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ERASMUS+

Day 1- Computer Components

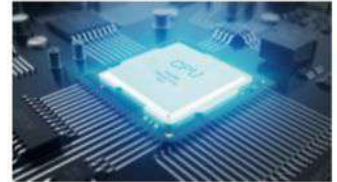
A computer is a machine made of many parts that work together. Some of the most important parts are the motherboard, CPU, RAM, and HDD/SSD. Each part has its own job, and they must be compatible with each other for the computer to work well.

The motherboard is the main part that connects everything. It has slots and ports for the CPU, RAM, hard drives, and other components. It is like the body of the computer where everything is placed. All the parts must fit into the correct spots on the motherboard.



The CPU (Central Processing Unit) is like the brain of the computer. It does all the thinking and calculations. It runs programs and controls the other parts. The CPU must match the socket on the motherboard.

RAM (Random Access Memory) is the computer's short-term memory. It stores data for running programs. More RAM makes the computer faster when doing many tasks. The type and size of RAM must match what the motherboard supports.



HDD (Hard Disk Drive) and SSD (Solid State Drive) are used to save files. SSDs are faster, but HDDs are cheaper and have more space.



All these parts must be compatible. When building or upgrading a computer, it is important to research and choose parts that work well together.

Day 2- Peripheral Devices

Peripheral devices are tools we connect to a computer to help us use it better. Some common peripheral devices are monitors, keyboards, mice, and printers. These devices are not inside the computer but are very important for using it.

A monitor shows what the computer is doing. It lets us see texts, pictures, videos, and programs. To install a monitor, we connect it to the computer using a cable like HDMI or VGA. Some monitors also need power from a wall socket.



A keyboard helps us type words and give commands. A mouse helps us move the pointer on the screen and click on things. These devices usually connect through USB ports or wirelessly with Bluetooth. They often work right away after plugging them in, but sometimes they need drivers, which are small programs that help them work correctly.



A printer lets us put documents or pictures from the computer onto paper. To install a printer, we connect it by USB or Wi-Fi and install the printer software. Then we can choose the printer when we want to print something.



Learning how to install and use these devices is important for school, work, and everyday computer use. They make using a computer easier and more useful.

Day 3- Computer Assembly

Assembling a computer means putting all the computer parts together so the machine can work properly. It may seem difficult at first, but if each step is done carefully, it becomes easier. Learning to build a computer is a useful skill, especially for people interested in technology.

Before starting, it is important to prepare all the necessary parts. The main components are: the motherboard, CPU (Central Processing Unit), RAM (memory), power supply, HDD or SSD (storage), graphics card (if needed), cooling system, and the computer case. You also need a screwdriver and a clean table to work on.

The first step is to carefully install the CPU on the motherboard. Match the small triangle on the CPU with the triangle on the socket. Then, insert the RAM sticks into the RAM slots by pressing them until they click.

Next, place the motherboard inside the computer case and use screws to fix it in place. After that, install the power supply unit (PSU) into the case. Then, insert the HDD or SSD into its spot and connect the cables.

Now it's time to connect everything. The power supply cables go to the motherboard, CPU, and storage. If you have a graphics card, install it into the PCI slot. Also, connect the fans and any USB ports on the case.

After checking all the connections, close the case. Connect a monitor, keyboard, and mouse to the computer. Then press the power button to see if it works. If the screen turns on, the computer is ready.

Assembling a computer step by step helps people learn how computers work. It can also save money and allow users to choose the parts they want.

PC build videos: https://youtu.be/DC-Xn2C_L1U?si=EnFe18N4LzmTiyA

Day 4- Hardware Maintenance

Taking care of computer hardware is important to keep it working well for a long time. Regular hardware maintenance helps avoid problems like overheating, dust build-up, or damaged parts. Some key tasks include cleaning, applying thermal paste, and using safe handling methods.

Cleaning is important because dust can block fans and vents, which causes the computer to overheat. Use a soft brush or a can of compressed air to clean inside the computer. Always turn off and unplug the computer before cleaning it. Be gentle and avoid touching small parts.

Thermal paste is used between the CPU and the cooling fan. It helps transfer heat from the CPU to the fan, so the computer stays cool. If the computer is overheating or the fan is replaced, it's a good idea to clean the old paste and apply new thermal paste. Use only a small amount and spread it evenly.

Safe handling is also very important. Always hold parts by the edges, never by the circuits. Avoid static electricity by touching a metal object or wearing an anti-static wristband before working on the computer.

By cleaning the computer, applying thermal paste correctly, and handling parts safely, the hardware will last longer and work better. Good maintenance prevents many common computer problems.



