## Digital Literacy IC3 Global Standard 6:

# Mastering the Essentials of Modern Computing

April 2025

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IGNITING POSSIBILITIES

# Digital Literacy IC3 Global Standard 6

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# Course Description

This course introduces learners to the foundational concepts and practical skills required for the IC3 Digital Literacy certification. This certification is ideal for entry-level learners to be able to navigate the digital world. The course content is mapped to Certiport's IC3 Digital Literacy Level 1, Level 2, and Level 3 certification exam objectives, ensuring alignment with a globally accepted, standard-based credential for validating skills.

Learners will begin with an introduction to foundation knowledge and skills to begin using a digital computing device. Learners will explore seven domains to understand concepts related to technology basic, what digital citizenship is, how to manage information, how content is created, communicate with others globally, collaborate with others, and then identify safety and security concepts when working in the digital world.

Successful completion of the certification exam validates the knowledge and skill sets of individuals seeking employment or advancement of skills working in a digital world.

**Suggested Course Length: 71-134 Hours**

# Course Series

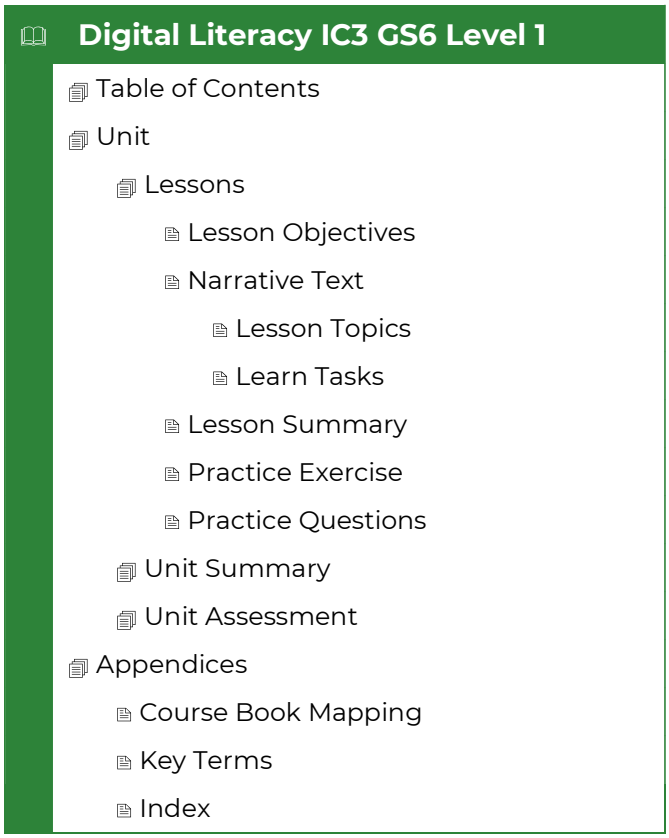
This guide is part of CCI's Digital Literacy series.

# Course Requirements

There are no requirements prior to proceeding with this course.

# Course Book Design

This course book was developed for instructor-led training and will assist you during class. Together with comprehensive instructional text and objectives checklists, this course book provides easy-to-follow hands-on exercises and a glossary of course-specific terms. This course book is organized in the following manner:




You will find this course book to be a valuable resource for reviewing exercises and applying the skills you have learned. Each lesson concludes with questions that review the material. These questions are provided as a study resource only and in no way guarantee a passing score on a certification exam. Appendices in the back of this course book provide additional information.

# Course Objectives

This course teaches the skills you will need to successfully complete the IC3 Digital Literacy GS6 Level 1 certification offered by Certiport. These skill sets are introduced using multiple types of exercises and review materials.

After completing this course, you will understand the following:

# Conventions and Graphics

The following conventions are used in CCI learning materials.

**Key Terms** – Vocabulary terms that are presented in the narrative appear in ***bold,*** *italic* font style.

**Procedures** – Procedures and commands you are instructed to activate are indicated in **bold** font style.

**Technical Notes** point out exceptions or special circumstances that you may find when working through a particular process, or may indicate there is another method to complete the task.

# Downloading Learner Files

To complete the exercises in this course, you will need the provided exercise files. Follow these steps to download them.

1. Launch your browser and navigate to the Student Data Files page on CCI Learning's website, located at http://www.ccilearning.com/data.
2. Enter: **7520** in the *Courseware #* field, then click **Find Data**.

   Note: Depending on the browser you are using, the ZIP file may be automatically saved in your Downloads folder, or you may be prompted to open or save the file.
3. Right-click the **ZIP file**, then select **Extract All** to display the Extract Compressed (Zipped) Folders dialog box.
4. Use the **Browse** button to navigate to the desired location to save your documents.

# Level 1 – Foundational Knowledge

# Unit 1: Technology Basics

## Unit Objectives

In this unit, you will be able to demonstrate a comprehensive understanding of hardware concepts, software concepts, browser concepts, and network concepts, including their components, functions, and interactions within the digital environment. Upon successful completion of this unit, you should be able to understand the following concepts:

- ☐ Hardware Concepts
- ☐ Software Concepts
- ☐ Browser Concepts
- ☐ Network Concepts

# Lesson 1: Hardware Concepts

## Lesson Objectives

In this lesson, you will be introduced to the hardware components of computing devices. You will also learn the purpose of each component and how the hardware components work together. Upon completion of this lesson, you should be able to identify the following:

- ☐ Key Internal Components
- ☐ Computing Devices
- ☐ Computer Memory
- ☐ Data Storage
- ☐ Input Devices
- ☐ Output Devices
- ☐ Device Connections

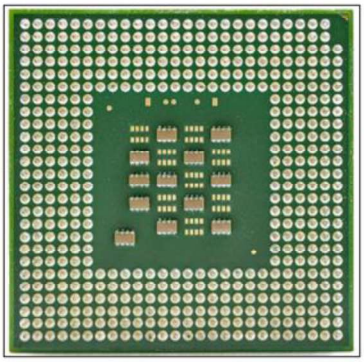
# Key Internal Components

Every computer has different parts inside it. The motherboard and the Central Processing Unit (CPU are two important parts. They are in charge of how the computer works on the inside.

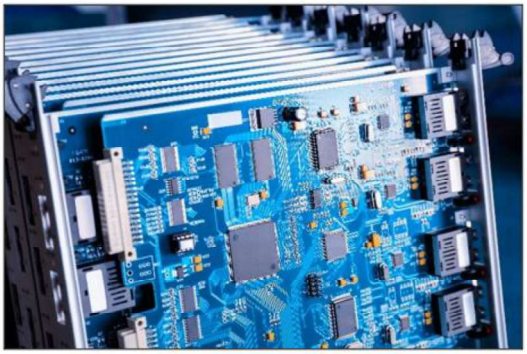
The motherboard is the main circuit board of the computer. It consists of the Central Processing Unit (CPU), Random Access Memory (RAM), and Read Only Memory (ROM). It helps connect all the other physical parts of the computer, like the power supply, storage units, and devices you connect to the computer.

The Central Processing Unit (CPU) is a tiny chip on the motherboard. It controls when instructions happen and how they communicate to each other inside the computer. It's often called the brain of the computer because it gives instructions to the hardware, software, and other parts of the computer.

| | |
|---|---|
| ***Motherboard*** | The main circuit board of a computer that connects and provides communication between various hardware components, including the CPU, RAM, storage devices, and more. |
| ***CPU (Central Processing Unit)*** | The primary hardware component responsible for executing instructions and performing calculations in a computer. It serves as the brain of the computer. |



Central Processing Unit (CPU)



Motherboard

Alex is embarking on the journey of building his own computer from scratch. He thoroughly researches compatible components, such as the CPU, motherboard, and RAM, carefully selecting each part to meet his performance and budget requirements.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Computing Devices

Desktop computers are made to be placed on top of a desk. They are strong and can do a lot of tasks. They have different ports to connect devices like printers or speakers. If something inside the computer breaks or needs to be upgraded, you can open the computer and change it out with a new part. For example, you can install a new video card to make the graphics better or a new audio card to make the sound clearer.

Windows Compatible Desktop iMac Desktop

An all-in-one computer is a special kind of computer that has everything you need in one place. Its appearance is like a regular computer monitor, but instead of just a screen, there are important parts inside the monitor like the brain (processor), memory, and storage. The complete computer is in a single piece. These computers are designed to be energy-efficient, which means they use less electricity than regular computers.

All-in-One Windows Computer All-in-One Mac Computer

Portable computers, like laptops or notebooks, are made to be comfortable to carry around. They are small, light, and can fit on your lap. Everything you need, like the screen, keyboard, camera, speakers, and mouse, is all in one piece. Laptops work just like desktop computers. They use the same parts inside, like a hard drive, memory, and processors. Laptops have a battery that you can charge with an AC adapter.


A Chromebook is a kind of laptop that is designed to run programs from the internet instead of programs stored on the computer itself. They can also work offline, but they are mainly meant for using programs on the internet. Chromebooks are light and strong, and they don't need a lot of power.

A tablet is a portable computer that you can hold in your hands with all the important parts, like the circuitry and battery, built into one device with a flat touchscreen display and comes with a microphone, speakers, and sensors to tell how you are holding the device.

Smartphones are small handheld devices that combine the features of a regular cell phone and a computer. You can install and use different programs called apps on smartphones. Smartphones have built-in cameras, video cameras, and memory, and they can use memory cards to store things. You can connect them to other devices and share photos and music.

| | |
|---|---|
| ***Desktop Computer*** | A stationary computer system that typically consists of a separate monitor, CPU tower or chassis, keyboard, and mouse. Desktops offer high performance and flexibility. |
| ***All-in-One Computer*** | A compact computer where the CPU, monitor, and other components are integrated into a single unit, reducing clutter and simplifying setup. |
| ***Portable Computer*** | A general term referring to any computer designed for convenient transport, such as laptops, notebooks, and netbooks. |
| ***Chromebook*** | A type of portable computer that runs Chrome's operating system, designed for web-based tasks and applications, often with lower-cost hardware. |
| ***Tablet*** | A handheld computing device with a touchscreen interface, designed for various applications, entertainment, and web browsing. |
| ***Smartphone*** | A mobile phone with advanced computing capabilities, featuring touchscreen interfaces, internet connectivity, and a wide range of applications. |

Oswaldo was deciding between a Chromebook and a tablet for his studies. He appreciated the tablet for its portability and touch-screen features and the Chromebook for its keyboard and efficient multitasking. Ultimately, he made the more practical choice for his academic needs and chose the Chromebook.

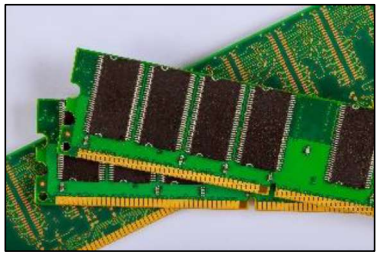
**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Computer Memory

A computer needs memory and storage space to run programs and create and use files. Every file used by a computer has a specific byte size. There must be enough memory to store the file when it is in use and sufficient storage space when not in use.

**Read Only Memory (ROM)** stores data that can be read and used but not changed. ROM chips store instructions that control the basic functions of the computer. These instructions remain in ROM regardless of whether the power is on or off.



**Random Access Memory (RAM)** is used for the temporary storage of information. Data and programs are read into memory from a storage location and passed from memory to the CPU. A computer could not run programs or be used to create or edit files without RAM.

| | |
|---|---|
| ***RAM (Random Access Memory)*** | A type of computer memory that provides temporary storage for data and program instructions that are actively being used by the CPU. It allows for quick access to and retrieval of information. |
| ***ROM (Read Only Memory)*** | Stores permanent data and instructions, used for booting up and critical software. |

**Note:** RAM can store data only while the computer is on. Any information stored in RAM disappears when the computer is turned off. When you close a program or save and close a file, the information is cleared from memory. The memory becomes available to store other data.

Tom was upgrading his PC and faced a choice between increasing the RAM or switching to a faster SSD with larger ROM capacity. He considered the improved performance and multitasking capabilities that more RAM would provide, but also acknowledged the benefit of faster data access and increased storage space offered by an SSD with a larger ROM. After careful consideration, Tom decided to prioritize upgrading the RAM, as it would significantly enhance his PC's overall speed and responsiveness, benefiting his daily computing tasks.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Data Storage

Software programs must be stored on the computer. Any files you create using a software program and want to retrieve in the future must also be stored. Programs and user files are saved to storage devices. These devices can be internal or external.

Internal storage devices are central storage locations inside a computer. Hard disks are the primary storage location for both data and programs. Software programs must be installed on a hard disk before you can use them. The operating system must also be installed on a hard disk.

**Solid-State Drive (SDD)** is a long-term internal storage device used to store programs, documents, and files. An SSD device stores data on a set of memory chips and does not have any moving parts. This makes it much faster to save and retrieve files and software applications.

