

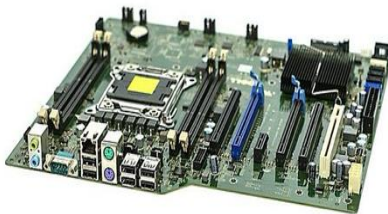
Danca Jessica-Information Technologies Department

14/04/2025

Day 1: Computer Components – Motherboard, CPU, RAM, HDD/SSD

A computer is made up of several key components that work together to perform various tasks. The most important ones include the motherboard, CPU, RAM, and storage devices like HDDs and SSDs.

The motherboard is the main circuit board that connects all the components of a computer. It provides slots and sockets for the CPU, RAM, and storage devices. It also allows communication between all parts of the system.



The CPU (Central Processing Unit) is often called the brain of the computer. It performs all the calculations and instructions that allow software and hardware to function. The CPU must be compatible with the motherboard, meaning the socket type and chipset must match.



RAM (Random Access Memory) is temporary memory that stores data and instructions currently being used by the CPU. More RAM allows a computer to multitask better. Like the CPU, RAM must be compatible with the motherboard's type (DDR3, DDR4, etc.) and speed.



HDDs (Hard Disk Drives) and SSDs (Solid State Drives) are used for permanent storage. HDDs are cheaper and have more storage capacity, while SSDs are faster and more reliable. Modern motherboards usually support both.



In conclusion, understanding the functions and compatibility of these components is essential when building or upgrading a computer. All parts must be carefully selected to work well together for optimal performance.

15/04/2024

Day 2: Peripheral Devices – Monitors, Keyboards, Mice, Printers

Peripheral devices are external hardware components that connect to a computer to add functionality. They are essential for interacting with the system and performing various tasks. Common peripheral devices include monitors, keyboards, mice, and printers.

A monitor is an output device that displays the visual output from the computer. It connects through ports like HDMI, VGA, or DisplayPort. Modern monitors support high resolutions and refresh rates, improving the user experience, especially for gaming or graphic design.



A keyboard is an input device used to type text and send commands to the computer. Keyboards can be wired via USB or wireless using Bluetooth. Installing a keyboard is usually simple—just plug it in, and the operating system detects it automatically.



A mouse is another input device that controls the cursor on the screen. Like keyboards, mice can be wired or wireless. They connect via USB or Bluetooth, and most modern systems install drivers automatically.



Printers are output devices that produce physical copies of digital documents or images. They connect to the computer via USB, Wi-Fi, or Bluetooth. Printer installation often involves installing specific software or drivers from the manufacturer's website or a provided CD.



In summary, peripheral devices are easy to install and use, and they play a crucial role in how users interact with a computer system.

16/04/2025

Day 3: Computer Assembly – Steps to Assemble a Computer

Assembling a computer involves carefully installing all the components into the case in the correct order. Understanding each step is important to ensure the system works properly. Watching PC build videos is a great way to learn the process visually and simulate the experience.

The first step in assembling a computer is installing the CPU onto the motherboard. This must be done carefully to avoid bending any pins. Next, the RAM is inserted into the memory slots, followed by installing the CPU cooler to keep the processor from overheating.

After these components are secured, the motherboard is placed inside the computer case and screwed into position. The power supply unit (PSU) is then installed to provide electricity to all components. All power cables are connected to the motherboard, CPU, and storage devices.

Next, storage devices like HDDs or SSDs are mounted in their designated areas and connected with data and power cables. The graphics card (if used) is installed into the appropriate PCIe slot on the motherboard.

Finally, all peripheral devices (monitor, keyboard, mouse) are connected, and the system is powered on for the first time. If everything is connected properly, the system should boot into the BIOS or operating system.

This process helps develop hands-on skills and a better understanding of how each component fits and functions in a complete PC system.

17/04/2025

Day 4: Hardware Maintenance – Cleaning, Thermal Paste, Safe Handling, Explore maintenance best practices

Maintaining computer hardware is essential for ensuring long-term performance, stability, and reliability. Dust, heat, and improper handling are some of the most common causes of hardware failure. Regular maintenance not only helps prevent issues but also extends the lifespan of the components.

