



# **Internet & mobile computing**

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# What is internet ?

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Internet is an interconnected system of computer networks that serves the users all over the world.

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- *Vinton Gray Cerf is considered as the father of Internet.*
- *Tim Berners Lee proposed the idea of World Wide Web (WWW).*
- *Tim Berners Lee and his team invented Hyper Text Transfer Protocol (HTTP), HTML and the technology for a web server and a web browser.*

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Intranet is considered as a private computer network similar to Internet that uses TCP/IP protocol to share information, software or services within an organisation.

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# Hardware and software requirements for connecting to the Internet

- >> A computer with Network Interface Card (wired/wireless) facility and an operating system that supports TCP/IP Protocol
- >> Modem
- >> An Internet account given by an Internet Service Provider (ISP)
- >> Software like browser, client application for e-mail, chat, etc.

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**Dial-up connection**

**Wired broadband connection**

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# Dial-up connection

- ♦ Slow connections . Speed up to 56 kbps
- ♦ Requires dialing to connect to ISP
- ♦ Use telephone line exclusively
- ♦ Use dial-up modem

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# Wired broadband connection

- ♦ Higher speed connection.usually higher than 256kbps
- ♦ Always on connection
- ♦ Simultaneous use of voice and internet
- ♦ Use broadband modem

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# Popular broadband technologies

Integrated Services Digital Network (ISDN)

Cable Internet

Digital Subscriber Line (DSL)

Leased Lines and Fiber to the Home (FTTH)

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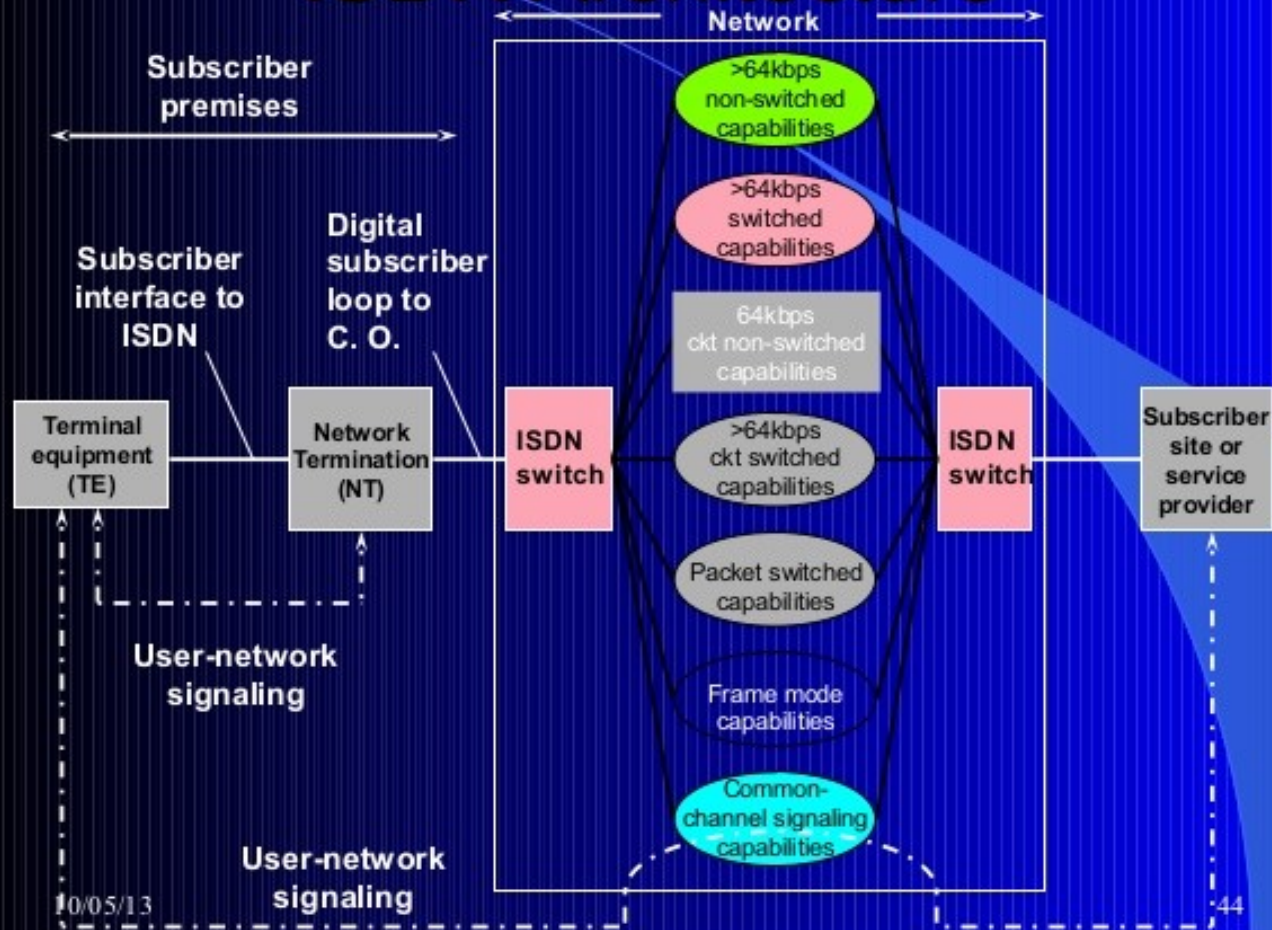
# ISDN

