Sri Eshwar College of Engineering
An Autonomous Institution
Affiliated to Anna University, Chennai

Celebrating 12 Years of Excellence

Computer Networks (R19EC253)

Unit 5

Session by

Agenda of the session

- Application Layer
  - ❑HTTP
  - ❑ E-mail (SMTP,MIME,POP3)
  - ❑DNS
  - ❑ Firewall

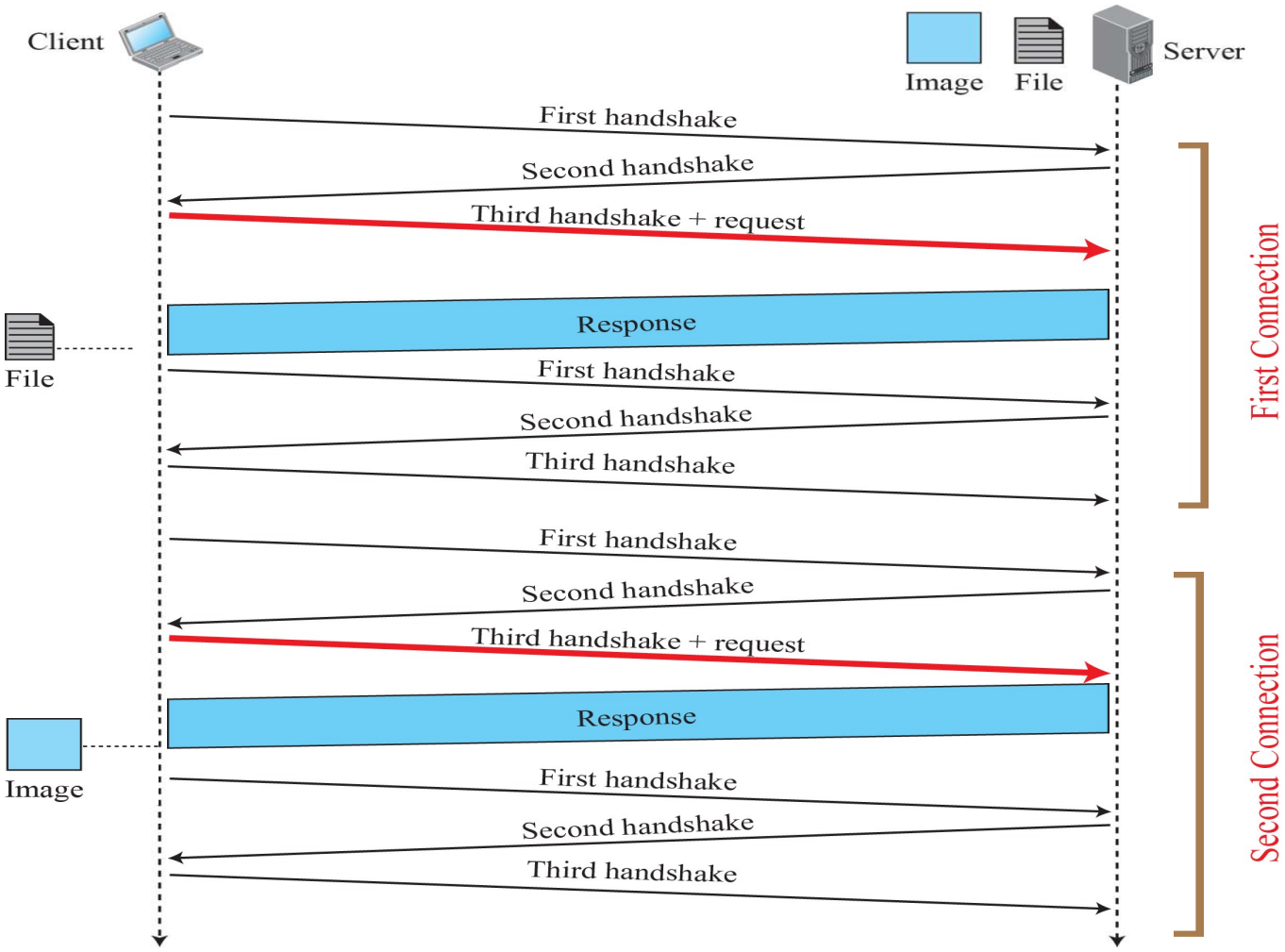
HyperText Transfer Protocol(HTTP)

- HTTP - is a protocol used mainly to access data on the World Wide Web.
- HTTP functions as a combination of FTP and SMTP.
- HTTP - defines how the client-server programs can be written to retrieve web pages from the Web.
- An HTTP client sends a request; an HTTP server returns a response.
- Server uses the port number **80**; client uses a temporary port number.
- HTTP uses the services of TCP.
- There is no separate control connection; only data are transferred between the client and the server.