One of the most important parts of hardware maintenance is cleaning. Over time, dust builds up inside the computer case, especially around fans, heat sinks, and vents. This dust can block airflow, causing components like the CPU and GPU to overheat. Overheating can lead to performance drops, unexpected shutdowns, or even permanent damage. To clean the inside of a computer, it's recommended to turn off the system, unplug it, and use a can of compressed air to blow dust off the components. Special attention should be given to fans, power supply vents, and any filters in the case. Never use a vacuum cleaner or touch components directly with a cloth, as this can generate static electricity and damage sensitive parts.

Another key task is checking and reapplying thermal paste. Thermal paste is a compound applied between the CPU and the cooler to improve heat transfer. Without it, or if the paste has dried out, the CPU can overheat very quickly. When removing an old CPU cooler, the old thermal paste should be cleaned off using isopropyl alcohol and a lint-free cloth. A small amount (about the size of a pea) of new thermal paste is then applied before reinstalling the cooler. This simple step can make a big difference in temperature and system performance.

Equally important is safe handling of computer components. Many parts, such as the CPU, RAM, and motherboard, are sensitive to static electricity. Even a small static discharge can permanently damage them. To avoid this, it's best to wear an anti-static wrist strap or frequently touch a grounded metal object while working. Components should be handled by their edges, avoiding direct contact with circuits or connectors. When not in use, parts should be placed on anti-static bags or non-conductive surfaces.

Proper computer maintenance is essential for keeping systems running efficiently and avoiding hardware issues. Best practices include regularly cleaning dust from internal components to prevent overheating, checking and reapplying thermal paste on the CPU as needed, and keeping all cables and connections secure. It's also important to handle parts with care using anti-static precautions. Updating software, drivers, and the operating system ensures the system stays secure and compatible. Regularly

scanning for viruses and backing up important data are also key habits. Following these steps helps extend the lifespan of the computer and ensures optimal performance over time.

In conclusion, proper hardware maintenance includes regular cleaning, correctly applying thermal paste, and handling parts with care. These practices help prevent overheating, reduce the risk of failure, and ensure that the computer stays in good working condition for as long as possible. Learning how to maintain a PC is a valuable skill for anyone who uses computers regularly or is interested in building and repairing them.

18/04/2025

Day 5: BIOS/UEFI Settings – Startup Sequence, Boot Device, Basic Settings

The BIOS (Basic Input/Output System) or UEFI (Unified Extensible Firmware Interface) is a crucial part of a computer's system. It is the first software that runs when the computer is turned on and is responsible for detecting hardware, performing checks, and starting the boot process. Understanding how BIOS/UEFI works and learning to use it safely is an important step in computer maintenance and troubleshooting.

One of the most important settings in BIOS/UEFI is the startup sequence. This determines the order in which the system checks devices (such as SSDs, HDDs, or USB drives) to find an operating system. For example, when installing Windows or Linux, users must often set the USB drive as the first boot device.

Another essential function is choosing the boot device. This setting allows users to select where the computer boots from — useful when installing a new OS, running diagnostics, or booting from a recovery tool. Changing the boot device temporarily or permanently can be done easily within the BIOS/UEFI menu.

In addition to boot settings, BIOS/UEFI includes many basic system configurations. These include setting the system clock, enabling or disabling components like onboard audio or USB ports, checking system temperatures, and more. Some advanced settings also allow users to adjust CPU and RAM performance, but these should be changed with care.

Most modern systems use UEFI, which has a more user-friendly graphical interface compared to traditional BIOS and supports larger drives and faster boot times.

To safely learn BIOS/UEFI settings, students can use virtual BIOS simulators online. These tools allow exploration of menus and options without any risk to real hardware.

Learning BIOS/UEFI basics is a valuable skill for anyone who works with or builds computers.

21/04/2025

Day 6: Networking Basics – LAN, WAN, IP, Router, Switch

Networking is the foundation of modern communication, allowing devices to connect, share information, and access the internet. Whether in homes, schools, or businesses, understanding how networks function is an essential skill in the IT field.

A LAN (Local Area Network) is a network that connects devices within a small area, like a single building or room. It is commonly used in homes, offices, or schools. LANs are fast, secure, and rely on devices such as switches and routers to connect computers, printers, or other devices.

A WAN (Wide Area Network) connects multiple LANs across long distances, such as between cities or countries. The most well-known example of a WAN is the internet. WANs require more complex infrastructure and are typically managed by internet service providers (ISPs).

