# BISHOP SCOTT BOYS' SCHOOL

**(Affiliated to CBSE, New Delhi) Affiliation No.: 330726, School Campus: Chainpur, Jaganpura, By-Pass, Patna 804453.**
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# STUDY COURSE MATERIAL
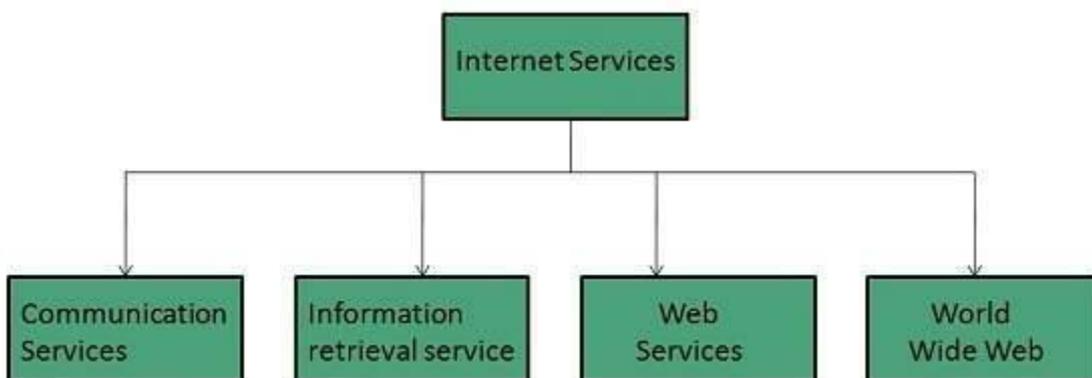# COMPUTER APPLICATION
### SESSION-2020-21
### CLASS-X

## TOPIC: CHAPTER-2 INTERNET SERVICES
## DAY-1

### TEACHING MATERIAL

**Internet Services** allows us to access huge amount of information such as text, graphics, sound and software over the internet. Following diagram shows the four different categories of Internet Services.



Communication Services

There are various Communication Services available that offer exchange of information with individuals or groups. The following table gives a brief introduction to these services:

| S.N. | Service Description |
|------|---------------------|
| 1 | **Electronic Mail**<br>Used to send electronic message over the internet. |
| 2 | **Telnet**<br>Used to log on to a remote computer that is attached to internet. |

| | | |
|---|---|---|
| 3 | **Newsgroup**<br>Offers a forum for people to discuss topics of common interests. | |
| 4 | **Internet Relay Chat (IRC)**<br>Allows the people from all over the world to communicate in real time. | |
| 5 | **Mailing Lists**<br>Used to organize group of internet users to share common information through e-mail. | |
| 6 | **Internet Telephony (VoIP)**<br>Allows the internet users to talk across internet to any PC equipped to receive the call. | |
| 7 | **Instant Messaging**<br>Offers real time chat between individuals and group of people. Eg. Yahoo messenger, MSN messenger. | |

## VIDEO-LINKS

LINK-1
https://www.youtube.com/watch?v=G96pTk_6T6o

## PPT LINKS

LINK-1

https://www.cbsetuts.com/cbse-notes-class-10-foundation-information-technology-internet-services/

## DOCUMENTS LINKS

https://www.cbsetuts.com/cbse-notes-class-10-foundation-information-technology-internet-services/

# DAY-2

Information Retrieval Services

There exist several Information retrieval services offering easy access to information present on the internet. The following table gives a brief introduction to these services:

| S.N. | Service Description |
|------|---------------------|
| 1 | **File Transfer Protocol (FTP)** Enable the users to transfer files. |
| 2 | **Archie** It's updated database of public FTP sites and their content. It helps to search a file by its name. |
| 3 | **Gopher** Used to search, retrieve, and display documents on remote sites. |
| 4 | **Very Easy Rodent Oriented Netwide Index to Computer Achieved (VERONICA)** VERONICA is gopher based resource. It allows access to the information resource stored on gopher's servers. |

Web Services

Web services allow exchange of information between applications on the web. Using web services, applications can easily interact with each other.

