**Unit - I**

**History of the Internet and World Wide Web**

Although in the popular imagination the Internet is a feature of the 1990s, the earliest inklings of the possibilities of networked computers can be traced to the early 1960s. In 1962, J.C.R. Licklider at the [Massachusetts Institute of Technology](https://www.encyclopedia.com/social-sciences-and-law/education/colleges-us/massachusetts-institute-technology) (MIT) first elucidated his dream of a "Galactic Network" connecting computers across the globe for the distribution and access of data and programs. Licklider went on to become the first director of the [Defense Advanced Research Projects Agency](https://www.encyclopedia.com/social-sciences-and-law/political-science-and-government/us-government/defense-advanced-research) (DARPA), an arm of the U.S. Department of Defense and the body that funded and coordinated the original research into what became the Internet.

Perhaps the invention that most facilitated the growth of the Internet as a global information-sharing system is the World Wide Web. Unlike the Internet, however, the early design and development of the World Wide Web was primarily the doing of just one person: [Tim Berners-Lee](https://www.encyclopedia.com/people/science-and-technology/computers-and-computing-biographies/tim-berners-lee). Working as a contract programmer at the Geneva, Switzerland-based Centre Europen de Recherche Nucleaire (European Laboratory for Particle Physics, or CERN), Berners-Lee repeatedly proposed to develop a global interactive interface for use on the Internet so as to turn the fragmented and relatively exclusive Internet into a popular and seamless whole. After several rejections, Berners-Lee simply developed a prototype using the laboratory's phone-book entries in 1989. Called Enquire Within Upon Everything, the prototype was designed to link and connect elements much in the way that the brain makes random connections and associations. Unlike the average database system, according to Berners-Lee, the Web was to be designed to make random associations between arbitrary objects in the files.

**Search Engines**

A search engine is [software](https://www.computerhope.com/jargon/s/software.htm) accessed on the [Internet](https://www.computerhope.com/jargon/i/internet.htm) that searches a [database](https://www.computerhope.com/jargon/d/database.htm) of information according to the user's [query](https://www.computerhope.com/jargon/q/query.htm). The engine provides a list of results that best match what the user is trying to find. Today, there are many different search engines available on the Internet, each with its own abilities and features. The first search engine ever developed is considered [Archie](https://www.computerhope.com/jargon/a/archie.htm), which was used to search for [FTP](https://www.computerhope.com/jargon/f/ftp.htm) files, and the first text-based search engine is considered [Veronica](https://www.computerhope.com/jargon/v/veronica.htm). Currently, the most popular and well-known search engine is [Google](https://www.computerhope.com/jargon/g/google.htm). Other popular search engines include [AOL](https://www.computerhope.com/comp/aol.htm), [Ask.com](https://www.computerhope.com/jargon/a/ask.htm), [Baidu](https://www.computerhope.com/comp/baidu.htm), [Bing](https://www.computerhope.com/jargon/b/bing.htm), [DuckDuckGo](https://www.computerhope.com/jargon/d/duckduckgo.htm), and [Yahoo](https://www.computerhope.com/jargon/y/yahoo.htm).

**News Group**

A newsgroup is an Internet-based discussion around an individual, entity, organization or topic. Newsgroups enable remotely connected users to share, discuss and learn about their topic of interest by exchanging text messages, images, videos and other forms of digital content.  
  
Newsgroups are also referred to as usenet newsgroups.

Newsgroups were initially created in 1979 by some university students to exchange messages. Users can subscribe for free by submitting an email address, and the group generally consists of several topics/categories based around a main theme. The user/subscriber can post a message in a particular topic/category, which is either automatically visible in open newsgroups, or can only be viewed by approved members in moderated groups. All subscribers participating or following a particular topic/newsgroup will be notified of new messages and updates. Moreover, news/stories/topics in the newsgroup can be read through a downloadable news reader application.