**Hard Disk Drive (HDD)** is a long-term storage device used to store programs, documents, and files. HDD stores data on mechanical platters. It uses a moving read/write head to read and write data to the platters.

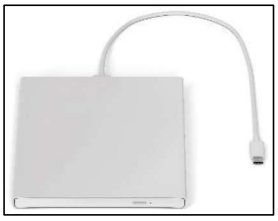
External storage devices are hard drives in a case and attached to a computer with a cord as a peripheral device. These drives supply extra storage capacity for user documents, pictures, videos, etc. Usually, they are connected to one of the ports on the computer via a cable. Common types of these external storage devices include:

**Flash drives** (also called jump drives, thumb drives, or pen drives), which are portable mass storage devices that use flash memory chips.

**Solid-State Drive (SSD)**, which stores data on a set of memory chips and does not have any moving parts.

**Hard Disk Drive (HDD)**, which stores data on mechanical platters. It uses a moving read/write head to read and write data to the platters.

**SD (Secure Digital)** cards, which are small, high-capacity flash memory storage devices.



**Optical drives**, which read Compact Discs (CDs) and Digital Versatile/Video Discs (DVDs). The drive spins the disc and a laser reads the data stored on the disc.

| | |
|---|---|
| ***Internal Storage Device*** | A component inside a computer that stores data and programs, such as the operating system and software applications. |
| ***HDD (Hard Disk Drive)*** | A type of internal storage device that uses spinning magnetic disks to store data, offering large storage capacities but slower speeds compared to SSDs. |
| ***SSD (Solid-State Drive)*** | A type of internal storage device that uses flash memory chips to store data, providing faster performance, durability, and energy efficiency compared to HDDs. |
| ***External Storage Device*** | A device used to store and transfer data outside of a computer, typically connected via USB, Thunderbolt, or other interfaces. Examples include external hard drives and USB flash drives. |
| ***Peripheral*** | An external device connected to a computer that extends its functionality, such as keyboards, mice, printers, and scanners. |
| ***Optical Drive*** | A hardware component that reads and writes data from and to optical discs, such as CDs, DVDs, and Blu-ray discs. |
| ***Flash Drive*** | A small, portable external storage device that uses flash memory to store data and can be connected to a computer's USB port for data transfer. Also known as a USB flash drive or thumb drive. |
| ***SD Card (Secure Digital)*** | A type of removable storage card commonly used in cameras, smartphones, and other portable devices to store data and media. It comes in various sizes, including standard, micro, and mini. |

Jennifer, a graphic designer, recently purchased a new laptop for her job. She decided to add some peripherals to her setup. She carefully selected a high-resolution external monitor, a wireless ergonomic keyboard, and a precision mouse. With these peripherals in place, Jennifer created a workstation that allowed her to work more comfortably and achieve greater precision in her designs.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Input Devices

When we use a computer, we interact with it through peripheral devices. These devices are connected to the computer either with wires or wirelessly. There are different types of peripheral devices, and one type is called input devices. These devices are used to send information to the computer. Here are some examples of input devices:

**Keyboard**: This is the main tool for sending information to the computer. We use it to type and enter data or give commands to the computer.

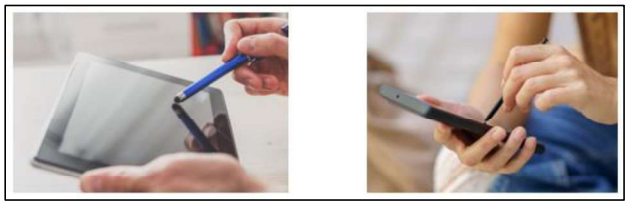
**Mouse**: This is a device for pointing, moving, and selecting things on the computer screen. When we move the mouse on a flat surface, the pointer on the screen moves in the same way.

**Touchpad**: This is a small touch-sensitive area on some laptops. It controls the mouse pointer on the screen. It has buttons like the left and right buttons on a mouse.

**Microphone**: This device lets us record sounds and convert them into a digital format for the computer.

**Adaptive Input Devices**: These are special input devices designed for specific needs and disabilities. They range from hands-free alternatives to devices called digitizers.

**Stylus**: This resembles a pen and is used instead of our finger to select or activate things on a touchscreen.



**Touchscreen**: This is a display device that allows us to interact with the computer by touching the screen.

**Gaming Controller**: This is a special device used for playing video games or controlling entertainment systems.

Optical Scanner: This uses a light beam to scan codes, text, or images directly into a computer. You might notice bar-code and Quick Response (QR) code scanners at store checkout counters.

These input devices help us give instructions or input to the computer and make our interaction with the computer more convenient.

| | |
|---|---|
| ***Keyboard*** | A hardware input device consisting of a set of keys that allows users to input text and commands into a computer or other electronic device. |
| ***Mouse*** | A pointing device that is moved by hand to control the cursor on a computer screen. It typically has buttons for selecting and scrolling. |
| ***Touchpad*** | A small, touch-sensitive surface often found on laptop computers that acts as a substitute for a mouse, enabling users to control the cursor with their fingertips. |
| ***Microphone*** | A device that converts sound waves into electrical signals, allowing users to input audio and voice into a computer or recording equipment. |

| | |
|---|---|
| ***Adaptive Input Device*** | Specialized input devices designed to accommodate individuals with disabilities, allowing them to interact with computers and devices more comfortably and effectively. |
| ***Stylus*** | A pen-like input device with a pointed tip, often used for drawing or writing on touchscreen devices, such as tablets and smartphones. |
| ***Touchscreen*** | A display screen that is sensitive to touch, allowing users to interact with the device by directly tapping or swiping on the screen. |
| ***Gaming Controller*** | A specialized input device designed for gaming, featuring buttons, triggers, joysticks, and other controls to navigate and interact with video games. |
| ***Optical Scanner*** | A device that uses light and sensors to create digital representations of physical documents, images, or objects, which can then be stored or manipulated on a computer. |

Samantha, a project manager, uses speech-to-text technology, rather than a keyboard, to complete her tasks. When responding to emails, she uses a microphone and speech recognition software to dictate her responses and edits.

Learn Task

To practice this skill, access your XperienceED learning platform or student data files.

# Output Devices

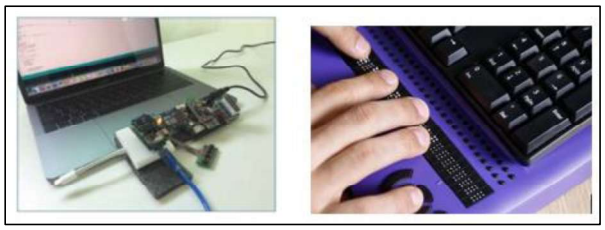
When we use a computer, we can connect peripheral devices to it. These devices help us do different tasks with the computer. Some devices are used to send information from the computer, and we call them output devices. Here are some examples of output devices:

**Monitor**: This is a screen that illustrates what the computer is doing. We can view pictures, videos, and words on it.

**Printer**: This device takes information from the computer and prints it on paper. It can print out documents, pictures, and other desired content we want on paper.

**Speakers**: These are special boxes that make sounds. They let us listen to music, videos, and other sounds from the computer.

**Adaptive Output Devices**: These are special devices that help people with specific needs. They can be machines like fax machines, robots, or devices that read out loud what's on the screen.



**Projectors**: They can display the computer's screen on a big wall or screen. This is helpful for presentations or illustrating things to a lot of people.

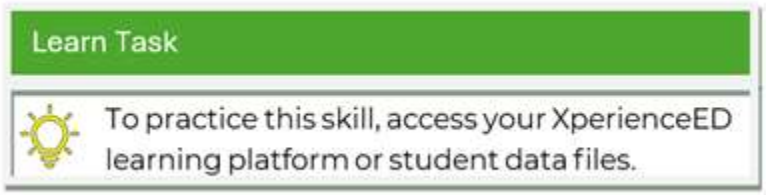
**Headphones**: These are special earphones that we wear on our heads. They let us listen to sounds from the computer without bothering others.

**Smartboards**: These are special whiteboards that allow us to perform multiple tasks through them. We can touch them to control the computer, view videos and pictures, and even write or draw on them.

These devices help us get information from the computer in different ways. They let us observe, hear, or interact with what the computer is doing, which makes using the computer more fun and useful.

| | |
|---|---|
| ***Monitor*** | A visual output device that displays text, images, and videos from a computer or other electronic device on a screen. |
| ***Printer*** | An output device that produces hard copies of documents or images from a digital format onto paper or other media. |
| ***Speakers*** | Audio output devices that produce sound and are typically used to play music, provide audio for videos, or enhance the audio from a computer or other source. |
| ***Adaptive Output Devices*** | Specialized output devices designed to accommodate individuals with disabilities, providing alternative ways to receive information or interact with devices. |
| ***Projector*** | A device that projects images or videos onto a larger surface, such as a screen or wall, often used for presentations or displaying content to a larger audience. |
| ***Headphones*** | Personal audio output devices worn over the ears, allowing users to listen to audio content privately without disturbing others. |
| ***Smartboard*** | An interactive whiteboard that combines the features of a traditional whiteboard with touchscreen technology, enabling users to write, draw, and interact with digital content displayed on the board. |

Alex, a business owner, had just purchased a new printer for his office. He carefully unpacked the printer, followed the instruction manual, and connected it to his computer via USB cable. After installing the necessary printer drivers and software, he tested the printer with a test page and successfully set it up to handle all his printing needs.




# Device Connections

When we want to connect peripheral devices like printers, speakers, etc. to a computer, we use special cables. These cables have a connector at one end that goes into the computer. The computer has special places, called ports, where we can plug in these cables.

There are different types of ports on a computer:

**Video Ports** (e.g., VGA and HDMI): These let us connect our computer to devices like a monitor or a projector to display what's on the screen. Some video ports can also carry sound along with the picture.

**Network Ports** (e.g., Ethernet): These let our computer connect to the internet or to other computers. It's like plugging our computer into a big network so it can communicate to other computers.

**Audio Ports**: These let us plug in speakers or headphones to our computer so we can receive sounds like music or videos.

**USB Ports**: These are special slots where we can plug in all sorts of devices, like printers, cameras, or even a mouse or a keyboard.

Sometimes, we don't even need cables to connect our devices. We can use wireless technology instead.

**Wireless Network Adapter**: This is hardware that allows a computer or other device to connect to a wireless network. It enables the device to communicate with the network and access the internet or share files with other devices.

**Bluetooth Adapter**: This enables your device to connect with other Bluetooth devices like speakers, headphones, or smartphones, without needing any wires.

| | |
|---|---|
| ***Ports*** | A connector on the computing device where you can plug in various devices to display or print items. |
| ***Video Port*** | A connector on a computer or device that allows the connection of a video cable to transmit video signals to a monitor or display, enabling visual output. |
| ***Network Port*** | A socket or connector on a computer or networking device that enables the connection to a wired network for data communication. |
| ***Audio Port*** | A socket or jack on a computer or audio equipment that allows the connection of audio cables or headphones, enabling the input or output of sound. |
| ***USB Port (Universal Serial Bus)*** | A connector on a computer or device that facilitates the connection of various peripherals and external devices, such as flash drives, printers, and keyboards. |
| ***Wireless Network Adapter*** | A hardware component that enables a computer or device to connect to a wireless network, typically using Wi-Fi technology, for wireless data communication. |
| ***Bluetooth Adapter*** | A hardware device or module that enables wireless communication between a computer or device and other Bluetooth-enabled devices, such as headphones, keyboards, or smartphones. |

Santiago wants to upgrade his laptop's connectivity options. He decides to purchase both a wireless network adapter and a Bluetooth adapter. After plugging the wireless network adapter into a USB port, he establishes a faster and more stable internet connection. With the Bluetooth adapter, he can connect his wireless headphones and external speakers, enhancing his laptop's versatility for both work and leisure activities.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

**Lesson Assessments**

Access your XperienceED learning platform or student data files and complete the Practice Questions and Practice Exercises for this lesson.

# Lesson 2: Software Concepts

## Lesson Objectives

In this lesson, you will be able to understand and differentiate between software applications, operating systems, and their installation options. You will also gain knowledge about computer operating systems, mobile operating systems, productivity software, and the distinction between proprietary and open-source software. Upon completion of this lesson, you should be able to understand the following:

- ☐ Software Applications
- ☐ Operating Systems
- ☐ Computer Operating Systems
- ☐ Mobile Operating Systems
- ☐ Productivity Software
- ☐ Proprietary and Open-Source Software
- ☐ Software Installation Options

# Software Applications

Hardware makes computers powerful and capable machines. However, it is software programs that make them useful. Software applications, also known as programs, are tools that help us perform tasks on computers, tablets, and smartphones. They are designed for specific purposes, such as word processing, photo editing, entertainment, organization, and more. When we use a software application, we interact with a user interface that includes buttons, menus, and graphical elements. Behind the scenes, the application processes our input, performs calculations, and displays the output accordingly.