It is a broadband service capable of transporting voice and digital data.

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# ISDN Architecture



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## Cable internet

Internet access is provided using coaxial cables  
laid for television signal transmission to our home

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## DSL

It is another broadband service that provides connection to the Internet through standard Telephone lines

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## Leased line

These are dedicated lines used to provide Internet facility to ISPs, business, and other large enterprises.

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# Fibre to the Home (FTTH)

It uses optical fibres for data transmission. Optical fibres are laid from the ISP to our homes.

FTTH technology has been accepted worldwide to implement high speed Internet to the home.

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# Wireless broadband connectivity

It provides almost the same speed as that of a wired broadband connection. The popular wireless broadband accesses are Mobile Broadband, Wi-MAX, Satellite Broadband and Wi-Fi.

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# Mobile broadband

It is wireless Internet access using mobile phone, USB wireless modem, tablet or other mobile devices.

The modem is built into mobile phones, tablets, USB dongles, etc.

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# Wi-max

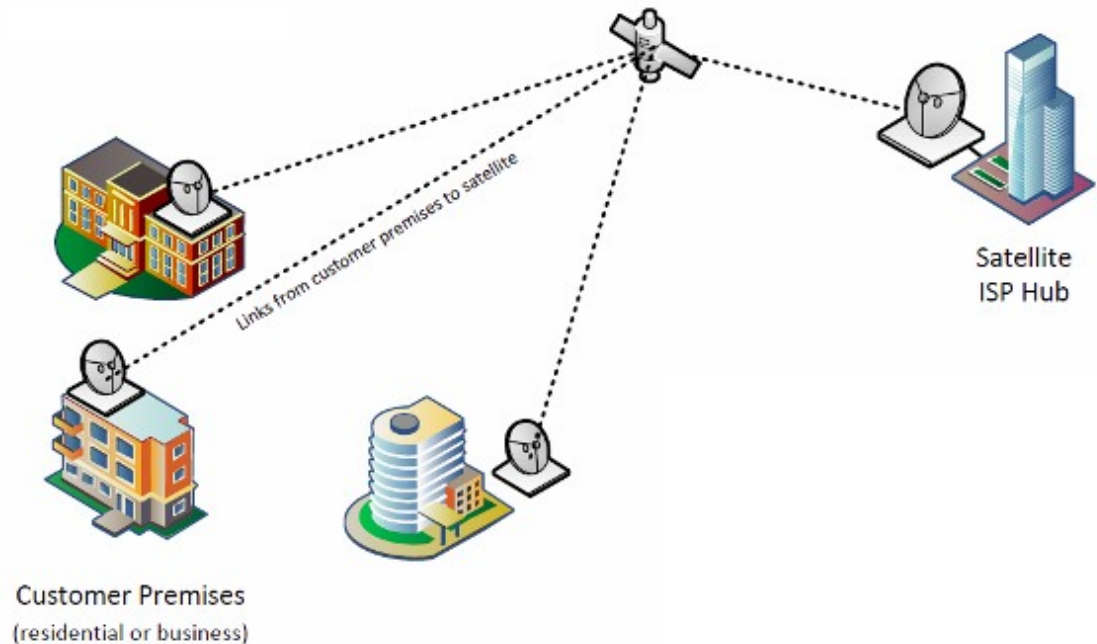
Worldwide Interoperability for Microwave Access (Wi-MAX)  
offers a Metropolitan Area Network which can provide  
wireless Internet up to a distance of 50 Km.