The web services are offered using concept of **Utility Computing.**

World Wide Web (WWW)

is also known as W3. It offers a way to access documents spread over the several servers over the internet. These documents may contain texts, graphics, audio, video, hyperlinks. The hyperlinks allow the users to navigate between the documents.

# Video Conferencing

Video conferencing or Video teleconferencing is a method of communicating by two-way video and audio transmission with help of telecommunication technologies.
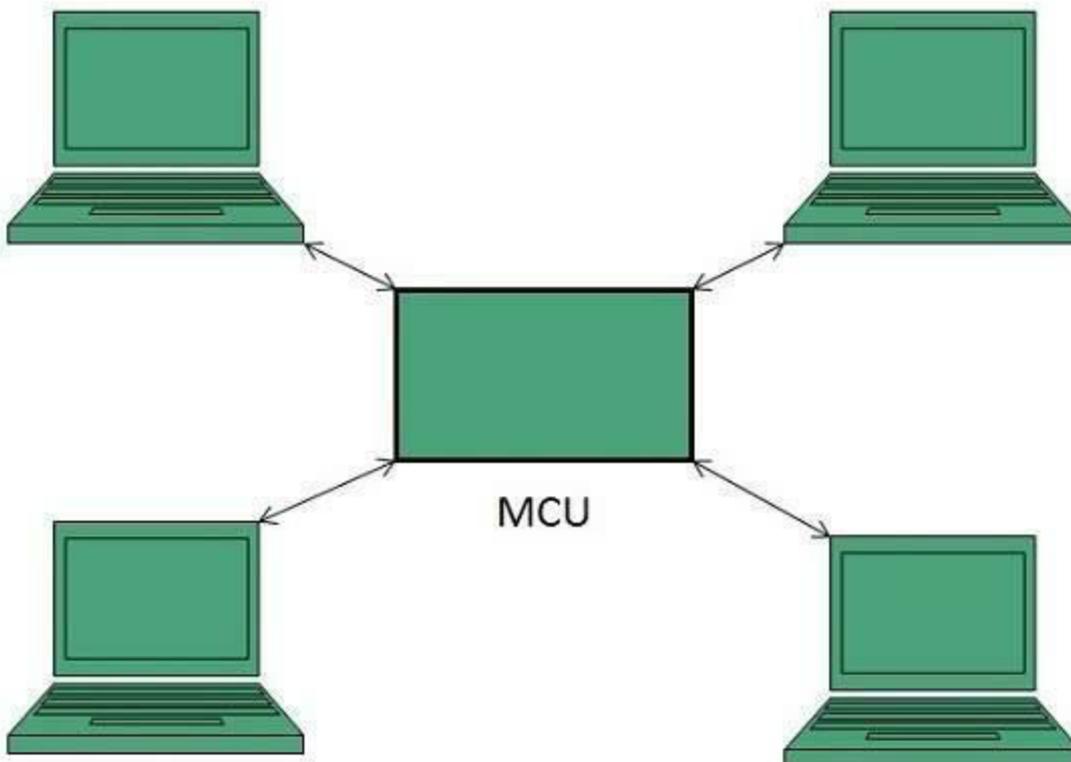
## Modes of Video Conferencing

### Point-to-Point

This mode of conferencing connects two locations only.



### Multi-point

This mode of conferencing connects more than two locations through **Multi-point Control Unit (MCU).**

Here in this tutorial, we will discuss how to connect to internet i.e. internet service providers, software and hardware requirements, configuring internet connection etc.