Software applications are an integral part of our digital lives, helping us create, communicate, and stay organized. With a basic understanding of software application concepts, we can navigate the digital world confidently and make the most of the tools at our disposal.

| | |
|---|---|
| ***Software*** | Computer programs that make devices perform tasks, like word processing or gaming, by providing instructions and code. |

John, a software developer, was tasked with creating a user-friendly mobile application for a fitness startup. With his expertise in software applications, he designed a sleek and intuitive interface, integrated tracking features, and ensured seamless compatibility across various devices, ultimately delivering a highly functional fitness app that received rave reviews from users.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Operating Systems

An operating system, or OS for short, is like the boss of a computer or a device. It's a special program that helps manage and control all the other programs and apps on the device. Just like a boss instructs workers what to do, an operating system instructs the computer or device how to work and allows us to use different software and apps.

The main functions of an operating system are to:

- Provide a user interface to help us communicate with the computer.
- Manage hardware resources, such as the printer, CPU, memory, and storage devices.
- Control communication between hardware devices and application programs.
- Manage access to programs and data through permissions and user authentication.

There are several types of operating systems, such as the following:

| | |
|---|---|
| ***Server Operating Systems*** | Designed to run on servers, which are powerful computers that manage network resources and provide services to other computers or devices. |
| ***Desktop Operating Systems*** | Designed for desktop and laptop computers. They provide a user-friendly interface and allow users to perform various tasks like running programs, browsing the internet, and managing files. |
| ***Mobile Operating Systems*** | Designed specifically for mobile devices like smartphones and tablets. They are optimized for touch-screen interfaces and provide a range of features and apps tailored to mobile usage. |
| ***Embedded Operating Systems*** | Used in specialized devices or equipment, such as car navigation systems, smart TVs, and industrial machinery. These operating systems are typically lightweight and tailored to specific hardware requirements, providing the necessary functionality to control and manage the device. |
| ***Real-Time Operating Systems*** | Used in systems that require immediate response and precise timing, such as aircraft control systems, medical devices, and robotics. They prioritize time-sensitive tasks and ensure that operations occur within specific time constraints. |

Operating systems are important because they make it possible for us to use different software and apps on our devices. They handle tasks like managing memory, running programs, and connecting to the internet. Without an operating system, our computers, devices, and even cars wouldn't be able to do all the amazing things they can do!


Examples of Desktop Operating Systems Examples of Mobile Operating Systems

Sarah, a computer technician, was troubleshooting a laptop that was experiencing frequent crashes and slow performance. After diagnosing the issue, she determined that the operating system was corrupted due to a recent software update. Sarah then proceeded to reinstall the operating system, restoring the laptop to its optimal state.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Computer Operating Systems

Each operating system has its own strengths and unique features, but they all help you use your computer and do interesting things in different ways. With the variety of systems available, you can choose the one that best suits your needs. The most commonly used operating systems include:

| | |
|---|---|
| ***Windows*** | A popular computer operating system made by Microsoft. When you turn on your computer, it gives you a colorful desktop with icons and a start menu. It lets you run different programs, play games, browse the internet, and do an assortment of interesting activities. |
| ***MacOS (Operating System)*** | The operating system used on Apple Mac computers. It's known for its sleek and user-friendly design. Just like Windows, it controls how your computer works and lets you perform tasks like writing documents, editing photos, or creating music. It has its own unique features and programs that make it popular among creative people. |
| ***Linux*** | A free and open-source operating system. It's different from Windows and macOS because it's created by a community of volunteers from all over the world. It is known for its stability, security, and flexibility. It's often used by tech enthusiasts and professionals who like to customize their computer's settings and have more control over their operating system. |
| ***Unix*** | An operating system developed long ago is used mainly in large organizations and universities. It's very reliable and powerful, often running on big servers and supercomputers. It is known for its stability and security, making it a popular choice for systems that need to handle a lot of data and run important tasks. |
| ***Chrome OS (Operating System)*** | A special operating system designed by Google for specific devices called Chromebooks. It's a lightweight and fast operating system that mainly focuses on using web-based applications. This OS is built around the Chrome web browser and relies on cloud storage for your files. |

Windows OS Mac OS Linux

Nkenge, a graphic designer, was in the process of choosing a new computer for her work. She found herself torn between selecting a Windows PC or a MacBook with macOS. She researched extensively, considering factors like software compatibility, hardware specifications, and design aesthetics, ultimately making her decision based on the seamless integration of design software with macOS, leading her to choose a MacBook to enhance her creative workflow.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Mobile Operating Systems

Mobile operating systems are like the brains of our smartphones and tablets. They are special software that runs on these devices and helps us use them to do various tasks. There are a few popular mobile operating systems that you might recognize:

| | |
|---|---|
| ***Android*** | Made by Google. It's used on many different smartphones and tablets from different companies. It is known for its flexibility and wide range of apps that you can download from the Google Play Store. It also lets you make calls, send messages, take photos, play games, browse the internet, etc. on your mobile device. |
| ***OS (iPhone Operating System)*** | Used on Apple iPhones and iPads. It was created by Apple and is known for its sleek and user-friendly design. It offers a seamless and integrated experience across all Apple devices. It comes with a variety of built-in apps and connects you to the Apple App Store where you can download many different apps for various purposes. |
| ***Windows Mobile*** | Developed by Microsoft for mobile devices. It provides a similar experience to the Windows operating system on desktop computers. It allows you to use your phone or tablet to make calls, send messages, browse the internet, use apps, and access Microsoft Office tools for productivity. |

These mobile operating systems help us stay connected, be productive, and have fun on our mobile devices. They provide a user-friendly interface with icons, menus, and touch movements that make it straightforward for us to navigate and use our smartphones and tablets. They also support various apps that we can download and install to add even more functionality to our mobile devices.

Khalifa and Sarah, work colleagues in a marketing agency, were discussing their upcoming business trip where they needed to choose between Android and iOS for their company-provided smartphones. Khalifa, who was familiar with Android, highlighted its customization options and affordable device range, which could be beneficial for their budget-conscious team. On the other hand, Sarah, who preferred iOS, emphasized its reliability, security, and seamless integration with the company's preferred productivity apps, making it a safer and more efficient choice for their work needs. After a lengthy debate, they decided to opt for iOS, prioritizing security and productivity for their business trip.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Productivity Software

Productivity software is a special computer program that helps us get things done more efficiently and effectively. It's like having a set of digital tools that make our work more convenient and faster. Different types of productivity software serve different purposes. Here are a few examples:

| | |
|---|---|
| ***Word Processing Software*** | Used for creating and editing text documents, like essays, letters, or stories. It allows us to type, format, and organize our writing. We can change the font, add images, and even check for spelling and grammar mistakes. Popular software includes Microsoft Word and Google Docs. |
| ***Spreadsheet Software*** | Helps us organize and analyze data using rows and columns. It's great for making charts, graphs, and performing calculations. We can create budgets, track expenses, and even create basic databases. Microsoft Excel and Google Sheets are popular software examples. |
| ***Presentation Software*** | Allows us to create slideshows with text, images, and videos to present information in a visually appealing way. We can add animations and transitions to make our presentations engaging. Some common software examples are Microsoft PowerPoint and Google Slides. |
| ***Graphic Design Software*** | Helps us create visually appealing designs for various purposes. We can design logos, posters, flyers, and other artwork. These programs provide tools to draw shapes, apply colors and effects, and arrange elements on a digital canvas. Adobe Photoshop and Canva are popular software examples. |
| ***Video Editing Software*** | Allows us to edit and create videos by combining and manipulating different clips, adding effects, transitions, and music. We can trim, rearrange, and enhance videos to relate a story or share creativity. Popular software includes Adobe Premiere Pro and iMovie. |

These productivity software programs help us be more organized, efficient, and creative in our work. They provide us with tools to write, calculate, present, design graphics, and edit videos. Whether we're working on a school project, creating artwork, or editing videos for fun, productivity software makes it more straightforward for us to complete our tasks and express our creativity.


Lisa, a project manager, was faced with a decision at work on how to organize and present a large set of data for an upcoming presentation. She weighed her options between using word processing software for a narrative report or spreadsheet software for a data-driven approach. After considering her need for data analysis and visualization, Lisa decided to go with spreadsheet software. It provided the flexibility to create charts and graphs while maintaining structured data.

Learn Task

To practice this skill, access your XperienceED learning platform or student data files.

# Proprietary and Open-Source Software

There are two different types of software, proprietary and open-source.

Proprietary software belongs to a specific company. It means that only that company has the right to modify and distribute the software. Examples of proprietary software include Microsoft Office, Adobe Photoshop, and Apple's iOS.

On the other hand, open-source software is for everyone. It is created and shared by a community of people who work together. Imagine a group of friends sharing their favorite recipes and making improvements together. Open-source software is available to everyone, and anyone can use, modify, and distribute it. Examples of open-source software include the Linux operating system, the Firefox web browser, and the VLC media player.

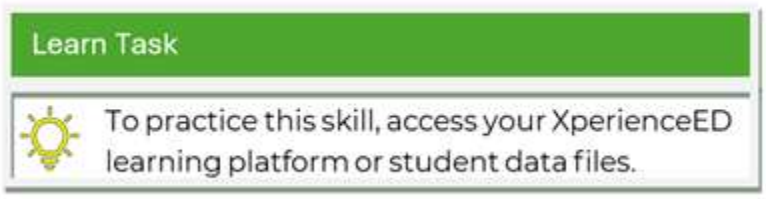
Now, you might wonder why people choose one type of software over the other. Well, proprietary software is often created by big companies that invest a lot of time and money into making it. They usually charge a fee for people to use their software, and they may have restrictions on how it can be modified or shared.

On the other hand, open-source software is often created by a community of volunteers who believe in sharing their work with others. They believe that by working together and sharing their knowledge, they can create better software that everyone can benefit from. Open-source software is usually free to use, and people can modify and customize it to suit their needs.

Both types of software have their advantages. Proprietary software often comes with professional support and is known for its reliability. Open-source software, on the other hand, encourages collaboration and gives people the freedom to adapt and improve the software to fit their specific needs.

| | |
|---|---|
| ***Proprietary Software*** | Software that is owned and controlled by a specific company or organization, and its source code is typically not available to the public. Users usually have to pay for licenses to use it, and its modification is restricted. |
| ***Open-Source Software*** | Software whose source code is openly available to the public, allowing anyone to view, modify, and distribute it. It is often developed collaboratively by a community of volunteers. |

Dikembe, a software developer, was assigned a crucial project for his company's new web application. Faced with budget constraints, he decided to leverage open-source software to build the project efficiently. He utilized popular open-source frameworks and libraries like React.js and Node.js, reducing development costs and benefiting from the vibrant open-source community's support. This allowed Dikembe to deliver a high-quality, cost-effective solution that met the project's requirements and exceeded his company's expectations.




# Software Installation Options

The most popular way to obtain software is to download it from the internet. Once you select the application program and license type you will need to install it before you can use it.

A perpetual license means you have the right to use that software indefinitely. It's like buying a video game that you can play whenever you want, as long as you have the game and the game console. You pay a one-time fee, and then you can use the software for as long as you want without any time limits.

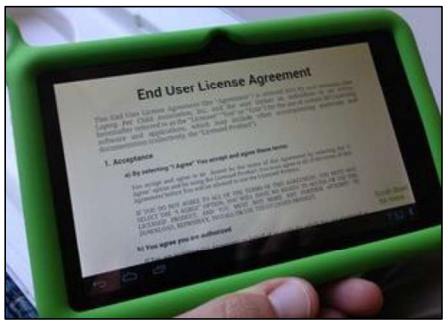
A subscription license means you can use that software for a certain amount of time. It's like renting a video game for a month and returning it when the time is up. You pay a regular fee to continue using the software. Once you stop paying, you no longer have access to the software.

Installing software from online sources means getting new software or programs from the internet and adding them to your computer or device. When you want to install software, you usually go to a website or an app store, find the software you want, and select the download button. The software is then transferred from the internet to your device, and you can start using it.

| | |
|---|---|
| ***Perpetual License*** | Grants the holder the right to use a software product indefinitely without subscription renewals after a one-time purchase. It typically includes updates and support for a limited time. |
| ***Subscription License*** | Provides access to a software product for a specified period, often on a monthly or yearly basis, requiring regular payments to continue using the software. It may include updates and support as long as the subscription is active. |
| ***EULA (End User License Agreement)*** | A legal contract that outlines the terms and conditions under which a user is allowed to use a software product. It specifies the rights, restrictions, and responsibilities of the software user, often including issues like licensing, copyright, and usage limitations. |

Similar to installing software from the internet on a computer, when you want to add new apps or programs to your smartphone, you go to a special app store, like the Apple App Store for iPhones or the Google Play Store for Android phones. From there, you can browse through different apps, find the ones you want, and tap on a button to download and install them.