Day 5- BIOS/UEFI Settings

BIOS (Basic Input/Output System) or UEFI (Unified Extensible Firmware Interface) is special software that starts when the computer is turned on. It checks the hardware and helps the computer start the operating system. Learning how to use BIOS/UEFI is useful, and many people practice using virtual BIOS tools before changing real settings.

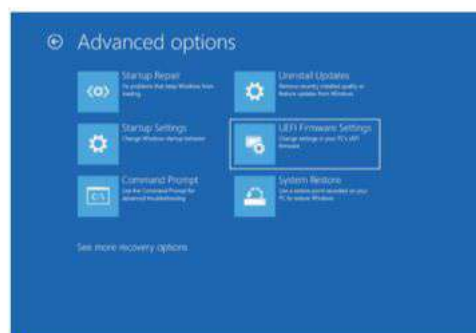
One important setting in BIOS/UEFI is the startup sequence. This tells the computer which device to start from first. For example, if you want to install Windows from a USB drive, you need to set the USB as the first boot device. After the system is installed, the hard drive or SSD is usually the first boot device.

Other basic settings include the date and time, enabling or disabling USB ports, and checking connected hardware like RAM or hard drives. You can also check CPU temperature and fan speed in UEFI.

To enter BIOS/UEFI, press a key like Delete, F2, or Esc right after turning on the computer. Every motherboard can have a different key.

Using virtual BIOS tools is a safe way to learn these settings without risking real changes. It helps users get comfortable with the menus and options.

Knowing how to use BIOS/UEFI is helpful for fixing problems and setting up a computer the right way.



How To Fix UEFI Firmware Settings missing / Not Found and Not Showing in Windows 11 / 10 / 8 / 7: <https://dai.ly/x90fil2>

Day 6- Networking Basics

Computer networking allows devices to connect and share information. Some important terms to understand are LAN, WAN, IP address, router, and switch.

A LAN (Local Area Network) is a small network in one place, like a home, school, or office. It connects computers, printers, and other devices so they can share files and internet. A WAN (Wide Area Network) is a larger network that connects many LANs over long distances. The internet is the biggest example of a WAN.

Every device on a network has an IP address (Internet Protocol address). This number helps devices identify each other and communicate. It's like a home address, but for computers.

A router connects the LAN to the internet. It also gives out IP addresses to the devices in the network. Routers help control traffic and keep the network safe. Most home routers have Wi-Fi to connect wireless devices.

A switch is used inside a LAN to connect many devices with cables. It sends data to the correct device quickly. While a router connects networks, a switch connects devices inside one network.

Understanding how LANs, WANs, IPs, routers, and switches work is the first step in learning about computer networks. These basics help us stay connected at home, school, and everywhere else.

Computer Networking Fundamentals NetworkingTutorial
for beginners Full Course:

<https://youtu.be/k9ZigsW9il0?si=Rbu0xwrLhz8RZCPT>



Day 7- Wi-Fi Setup and Configuration

Setting up Wi-Fi at home or in a small office is important for connecting phones, laptops, and other devices to the internet. The main parts of a Wi-Fi setup are the modem, the router, and the device settings.

The modem connects to the internet from your service provider. The router connects to the modem and sends out a Wi-Fi signal to your devices. Some devices combine both modem and router in one box.

To set up the Wi-Fi, you need to access the router settings. This is done by typing the router's IP address (often 192.168.0.1 or 192.168.1.1) into a web browser. You'll need a username and password to log in.

Inside the settings, you can change the SSID (Service Set Identifier), which is the name of your Wi-Fi network. You should choose a strong password to protect the network from others trying to connect without permission. Using WPA2 or WPA3 security is best.

Another important setting is IP allocation. The router gives each connected device an IP address. This can be done automatically (dynamic IP) or manually (static IP). Most home users use dynamic IPs.

Understanding these basic settings helps keep the network safe and running smoothly. A well-configured Wi-Fi network is fast, secure, and easy to use.

Step by step: <https://www.cisco.com/c/en/us/solutions/small-business/resource-center/networking/how-to-set-up-router.html#~router-setup-steps>



Day 8- Operating Systems

An operating system (OS) is the main software that controls a computer. It helps manage files, run programs, and connect to hardware like a printer or keyboard. Two popular operating systems are Windows and Linux. Each has its own features and uses.

Windows, made by Microsoft, is the most commonly used OS for home and office computers. It has a user-friendly design with a desktop, taskbar, and Start menu. Windows supports many programs, including Microsoft Office, games, and design software. It is often used in schools, businesses, and homes.



Linux is an open-source OS, which means it is free and can be changed by anyone. It is popular for servers, programming, and cybersecurity. There are many versions of Linux, like Ubuntu and Linux Mint, which are also easy to use. Linux is known for being fast, secure, and stable.