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# Satellite broadband technology

It is a method by which Internet connectivity is provided through a satellite.



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# Sharing an internet connection

Internet connection can be shared among several computers using a LAN, Wi-Fi network or Li-Fi network.

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## Service on internet

Services like WWW, e-mail, search engines, social media, etc. Are widely used throughout the globe.

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# World Wide Web (WWW)

It is a system of interlinked hypertext documents accessed via the internet.

It is a huge client-server system consisting of millions of clients and servers connected together.

Each server maintains a collection of documents and they can be accessed using a reference called Uniform Resource Locator (URL)

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# Web browser

It is a software use to retrieve or present information and to navigate through web pages in the World Wide Web.

Eg: Google Chrome,  
Internet Explorer,  
Mozilla ,Opera, and Safari



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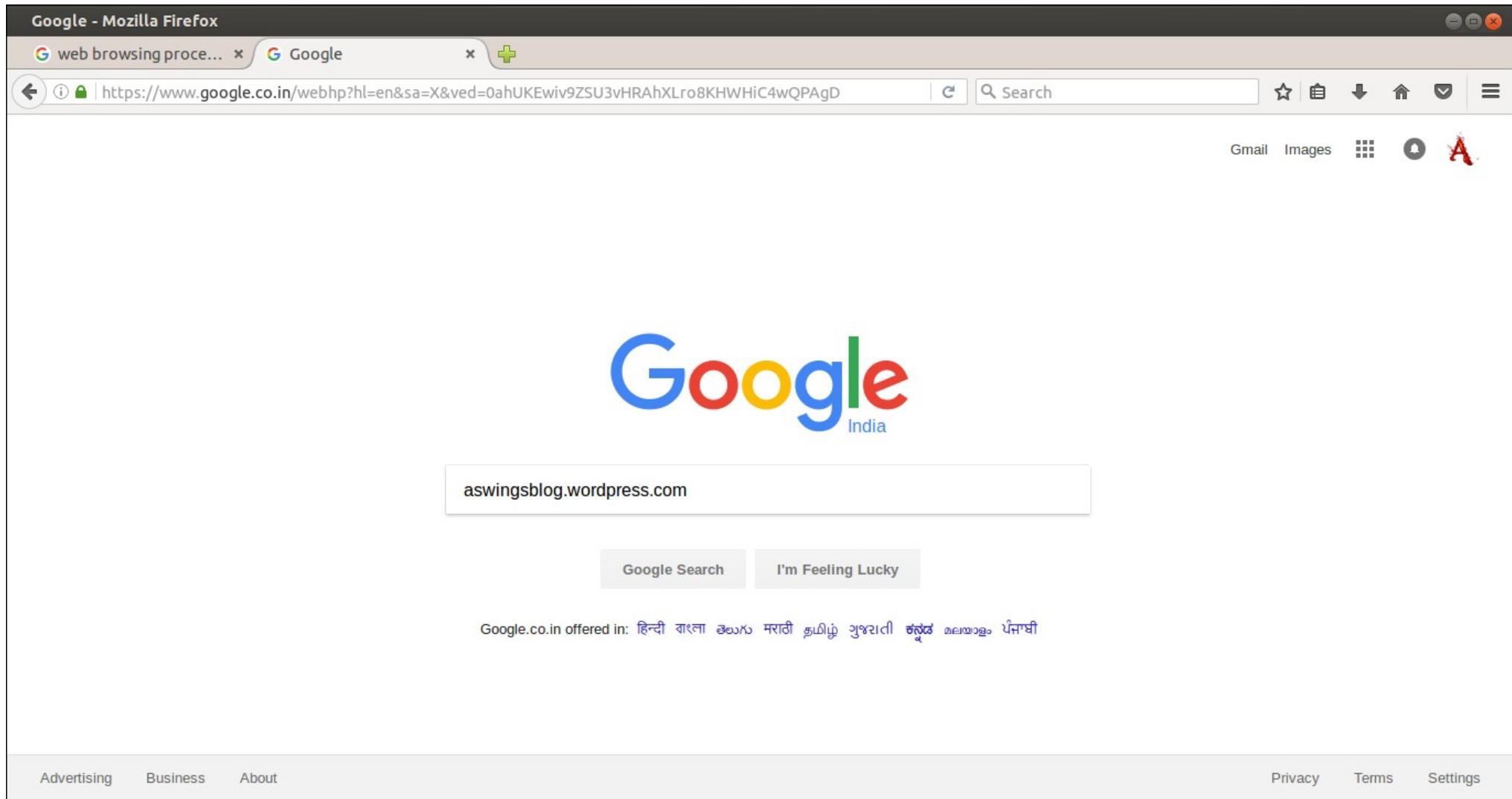
# Search engines