When you install software or apps, you must agree to the End User License Agreement (EULA). This agreement has rules that you need to follow. The rules state that you can't change the software's code or make copies to give to your friends. It also might state how many devices you can install the software on and that you can't share it with others.




Remember, it's always important to follow the download instructions carefully. This way, you can enjoy new programs and apps while keeping your devices safe and secure.

Naomi, a marketing manager, needed access to advanced design software for her team's upcoming campaign. She decided to acquire a subscription license, opting for a monthly payment plan rather than a one-time purchase. This choice allowed her team to have the latest software updates, ensuring they could efficiently collaborate and produce high-quality materials throughout the campaign's duration while staying within their budget.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

**Lesson Assessments**

Access your XperienceED learning platform or student data files and complete the Practice Questions and Practice Exercises for this lesson.

# Lesson 3: Browser Concepts

## Lesson Objectives

In this lesson, you will be able to demonstrate proficiency in using web browsers to effectively navigate the internet, search for information, access websites, and utilize browser features for an enhanced browsing experience. Upon completion of this lesson, you should be able to explain the following:

- ☐ Web Browsers
- ☐ Navigate the Web
- ☐ Browser Interface
- ☐ Search Engines
- ☐ Search Results
- ☐ Refine Search Results

# Web Browsers

Web browsers are software applications that enable users to access, view and navigate websites on the internet identified by a unique URL (Uniform Resource Locator), known as a web address. A browser's main function is to retrieve pages from a web server, translate the HTML (Hypertext Markup Language) code used to create page content, then display them on your screen. Browsers provide access to search engines to locate and download any information on any subject desired from anywhere in the world.

Contrary to popular belief, the World Wide Web (Web or WWW) is not the same as the internet. The internet is a system of networks. The WWW is a huge collection of web pages connected through hyperlinks and URLs following the Hypertext Transfer Protocol (HTTP).

Key components of the Web include:

| | |
|---|---|
| ***Web Servers*** | Powerful computers that manage network resources and provide services to other computers or devices. |
| ***Clients*** | Devices connected to the internet that request resources from a web server. |
| ***Web Browsers*** | A client software application that accesses, retrieves, and displays web pages. |
| ***HTTP (Hypertext Transfer Protocol)*** | The protocol that controls the transfer of data between a web server and web browser. |
| ***URL (Uniform Resource Locator)*** | A web address that specifies the location of a resource on the internet, allowing browsers to find and retrieve web pages and other content. |
| ***Hyperlinks*** | Selectable elements that are used to connect (link) to another web page, website, or resource. |
| ***HTML (Hypertext Markup Language)*** | The coding language used to create web pages. |

Popular web browsers are Microsoft Edge, Google Chrome, Apple Safari, and Mozilla Firefox.

| | |
|---|---|
| ***Microsoft Edge*** | A web browser made by Microsoft. It's fast and keeps you safe while browsing. It works well with Windows and connects with Microsoft services. |
| ***Google Chrome*** | A web browser created by Google. Many people use it because it's straightforward to use and fast. It can do a lot of things, like running web apps and adding extra features. |
| ***Apple Safari*** | A web browser provided to you when you use Apple devices. It's the default browser and works smoothly. It saves energy, syncs with iCloud, and works well on Apple systems. |
| ***Mozilla Firefox*** | A web browser that's open to everyone. It's known for being flexible and keeping your privacy safe. |

Ahmed, a digital marketer, was considering which web browser to use for his daily work tasks. He weighed the options between Google Chrome, Mozilla Firefox, and Microsoft Edge. After researching their features and performance, Ahmed decided to go with Google Chrome for its speed, vast selection of extensions, and seamless integration with the marketing tools he used, ultimately enhancing his productivity and online workflow.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Navigate the Web

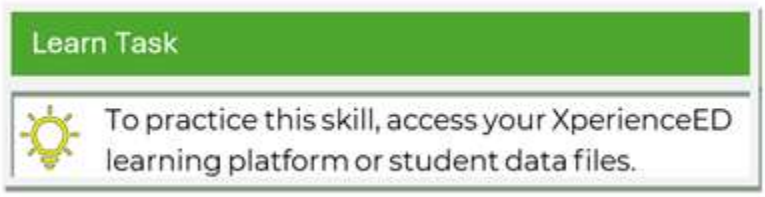
Web browsers are special programs that help you use the internet. They have a user interface that makes it convenient for you to visit websites, search for various information, and do activities online. One popular web browser is Google Chrome. When you open it, you'll notice a basic and neat design. At the top, there's a toolbar with an address bar. You can use this bar to enter in website addresses or search for things. Below the toolbar, there are tabs that display different web pages. You can use them to switch between open web pages. There are also navigation buttons that let you go back or forward, refresh the page, and access more features.


The text address you enter into a browser's address bar is called a URL. URLs start with a special code, called a protocol, followed by the domain name. Usually, the protocol is HTTP://, and it instructs the web browser how to communicate to the web page. If a web page is secure, the protocol changes to HTTPS://, which means that all the information going to and from the web page is protected and kept safe. The domain name is the human readable form of the IP (Internet Protocol) address.


Every device, website, and resource on the internet has a unique numeric and text address. The numeric address is called an IP address.

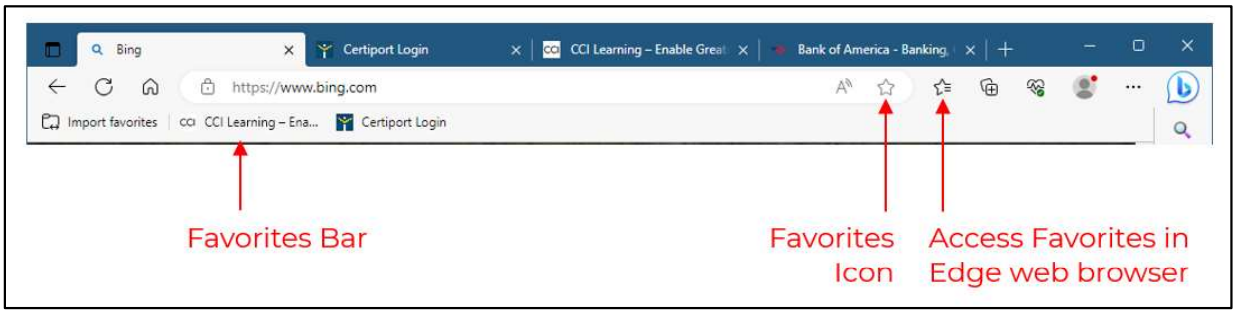
| | |
|---|---|
| ***Web Browser*** | A software application that allows users to access and view content on the World Wide Web, including web pages, multimedia, and other online resources. |
| ***IP Address (Internet Protocol)*** | A unique numerical label assigned to each device connected to a computer network. It serves as an identifier for routing data packets to their destination on the internet or local network. |

Nadia, a university student, needed to access her online class materials. She opened her web browser and entered the URL provided by her professor. She was instantly directed to the class web page, where she could access lecture notes and assignments.




# Browser Interface

Modern browsers allow for tabbed browsing. This means you can view different websites simultaneously in their own tab. Opening a new tab is the same as opening a new browser window. You can open a separate web page in each tab and switch between them. Only one tab can be the active tab at any given time.



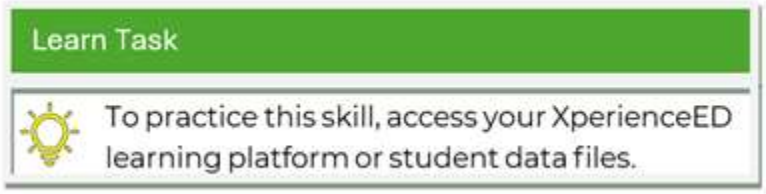

In a browser, bookmarks are saved shortcuts to web pages you want to view later or for websites you frequently visit. All popular web browsers allow you to create and manage bookmarks. They are referred to as favorites depending on your browser. You can add a bookmark by using the star icon in the address bar. The bookmarked information will be saved in the browser's Bookmarks (or Favorites) folder.

Hyperlinks are special words or pictures on a web page that you can use to go to other pages or sections on the internet. They display differently than the rest of the text. For example, they may be in a different color or underlined. When you use a hyperlink, you can go to another website or find more information about what you're reading.

Breadcrumbs are like a small map that helps you know where you are on a website. They are a line of links that illustrate the path you took to get to the page you're on. They usually start with a link to the main page or category and then display the different sections or pages you visited. Breadcrumbs help you find your way back or explore more on the website. They illustrate how the website is organized and make it more straightforward for you to find what you're searching for.


| | |
|---|---|
| ***Bookmarks*** | Saved links to favorite web pages for quick access. |
| ***Favorites*** | Preferred web pages that are saved for convenient access. |
| ***Breadcrumbs*** | Navigation trail that displays visited pages on a website. |

Rami relies on bookmarks to keep track of important web pages. He regularly saves links to his favorite news sites, work-related resources, and entertainment websites. This convenient organization allows Rami to quickly access the websites he frequently visits, saving him time throughout his busy day.




# Search Engines

Search engines are special tools that help us find information on the internet. They work like digital libraries, where they keep track of web pages, pictures, videos, etc. When we search for something using a search engine, it goes through its database and gives us a list of results that match our search. The search engine uses special rules to decide which results are the most helpful.

For example, let's examine Google, a popular search engine. When you go to Google's website, enter what you're searching for in the search box. Let's imagine you want to learn about cybersecurity. You can enter "cybersecurity" in the box. Google will display a list of websites about cybersecurity, including articles, pictures, and videos. You can use those results to visit the websites and find the information you want. Google is known for being fast and accurate, and it has a lot of information on the internet.

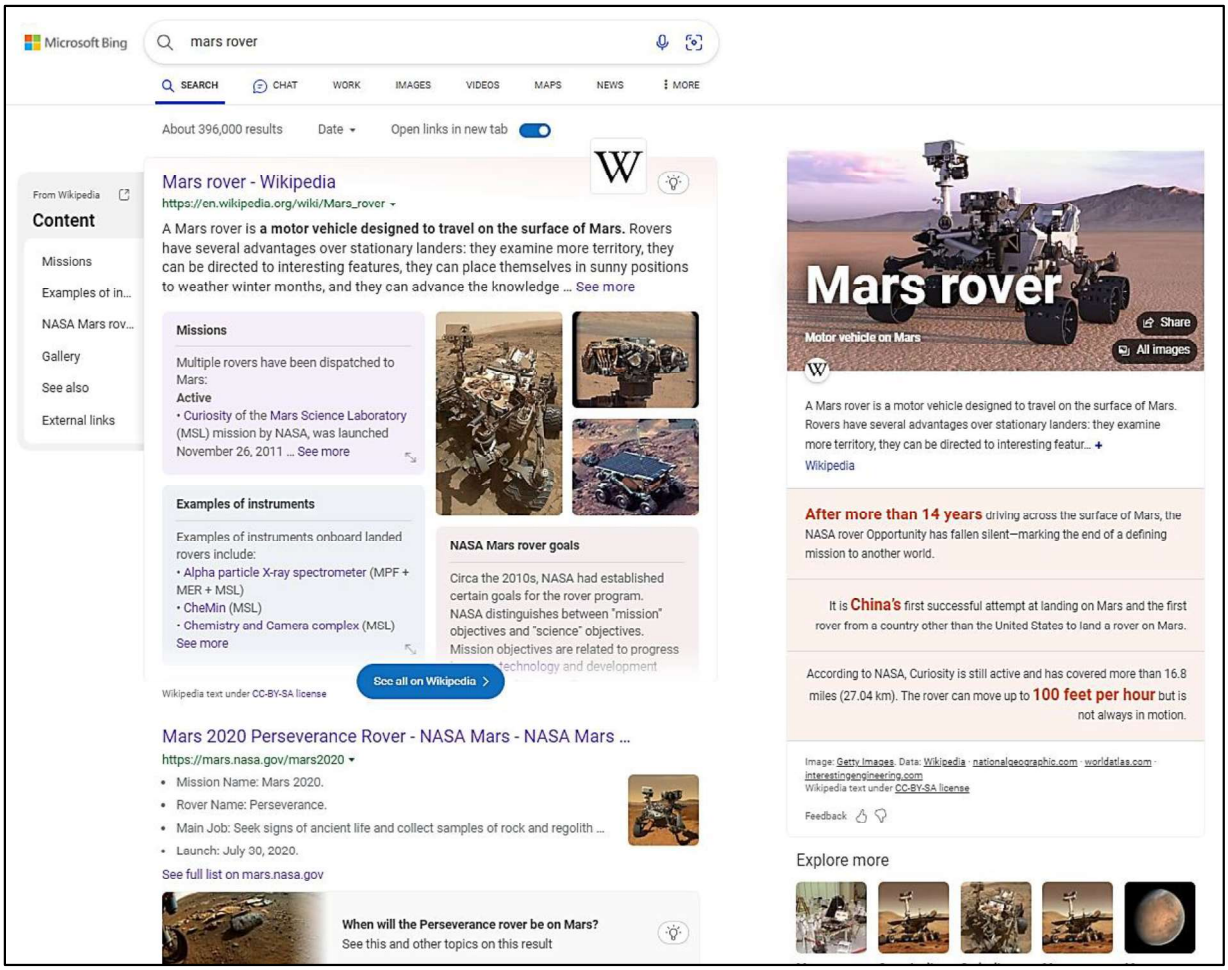
| | |
|---|---|
| ***Google*** | A very popular search engine that helps you find all sorts of things on the internet, like websites, pictures, videos, and more. It has many features, such as Maps, Images, and News. |

In addition to Google, there are other popular search engines that help us find information on the internet. Here are a few examples:

| | |
|---|---|
| ***Bing*** | A search engine made by Microsoft. Some people may prefer it because of its visually appealing homepage and image search functionality. It also offers rewards for using their search engine through their rewards program. |

| | |
|---|---|
| ***Yahoo*** | A search engine that also offers email and news. You can use it to search for various topics or images and get different types of results. |
| ***DuckDuckGo*** | A search engine that focuses on keeping your searches private. It doesn't track what you search for or illustrate personalized results. |

These search engines help us find information on the internet based on our search queries and preferences. They all have their own unique features and user experiences, allowing us to explore and discover relevant content online. They save us time by finding what we need from different places. With search engines, we can explore and learn new things without any trouble.