Each device on a network has a unique IP address (Internet Protocol address). This address allows devices to send and receive information. There are two main types: IPv4, which is more common, and IPv6, which supports a larger number of devices. IP addresses can be assigned manually (static) or automatically by a router using DHCP (Dynamic Host Configuration Protocol).

A router is a device that connects a LAN to the internet or other networks. It directs network traffic and assigns IP addresses to devices within the local network. Most modern routers also offer wireless (Wi-Fi) capabilities, allowing devices to connect without cables.

A switch is used to connect multiple devices within the same LAN. It works by receiving data and sending it only to the device it's meant for, improving network efficiency and speed. Switches are smarter than older hubs, which sent data to all devices regardless of the destination.

By watching networking tutorials and exploring interactive tools, students can learn how these components work together. Understanding these basics is the first step toward mastering network configuration, troubleshooting, and even cybersecurity.

22/04/2025

Day 7: Wi-Fi Setup and Configuration

Setting up and configuring a Wi-Fi network is an essential part of managing a reliable and secure internet connection. Whether for home use, school, or office, understanding the basics of modem/router settings, SSID, passwords, and IP allocation is crucial for smooth network performance.

The modem is the device that connects your home or office to your Internet Service Provider (ISP). It brings internet access into your building. The router, on the other hand, distributes that connection to all devices in the network, either wirelessly (Wi-Fi) or through Ethernet cables. Most routers have a web-based interface that can be accessed by entering the router's IP address (commonly 192.168.0.1 or 192.168.1.1) in a browser.

One of the first things to configure is the SSID (Service Set Identifier), which is the name of your Wi-Fi network. It should be easy to recognize but not include personal details like your name or address. It's also important to secure the network by setting a strong password. WPA2 or WPA3 encryption is recommended, along with a password that combines upper and lowercase letters, numbers, and special characters.

Next is IP allocation. Routers typically use DHCP (Dynamic Host Configuration Protocol) to automatically assign IP addresses to each device connected to the network. However, advanced users can assign static IPs to devices like printers, servers, or smart TVs to ensure a consistent connection. This is especially useful in troubleshooting or when port forwarding is needed.

By learning how to adjust these settings, users can enhance network security, manage connected devices more effectively, and reduce common issues like slow speeds or weak connections. Online tutorials and router simulators can provide safe environments to practice configuration without risking actual network stability.

23/04/2025

Day 8: Operating Systems – Windows and Linux: Features, Uses, Differences

An operating system (OS) is the software that manages computer hardware, software resources, and provides services for computer programs. Two of the most widely used operating systems are Windows and Linux. Understanding their features, uses, and differences helps users choose the right one for their needs.

Windows, developed by Microsoft, is a commercial OS known for its user-friendly graphical interface, wide compatibility with applications, and strong support for gaming and productivity tools. Windows is commonly used in homes, schools, and offices. It supports a wide range of hardware and is pre-installed on many commercial computers and laptops. Users can perform everyday tasks such as browsing the web, using Microsoft Office, editing photos, and playing games with ease.

Linux is an open-source operating system, meaning its source code is freely available to anyone. It comes in many distributions (or “distros”) such as Ubuntu, Fedora, and Debian. Linux is widely used in servers, cybersecurity, programming, and education. It is known for being highly customizable, lightweight, and secure. While Linux has a steeper learning curve, it is preferred by developers and IT professionals due to its powerful terminal, system control, and efficiency.

Key differences between Windows and Linux include licensing (Windows is paid; Linux is free), user interface (Windows is more GUI-based; Linux often relies on command-line), and software availability (Windows supports more commercial apps; Linux excels in open-source tools).

To understand these systems better, users are encouraged to try basic tasks in both operating systems. For example, creating folders, installing software, using the terminal/command prompt, or browsing the web. Virtual machines or live USBs can allow you to explore Linux without altering your current system.

In conclusion, both Windows and Linux have strengths and are suited to different tasks. Learning to work with both broadens your skills and prepares you for various environments in IT and beyond.

24/04/2025

DAY 9 INSTALLING OS WINDOWS/LINUX INSTALLATION ON VM OR REAL SYSTEM

The objective of this project is to understand and demonstrate the process of installing popular operating systems like Windows and Linux on both virtual machines and real hardware systems. This helps in learning system setup, OS selection, and configuration steps.

