

Microsoft Office Package

Prepared By:

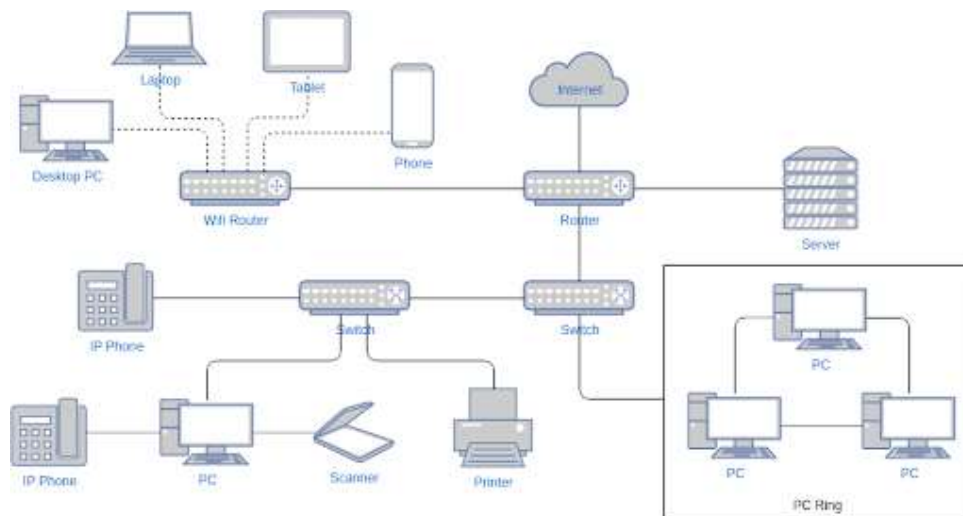
Professor Dr. Md. Mijanur Rahman
Department of Computer Science & Engineering
Jatiya Kabi Kazi Nazrul Islam University
www.mijanrahman.com

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Internet and Email

What Is the Internet?

The internet is a global network of interconnected computers, servers, phones, and smart appliances that communicate with each other using the transmission control protocol (TCP) standard to enable a fast exchange of information and files, along with other types of services.



How Internet Works

The internet is a global hub of computer networks — a network of connections wherein users at any workstation may, with authorization, receive data from every other system (and often interact with users working on other computers).

Internet infrastructure comprises optical fiber data transmission cables or copper wires, as well as numerous additional networking infrastructures, such as local area networks (LAN), wide area networks (WAN), metropolitan area networks (MAN), etc. Sometimes wireless services such as 4G and 5G or WiFi necessitate similar physical cable installations for internet access.

Internet Corporation for Assigned Names and Numbers (ICANN) in the United States controls the internet and its associated technologies, such as IP addresses.

How was the internet developed?

The internet was first envisioned in the form of ARPANET by the Advanced Research Projects Agency (ARPA) of the U.S. government in 1969. The initial goal was to create a network that would enable users of a research computer at one institution to “communicate” with research computers at another institution. Since communications can be sent or diverted across several directions, ARPANet could continue to operate even if a military strike or any other calamity damages portions of the network.

ARPANET used the new packet switching technology to create low-cost, interactive interactions between computers, which generally communicate in short data bursts. Packet switching broke down large transmissions (or portions of computer data) into smaller, more manageable parts (called packets) that could travel independently across any accessible circuit to the destination where they were reassembled. Consequently, unlike conventional voice services, packet switching doesn’t require a separate dedicated connection between a pair of users.

In the 1970s, corporate packet networks were launched, although their primary purpose was to enable efficient access to distant computers through specialized terminals. They replaced expensive long-distance modem connections with “virtual” lines via packet networks.

Today, the internet is a globally accessible, collaborative, and self-sustaining public resource available to tens of millions of individuals. Countless people utilize it as their primary source of data consumption, spurring the development and expansion of their own community through social networking and content exchange. However, private versions of the internet do exist, which are primarily used by large organizations for secure and regulated information exchange.

Key features of the internet

The internet is a vast, interconnected network of computers and other network-enabled devices, which is:

- **Globally available:** The internet is an international service with universal access. People living in isolated areas of an archipelago or even in the depths of Africa can now access the internet.

- **Easy to use:** The software used to connect to the internet (web browser) is user-friendly and easy to understand. It's also relatively easy to create.
- **Compatible with other types of media:** The internet provides a high level of engagement with photos and videos, among other media.
- **Affordable:** Internet service development, as well as maintenance costs, are modest.
- **Flexible:** Internet-based communication is highly adaptable. It supports text, audio, and video communication. These services are available at both individual and organizational levels.