Internet search engine websites are special programs that are designed to help people to find information available in World Wide Web.

Search engine web sites use programs called web crawlers or spiders or robots to search the web.

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# Working of Search engines

Web crawlers search the web pages stored in the different web servers and find possible keywords.

These keywords are stored along with their URLs to form an index in the search engine's web servers.

When a particular topic (keyword), is searched, the web crawler searches the index, and select a list of URLs where the particular topic is found and displays the list as the result.

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# Electronic mail or e-mail

It is a method of exchanging digital messages between computers over Internet.



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# Sections of e-mail

New Message — ✱ ✕

To | Cc Bcc

Subject

Sans Serif ▾ | T ▾ | B I U A ▾ | [List Icons] | [Quote Icon] | [Link Icon]

Send | [Text Icon] | [Attach Icon] | [Image Icon] | [Globe Icon] | [Smiley Icon] [Trash Icon] ▾

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# Sections of e-mail

To (Recipient Address)

Cc (Carbon copy to the secondary recipients)

Bcc (Blind carbon copy to the tertiary recipients)

Subject

Content

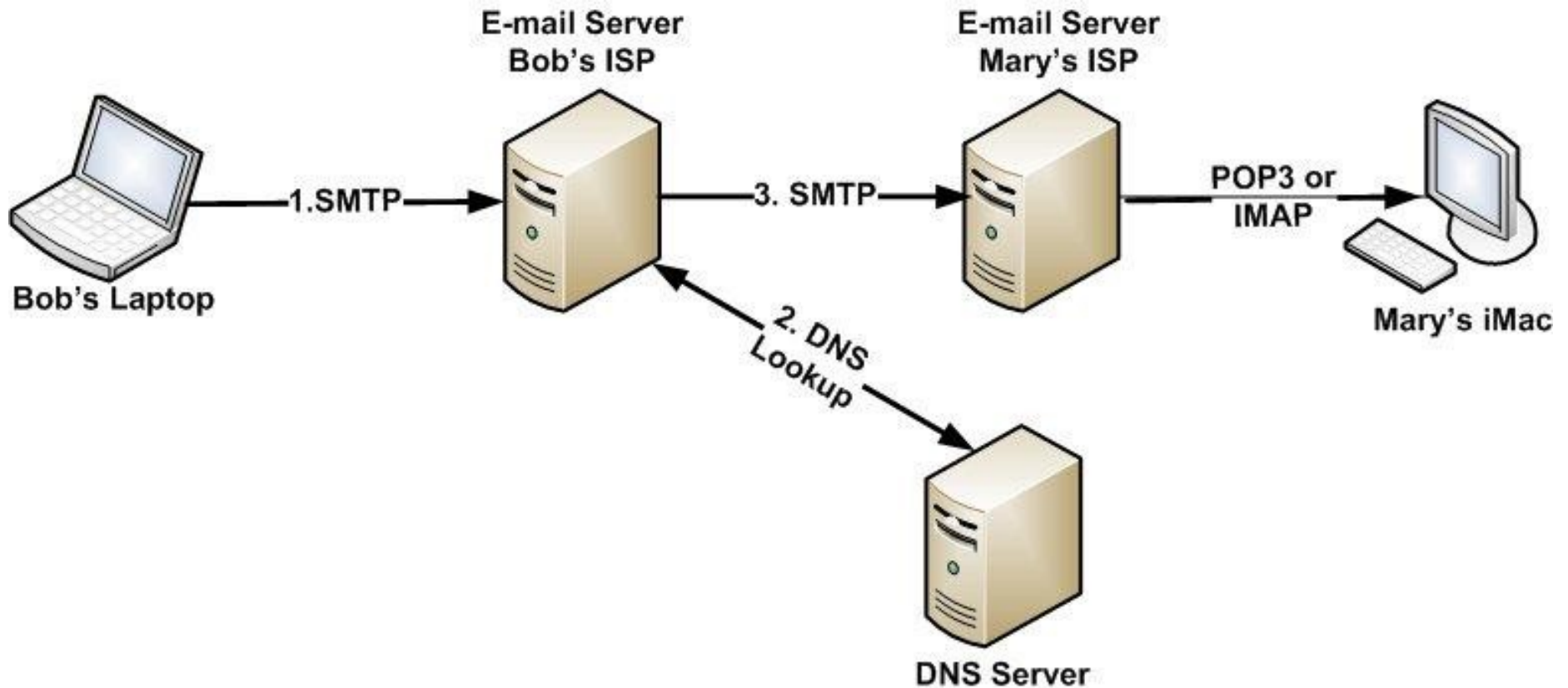
Attachments.

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# Working of email



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# Advantages of e-mail

Speed, easy to use, provision of attachments, environment friendly, easy reply to an e-mail, cost-effective, available anywhere anytime.

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# Types of social media

Internet forums, social blogs, micro blogs, wikis, social networks, content communities and a lot more.

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# Internet forums

It is an online discussion website where people can engage in conversations in the form of posted messages.

Eg: Ubuntu Forum

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## *Social blogs*

It is a discussion or informational website consisting of entries or posts displayed in the reverse chronological order i.e., the most recent post appears first.