Operating Systems (OS) are essential for running and managing hardware and software resources on a computer. Two of the most widely used OS types are Microsoft Windows and various Linux distributions such as Ubuntu, Fedora, and Debian. OS installation can be performed on a real system (physical machine) or a virtual machine (VM). A VM is a software-based emulation of a computer, allowing users to run multiple OS on the same hardware using programs like VirtualBox, VMware, or Hyper-V.

To install an OS on a VM, first install a virtualization software. Create a new virtual machine by allocating resources like RAM, hard disk, and CPU cores. Then, mount the ISO file of the OS and boot the VM. Follow the installation wizard to complete the setup. This method is safe for testing and learning purposes.

Installing an OS on a real system involves creating a bootable USB drive with the OS ISO. Boot the computer from the USB and follow the installation steps. This process replaces or installs the OS directly on the computer's hardware, making it ready for daily use.

Learning how to install Windows or Linux provides foundational knowledge for IT students and professionals. It teaches system setup, partitioning, file systems, and driver installation. Mastery of this process is crucial for careers in system administration, cybersecurity, and software development.

25/04/2025

Day 10: File Systems and Utilities – NTFS, FAT32, EXT4, Disk Management, and System Tools

A file system is a method used by the operating system to store, retrieve, and organize files on a storage device. The most common file systems are NTFS, FAT32, and EXT4, each with unique features and purposes.

NTFS (New Technology File System) is the default file system used by Windows. It supports large files, file permissions, data encryption, disk quotas, and journaling, which helps recover data in case of a system crash. It is ideal for internal hard drives on Windows systems.

FAT32 (File Allocation Table 32) is an older file system commonly used on USB flash drives and memory cards. It is compatible with many devices and operating systems, including Windows, macOS, and Linux. However, it has limitations, such as a maximum file size of 4GB and lack of security features.

EXT4 (Fourth Extended File System) is the most widely used file system on Linux distributions. It supports large file sizes, journaling, and offers fast performance. It is more resistant to file corruption and is a standard in Linux environments.

Disk management tools help manage storage devices and partitions. In Windows, the Disk Management utility lets users create, format, and delete partitions, as well as assign drive letters. In Linux, tools like GParted and fdisk allow similar tasks through a graphical or command-line interface.

System tools like CHKDSK in Windows and fsck in Linux are used to scan disks and repair file system errors. These tools ensure the health of the storage system and help prevent data loss.

Understanding file systems and disk utilities is essential for system administrators and IT technicians. They ensure proper data management, better system performance, and secure file handling.

28/04/2025

Day 11: Introduction to Software Types – System Software, Application Software, Utilities

Software is a set of instructions that tell a computer how to perform specific tasks. It is generally divided into three main types: system software, application software, and utility software. Each type plays a different role in helping the computer function effectively.

System software is the core software that manages the computer hardware and provides a platform for other software. The most important example is the operating system (OS), such as Microsoft Windows, macOS, or Linux. The OS controls the computer's resources, runs programs, and manages files and devices. Other examples of system software include device drivers and firmware.

Application software allows users to perform specific tasks or solve particular problems. These programs are designed for end-users and include tools like Microsoft Word (for writing documents), Google Chrome (for browsing the internet), and Adobe Photoshop (for editing images). There are also mobile apps, games, and educational software that fall under this category.

Utility software supports the operating system by performing specific maintenance or optimization tasks. These tools help manage, repair, or analyze the computer system. Examples include antivirus software (like Avast or Windows Defender), disk cleanup tools, file compression programs (like WinRAR or 7-Zip), and backup software.

Understanding these categories helps users choose the right software for their needs and better manage their computer systems. It also lays the foundation for learning more complex IT concepts, such as software development, system administration, and cybersecurity.

29/04/2025

Day 12: Installing & Configuring Software – Office Suites, Antivirus, Browsers, Multimedia Tools

Software installation and configuration are essential steps in setting up a fully functional computer system. Users often need various programs to complete daily tasks, stay protected online, browse the internet, or work with media files. This project covers the most common software types and how to install and configure them.