Internet Service Providers (ISP)

**Internet Service Provider (ISP)** is a company offering access to internet. They offer various services:
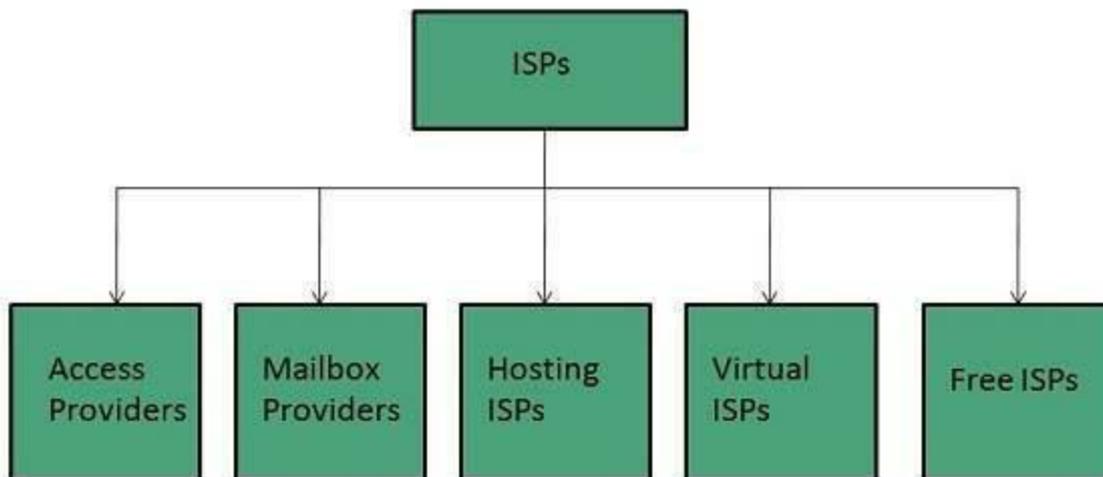
Internet Access

Domain name

registration Dial-up

access

Leased line access

# DAY-3

❖

ISP Types

ISPs can broadly be classified into six categories as shown in the following diagram:



Access providers

They provide access to internet through telephone lines, cable wi-fi or fiber optics.

Mailbox Provider

Such providers offer mailbox hosting services.

Hosting ISPs

Hosting ISPs offers e-mail, and other web hosting services such as virtual machines, clouds etc. Virtual ISPs

Such ISPs offer internet access via other ISP services.

Free ISPs

Free ISPs do not charge for internet services.

Connection Types

There exist several ways to connect to the internet. Following are these connection types available:

1. Dial-up Connection
2. ISDN
3. DSL
4. Cable TV Internet connections
5. Satellite Internet connections
6. Wireless Internet Connections

Dial-up Connection

**Dial-up** connection uses telephone line to connect PC to the internet. It requires a modem to setup dial-up connection. This modem works as an interface between PC and the telephone line.

There is also a communication program that instructs the modem to make a call to specific number provided by an ISP.

Dial-up connection uses either of the following protocols:

1. Serial Line Internet Protocol (SLIP)
2. Point to Point Protocol (PPP)

The following diagram shows the accessing internet using modem:
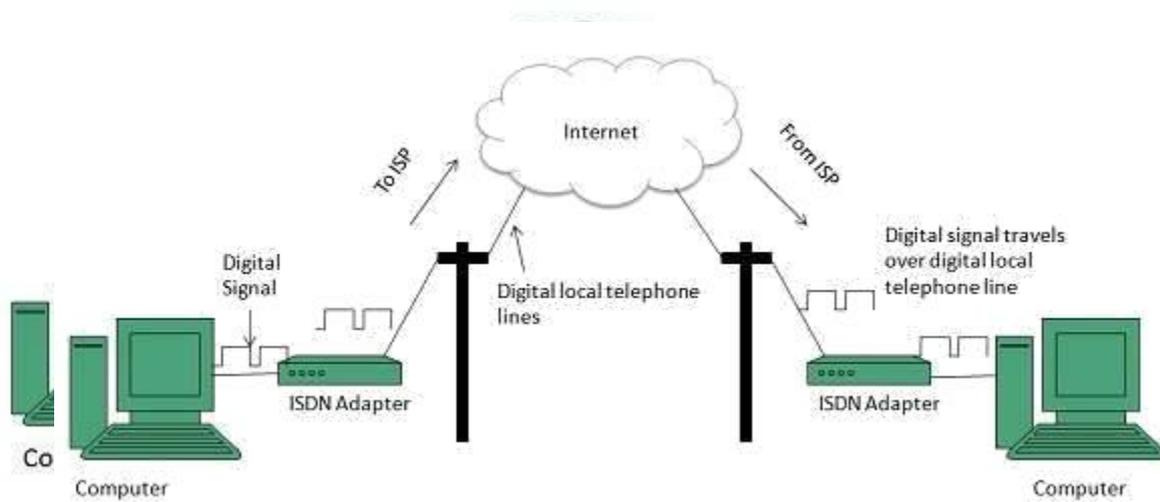
ISDN