Eg: [Blogger.com](https://www.blogger.com) , [Wordpress.com](https://www.wordpress.com).

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# Microblogs

They allow users to exchange short sentences, individual images or video links.

It offers a communication mode that is spontaneous and can influence public opinion.

Twitter.com is a popular micro blogging site.

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# Wikis

Wikis allow people to add content or edit existing information in a web page, to form a community document.

Wiki is a type of content management system.

Eg: wikipedia.org.

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# Social networks:

These sites allow people to build personal web pages and then connect with friends to communicate and share content.

We can share text, pictures, videos, etc. and comment to the posts.

Eg: facebook.com

linkedin.com.



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# Advantages of social media

Bring people together

help to plan and organise events

promoting business

enhance social skills.

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# Limitation of social media

Intrusion to privacy

Addiction

spread rumours.

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# Content communities

These are websites that organise and share contents like  
photos, videos,

etc. Eg: Youtube.com, flickr.com.

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# Computer virus

It is a program that attaches itself to another program or file enabling it to spread from one computer to another without our knowledge and interferes with the normal operation of a computer.

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# Computer worm

It is a stand-alone malware (malicious software) program that replicates itself in order to spread to other computers.

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# Trojan horse

It will appear to be a useful software but will actually do damage once installed or run on your computer.

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# Spams or junk mails

These are unsolicited e-mails sent indiscriminately to persons to promote a product or service

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# Hacking

It is a technical effort to  
manipulate the normal behaviour  
of network connections and  
connected systems.