Office suites are programs used for productivity tasks like writing, creating spreadsheets, and making presentations. One of the most popular examples is Microsoft Office, which includes Word, Excel, and PowerPoint. Another free alternative is LibreOffice, which offers similar tools. Installation usually involves downloading the installer from the official website and following setup instructions. Configuration includes setting language preferences, saving locations, and default file formats.

Antivirus software protects the system from malware, viruses, and other online threats. Popular antivirus programs include Avast, Bitdefender, and Windows Defender (built into Windows 10 and 11). Installation typically requires downloading the setup file, running it, and allowing the software to perform an initial system scan. Configuration may involve setting real-time protection, scheduled scans, and internet protection levels.

Web browsers are used to access the internet. Some well-known browsers are Google Chrome, Mozilla Firefox, Microsoft Edge, and Opera. Installation is simple—download from the official site and run the installer. After setup, users can sign in to sync bookmarks, history, and extensions. Browsers can also be customized with themes and privacy settings.

Multimedia tools are used for playing, editing, or managing media files like music and video. Examples include VLC Media Player, Windows Media Player, and Audacity (for audio editing). These tools can be installed from their websites and often allow custom setup options like file associations and codecs.

Installing and configuring software is an important skill for any computer user. It ensures the system is equipped with the right tools for work, protection, communication, and entertainment.

30/04/2025

Day 13: Basic Troubleshooting – Software Not Starting, Driver Issues, Slow Performance

Troubleshooting is the process of identifying and solving problems that can affect the normal operation of a computer. Knowing how to fix basic issues is an important skill in IT and everyday computer use. The most common problems include software not starting, driver errors, and slow performance.

Software not starting is a frequent problem that can be caused by corrupt files, missing dependencies, or conflicts with other programs. The first step is to restart the computer. If the problem continues, users can try reinstalling the software, running it as an administrator, or checking for updates. In Windows, the Task Manager can also be used to end any frozen processes.

Driver issues often occur when the system cannot communicate properly with hardware components like the printer, graphics card, or sound device. Signs of a driver issue include non-functional devices or error messages. The solution is to open Device Manager, find the problematic device, and update or reinstall its driver. Sometimes downloading the latest driver directly from the manufacturer's website is necessary.

Slow performance can happen when too many programs are running, the disk is full, or the system is infected with malware. To improve speed, users can open Task Manager to check which applications use the most resources and close unnecessary ones. Running Disk Cleanup, uninstalling unused software, scanning for viruses, and increasing RAM can also help.

In general, troubleshooting involves observing the problem, identifying possible causes, and applying step-by-step solutions. Simple actions like restarting the system, checking connections, and updating software or drivers often solve the issue.

Learning basic troubleshooting helps users avoid frustration, reduce downtime, and keep their computers running smoothly.

01/05/2025

Day 14: Mini IT Project Design – Setting Up a New Office Computer & Network System

Scenario Overview

You are part of an IT team assigned to set up the computer and network infrastructure for a new office that will host 10 employees. The office will perform general business tasks such as word processing, data entry, online meetings, and document sharing. Your role is to plan, select, and explain the necessary hardware components and network system to ensure smooth, efficient, and reliable operation for daily work.

Computer Setup Requirements

Each employee will be provided with a personal workstation. Your design must include the following essential computer components:

1. Motherboard

The motherboard is the main platform where all computer components connect. It must be compatible with the CPU and RAM you choose. Make sure it includes:

- At least four USB ports
- One or more PCIe slots for possible future expansions (e.g., graphics card)
- M.2 or SATA slots for SSD storage
- Gigabit Ethernet port for wired internet access
- Support for DDR4 RAM

2. CPU (Central Processing Unit)

The CPU will handle all the processing tasks. Choose a modern, energy-efficient processor like an Intel Core i5 or AMD Ryzen 5. These offer good performance for business tasks without overheating or using too much power. Ensure that:

- The CPU socket matches the motherboard (e.g., LGA1200 or AM4)
- The chipset is compatible for optimal performance and stability

3. RAM (Random Access Memory)

RAM stores temporary data used by open programs. For multitasking (e.g., browsing, using spreadsheets, and running video calls), each workstation should have at least:

- 8GB of DDR4 RAM (upgradeable to 16GB for future needs)
- A RAM speed that matches the motherboard (e.g., 2666MHz or 3200MHz)

4. Storage (SSD)

Fast storage improves system responsiveness. Equip each computer with:

- A 512GB Solid State Drive (SSD) for fast boot times and program loading
 - Optional secondary 1TB HDDs for file storage if needed
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Network Setup Requirements

A reliable and secure network is crucial for collaboration, internet access, and file sharing.