How Does the Internet Work?

The internet delivers different types of information and media across networked devices. It operates using an internet protocol (IP) and a transport control protocol (TCP) packet routing network. Whenever you visit a website, your computer or mobile device requests the server using such protocols.

A server is where web pages are stored, and it functions similarly to the hard drive of a computer, except with far greater processing power. The server accesses the web page and delivers the right information to your computer whenever the request arrives. This is broadly the end-to-end user experience. Let us now look at the more technical details of how the internet works.

1. Connecting computers

The basic foundation of the internet is an interconnected network of computers. When two computers interact, they must be physically (often via an Ethernet connection) or wirelessly connected (via Wi-Fi or Bluetooth). All modern systems can support any of these connections to establish a core network.

2. Scaling computer networks

The [computer network](#), as described above, is not restricted to two PCs. One can link several computers. However, as you expand, it may get more complex. Every machine on a network is connected to a tiny computing device known as a router to address this problem. This router's only function is to operate as a signaler. It ensures that a message transmitted from a particular computer reaches its intended recipient. With the addition of a router, a system of 10 computers needs merely ten wires instead of $10 \times 10 = 100$ connections.

3. Enabling infinite scaling

Let us now discuss interconnecting hundreds of thousands to billions of machines. A single router cannot scale to that extent; nonetheless, a [router](#) is an independently programmable computer unit. This implies that two or more routers may be connected, enabling infinite scaling.

4. Utilizing ubiquitous public infrastructure via a modem

By now, we have constructed a network identical to the internet, although it is only intended for individual use and cannot connect with the outside world. This is where public

infrastructure comes in. The telephone system links an office to everyone worldwide, making it the ideal wiring configuration for the internet. A modem is necessary for connecting networks to the telephone system. This modem converts data from a network into data that can be managed by the telephony architecture and vice versa.

5. Sending messages from one network to another

The following step is to transmit the information from your network to the target network. To accomplish this, the network must establish a connection with an internet service provider (ISP). An ISP is a service that administers specified routers that are interconnected and also have access to the routers of other ISPs. Therefore, the data from the host network is delivered to the target network via the web of ISP networks.

To deliver a message to a system, it is important to identify which computer it should be sent to. Therefore, every machine connected to a network has a unique identifying address known as an “IP address” (here, IP refers to internet protocol). It is an address consisting of four integers separated by periods, such as 192.168.2.10. There are several versions of IP; currently, we are in IPv4 and [IPv6](#) iterations, depending on the region.

6. Assigning domain name to IP addresses

IP addresses are intended for computers, but in an infinitely extensible internet, it would be difficult for people to keep count of an ever-growing number of addresses. To simplify matters, one may designate an IP address with a domain name, a human-readable name. Google.com is an excellent example of this — the domain name is used in conjunction with the IP address 142.250.190.78. Therefore, typing the domain name is the simplest way to access a computer online.

7. Connected the internet to the web

The internet is a network architecture that enables millions of machines to communicate with one another. Several of these machines (web servers) can feed web browsers intelligible messages. The web is an application constructed on top of the internet’s infrastructure. It is important to note that additional services, like email, have been developed on top of the internet.

8. Connecting the internet to a private intranet or extranet

Intranets are personal and bespoke networks confined to an organization’s members. They offer participants a secure gateway to access shared information, collaborate, and communicate.

Extranets are quite similar to intranets, except that they enable collaboration and sharing with other businesses. Typically, they are employed to safely and confidentially transmit information to customers and other enterprise stakeholders. Frequently, their functions resemble those of an intranet: file and information sharing, collaboration tools, message boards, etc.

Intranets and extranets operate on the same infrastructure and adhere to the same protocols as the internet.

How does the web work?

When we discuss the internet in common parlance, we typically refer to the web – although the two terms are not interchangeable. If the internet can be understood as a network of highways, then the web will be the network of restaurants, toll booths, gas stations, etc., built along it. The main job of the internet is to access the web. However, it can perform other tasks like supporting cloud storage on computers, keeping the software as a service (SaaS) apps online, automatically updating the computer’s time, etc.

On the other hand, the web comprises multiple computers connected to the internet called clients and servers.

- Clients are internet-connected devices of a web user (such as a computer linked to Wi-Fi or a mobile phone) and the online-accessing software installed on such systems (generally a web browser).
- Servers store websites, applications, and their associated data and activities. When a client device requests access to a website, a replica of the webpage is received from the server to the client’s computer. The webpage is then exhibited in the client’s web browser.