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# Ethical hacking

Computer experts perform hacking to test the security and find the vulnerabilities in computer networks and computer systems.

Such computer experts are often called 'white hats' and such hacking is called ethical hacking.

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## **Black hats & grey hats**

Computer criminals break into secure networks to destroy data or make the network unusable for those who are authorised to use the network. Such criminals are called 'black hats'.

There are 'grey hat hackers', who sometimes act illegally, though with good intentions, to identify the vulnerabilities.

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# Denial of Service(DoS)

It is a network attack is usually aimed at a web server. Such an attack forces the server/computer to restart.

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# Phishing

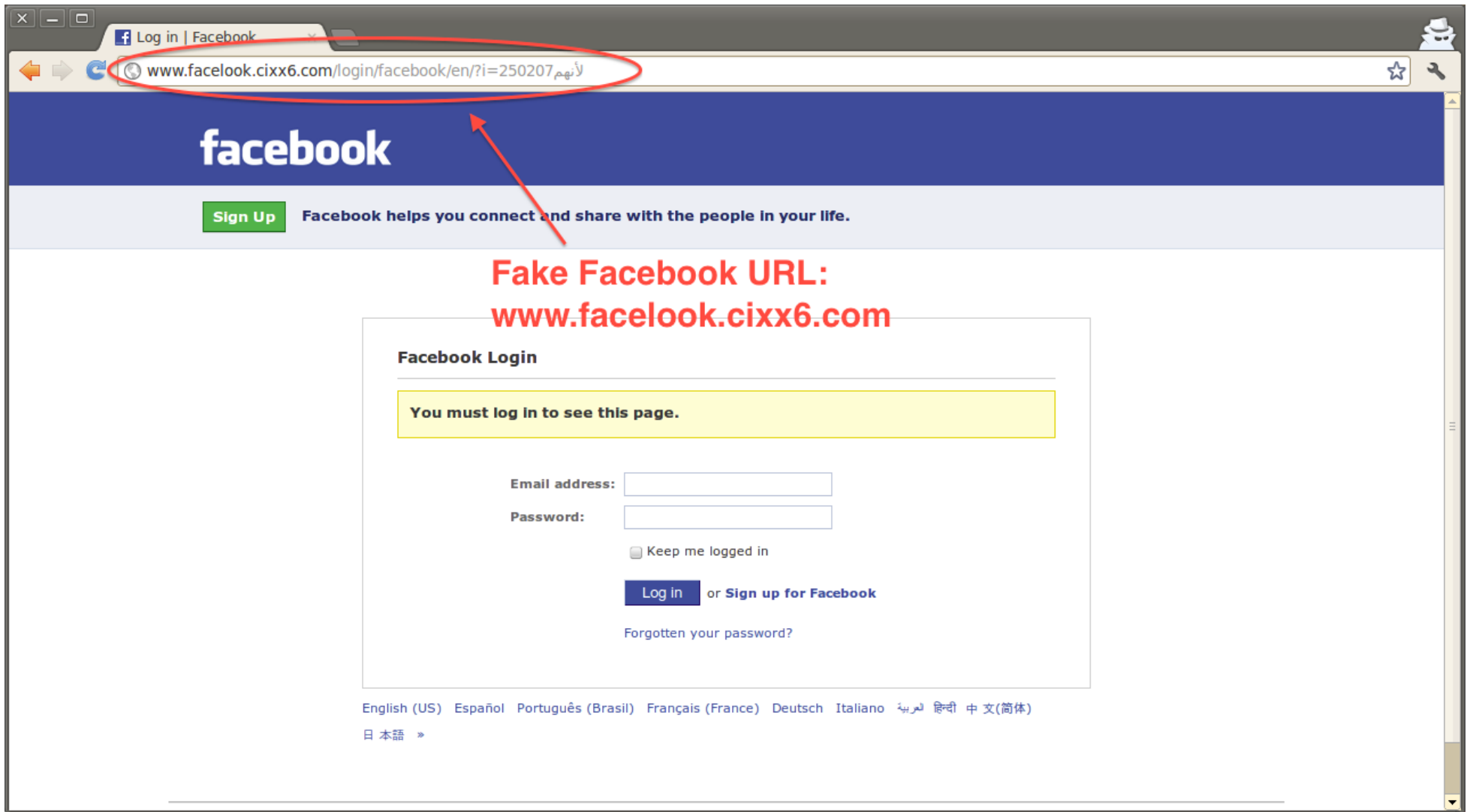
It is an attempt to acquire information such as usernames, passwords and credit card details by posing as the original website, mostly that of banks and other financial institutions.