**ISDN** is acronym of **Integrated Services Digital Network.** It establishes the connection using the phone lines which carry digital signals instead of analog signals.

There are two techniques to deliver ISDN services:

1. Basic Rate Interface (BRI)
2. Primary Rate Interface (PRI)

**Key points:**

> The BRI ISDN consists of three distinct channels on a single ISDN line: t1o 64kbps B (Bearer) channel and one 16kbps D (Delta or Data) channels.

> The PRI ISDN consists of 23 B channels and one D channels with both have operating capacity of 64kbps individually making a total transmission rate of 1.54Mbps.

The following diagram shows accessing internet using ISDN connection:

DSL

**DSL** is acronym of **Digital Subscriber Line.** It is a form of broadband connection as it provides connection over ordinary telephone lines.

Following are the several versions of DSL technique available today:

1. Asymmetric DSL (ADSL)
2. Symmetric DSL (SDSL)
3. High bit-rate DSL (HDSL)
4. Rate adaptive DSL (RDSL)
5. Very high bit-rate DSL (VDSL)
6. ISDN DSL (IDSL)

All of the above mentioned technologies differ in their upload and download speed, bit transfer rate and level of service.

The following diagram shows that how we can connect to internet using DSL technology:



Internet Access Using DSL Modem
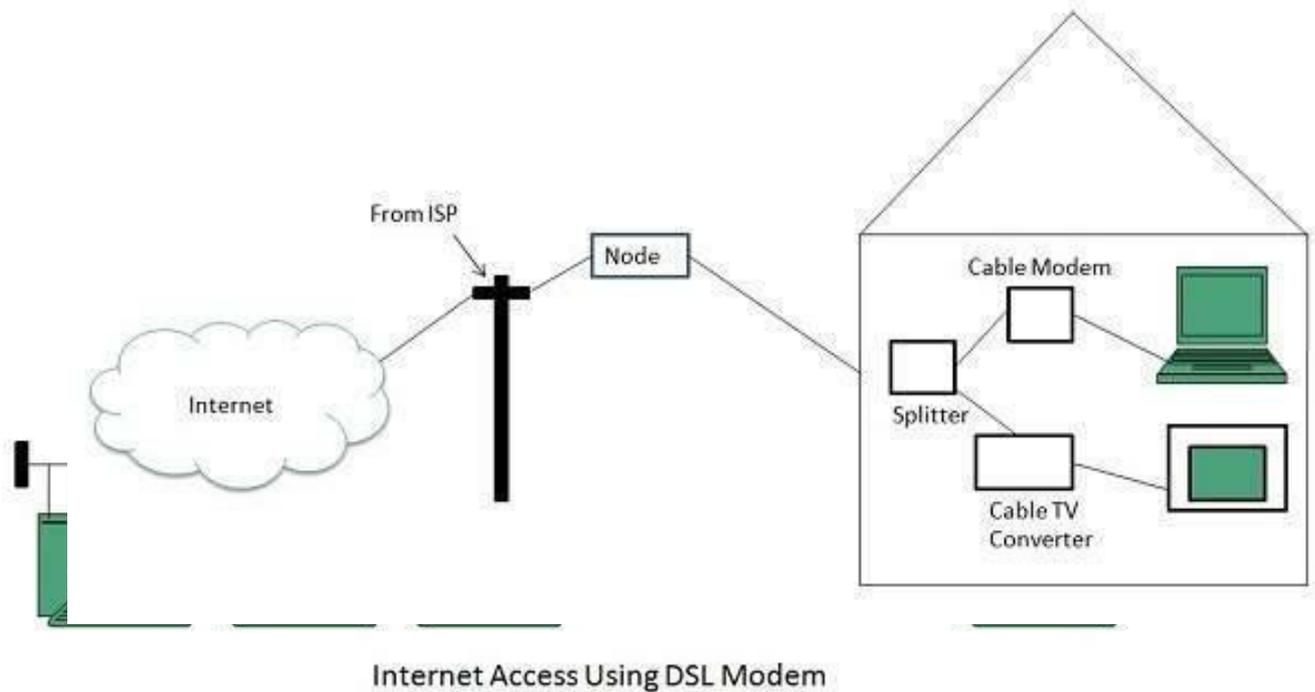
Cable TV Internet Connection
Cable TV Internet connection is provided through Cable TV lines. It uses coaxial cable which is capable of transferring data at much higher speed than common telephone line.