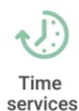
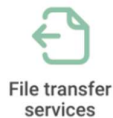
When a user inputs a domain name or uniform resource locator (URL) in the browser, the domain name system (DNS server) is contacted to get the actual IP address of the website’s server.

The browser then transmits an HTTP or HTTPS request message back to the server, asking the server to transmit a copy of the web page to the client. This message and all other data transferred between the client and server are sent via the TCP/IP protocol across your internet connection.

If the server authorizes the client’s request, it returns a “200 OK” status code. The server then begins transmitting the site’s contents to the client as a sequence of data packets. The browser constructs an entire web page from the packets and starts displaying it. This request, response, and information exchange happens via the internet infrastructure.

Types of Internet Services

Types of Internet Services



As mentioned earlier, the internet can enable various services, not just web access. Some of the key types of internet services are:

1. Communication services

To exchange data/information among individuals or organizations, the internet enables communication services. This mainly includes VoIP and video conferencing.

Voice over internet protocol (VoIP) enables users to place voice calls over the internet compared to a conventional (or analog) phone connection. Other VoIP services allow you to contact anybody with a mobile number, encompassing long-distance, cellular, and even local/international connections.

Video conferencing technology enables two or more individuals in separate locations to connect visually and in real time. It includes persons in different places using video-enabled devices and broadcasting real-time speech, video, texts, and slideshows via the internet.

Other communication services based on the internet include email, internet relay chat (IRC), and list server (LISTSERV) used for asynchronous text communication, instant messaging, and group announcements, respectively.

2. File transfer services

We utilize file transfer to exchange, transmit, or send a document or logical data item among many individuals or computers, both locally and remotely. Data files may comprise documents, videos, photos, text, or PDFs. They may be shared via internet downloading and uploading. File transfer protocol (FTP) is one of the most common internet protocols used for this purpose.

3. Directory services

A directory service is a collection of software that maintains information about the organization, its customers, or both. Directory services are responsible for mapping network resource names to network addresses. It offers administrators and users transparent access to all network computers, printers, servers, and other devices. It is also an important backend service provider for and by the internet.

Domain number system (DNS) and lightweight directory access protocol (LDAP) are the most commonly used directory services. A DNS server stores a map of computer hostnames and other domain names to IP addresses. LDAP is a collection of open protocols to obtain centralized network access to stored data. It is also a mechanism for cross-platform authentication.

4. Ecommerce and online transactions

Ecommerce allows the customer to purchase a service or product directly from the vendor, at any time or anywhere on the planet. When IBM started offering hardware and software for computers over the internet, it was one of the first instances of ecommerce. Since then, this service has grown in use tremendously. Ecommerce uses the web to enable financial exchanges so that data packets can translate into their real-world monetary equivalents.

5. Services for network management

Network management services are some of the most critical and valuable internet services for IT administrators. They assist in avoiding, monitoring, diagnosing, and resolving network-related issues. Two services are mainly used for this purpose – ping and traceroute.

The ping utility checks the host machine's availability and the time required to react to any and all internet control message protocol (ICMP) transmissions. It guarantees that all requests issued by a computer reach the web server without packet loss. In the meantime, the traceroute identifies and displays all potential paths from query to response, as well as the turnaround time for each route.

6. Time services

Greenwich Mean Time (GMT) or Coordinated Universal Time synchronizes computer clocks (UTC). [Network time protocol \(NTP\)](#) is an established internet time service that syncs and adjusts the computer clock accurately to all these standards. All Windows time variants released after Windows 2000 synchronize with an NTP server. NTPsec is primarily a secured version of NTP.

7. Search engine services on the web

When users search for a web page through a search engine rather than the domain name, the search engine examines the web crawler's index of all pages. It will study the search phrase and compare it to the database, including how often the search terms appear on a webpage, where they appear on the site, whether they appear together, etc. It analyzes this information to determine which websites best fit your search query.

The results are then shown in order, with those that best fit the search keyword appearing initially. It is important to note that search engines can accept funds from commercial entities to prioritize their websites in the results of a particular query. This is an advert, and the search engine results will be labeled as such.

Internet Browsing

Internet browsing is the act of accessing websites using a web browser. A web browser is an application that retrieves files from a web server and displays them on a user's device when a web page is requested. Web browsers can be used on a variety of devices, including desktops, laptops, tablets, and smartphones.