Leila is considering which search engine to use for her research project. She is comparing Google, Bing, and DuckDuckGo. After examining their search results, privacy features, and user interface, Leila decides to go with DuckDuckGo due to its strong focus on user privacy and its commitment to not tracking user data.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Search Results

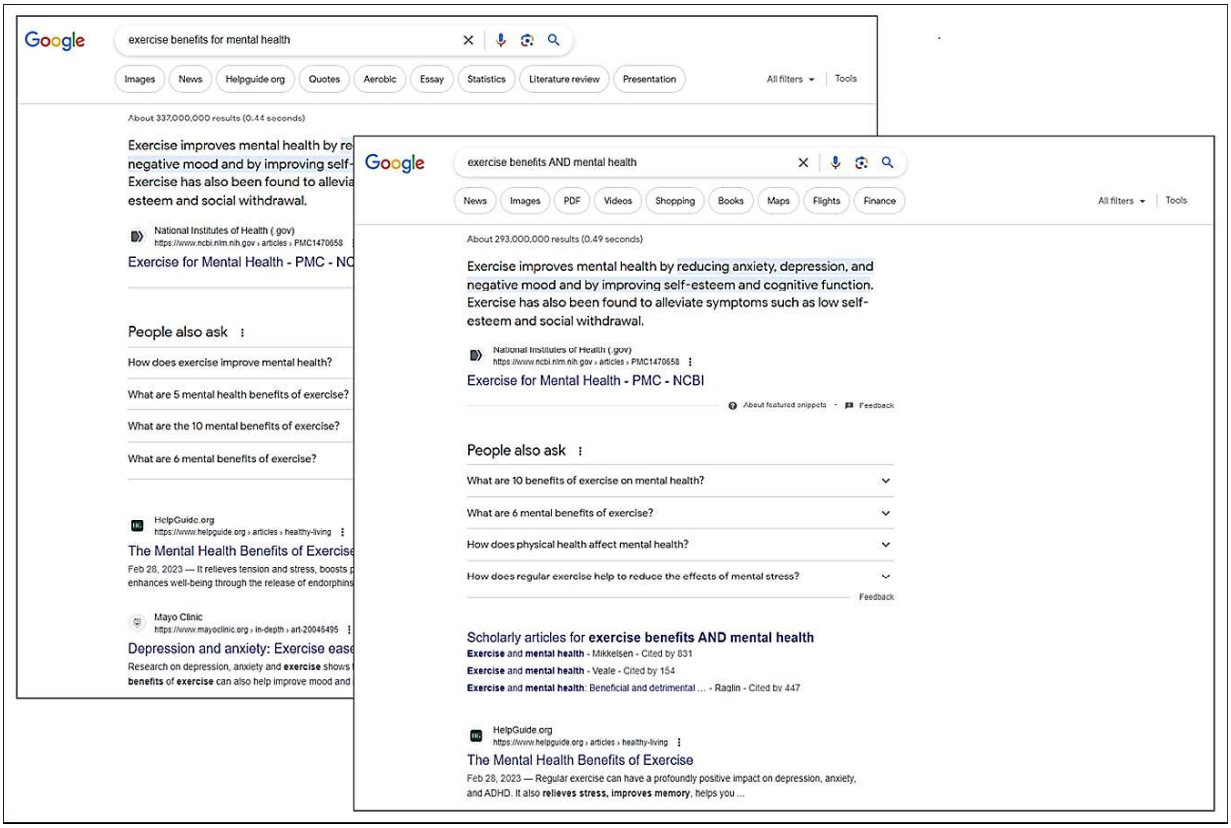
When we want to find information on the internet using a search engine, it's important to know how to make effective search queries. A search query is the words or phrases we enter into the search engine to find what we are seeking. We can get better and more relevant results by using the right queries.

To make effective search queries, we can follow some basic rules. First, we should use specific and relevant words related to the information we want. This helps the search engine understand what we're searching for and gives us better results.

Putting quotation marks around a phrase can also help. It informs the search engine that we want those words exactly in that order. This is helpful when searching for a specific quote, song lyrics, or book title.

Let's discuss an example. We want to find information about how exercise can help mental health. Instead of searching for "exercise benefits," we can make our query better by entering "exercise benefits for mental health." This gives us more specific results about the connection between exercise and mental well-being.

We can also use special words like AND, OR, and NOT to make our search queries more precise. For example, using AND between two words instructs the search engine to include both in the results. Using OR means it can display results with either of the words.




Imagine you want to find information about different types of dogs. Specifically, you're interested in Golden Retrievers and German Shepherds but don't want any information about Labrador Retrievers.

To make your search more effective, you can use these words:

**AND**: If you use AND in your search, you want information that includes Golden Retrievers and German Shepherds. This helps you find results about both breeds together.

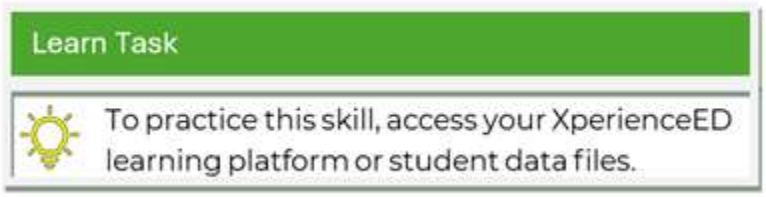
**OR**: If you use OR in your search, you want information about either Golden Retrievers or German Shepherds. This helps you find results about either breed.

**NOT**: If you use NOT in your search, it means you want information about Golden Retrievers, but you don't want any information about Labrador Retrievers. This helps you exclude results about a specific breed.

By understanding how to define effective search queries, we can optimize our search experience and quickly find the information we need from the vast resources available on the internet.

| | |
|---|---|
| ***Search Query*** | A user's input, typically in the form of keywords or phrases, entered into a search engine or database to retrieve relevant information or results. |

Erik, a historian, is conducting research on Viking history. He opens his preferred web browser and enters a search query: "Viking trade routes and settlements." Erik then carefully reviews the search results, navigating to relevant links to gather information for his research paper.

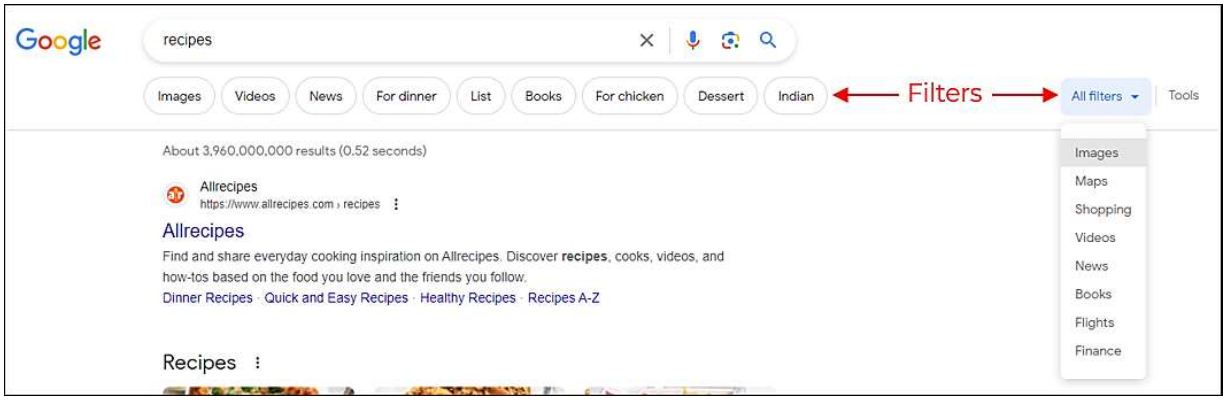



# Refine Search Results

When you search for something on the internet using a web browser, you can make your search more precise by using filters. Filters are special settings that help you find specific information.

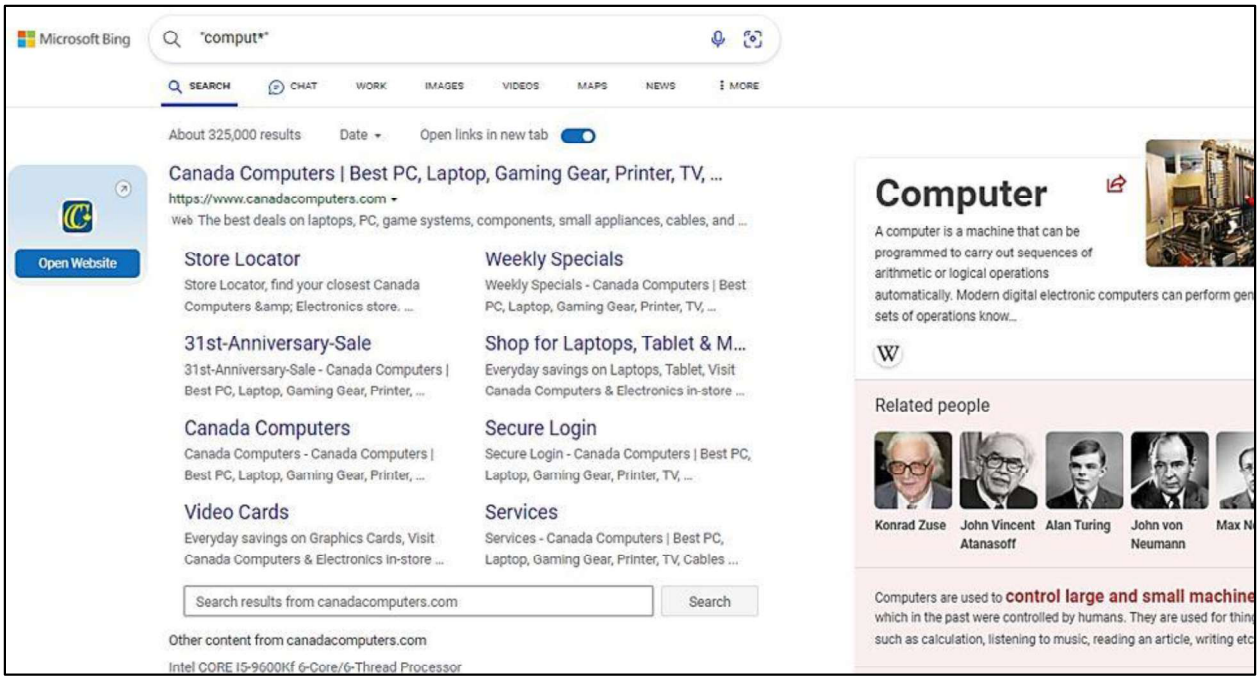
For example, if you're searching for pictures of dogs, you can use filters to narrow down the results. Instead of just searching for dogs, you can choose the Images option at the top of the search results page. This will display only pictures of dogs.

Filters are helpful because they make it more convenient to find exactly what you want and save time by displaying more specific results. They allow you to customize your search based on your particular needs or preferences.



You can also search for root words and exclude suffixes. You can use special techniques to find more specific information. First, think about the main word that represents what you want to learn about. For example, if you're interested in running, focus on the word "run." These parts are called suffixes. In the case of "running," the suffix is "-ing." By searching for just the root word, like "run," you'll get more general results.


Some search engines allow the use of wildcards, such as an asterisk (*), to represent any characters or variations in a word. You can use it to replace letters or parts of a word. This lets you search for different forms of the root word. For example, searching for "comput*" will give you results for "computer," "computers," and "computing."