## Key Points:

A cable modem is used to access this service, provided by the cable operator.

The Cable modem comprises of two connections: one for internet service and other for Cable TV signals.

Since Cable TV internet connections share a set amount of bandwidth with a group of customers, therefore, data transfer rate also depends on number of customers using the internet at the same time.

The following diagram shows that how internet is accessed using Cable TV connection:
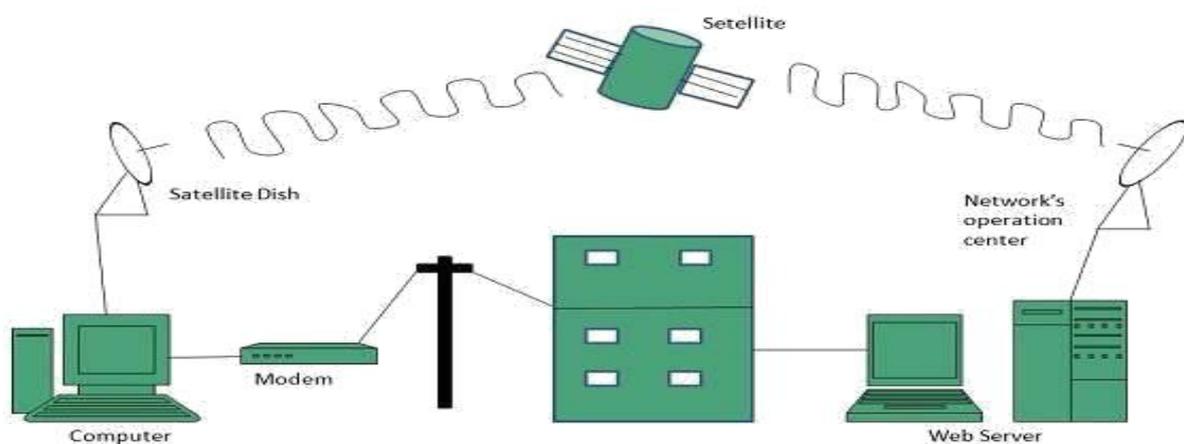
Satellite Internet Connection

Satellite Internet connection offers high speed connection to the internet. There are two types of satellite internet connection: one way connection or two way connection.

In one way connection, we can only download data but if we want to upload, we need a dialup access through ISP over telephone line.

In two way connection, we can download and upload the data by the satellite. It does not require any dialup connection.

