal pins or circuits.

4. Check for Problems

Listen for strange noises, check for overheating, and make sure fans are spinning. Fix issues early to avoid damage.

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BIOS/UEFI Settings: Basics to Know

1. What is BIOS/UEFI?

BIOS or UEFI is the system that starts your computer before Windows or any other operating system loads. You can open it by pressing a key like DEL, F2, or ESC right after turning on the computer.

2. Startup Sequence (Boot Order)

This decides which device the computer checks first to start — like a hard drive, USB stick, or CD/DVD. You can change the order so the system boots from your USB or SSD first.

3. Boot Device Selection

You can choose a specific device to start the computer from. This is useful when installing a new operating system from a USB drive.

4. Basic Settings

Inside BIOS/UEFI, you can also:

- Check system info (CPU, RAM)
- Set the time and date
- Enable/disable ports or built-in hardware
- Load default settings if something goes wrong

5. Learn with Virtual Tools

You can practice using virtual BIOS tools online without risking real hardware. These tools let you click around and explore safely.

Networking Basics: Key Terms and Functions

1. LAN (Local Area Network)

A LAN connects devices in a small area like a home, school, or office. All the devices share the same internet connection.

2. WAN (Wide Area Network)

A WAN connects multiple LANs over large distances. The internet is the biggest WAN.

3. IP (Internet Protocol) Address

An IP address is a unique number given to each device on a network. It helps devices find and talk to each other.

4. Router

A router connects your network to the internet. It gives IP addresses to devices and sends data to the right place.

5. Switch

A switch connects many devices in a LAN. It sends data between them quickly and safely.

Ciobanu Budău Daria Rihanna-Day 7,22/04/2025

1. Modem and Router

The modem connects your home to the internet. The router sends the internet wirelessly to your devices. Sometimes both are in one box.

2. Access Router Settings

To change settings, open a web browser and type the router's IP address (usually 192.168.1.1 or 192.168.0.1). Log in with the default username and password (often written on the router).

3. SSID (Network Name)

SSID is the name of your Wi-Fi network. You can change it to something easy to recognize, like "HomeWiFi" or "MyNetwork."

4. Passwords

Set a strong Wi-Fi password to keep your network safe. Use a mix of letters, numbers, and symbols.

5. IP Allocation

The router gives each device an IP address (automatically using DHCP). You can also set a static IP for devices that need the same address all the time.

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Operating Systems: Windows vs. Linux

1. Windows

- Features: Easy to use, supports most games and programs, has a user-friendly interface.
- Uses: Common in homes, schools, and businesses.
- Basic Tasks: Install software, browse the internet, manage files, use Microsoft Office.

2. Linux

- Features: Free and open-source, customizable, secure, uses less system resources.
- Uses: Popular for servers, coding, and advanced users.
- Basic Tasks: Use the terminal, install apps from the Software Center, manage files, browse the internet.

3. Key Differences

- Cost: Windows is paid; Linux is free.
- Software: Windows supports more commercial apps; Linux uses open-source ones.
- Interface: Windows has a standard desktop look; Linux has many versions (Ubuntu, Mint, etc.)
- Security: Linux is less likely to get viruses.

Try Them Out

You can try Linux without installing it by using a Live USB. Practicing tasks on both helps you learn their strengths.

Installing an OS: Windows or Linux

1. What You Need

- An installation file (ISO) for Windows or Linux
- A USB drive (for real install) or a Virtual Machine (VM) app like VirtualBox
- A video tutorial to follow step-by-step

2. Installing on a Real System

- Create a bootable USB using tools like Rufus
- Plug in the USB and restart the computer
- Enter the BIOS and set the USB as the boot device
- Follow the on-screen instructions to install the OS

3. Installing on a Virtual Machine (VM)

- Download VirtualBox or VMware
- Create a new virtual machine and choose the OS type
- Load the ISO file into the VM
- Start the VM and follow the setup steps

4. Windows Installation Steps

- Choose language and region
- Enter product key (or skip)
- Pick a hard drive partition
- Wait for installation to finish
- Set up your user account

5. Linux Installation Steps

- Choose language and try or install Linux
- Pick the installation type (erase disk or dual-boot)
- Set username and password

- Wait for installation to finish
- Reboot and start using Linux

Tip: Follow YouTube tutorials to see each step clearly.

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File Systems and Utilities: Basics

1. File Systems

A file system controls how data is stored and organized on a drive.

- NTFS (New Technology File System):

Used by Windows. Supports large files, file permissions, and system recovery features.
- FAT32 (File Allocation Table 32):

Works with most devices (Windows, Linux, Mac, USB drives). But it can't store files larger than 4GB.
- EXT4 (Extended File System 4):

Common in Linux systems. Fast, reliable, and supports large files.

2. Disk Management Tools

Used to manage storage drives. You can:

- Create or delete partitions
- Format drives
- Assign drive letters

(Windows tool: Disk Management | Linux tool: GParted)

3. System Utilities

These tools help keep your computer running smoothly.

- Disk Cleanup: Deletes temporary and unused files (Windows).
- Task Manager / System Monitor: Shows what apps are running and how much memory/CPU they use.
- Check Disk (chkdsk): Scans for drive errors.
- Defragment (Windows): Reorganizes data on the disk (for HDDs only).

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Introduction to Software Types

1. System Software

This runs the computer and manages hardware.