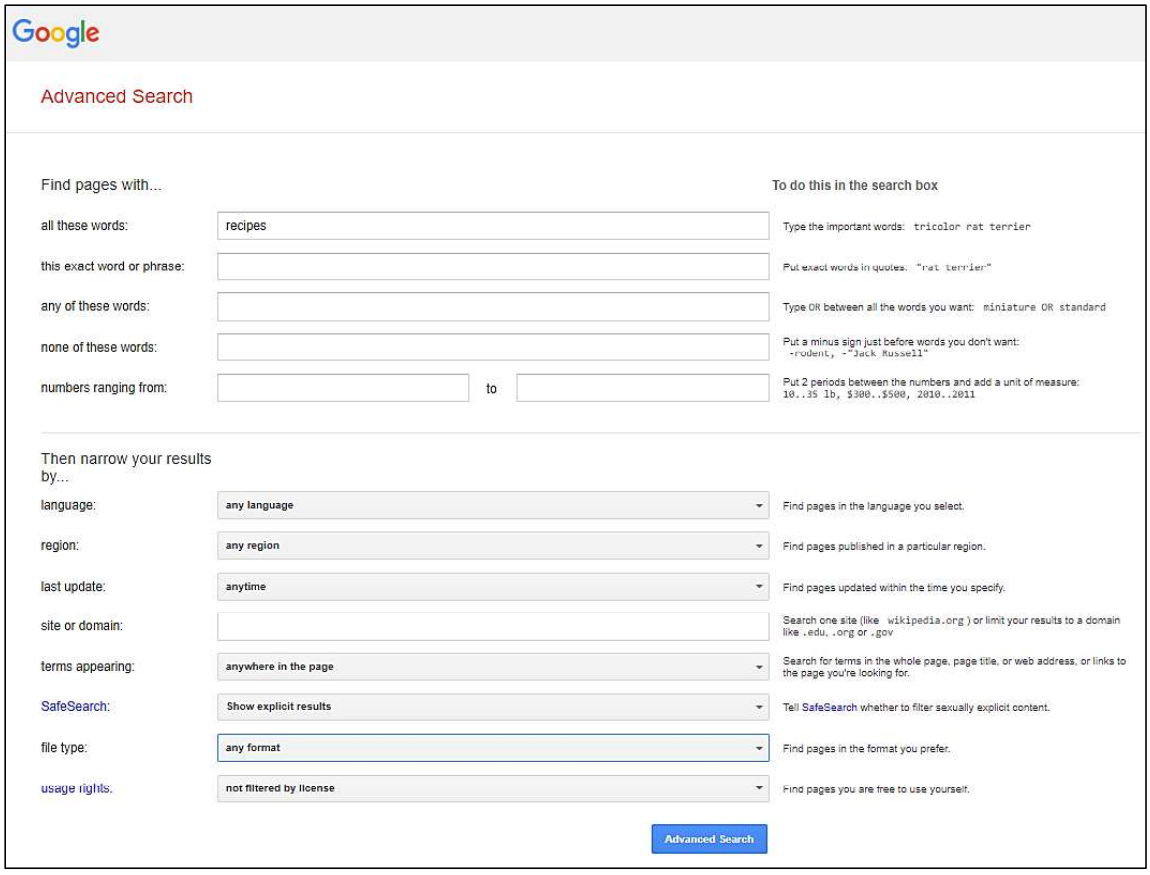

If you want to cover different forms of the root word, you can use the OR operator. This way, you can search for multiple variations all at once. For example, searching for "run OR running OR ran" will display results that have any of these forms of the word "run."

You can make your searches better by using advanced search options. These options help you find exactly what you're searching for.

To use advanced search options, start by searching for something using words that describe what you want. After your search results are displayed, find the link that says Advanced Search or Settings. Use that link to find more search options.

**Note**: The place where you find advanced search options may be different depending on the search engine you're using.

In the advanced search options, you can choose things like the language you want or the time period for your results. Once you have selected your options, select the search button to display the new results based on your choices.




| | |
|---|---|
| ***Filter*** | A tool or feature used to narrow down or refine search results or data by applying specific criteria or conditions, allowing users to focus on relevant information. |
| ***Root Word*** | The core or base word from which other words are derived, often by adding prefixes or suffixes. It carries the primary meaning of a word and is usually a word's most basic form. |
| ***Suffix*** | An affix or group of letters added to the end of a word to modify its meaning or grammatical function. It can change a word's tense, form, or definition. |
| ***Wildcards*** | Symbols, such as asterisks (*) or question marks (?), used in search queries to represent unknown or variable characters in a search term, helping users find results with similar or related terms. |
| ***Advanced Search Options*** | Additional and often customizable search settings or parameters provided by search engines or databases, allowing users to refine their searches with greater precision, including date ranges, file types, and specific sources. |

Lena, a market analyst, is conducting in-depth research on consumer preferences for a new product launch. To narrow down her search results and find specific data, she uses advanced search options on her chosen search engine. Lena filters results by date range, selects trusted sources, and applies precise keywords, allowing her to access accurate and up-to-date information.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

**Lesson Assessments**

Access your XperienceED learning platform or student data files and complete the Practice Questions and Practice Exercises for this lesson.

# Lesson 4: Network Concepts

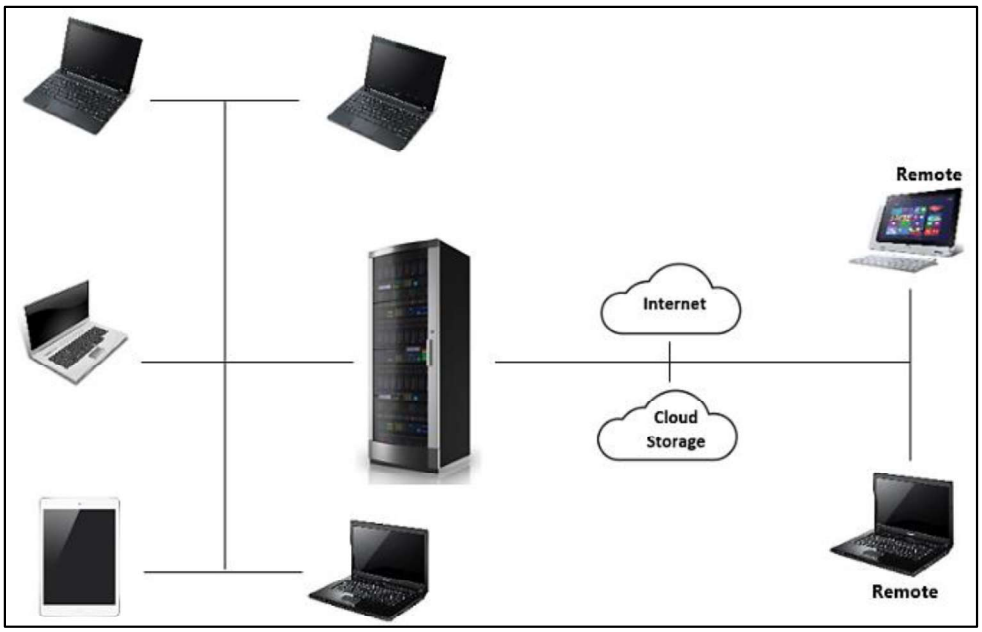
## Lesson Objectives

In this lesson, you will be able to understand the fundamentals of networks, including public and private networks and enterprise networks. You will also learn about how networks connect with and without wires and how to troubleshoot issues with connectivity. Upon completion of this lesson, you should be able to understand the following:

- ☐ Network Basics
- ☐ Types of Networks
- ☐ Public and Private Networks
- ☐ Enterprise Networks
- ☐ Network Connections
- ☐ Network Connectivity
- ☐ Network Connection Device
- ☐ Wireless Connections
- ☐ Wireless Connection Troubleshooting
- ☐ Wired Connections
- ☐ Wired Connection Troubleshooting

# Networks Basics

Networks are systems that connect different devices, such as computers and smartphones. Networks let devices communicate with each other, send data, and access shared files or services. Networks can be small, like at home or in an office, where devices connect in a small area. They can also be quite big, like the internet, which connects networks from all over the world. Networks use different technologies and rules to make sure data is sent safely and quickly. Knowing about networks helps us understand and use our digital world, where everything is connected.




Internetworking is when we connect many networks to make one big network. It lets devices from different networks communicate with each other and share information. We need special devices like routers and switches to make these connections. Connecting networks allows us to send data and access things from different places. This connection makes the whole network more powerful. Understanding internetworking is important because it helps us stay connected to people and do things online, like sending messages and viewing videos.

| | |
|---|---|
| ***Network*** | A collection of interconnected devices or computers that can share resources and information with each other. |
| ***Internetworking*** | The practice of connecting multiple networks together, enabling data and communication to flow between them, often via routers or gateways. |

Bernardo, an IT manager, was tasked with improving internetworking between the company's branch offices located in different countries. He initiated a comprehensive project that involved upgrading network infrastructure, implementing advanced routing protocols, and enhancing security measures. By optimizing internetworking capabilities, Bernardo aimed to improve data sharing, enhance communication, and promote greater collaboration among the global team.

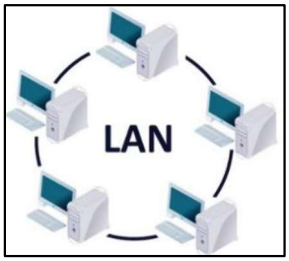
**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

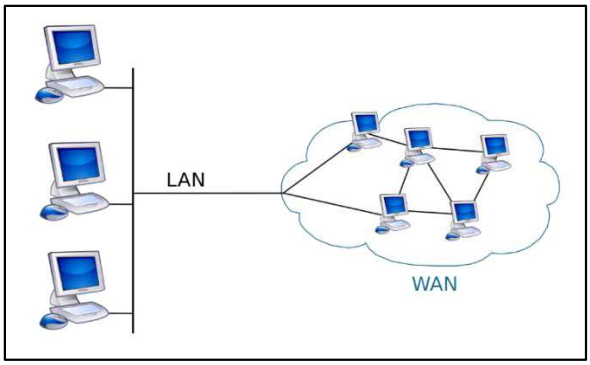
# Types of Networks

Networks connect different devices, like computers and smartphones, to share information and resources. Knowing about these different types of networks helps us choose the right network for our needs. Whether we want to set up a home network, connect to the internet, or work together with others, understanding networks helps us make smart decisions and use networks effectively.

Different types of networks serve specific purposes:

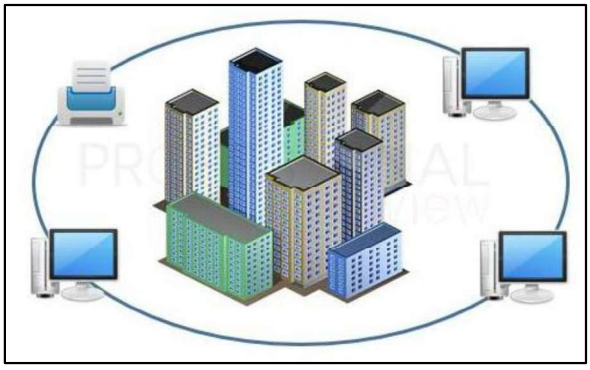



**Local Area Network (LAN)**A LAN connects devices in a small area like a home, office, or school. It lets devices share files, printers, and internet access.



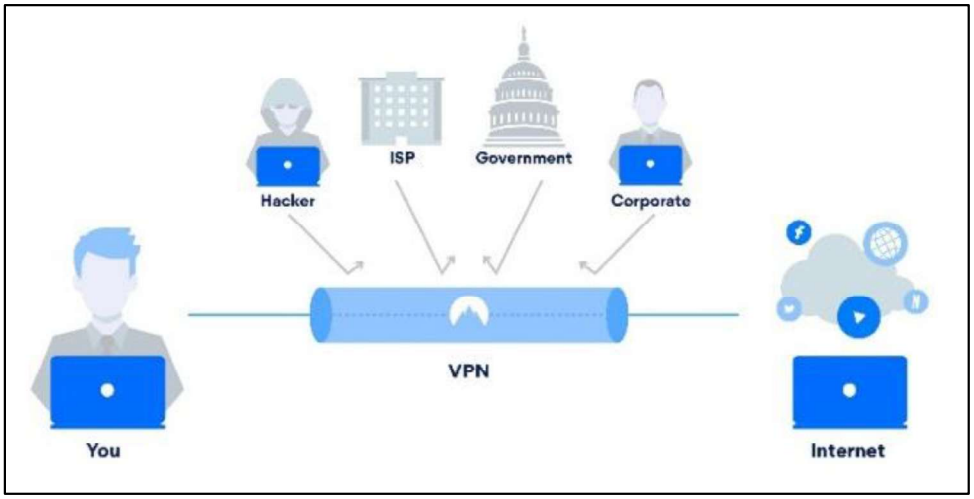

**Wide Area Network (WAN)**: A WAN connects multiple LANs over bigger areas, like cities or countries. It helps people in different places communicate and share information.