The following diagram shows how internet is accessed using satellite internet connection:

## VIDEO-LINKS

MUST WATCH
https://www.youtube.com/watch?v=G96pTk_6T6o

## PPT LINKS

https://www.youtube.com/watch?v=3v3J1bBKn8c https://www.cbsetuts.com/cbse-notes-class-10-foundation-information-technology-internet-services/

# DAY-4

## TEACHING MATERIAL

Transmission Control Protocol (TCP)

TCP is a connection oriented protocol and offers end-to-end packet delivery. It acts as back bone for connection.It exhibits the following key features:

Transmission Control Protocol (TCP) corresponds to the Transport Layer of OSI

Model. TCP is a reliable and connection oriented protocol.

TCP offers:

o  Stream Data Transfer.

o Reliability.

o  Efficient  Flow  Control  o

Full-duplex   operation.   o

Multiplexing.

TCP offers connection oriented end-to-end packet delivery.

TCP ensures reliability by sequencing bytes with a forwarding acknowledgement number that indicates to the destination the next byte the source expect to receive.

It retransmits the bytes not acknowledged with in specified time period.

TCP Services

TCP offers following services to the processes at the application layer:

Stream Delivery Service

Sending and Receiving

Buffers Bytes and Segments

Full Duplex Service

Connection Oriented

Service Reliable Service

## Stream Deliver Service

TCP protocol is stream oriented because it allows the sending process to send data as stream of bytes and the receiving process to obtain data as stream of bytes.

## Sending and Receiving Buffers

It may not be possible for sending and receiving process to produce and obtain data at same speed, therefore, TCP needs buffers for storage at sending and receiving ends.

## Bytes and Segments

The Transmission Control Protocol (TCP), at transport layer groups the bytes into a packet. This packet is called segment. Before transmission of these packets, these segments are encapsulated into an IP datagram.

## Full Duplex Service

Transmitting the data in duplex mode means flow of data in both the directions at the same time.

## Connection Oriented Service

TCP offers connection oriented service in the following manner:

1. TCP of process-1 informs TCP of process – 2 and gets its approval.
2. TCP of process – 1 and TCP of process – 2 and exchange data in both the two directions.
3. After completing the data exchange, when buffers on both sides are empty, the two TCP's destroy their buffers.
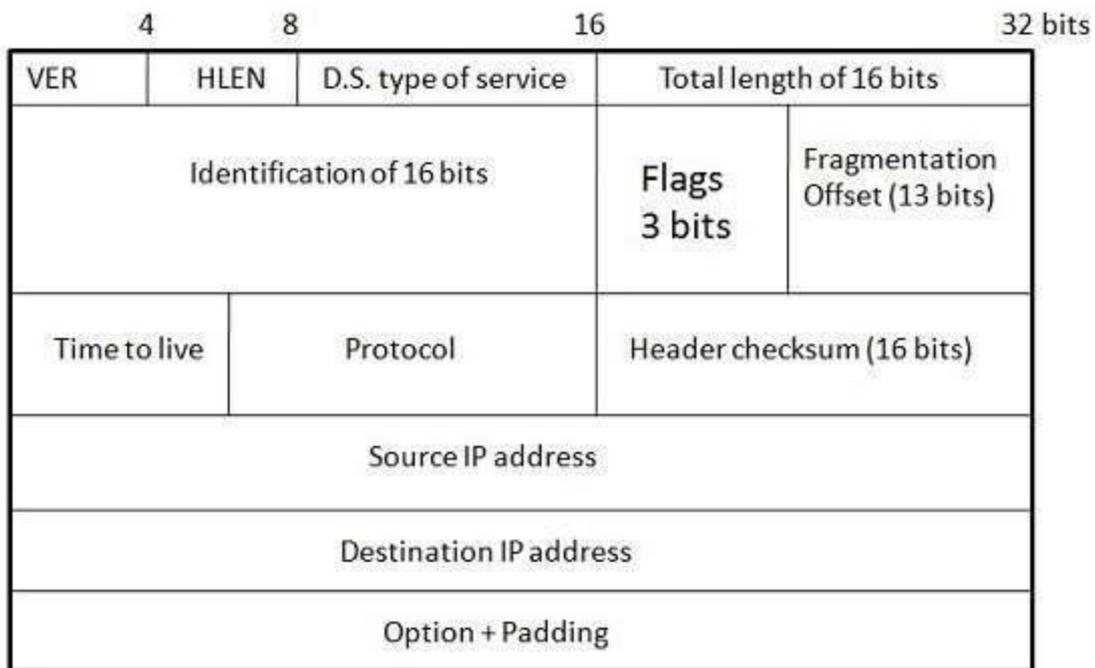
## Reliable Service