Here are some popular web browsers:



Google Chrome

A web browser developed by Google that was first released in 2008



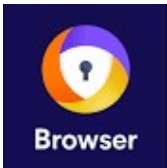
Safari

Apple's native browser that is known for its speed and efficiency



Microsoft Edge

Microsoft's proprietary browser that replaced Internet Explorer in 2015



Avast Secure Browser

A browser that has built-in features for browsing privately and security



Samsung Internet

A browser that comes pre-installed on Samsung phones and includes a privacy dashboard and browsing history management



Vivaldi

A browser that offers a high level of customization, including how navigation works



Konqueror

A web browser and file manager that can view local files and files on remote ftp servers



Netscape Navigator

A web browser created in 1994 that was the first commercially successful browser with a graphical user interface

Most popular web browsers offer the option to browse privately and are compatible with ad-blocker add-ons and antivirus software.

Search Engines

A search engine is a software program that helps people find information on the web. Users enter a query into a search engine, which then returns a list of hyperlinks, images, and textual summaries.

How search engines work

- Search engines scan the internet continuously and index every page they find.
- When a user enters a query, the search engine returns results based on the keywords or phrases used.

Some popular search engines



Google

The most popular search engine, with over 92% of the global market share



Bing

The second most popular search engine, with just over 1% of the global market share



Yahoo! Search is a search engine owned and operated by Yahoo!, using Microsoft Bing to power results.



Yandex

One of the largest search engines in the world, and the largest in Russia



uckDuckG

DuckDuckGo

A search engine that focuses on protecting users' privacy



Baidu

The dominant search engine in China, with similar features and services to Google



Ecosia

A private and charitable search engine that donates 80% of its profits to tree-planting projects

Brave Search

An independent, private search engine that can be integrated into most major browsers.

E-Mail

Email (short for electronic mail; alternatively spelled e-mail) is a method of transmitting and receiving messages using electronic devices. It was conceived in the late–20th century as the digital version of, or counterpart to, mail (hence e- + mail). Email is a ubiquitous and very widely used communication medium; in current use, an email address is often treated as a basic and necessary part of many processes in business, commerce, government, education, entertainment, and other spheres of daily life in most countries.

Creating email account

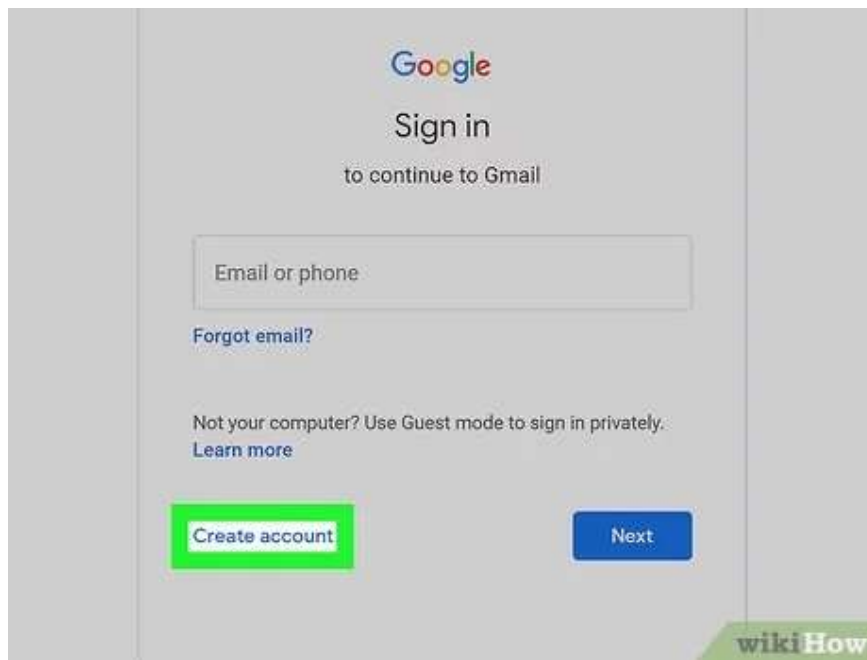
To create an email account, you can:

1. Go to the email provider's website
2. Select Create account or a similar option
3. Enter your personal information, such as your name, birthday, and gender
4. Choose a username and password
5. Review and confirm your account information
6. Accept the terms of service

You can create an email account on a computer or mobile device.