There are some differences between them. Windows is easier for beginners and has more software support. Linux is better for advanced users who want more control. In Linux, users often use the terminal for tasks, while Windows uses menus and buttons.

Trying basic tasks like creating folders, installing apps, or connecting to Wi-Fi in both systems helps users understand how they work. Learning both Windows and Linux is useful for future tech skills and careers.

Day 9- Installing OS

Installing an Operating System (OS) is the first step to make a computer work. Two popular systems are Windows and Linux. You can install them on a real system (a physical computer) or on a Virtual Machine (VM), which lets you run another OS inside your current system.

To install Windows, you need a bootable USB or DVD with the Windows setup. You start the computer, enter the BIOS/UEFI, and select the USB/DVD as the boot device. Then you follow the steps to choose language, format the hard drive, and finish the setup. After that, Windows will install and restart.

Linux installation is similar. You use a bootable USB or DVD with a Linux version like Ubuntu or Linux Mint. You can try it without installing, or install it fully. The steps include choosing your region, creating a user account, and selecting installation options.

A Virtual Machine (like VirtualBox or VMware) is a safe way to try Windows or Linux without changing your main system. You create a virtual hard drive, load the OS image (ISO file), and follow the same installation steps.

Installing an OS teaches important skills like disk formatting, partitioning, and system setup. It also helps users understand the differences between Windows and Linux.

Links: https://youtu.be/9m7QmU9sF1U?si=Us_NJi7Jf6bZLcV6
<https://youtu.be/xDHLM-FnwJQ?si=6ch99d1LQ31W5NqE>
https://youtu.be/_BoqSxHTTNs?si=kBbul48CwNDDHtcV

Day 10- File Systems and Utilities

A file system is a way a computer organizes and stores data on a drive. Different operating systems use different file systems. Understanding these file systems and how to manage them is important for keeping your computer running well.

NTFS (New Technology File System) is used by Windows. It supports large files, file permissions, and data protection. It is the best choice for Windows users, especially for internal drives.

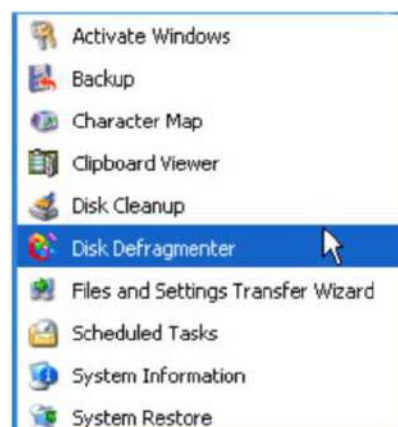
FAT32 is an older file system that works on many devices, including Windows, Linux, and USB drives. However, it has a file size limit of 4 GB, so it is not good for large files.

EXT4 is the file system used by most Linux systems. It is fast, stable, and supports large storage sizes. Windows cannot read EXT4 without extra software.

Disk management is the process of organizing and maintaining drives. Windows has a built-in tool called Disk Management, which lets users format drives, create partitions, or assign drive letters. Linux has tools like GParted for similar tasks.

System tools like Check Disk, Disk Cleanup, and Defragmenter in Windows help keep the system clean and error-free. Linux has tools like fsck for checking file systems and BleachBit for cleaning files.

Learning about file systems and utilities helps users manage storage better and fix common problems.



Day 11- Introduction to Software Types

Software is the set of programs that tells a computer what to do. There are three main types of software: system software, application software, and utility software. Each type has a different role in helping the computer function properly.

System software is the most important type. It controls the computer hardware and runs basic tasks. The best example is the Operating System (OS), like Windows, Linux, or macOS. System software helps the computer start, run programs, and manage memory and devices.

Application software is what people use to do everyday tasks. These programs help users write documents, watch videos, browse the internet, or play games. Some common examples are Microsoft Word, Google Chrome, Zoom, and Photoshop. These programs run on top of the operating system.

Utility software helps keep the computer running smoothly. It is usually small and focused on specific jobs. Examples include antivirus programs, file managers, disk cleanup tools, and backup software. Utilities are important for security, performance, and managing files or storage.

Each software type works together to give users a good experience. The system software creates the base, the application software helps people work and have fun, and utility software keeps everything safe and organized.



Day 12- Installing & Configuring Software

Installing and configuring software is an important skill for using a computer. After setting up the operating system, the next step is to add the programs we need for work, communication, and entertainment.

One of the most common software types is the office suite, used for writing, making presentations, and working with numbers. Popular examples include Microsoft Office (with Word, Excel, PowerPoint) and LibreOffice, which is free and works on Windows and Linux. After installation, users can adjust settings like language, autosave, and themes.