For sake of reliability, TCP uses acknowledgement mechanism.

## Internet Protocol (IP)

Internet Protocol is **connectionless** and **unreliable** protocol. It ensures no guarantee of successfully transmission of data.

In order to make it reliable, it must be paired with reliable protocol such as TCP at the transport layer.

Internet protocol transmits the data in form of a datagram as shown in the following diagram:

| 4 | 8 | 16 | 32 bits |
|---|---|---|---|
| VER | HLEN | D.S. type of service | Total length of 16 bits |
| Identification of 16 bits | | Flags 3 bits | Fragmentation Offset (13 bits) |
| Time to live | Protocol | Header checksum (16 bits) | |
| Source IP address | | | |
| Destination IP address | | | |
| Option + Padding | | | |

**Points to remember:**

The length of datagram is variable.

The Datagram is divided into two parts: **header** and

**data.** The length of header is 20 to 60 bytes.

The header contains information for routing and delivery of the packet.

User Datagram Protocol (UDP)

Like IP, UDP is connectionless and unreliable protocol. It doesn't require making a connection with the host to exchange data. Since UDP is unreliable protocol, there is no mechanism for ensuring that data sent is received.

UDP transmits the data in form of a datagram. The UDP datagram consists of five parts as shown in the following diagram:

| Source Port | Destination Port |
|---|---|
| Length | UDP checksum |
| Data | |
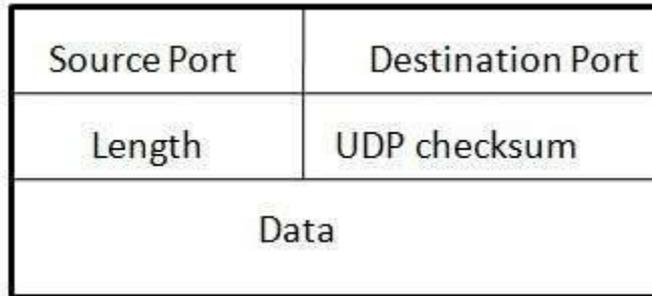
## Points to remember:

UDP is used by the application that typically transmit small amount of data at one time.

UDP provides protocol port used i.e. UDP message contains both source and destination port number, that makes it possible for UDP software at the destination to deliver the message to correct application program.

## File Transfer Protocol (FTP)

FTP is used to copy files from one host to another. FTP offers the mechanism for the same in following manner:

FTP creates two processes such as Control Process and Data Transfer Process at both ends i.e. at client as well as at server.

FTP establishes two different connections: one is for data transfer and other is for control information.

**Control connection** is made between **control processes** while **Data Connection** is made between<="" b="">

FTP uses **port 21** for the control connection and **Port 20** for the data connection.

## Trivial File Transfer Protocol (TFTP)

**Trivial File Transfer Protocol** is also used to transfer the files but it transfers the files without authentication. Unlike FTP, TFTP does not separate control and data information. Since there is no authentication exists, TFTP lacks in security features therefore it is not recommended to use TFTP.

## Key points

TFTP makes use of UDP for data transport. Each TFTP message is carried in separate UDP datagram. The first two bytes of a TFTP message specify the type of message.

The TFTP session is initiated when a TFTP client sends a request to upload or download a file. The request is sent from an ephemeral UDP port to the **UDP port 69** of an TFTP server.