Example of a non-persistent connection.

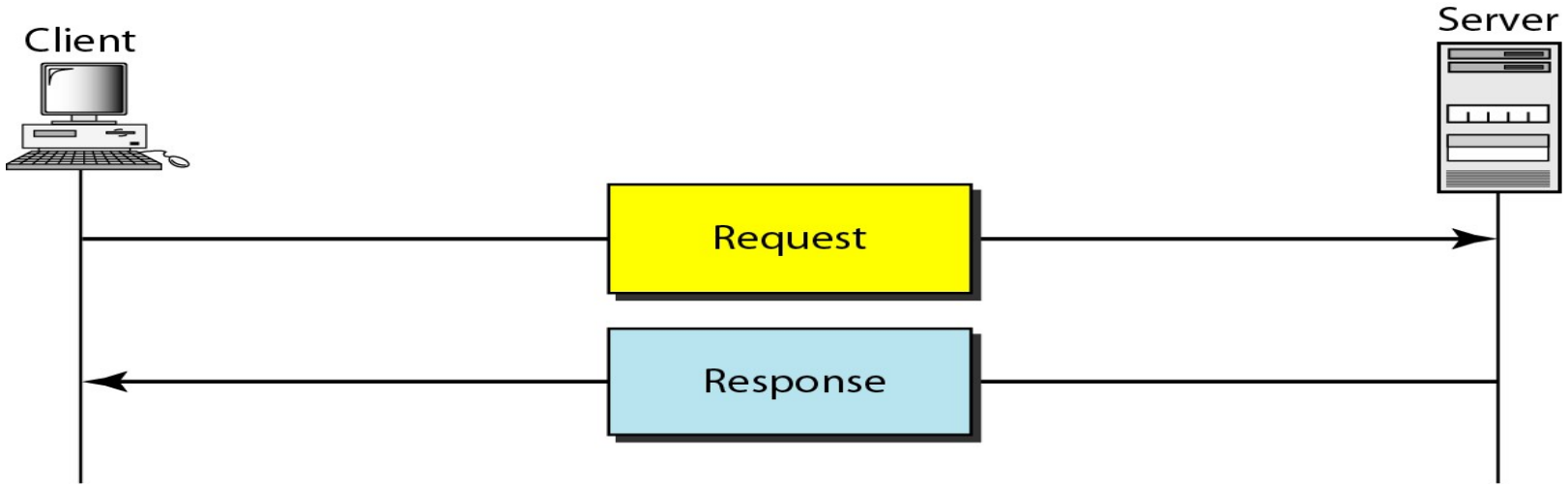
- The client needs to access a file that contains one link to an image.
- The text file and image are located on the same server.
- Here we need two connections.
- For each connection, TCP requires at least three handshake messages to establish connection, but the request can be sent with the third one.
- After the connection is established, the object can be transferred.
- After receiving an object, another three handshake messages are needed to terminate the connection.

Example of a non-persistent connection.



HTTP Transaction

- Figure illustrates the HTTP transaction between the client and server.
- HTTP uses the services of TCP, HTTP itself is a stateless protocol.
- The client initializes the transaction by sending a request message.
- The server replies by sending a response.



HTTP transaction

Messages

- The formats of the request and response messages are similar
- A request message consists of a request line, a header, and sometimes a body.
- A response message consists of a status line, a header, and sometimes a body.
- Request and Status Lines - first line in a request message is called a **request line**; first line in the response message is called the **status line.**
- Request type - This field is used in the request message.
- The request type is categorized into methods - **Status code**. This field is used in the **response message.**
- The status code field is similar to those in the **FTP and the SMTP** protocols.

It consists of three digits.

- codes in the 100 range are only informational
- codes in the 200 range indicate a successful request
- codes in the 300 range redirect the client to another URL
- codes in the 400 range indicate an error at the client site
- codes in the 500 range indicate an error at the server site

Status Phrase

❖ This field is used in the response message & explains the status code in text form.

Header

❖ The header exchanges additional information between the client and the server.

For example,

❖ client can request the document to be sent in a special format, or

❖ server can send extra information about the document.

❖ The header can consist of one or more header lines.