1. Internet Connection

- A business-class modem/router from an internet service provider
- Minimum of 200 Mbps download speed for a stable connection during video calls and file uploads

2. Router and Switch

- A gigabit router to handle network traffic
- A 16-port switch to connect all computers and printers through Ethernet cables

3. Wireless Access

- One or two wireless access points placed in central locations to ensure good Wi-Fi coverage for mobile devices and guests
- Wi-Fi should support at least 802.11ac (Wi-Fi 5) or higher for fast wireless performance

4. Server and Backup

(Optional but recommended for small offices)

- A local file server for storing shared documents and performing daily backups
 - External hard drives or cloud services (e.g., Google Drive, OneDrive) for backup redundancy
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Component Compatibility Notes

When selecting hardware, always ensure:

- CPU socket and motherboard socket match (e.g., Intel LGA1200, AMD AM4)
- RAM type matches the motherboard (e.g., DDR4 only, up to a certain speed)
- SSD uses the supported interface (SATA or M.2 NVMe)

Jessica – Information Technologies Department

02/05/2025

Day 15 – Presentation & Reflection

Internship Summary & Final IT Project

Over the past 15 days, I've taken a deep dive into the world of IT. From understanding the core components of a computer to building a small office network from scratch, every day brought something new to explore. This internship wasn't just about reading or watching tutorials—it was about putting knowledge into practice and learning through hands-on experience.

Week 1 – Getting to Know the Hardware

My journey started with the basics: the motherboard, CPU, RAM, and storage (HDD/SSD). I didn't just learn what each part does—I learned how they fit together, and how important compatibility is (like matching the CPU socket with the motherboard and using the correct type of RAM).

After that, I looked into peripheral devices—keyboards, monitors, printers—and how they connect and interact with the main system.

Then came a big step: simulating the assembly of a full desktop PC. This made all the theory click into place. I practiced identifying components, inserting RAM correctly, placing the CPU, and connecting power cables.

I also learned how to take care of hardware—how to clean components, apply thermal paste, and ensure the system stays safe and efficient over time.

By the end of the week, I was exploring BIOS/UEFI settings—learning how to set boot priorities and make basic system configurations before the operating system even loads.

Week 2 – Connecting the Dots: Networking & Operating Systems

With the hardware sorted, I moved on to networking. I discovered how LAN and WAN connections work, what IP addresses are, and how routers and switches control the flow of data.

One of the more interesting parts was configuring Wi-Fi settings—setting up SSIDs, passwords, and static IP addresses.

After that, I explored operating systems, comparing Windows and Linux, learning their features, and installing them myself. I used virtual machines to test things safely and got a good feel for what makes each OS unique.

Then I dug into file systems and utilities—learning about NTFS, FAT32, EXT4, and tools for partitioning, formatting, and maintaining storage drives.

Week 3 – Software and Final Project

In the final week, I focused on software—both system and application software. I practiced installing and configuring useful tools like office suites, antivirus software, and drivers.

I also learned the basics of troubleshooting—what to do when a program won't start, when the system runs slowly, or when drivers fail. It gave me confidence to approach real-world tech issues logically and calmly.

Day 14 – Final Mini Project: Office Setup

For my final project, I was tasked with designing an IT setup for a small office of 10 employees. I created a full plan that included:

- Selecting compatible computer components

- Designing a small office network using routers and switches
 - Assigning IP addresses and planning both wired and wireless access
 - Ensuring security with passwords and backup options (local server + cloud)
 - Organizing the workspace for easy access and future expansion
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Final Reflection

What I Gained Technically:

- I can now build and maintain a basic PC setup
- I understand how networking works and can set up small office systems
- I know how to install, configure, and troubleshoot operating systems and software

What I Gained Personally:

- I improved my ability to learn independently and solve problems
 - I became more organized and confident in explaining technical concepts
 - I learned how to structure a full IT project—from planning to documentation
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This internship gave me more than just knowledge—it gave me practical skills and the confidence to take the next steps in my IT journey. The combination of research, hands-on practice, and real-world simulations made this a powerful learning experience that I'll carry forward.