**Wireless Network**: A wireless network uses Wi-Fi or Bluetooth to connect devices without cables. It allows for flexible and mobile communication between devices.

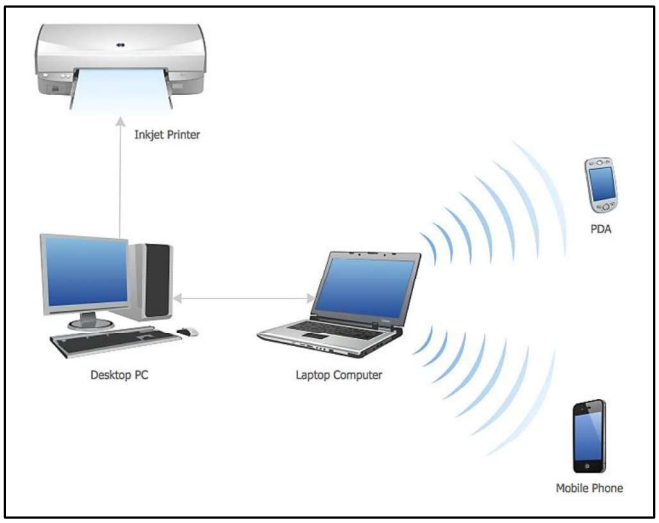


**Metropolitan Area Network (MAN)**: A MAN covers a city or town and connects different LANs. It helps organizations or institutions in the same area communicate with each other.

**Virtual Private Network (VPN)**: A VPN creates a secure connection over the internet. It lets users access private networks from remote locations while keeping their data safe.




**Personal Area Network (PAN)**: A PAN connects personal devices close to an individual, like smartphones, tablets, and wearable devices. It enables straightforward communication and data sharing between these devices.



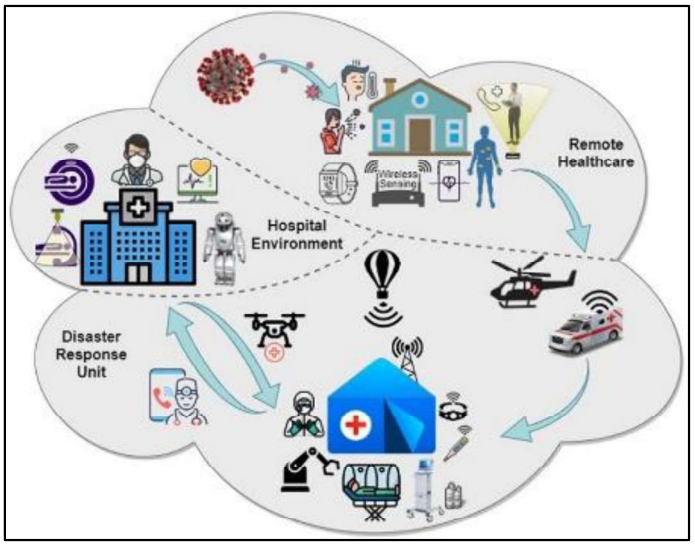

| | |
|---|---|
| ***LAN (Local Area Network)*** | Connects devices in a limited local area. |
| ***WAN (Wide Area Network)*** | Spans a large geographic area across regions. |
| ***Wireless Network*** | Uses wireless technologies for device connection. |
| ***MAN (Metropolitan Area Network)*** | Covers a city or metropolitan area. |
| ***PAN (Personal Area Network)*** | Connects devices within a short-range vicinity. |

**Learn Task**

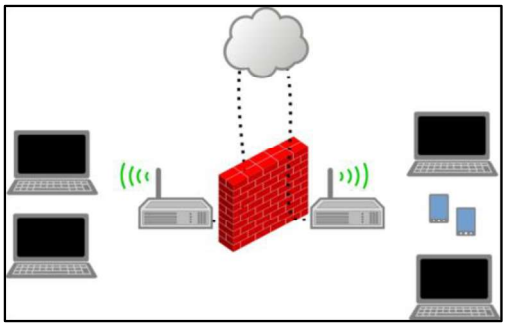
To practice this skill, access your XperienceED learning platform or student data files.

# Public and Private Networks

Public and private networks are two different types of networks that we use to connect our devices and access the internet. Knowing when to use each type of network helps us stay safe and have a good experience online.




A public network is like a big community where many people can connect and access the internet. Examples of public networks include Wi-Fi hotspots in cafes, airports, or libraries. While it's convenient to use public networks, we need to be careful because they are open to everyone. That means others on the same network can view our online activities. So, it's important to be cautious and avoid sharing sensitive information when connected to a public network.



On the other hand, a private network is our own personal space where only certain people can connect. It could be a network at our home, school, or office. Private networks have security measures to protect and keep our information private. We can control who gets access to our private network by setting up passwords and other security settings.

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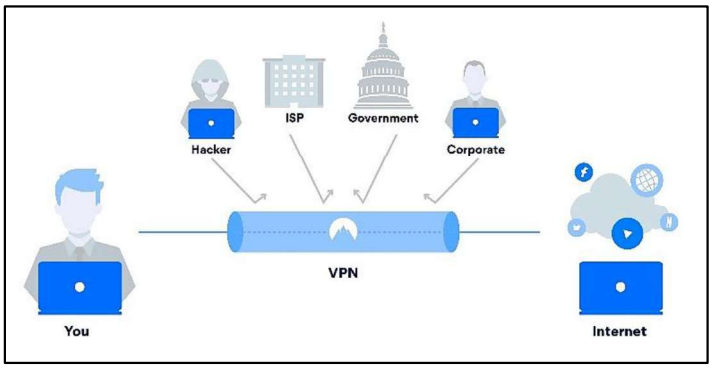
|---|---|
| ***Public Network*** | Accessible and open to the general public. |
| ***Private Network*** | Restricted access, typically within an organization or home, not openly accessible to the public. |

A Virtual Private Network, or VPN, is a special tool that adds extra security to our internet connection, even when using a public network. It creates a secret tunnel between our device and the websites or services we access. This tunnel protects our data from prying eyes and hackers who might want to steal our information.



When we connect to a VPN, it encrypts our data, turning it into secret code that others can't understand. This way, even if someone tries to observe what we're doing on the internet, they won't be able to read our data.

To use a VPN, we can choose from different VPN services available. It's important to pick a reputable and trustworthy service with good security measures. We can usually download a VPN app or program on our devices and follow the instructions to set it up. Once connected, we can browse the internet knowing our data is secure and private.

Mela, a remote worker for a cybersecurity firm, needed to access sensitive company data while traveling for a conference. Concerned about the security of public Wi-Fi networks, she connected to a VPN service provided by her company. This encrypted her internet connection, ensuring that her data remained secure and confidential while she accessed company resources from the conference venue.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Enterprise Networks

A network that includes the internet, intranet, and extranet is known as an enterprise network. This special network helps different parts of an organization, like computers and devices, to connect and share information.

The internet is like a giant web that connects millions of computers all around the world. It allows people from different places to communicate, share ideas, and access information. When we go online and visit websites, use social media, or send emails, we use the internet.

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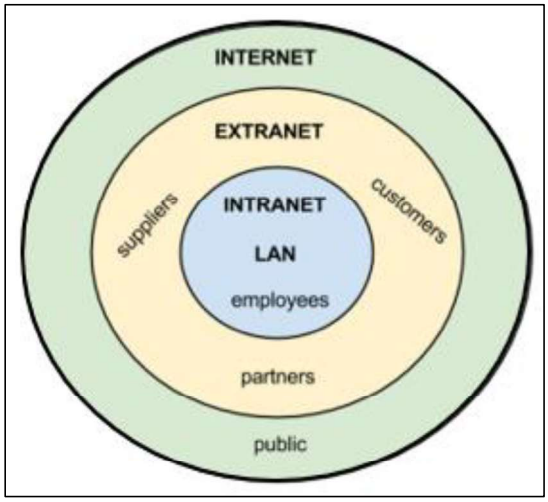
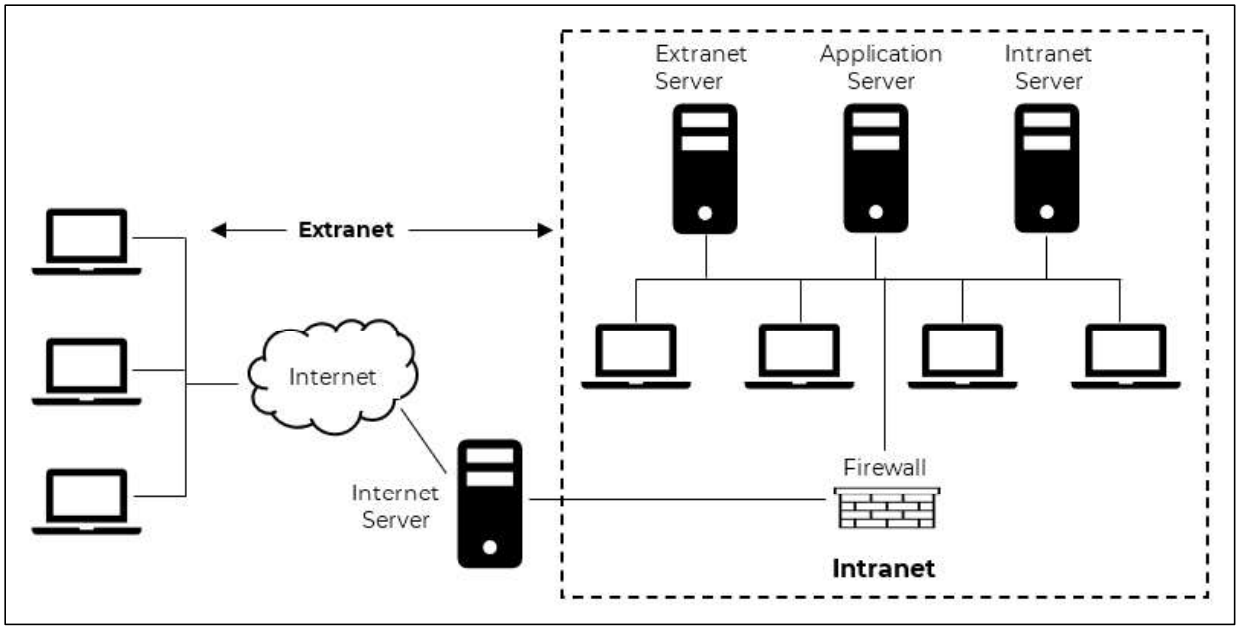
| ***Intranet*** | A private network that is only accessible within an organization. It is a digital space where employees can share files, collaborate on projects, and communicate. Businesses, schools, or government agencies often use this to keep their information secure and help their employees work together more effectively. |
| ***Extranet*** | An extension of the intranet, allowing some trusted people from outside the organization to access specific network parts. |




An enterprise network combines these to create a powerful and interconnected system. It helps organizations to have a strong online presence, collaborate internally, and work with external partners securely. With an enterprise network, organizations can communicate, share information, and accomplish their goals in today's digital world.



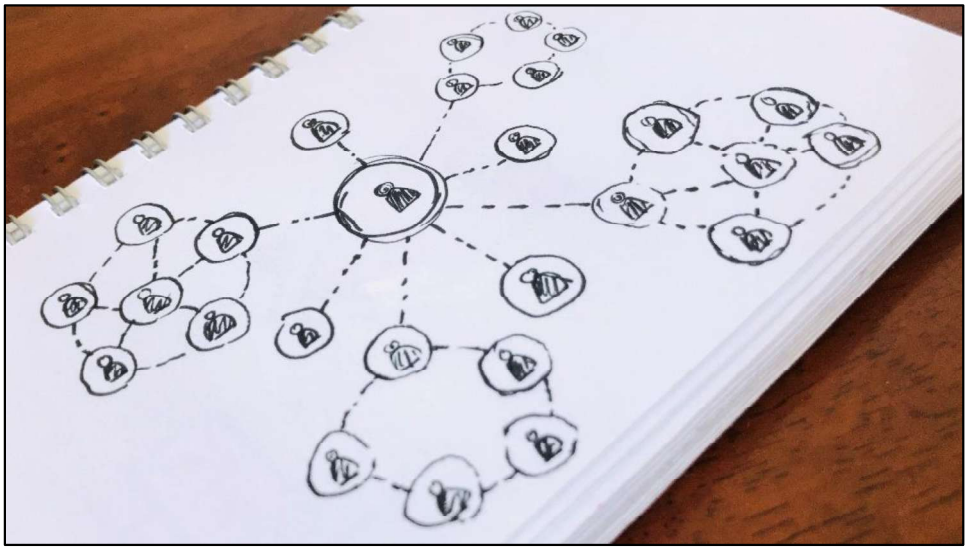

Dante needed to collaborate with his team on a project. He accessed the company's intranet, a private network, to share documents, communicate with team members, and access internal resources. By using the intranet, Dante and his team were able to collaborate while knowing that confidential company information remained within the secure network.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Network Connections

Network connections are how devices connect and communicate with each other in a network. There are different ways devices can connect:



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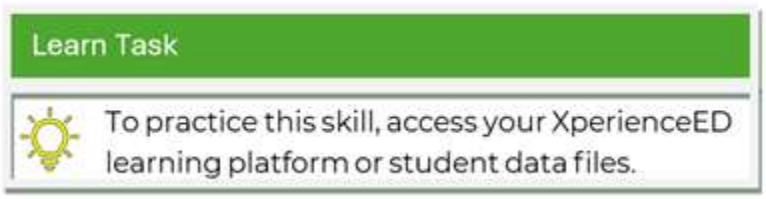
| ***Wired*** | Devices connect with cables, like Ethernet cables. It is a physical link that allows devices to share information and communicate with each other. |
| ***Wireless*** | Devices can connect without cables using Wi-Fi. It is a signal that travels through the air and lets devices communicate with each other. |
| ***Cellular*** | Smartphones can connect to the internet using a special network that comes from mobile phone towers. |
| ***Satellite*** | In some places, devices can connect using satellites to send and receive information. |
| ***VPN (Virtual Private Network)*** | Make connections secure and private to keep information safe when it travels between devices **or over public networks**. |

These different types of connections help devices in a network communicate with each other, share information, and access the internet. They enable devices to work together and browse websites, send messages, and share files.