Creating a Gmail account

1. Go to the Gmail website
2. Click Create account
3. Select For my personal use
4. Enter your personal information
5. Add a recovery email address (optional)
6. Review your account information
7. Review Google's Privacy and Terms



Creating an email account on a mobile device

1. Open the email app
2. Select Add account
3. Select the type of account you want to add
4. Enter your email address and password
5. Follow the on-screen steps

Sending Email

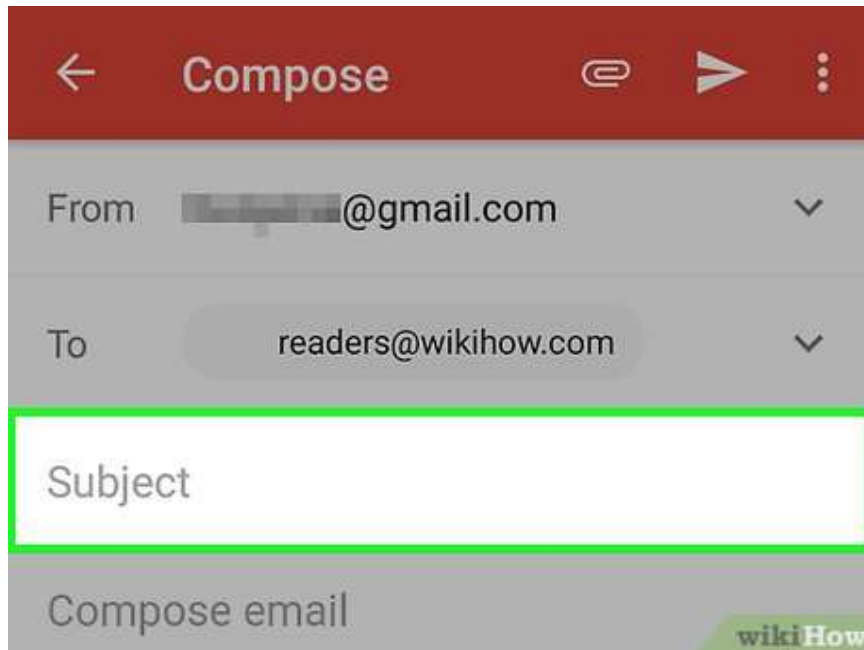
To send an email, you can:

1. Choose an email program
2. Add recipients in the "To" field
3. Add recipients in the "Cc" and "Bcc" fields
4. Write a subject line
5. Write your message
6. Attach any necessary files
7. Click Send

Steps for sending an email in Gmail

1. Go to Gmail
2. Click Compose in the top left

3. Add recipients in the "To" field
4. Add a subject
5. Write your message
6. Click Send at the bottom of the page



Sending Email Attachment

To send an email attachment, you can do the following:

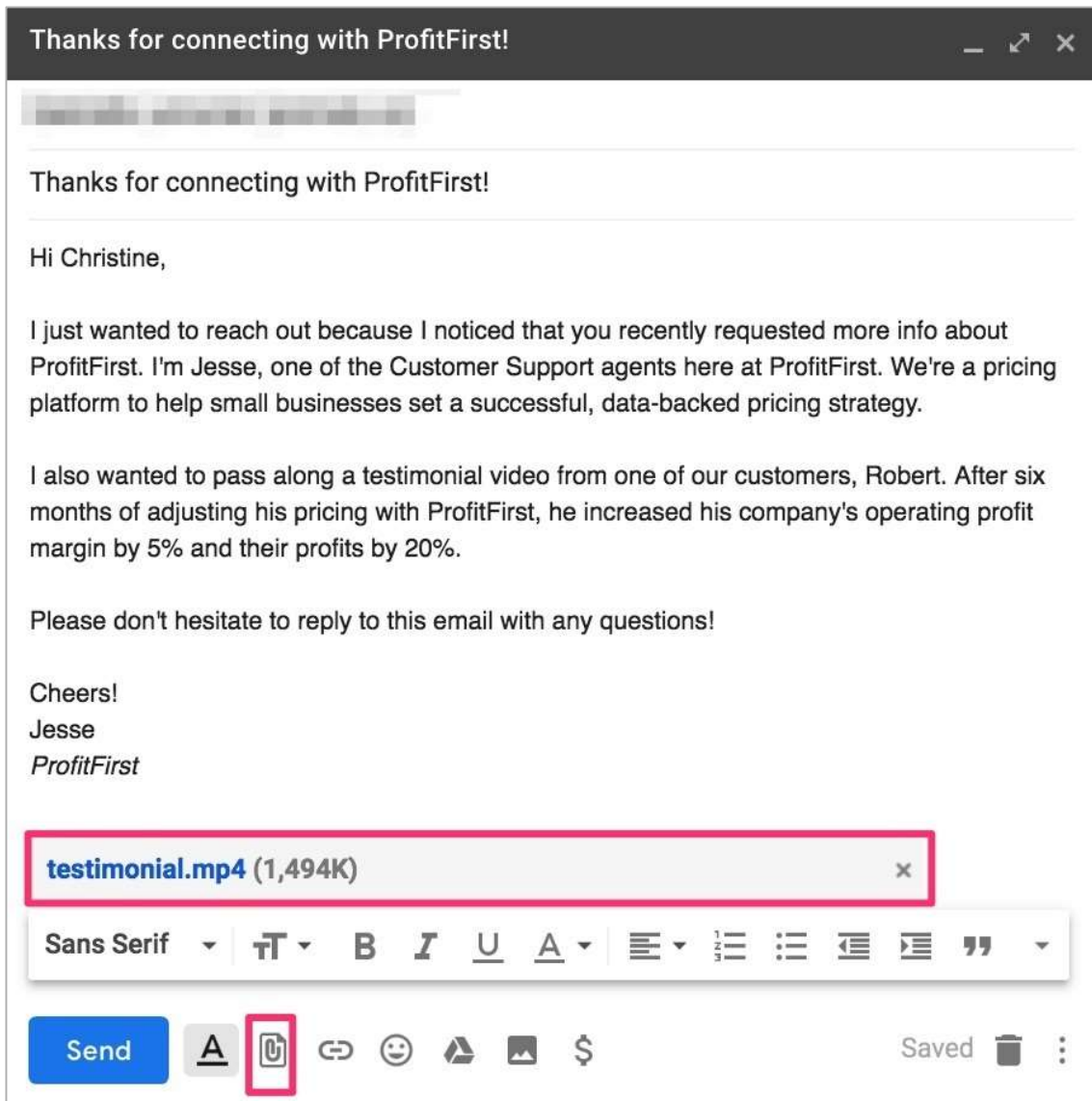
1. **Identify the files:** Before you start writing your email, find the files you want to attach and where they are on your device.
2. **Compose your email:** Write your email's subject line and body.
3. **Click the attachment icon:** In your email, click the paperclip icon or Attach button.
4. **Select the files:** Locate the files you want to attach and select them.
5. ****Click **: Open**** or Attach
6. **Preview and send:** Preview your email and send it.

You can attach many types of files to an email, including:

- **Document files:** Word documents, PDF files, and spreadsheets
- **Image files:** JPEGs, PNGs, and GIFs
- **Audio files:** MP3s and WAV files
- **Video files:** MP4s and AVI files

- **Archive files:** ZIP files and RAR files

To send sensitive information, you can encrypt emails and attachments, use password-protected files, or use Google Drive or a client portal.



Blogging

Blogging is the process of creating and publishing content on a website. Blogs can be personal or professional and can cover a range of topics.

What is a blog?

- A blog is a website that regularly updates content, such as articles, photos, and videos
- Blogs can be personal or professional
- Blogs can be interactive, with readers able to comment on posts

- Blogs can be a way to connect with people who share similar interests

What is a blog introduction?

- A blog introduction is the first paragraph of a blog post
- It's the first thing readers see when they visit a blog
- It sets the tone for the rest of the post



Facebook

Facebook is a social media and social networking service owned by American technology conglomerate Meta. Created in 2004 by Mark Zuckerberg with four other Harvard College students and roommates Eduardo Saverin, Andrew McCollum, Dustin Moskovitz, and Chris

Hughes, its name derives from the face book directories often given to American university students. Membership was initially limited to Harvard students, gradually expanding to other North American universities. Since 2006, Facebook allows everyone to register from 13 years old, except in the case of a handful of nations, where the age limit is 14 years.[6] As of December 2022, Facebook claimed almost 3 billion monthly active users.[7] As of November 2024, Facebook ranked as the third-most-visited website in the world, with 23% of its traffic coming from the United States.[8][9] It was the most downloaded mobile app of the 2010s.[10]

Facebook can be accessed from devices with Internet connectivity, such as personal computers, tablets and smartphones. After registering, users can create a profile revealing personal information about themselves. They can post text, photos and multimedia which are shared with any other users who have agreed to be their friend or, with different privacy settings, publicly. Users can also communicate directly with each other with Messenger, join common-interest groups, and receive notifications on the activities of their Facebook friends and the pages they follow.