- Examples:
 - o Operating Systems: Windows, Linux, macOS
 - o Device Drivers: Help hardware like printers or graphics cards work
 - o BIOS/UEFI: Starts the computer before the OS loads

2. Application Software

These are programs used to do tasks or work.

- Examples:
 - o Web Browsers: Chrome, Firefox
 - o Office Programs: Microsoft Word, Excel
 - o Media Players: VLC, Windows Media Player
 - o Games and design tools

3. Utility Software

These help maintain and improve your system.

- Examples:
 - o Antivirus programs
 - o Disk Cleanup
 - o File compression tools: WinRAR, 7-Zip
 - o Backup tools

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Installing & Configuring Software

1. Office Suites

Used for writing, spreadsheets, and presentations.

- Examples: Microsoft Office, LibreOffice, Google Docs
- How to Install:
 - Download from the official website
 - Run the installer and follow the steps
 - Choose tools you need (Word, Excel, etc.)
- Configuration:
 - Set default save location
 - Choose file formats (like .docx or .pdf)

2. Antivirus Software

Protects your computer from viruses and malware.

- Examples: Windows Defender, Avast, Bitdefender
- How to Install:
 - Download from a trusted site
 - Follow the setup instructions
- Configuration:
 - Schedule automatic scans
 - Turn on real-time protection

3. Web Browsers

Used to browse the internet.

- Examples: Google Chrome, Mozilla Firefox, Microsoft Edge

- Installation:
 - o Download the installer
 - o Run and complete setup
- Configuration:
 - o Set homepage and search engine
 - o Add extensions or bookmarks

4. Multimedia Tools

Used for playing or editing music, videos, and images.

- Examples: VLC Media Player, Audacity, GIMP
- How to Install:
 - o Download from the official site
 - o Run the installer
- Configuration:
 - o Set default media formats
 - o Adjust audio/video settings as needed

Ciobanu Budău Daria Rihanna- Day 13, 30/04/2025

Basic Troubleshooting: Common PC Problems

1. Software Not Starting

- What to Do:
 - o Restart the computer
 - o Check for updates or reinstall the software
 - o Run it as Administrator (right-click > “Run as administrator”)
 - o Check if your antivirus is blocking it

2. Driver Issues

Drivers help hardware (like printers or graphics cards) talk to the system.

- Signs of Problems: Device not working, errors, or poor performance
- Fixes:

- o Open Device Manager
- o Right-click the device > “Update driver”
- o Download drivers from the hardware maker’s website

3. Slow Performance

- Quick Fixes:
 - o Close unused apps and browser tabs
 - o Restart the PC
 - o Run Disk Cleanup and delete junk files
 - o Uninstall software you don’t use
 - o Scan for viruses or malware

Extra Tip:

Always keep your system and apps up to date. Updates fix bugs and improve performance.

Ciobanu Budău Daria Rihanna- Day 14, 01/05/2025

Mini IT Project Design: New Office Setup

Scenario:

You are hired to set up a small office with 5 employees. Your job is to install computers, connect them to a network, and make sure everything works safely and smoothly.

1. Hardware Setup

- 5 Desktop Computers
 - Each with a CPU, monitor, keyboard, mouse, and printer access
- 1 Network Switch – To connect all computers
- 1 Wi-Fi Router with Internet – For internet access
- 1 Network Printer – Shared by all employees

2. Software Installation

- Operating System: Windows 11 or Linux on each computer
- Office Suite: Microsoft Office or LibreOffice
- Browser: Google Chrome or Firefox
- Antivirus: Windows Defender or Avast
- Utility Tools: PDF reader, file compression (e.g., 7-Zip)

3. Network Setup

- LAN Setup: Connect all PCs to the switch using Ethernet cables
- Router Settings:
 - Set up SSID and strong Wi-Fi password
 - Enable DHCP to auto-assign IP addresses
- Printer Sharing: Install printer drivers on each PC and share via the network

4. Basic Security & Maintenance

- Set up strong login passwords on each computer
- Install antivirus and schedule weekly scans
- Turn on automatic updates
- Use disk cleanup tools regularly

5. Outcome

A fully functional mini-office with shared internet, printers, and secure systems ready for work!

Ciobanu Budău Daria Rihanna- Day 15, 02/05/2025

1. Introduction

- Company Name: Engin Digital
- Project Title: “Setting Up a New Office Computer & Network System”

2. What I Learned During the Internship

- How to install and configure software (Windows, Linux, Office tools)
- Basic hardware setup (CPU, RAM, HDD/SSD, peripherals)
- Networking concepts (LAN, routers, switches, IP addresses)
- Troubleshooting common issues (software, drivers, performance)
- Using tools like VirtualBox, Disk Management, and BIOS

3. About My Mini Project

- Goal: Create a working office setup with 5 computers
- Tasks I Completed:
 - o Assembled PCs
 - o Installed OS and software
 - o Set up a local network and shared printer
 - o Secured systems and ensured smooth performance

4. Challenges Faced

- Learning to install Linux on a VM
- Configuring Wi-Fi and IP settings
- Fixing driver errors during OS setup

5. What I Gained

- Real hands-on experience
- Better understanding of computer systems
- Confidence in setting up and managing small networks
- Teamwork and communication skills

6. Conclusion

This internship helped me grow my technical skills and taught me how to apply them in real-life situations. I feel more prepared for future IT roles.