Ana Maria, an adventurous traveler, found herself in a remote wilderness area where traditional internet connectivity was scarce. She faced a choice between using a cellular connection or a satellite connection to stay connected. Opting for the satellite connection, Ana Maria was able to establish a reliable and albeit slower internet link, allowing her to send important messages and access maps in areas where cellular networks were unavailable.




# Network Connectivity

Connectivity for networks means how devices in a network can connect and communicate with each other. It helps devices send and receive information, access shared information, and work together.

Here are some important features that make network connectivity possible:

| | |
|---|---|
| ***Network Cables*** | Special cables, like Ethernet cables, connect devices in a network. These cables let devices send information to each other. |
| ***Network Devices*** | Devices like routers, switches, and hubs that help devices in a network communicate with each other. |
| ***Wireless Signals*** | The sending of information between devices using radio waves. |
| ***Network Protocols*** | Rules that devices follow when they send and receive information in a network. They make sure devices can understand each other and work together. |
| ***ISP (Internet Service Provider)*** | The companies that give us internet access. They connect our networks to the internet, so we can use online services and visit websites. |

When networks have good connectivity, devices can share information, work together, and do many amazing things online. It's how we can visit websites, send emails, share files, and do many more things with our devices.

Atharva was frustrated with his current ISP due to slow speeds and frequent outages. He decided to research other ISPs in his area and ultimately switched to a local provider that offered faster and more reliable internet services. This change improved his business operations, allowing for smoother online transactions and better communication with customers.

**Learn Task**

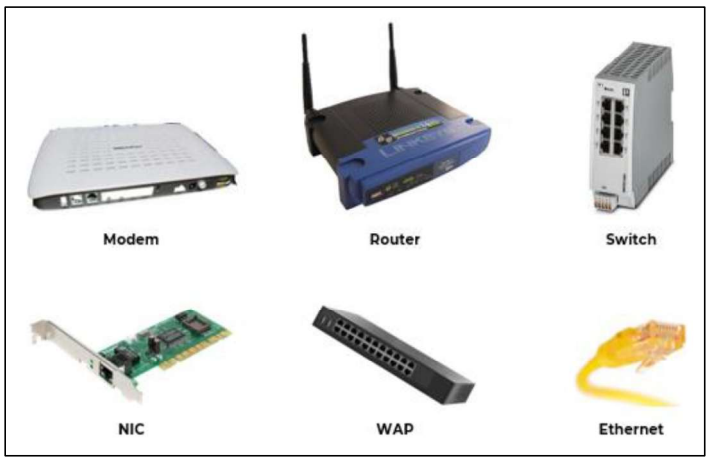
To practice this skill, access your XperienceED learning platform or student data files.

# Network Connection Device

Network connection devices are tools that help devices in a network connect and communicate with each other. Here are some common network connection devices:

| | |
|---|---|
| ***Modem*** | Connects to the internet and makes it available to devices in the network. |
| ***Router*** | Connects multiple devices in a network and helps them share information and access the internet. |
| ***Switch*** | Connects devices within a local network, like computers and printers, so they can communicate with each other and share data and resources. |
| ***Hub*** | Brings devices in a network together, helping them communicate with each other. |
| ***NIC (Network Interface Card)*** | A part inside a device, like a computer, that lets it connect to a network. |
| ***WAP (Wireless Access Point)*** | Allows devices to connect to a network using Wi-Fi. |
| ***Ethernet Cable*** | A special cable that connects devices together in a network using wires. |

These devices work together to make sure devices can communicate with each other, share information, and access the internet in a network.



Amisha, a gaming enthusiast, wanted a lag-free online gaming experience. She decided to upgrade her internet connection by using a high-quality Ethernet cable to directly connect her gaming console to the router. This choice provided a stable and low-latency connection, allowing Amisha to enjoy a competitive edge in her online matches.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Wireless Connections

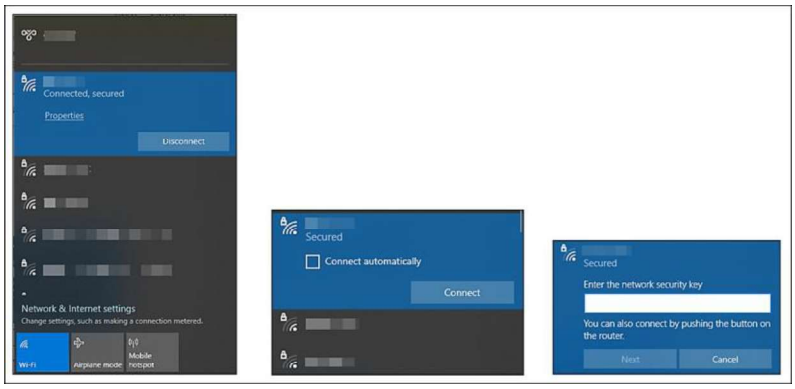
One common way to connect to the internet is through wireless networks, also called Wi-Fi. These networks let us connect our devices without using cables.

| | |
|---|---|
| ***Wi-Fi (Wireless Fidelity)*** | A wireless technology that lets devices connect without cables, which is convenient when users are on the move. |

To connect to a wireless network, follow these steps:

1. Turn on the Wi-Fi function on your device by going to the settings or control panel and finding the Wi-Fi or wireless network options.
2. Wait for your device to scan for available wireless networks. It will display a list of networks in range.
3. Select the desired wireless network from the list. Make sure you choose the correct network to which you have permission to connect.
4. If the network is secured, you will be prompted to enter a password or network key. Enter the password correctly to authenticate and connect to the network.
5. Once you have entered the correct password, your device will attempt to connect to the wireless network. It may take a few moments to establish the connection.
6. After successfully connecting, your device will display a confirmation message, or the Wi-Fi icon will display as connected.
7. Test your internet connection by opening a web browser or using any internet-dependent applications on your device. If the connection is successful, you can browse the internet or access network resources.

Remember to connect to wireless networks that you have proper authorization to use, and be cautious when connecting to public or unfamiliar networks to ensure your privacy and security.



Dechen, a new homeowner, needed to set up a wireless internet connection in his new house. He began by connecting his Wi-Fi router to the modem and configuring the network settings, including a strong password and network name. Afterward, he connected all his devices, such as smartphones, laptops, and smart home gadgets, to the newly established wireless network, ensuring everyone in the household could access the internet.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

# Wireless Connection Troubleshooting

When we use wireless technology to connect our devices to the internet, we sometimes have problems that stop us from getting a good connection. Troubleshooting wireless connections is essential because it helps us fix those problems and get back online.

To fix problems with your wireless connection, follow these steps:

1. Check the basics: Ensure Wi-Fi is on and you're close enough to the network. Also, make sure the Wi-Fi box is plugged in and working.
2. Restart your device: Sometimes, turning your device off and on again can fix the problem.
3. Check network settings: Double-check that you connect to the right network using the correct password.
4. Get closer to the Wi-Fi box: If the signal is weak, move closer to the Wi-Fi box. Sometimes, walls or other things can make the signal weaker.
5. Restart the Wi-Fi box: Unplug it, wait a few seconds, and plug it back in. Wait for it to turn on again.
6. Forget and reconnect: Find the Wi-Fi settings on your device and choose the network you're having trouble with. Then, choose the Forget option or Disconnect option. Find the network again to connect.
7. Update your device: Check if there are any updates for your device's software. Updating it can sometimes fix problems.

8. Restart the modem: If you have a separate box for the internet, unplug it, wait a few seconds, and plug it back in. Wait for it to turn on again.
9. Reset network settings: As a last option, you can try resetting your network settings. This will remove saved Wi-Fi networks, so you must connect to them again.

If these steps don't work, you can contact tech support or your internet provider for more help.

Citra faced Wi-Fi connectivity problems at home, so she optimized the placement of the Wi-Fi box, updated software, and adjusted network settings. By doing this, she reduced interference from neighboring networks, successfully resolving the issues and restoring a stable wireless connection.

Learn Task

To practice this skill, access your XperienceED learning platform or student data files.

# Wired Connections

Connecting to a wired network is a reliable and safe way to access the internet. Instead of using wireless signals, it uses cables to connect your device to the network directly. This gives you a strong and steady internet connection, which is great for playing games online, viewing videos, or downloading large files.

Here are the steps to connect to a wired network:

1. Locate the Ethernet port on your device: Scan for a small rectangular port that resembles a larger version of your phone's charging port. It is usually labeled as "Ethernet" or has an icon that seems like two arrows pointing toward each other.
2. Connect one end of the Ethernet cable to your device: Take one end of the Ethernet cable and insert it firmly into the Ethernet port on your device. Make sure to plug it in securely to establish a proper connection.
3. Connect the other end of the Ethernet cable to the router or modem: Find the corresponding Ethernet port on your router or modem. Insert the other end of the Ethernet cable into this port, ensuring a snug fit.
4. Check the network connection: Once both ends of the cable are connected, your device should automatically detect the wired network. You may notice a notification or icon indicating a successful connection.
5. Test the network connection: Open a web browser or any online application to confirm that you are connected to the internet. If the page or application loads successfully, you have successfully connected to the wired network.

Remember, wired connections offer a more stable and secure internet connection than wireless networks.

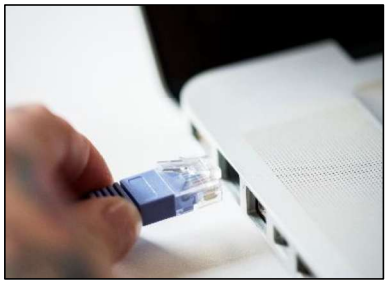
Tae-Song, an IT specialist, was tasked with setting up a wired network for a local school in his community. He carefully ran Ethernet cables throughout the classrooms, connecting them to a central switch. Tae-Song ensured a reliable and secure network infrastructure that provided fast and stable internet access for both students and teachers.

Learn Task

To practice this skill, access your XperienceED learning platform or student data files.

# Wired Connection Troubleshooting

If you're experiencing issues with your wired connection, there are a few troubleshooting steps you can follow to identify and resolve the problem.



1. Check the cables: Make sure that all cables are securely plugged in at both ends. Check for any visible damage or loose connections.
2. Restart your devices: A restart can sometimes fix connectivity issues. Turn off your device and any network equipment (such as modem and router), then turn them back on after a few seconds.
3. Test with a different cable: Try using a different Ethernet cable to connect your device to the network. Faulty cables can cause connection problems.
4. Check network settings: Ensure that your device's network settings are configured correctly. Check the IP address and default settings.
5. Update network drivers: If you're using a computer, make sure that your network drivers are up to date. Outdated drivers can cause compatibility issues.
6. Reset network settings: If all else fails, you can try resetting your network settings to their default values. This can be done through the network settings menu on your device or by using the reset button on your router.

Following these troubleshooting steps, you can often resolve common wired connection issues and get your internet connection back up and running smoothly.

Amina, an IT technician, received a call from a small business owner named Juma, reporting connectivity issues with their wired network. Amina promptly arrived at the location and began troubleshooting the problem. She inspected the Ethernet cables, identified a damaged one, and replaced it. Amina also reconfigured the network settings, resolving the issue and ensuring Juma's business could continue to operate smoothly with a stable wired connection.

**Learn Task**

To practice this skill, access your XperienceED learning platform or student data files.

**Lesson Assessments**

Access your XperienceED learning platform or student data files and complete the Practice Questions and Practice Exercises for this lesson.

**Unit Assessments**

Access your XperienceED learning platform or student data files and complete the Objective Assessment and Create Project for this unit.