Phishing websites have URLs and home pages similar to their original ones.

The act of creating such a misleading website is called spoofing.

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# Man-in-the-middle attack

It refers to an attack in which an attacker secretly intercepts electronic messages between the sender and the receiver and then captures, inserts and modifies messages during message transmission.

Encrypted connections such as HTTPS (HTTP Secure), SFTP (Secure FTP) etc. should be used for secure transactions, so that intruders cannot modify the messages.

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# Firewall

It is a system of computer hardware and software that provides security to the computer network in an organisation.

It denies malicious data from entering into the computer networks.

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# Anti virus programs

These tools are used to detect viruses and cure the infected system.

It scans files in the computer system for known viruses and removes them if found.

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# *Cookies*

These are small text files that are created when we use a browser to visit a website.

It remembers our user name, preferences, e-mail address,  
etc.

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# *Cookies*

It is always possible for a hacker to use cookies for malicious purposes.

Cookies can be used to act as a spyware.

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# MOBILE COMPUTING

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# Mobile computing

It is a technology that has computing capability and can transmit/receive data while in motion.

Mobile computing requires portable computing devices like laptops, tablets, smart phones, etc., wireless communication networks and connectivity to Internet.

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# Generations of mobile communication

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*1G mobile phones were based on the analog system and provided basic voice facility only.*

*2G networks follow digital system for communication.*

*Picture messages and MMS (Multimedia Messaging Service) were introduced in 2G.*

*3G networks offered multimedia services combining voice and data.*

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*It has the facility to send and receive large amounts of data using a mobile phone.*

*4G system, also called Long Term Evolution (L.T.E.), provides mobile ultra-broadband Internet access to mobile devices.*

*4G networks offer very high speeds and provide good quality images and videos.*

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# Mobile communication technologies

1)SMS,

2)MMS,

3)GPS

4)smart cards.

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# Mobile communication technologies

## Short Message Service

(SMS) is a text messaging service in mobile communication systems that allows exchanging short text messages containing up to 160 characters.

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# Mobile communication technologies

## Multimedia Messaging Service

Multimedia Messaging Service (MMS) is a standard way to send and receive messages that consists of multimedia content using mobile phones.

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# **Mobile communication technologies**

MMS does not specify a maximum size for a multimedia message and it supports contents such as text, graphics, music, video clips and more.

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# Mobile communication technologies

## Global Positioning System (GPS)

Global Positioning System (GPS) is a satellite based navigation system that is used to locate a geographical position anywhere on earth, using its longitude and latitude.

GPS is used for vehicle fleet tracking by transporting companies to track the movement of their trucks.

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# Mobile communication technologies

## smart cards

A smart card is a plastic card embedded with a computer chip / memory that stores and transacts data.

The advantages of using smart cards is that it is secure (data is protected), intelligent (it can store and process data) and that it is convenient (it is easy to carry).

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# Mobile Operating System

The software that manages the hardware, multimedia functions, Internet connectivity, etc. in a mobile device.

Eg: Android from Google, iOS from Apple,

BlackBerry OS from BlackBerry and Windows Phone from Microsoft.

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# Android mobile OS

It is a Linux-based operating system designed mainly for touch screen mobile devices such as smart phones and tablet computers.

It was originally developed by Android Inc. that was founded in Palo Alto, California in 2003 by Andy Rubin and his friends. In 2005, Google acquired Android Inc. making it a wholly owned subsidiary of Google.

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# Support #ags



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