❖ Each header line has

a header name

a colon

a space

a header value

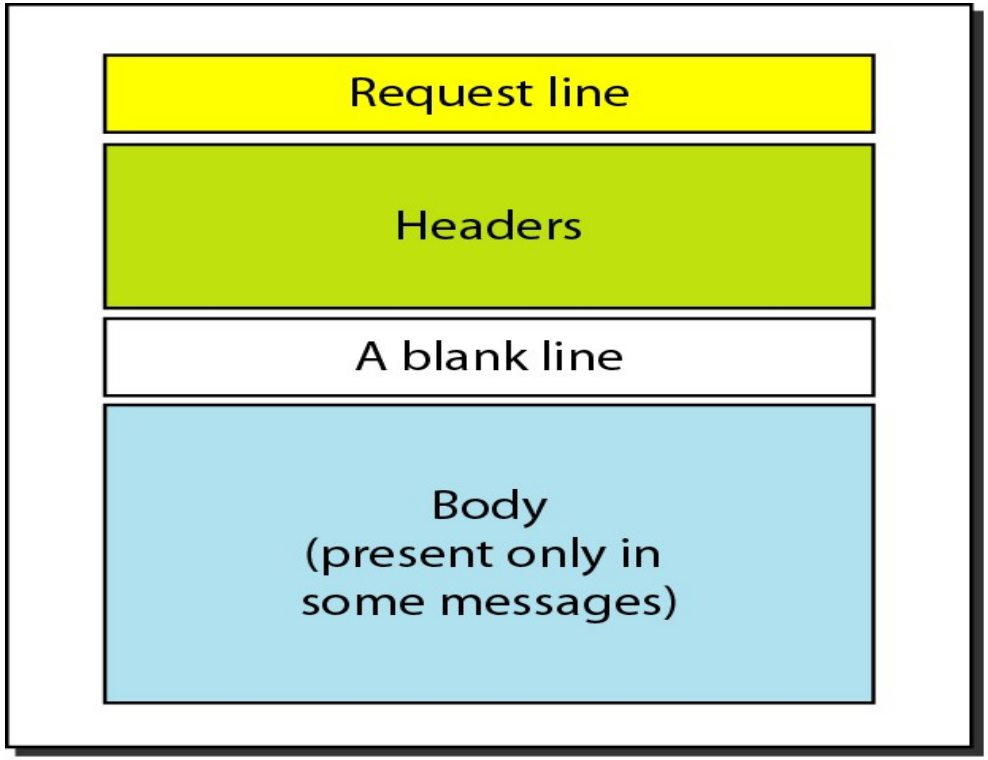
❖ A header line belongs to one of four categories:

❖ General header, Request header, Response header, and Entity header.

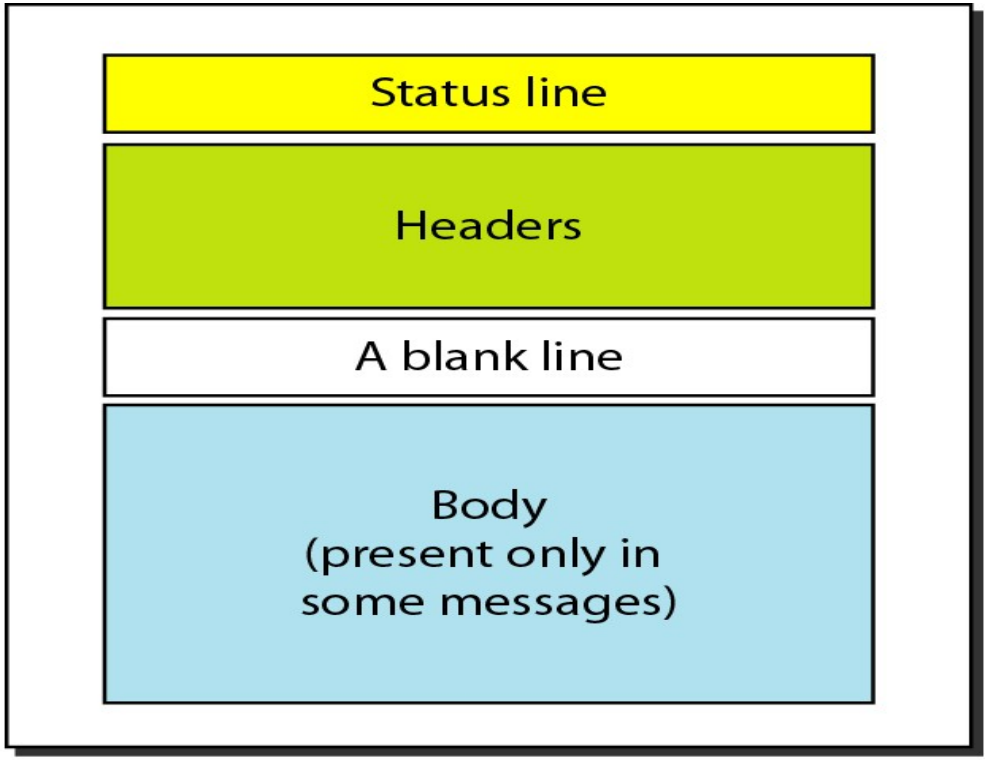
❖ **A request message** - contain only general, request, and entity headers.

❖ **A response message** - contain only general, response, and entity headers.

Request and response messages



Request message



Response message

Request and status lines