Antivirus software protects the computer from viruses and other threats. Some well-known antivirus programs are Avast, Kaspersky, and Windows Defender. During setup, users should enable real-time protection and automatic updates to stay safe.



Web browsers are used to access the internet. Common browsers include Google Chrome, Mozilla Firefox, and Microsoft Edge. After installing a browser, users can set a homepage, add extensions, and choose privacy settings.



Multimedia tools are used to play or edit music, videos, and images. Examples are VLC Media Player, Audacity, and GIMP. Configuration options may include default file types, quality settings, and device inputs.



Knowing how to install and set up these tools helps users work faster, stay safe, and enjoy a better computer experience.

Day 13- Basic Troubleshooting

Sometimes computers have problems, but many of them can be fixed with simple troubleshooting steps. Three common issues are software not starting, driver problems, and slow performance.

If a software program doesn't start, the first step is to restart the computer. If the problem continues, check if the software is updated or reinstall it. On Windows, you can right-click the shortcut and select "Run as administrator" if permissions are causing the issue.

Driver issues can happen when hardware like printers, sound cards, or video cards don't work correctly. A driver is a small program that helps hardware talk to the operating system. To fix this, go to Device Manager (in Windows), find the device with a warning sign, and choose "Update driver." You can also download the latest driver from the manufacturer's website.

If the computer is running slowly, check for too many programs running at once. Close unnecessary apps or restart the system. Use tools like Task Manager to see which programs use the most memory or CPU. Cleaning up the hard drive and running antivirus scans can also help speed up the system.

Basic troubleshooting helps users solve everyday problems without needing expert help. It keeps the computer working smoothly and saves time.

Software not starting: <https://youtu.be/BpyWfjteGqs?si=NnQLPRzIz89eAx0g>

Driver issues: https://youtu.be/ujVWBpW64_s?si=CIYtLYy0el3SwNNi

Slow performance: <https://youtu.be/hUt1sYLfMkQ?si=x7o9mruUFibJStJS>

Day 14- Mini IT Project Design

This mini IT project focuses on designing and setting up a basic computer and network system for a small office with five employees. Each person will need a computer to work efficiently, using programs like word processors, email, and internet browsers.

The project starts with choosing the hardware. Each workstation will include a desktop computer with a monitor, keyboard, mouse, and speakers. All computers will use the Windows 11 operating system, and come pre-installed with important software such as Microsoft Office, Google Chrome, antivirus protection, and multimedia tools. A shared printer and scanner will be installed and connected to the network so everyone can use them.

The next step is building the network system. A fast internet connection will be provided by an ISP (Internet Service Provider). A modem connects to a Wi-Fi router, which provides wireless internet. For better speed and reliability, a network switch will be added to connect all computers using Ethernet cables.

Each device will get an IP address automatically using DHCP, and a file server will be used to store shared documents and create daily backups. Each employee will have a personal user account with a password for security.

The Wi-Fi network will have a strong password, and the firewall on the router will be enabled to prevent attacks. Basic software settings will be customized for each user, including desktop shortcuts and default apps.

This project shows how to create a simple, well-organized, and secure office IT system. It helps improve teamwork, protects data, and keeps everything connected for a smooth work experience.

Day 15- Presentation & Reflection

During the internship, many important IT skills were learned and practiced through research, hands-on tasks, and project work. The experience began with exploring computer components, focusing on the motherboard, CPU, RAM, and storage devices (HDD/SSD). Their roles, compatibility, and how they work together were clearly understood.

Next, the focus moved to peripheral devices such as monitors, keyboards, mice, and printers. Learning how to install and use them properly helped build confidence in setting up full computer systems. Then, the step-by-step process of assembling a computer was studied, from placing the motherboard into the case to connecting all parts safely.

Hardware maintenance was also important—practicing safe handling, cleaning components, and learning to apply thermal paste correctly. Time was also spent exploring BIOS/UEFI settings, such as changing the startup sequence and choosing the boot device, which helped when learning how to install Windows and Linux, both on real computers and virtual machines.

The internship also included lessons on file systems (NTFS, FAT32, EXT4), using disk management tools, and understanding system utilities. Practical tasks involved installing and configuring software like office suites, antivirus, browsers, and multimedia tools. Troubleshooting skills were developed to fix slow systems, software errors, and driver issues.

The final project involved designing a mini IT setup for an office, including selecting hardware, installing software, building a network with a router and switch, and securing it with proper settings.

This presentation reflects not only technical skills but also problem-solving, research, and planning abilities. The internship gave real experience in building, managing, and maintaining computer systems, which will be useful in future studies and IT careers.