**Emails and its Protocols**

E-mail Protocols are set of rules that help the client to properly transmit the information to or from the mail server. Here in this tutorial, we will discuss various protocols such as SMTP, POP, and IMAP.

## SMTP

SMTP stands for Simple Mail Transfer Protocol. It was first proposed in 1982. It is a standard protocol used for sending e-mail efficiently and reliably over the internet.

**Key Points:**

* SMTP is application level protocol.
* SMTP is connection oriented protocol.
* SMTP is text based protocol.
* It handles exchange of messages between e-mail servers over TCP/IP network.
* Apart from transferring e-mail, SMTP also provides notification regarding incoming mail.
* When you send e-mail, your e-mail client sends it to your e-mail server which further contacts the recipient mail server using SMTP client.
* These SMTP commands specify the sender’s and receiver’s e-mail address, along with the message to be send.
* The exchange of commands between servers is carried out without intervention of any user.
* In case, message cannot be delivered, an error report is sent to the sender which makes SMTP a reliable protocol.

### SMTP Commands

The following table describes some of the SMTP commands:

|  |  |
| --- | --- |
| **S.N.** | **Command Description** |
| 1 | **HELLO** This command initiates the SMTP conversation. |
| 2 | **EHELLO** This is an alternative command to initiate the conversation. ESMTP indicates that the sender server wants to use extended SMTP protocol. |
| 3 | **MAIL FROM** This indicates the sender’s address. |

## IMAP

IMAP stands for Internet Message Access Protocol. It was first proposed in 1986. There exist five versions of IMAP as follows:

1. Original IMAP
2. IMAP2
3. IMAP3
4. IMAP2bits
5. IMAP4

**Key Points:**

* IMAP allows the client program to manipulate the e-mail message on the server without downloading them on the local computer.
* The e-mail is hold and maintained by the remote server.
* It enables us to take any action such as downloading, delete the mail without reading the mail.It enables us to create, manipulate and delete remote message folders called mail boxes.
* IMAP enables the users to search the e-mails.
* It allows concurrent access to multiple mailboxes on multiple mail servers.

### IMAP Commands

The following table describes some of the IMAP commands:

|  |  |
| --- | --- |
| **S.N.** | **Command Description** |
| 1 | **IMAP\_LOGIN** This command opens the connection. |
| 2 | **SELECT** This command helps to select a mailbox to access the messages. |
| 3 | **EXAMINE** It is same as SELECT command except no change to the mailbox is permitted. |
| 4 | **CREATE** It is used to create mailbox with a specified name. |
| 5 | **DELETE** It is used to permanently delete a mailbox with a given name. |
| 6 | **RENAME** It is used to change the name of a mailbox. |
| 7 | **LOGOUT** This command informs the server that client is done with the session. The server must send BYE untagged response before the OK response and then close the network connection. |

## POP

POP stands for Post Office Protocol. It is generally used to support a single client. There are several versions of POP but the POP 3 is the current standard.

**Key Points**

* POP is an application layer internet standard protocol.
* Since POP supports offline access to the messages, thus requires less internet usage time.
* POP does not allow search facility.
* In order to access the messaged, it is necessary to download them.
* It allows only one mailbox to be created on server.
* It is not suitable for accessing non mail data.
* POP commands are generally abbreviated into codes of three or four letters. Eg. STAT.

### POP Commands

The following table describes some of the POP commands:

|  |  |
| --- | --- |
| **S.N.** | **Command Description** |
| 1 | **LOGIN** This command opens the connection. |
| 2 | **STAT** It is used to display number of messages currently in the mailbox. |
| 3 | **LIST** It is used to get the summary of messages where each message summary is shown. |
| 4 | **RETR** This command helps to select a mailbox to access the messages. |
| 5 | **DELE** It is used to delete a message. |
| 6 | **RSET** It is used to reset the session to its initial state. |
| 7 | **QUIT** It is used to log off the session. |

**Web Portal**

A web portal is a specially designed website that brings information from diverse sources, like emails, online forums and search engines, together in a uniform way.