Difference between FTP and TFTP

| S.N. | Parameter | FTP | TFTP |
|------|-----------|-----|------|
| 1 | Operation | Transferring Files | Transferring Files |
| 2 | Authentication | Yes | No |
| 3 | Protocol | TCP | UDP |
| 4 | Ports | 21 – Control, 20 – Data | Port 3214, 69, 4012 |
| 5 | Control and Data | Separated | Separated |
| 6 | Data Transfer | Reliable | Unreliable |

Telnet

Telnet is a protocol used to log in to remote computer on the internet. There are a number of Telnet clients having user friendly user interface. The following diagram shows a person is logged in to computer A, and from there, he remote logged into computer B.
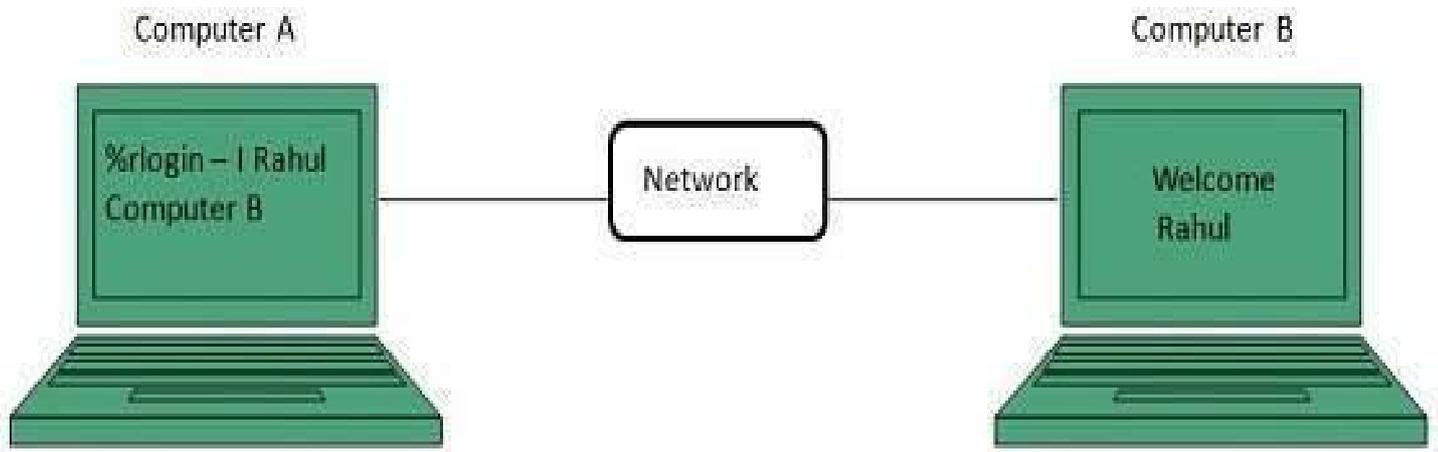
Hyper Text Transfer Protocol (HTTP)

HTTP is a communication protocol. It defines mechanism for communication between browser and the web server. It is also called request and response protocol because the communication between browser and server takes place in request and response pairs.

HTTP Request

HTTP request comprises of lines which contains:

Request line

Header Fields

Message

body

**Key Points**

The first line i.e. the **Request line** specifies the request method i.e. **Get** or **Post.**
The second line specifies the header which indicates the domain name of the server from where index.htm is retrieved.

HTTP Response

Like HTTP request, HTTP response also has certain structure. HTTP response contains:

Status line

Headers

Message body

**DOCUMENTS LINKS**

https://www.cbsetuts.com/cbse-notes-class-10-foundation-information-technology-internet-services/

**VIDEO-LINKS**

https://www.youtube.com/watch?v=G96pTk_6T6o

# DAY-5

# EXERCISE:

Complete all the unsolved exercises along with the objectives in your copy.