
COMPUTER NETWORKS Test 1
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Q1.

Q2.
There are 3 HTTP GET requests required to render the page properly on a web browser. These 3 requests are :

GET http://www.mynetworkcourse.org/mypage.html HTTP/1.1

GET http://www.mynetworkcourse.org/network.gif HTTP/1.1

GET http://www.mynetworkcourse.org/images/cs31006.gif HTTP/1.1

Q3.
There shall be a problem. We cannot use SMTP to obtain the messages because obtaining messages is a **pull** operation, whereas SMTP is a **push** protocol.

Q4.
We cannot use HTTP for large file transfers because -

1. FTP responses are often larger in size in comparison to HTTP responses. HTTP uses caching in order to provide results quicker so to cache such large files is not economical. Also large transfer of files might take a long time if we have just one dedicated channel for requests (as compared to FTP which has two separate channels - control connection and data

connection) and response so it will lead up to queuing up of commands which is bad.

2. FTP has a stateful control connection, which enables it to maintain the state information like user's current directory for a session. FTP can use non-standard ports, which can make getting through firewalls difficult whereas HTTP is a well-known port and is simpler for firewall to manage.
3. FTP is more efficient at transporting large files, where HTTP is better for transferring smaller files such as web pages.

Q5.

FTP uses two parallel TCP connections to transfer a file, a control connection and a data connection. The control connection is used for sending control information between the two hosts - information such as user identification, passwords, commands, etc. The data connection is used to actually send a file.

FTP is used for large file transfers. Now, if the command channel is used for data transfer as well, the commands for other clients (for example, commands to change directory, etc.) may experience a higher queuing delay while one client is being served.

Passive mode of operation of FTP can come handy when there is a firewall behind the client and it cannot accept a connection. To avoid this, the server selects a random port (>1024 and <65000) and the client initiates a TCP connection to that server port.

Q6.

Two transactions are usually observed between a client computer and a local name server for any DNS name lookup.

Client <--------> Local name server

Client generates a query in the form of a request

Server responds with a response

Generally the response to query is the domain resource record which the client requests

There is a bottleneck here if the local name server hosts many clients it may lead to many requests. And while there is a lookup on the original name server, this may take time and can exceed the limit to wait for other DNS requests waiting in the queue and thus end up giving a bad response.

Q7.
The given DNS Resource Record is :

```
cse.iitkgp.ac.in   86400   IN   A   203.110.245.250
```

Here,

1. **cse.iitkgp.ac.in** is the fully qualified domain name
2. **86400** is the time for which this DNS record stays active (ie, Time-to-Live, TTL)
3. **IN** is the class of internet resource
4. **A** is the type of record for IPv4
5. **203.110.245.250** is the value of the record, ie, IPv4 address for record type A

Q8.

(a) **False** - Counter example can be **router**, which does not support the top 2 layers. Another counter example can be **switches** which support only data and physical layer only.

(b) **False** - The length of Protocal Data Unit keeps on increasing as you go down the protocol stack as headers of each layer keep on getting attached as the information keeps on getting transferred from one machine to another.

(c) **False** - DNS does not use any enhanced version of UDP that provides reliable data delivery. Instead, in DNS reliability is ensured at the application layer.

(d) **True** - A persistent connection with pipelining is more efficient than an ordinary persistent connection as you can pipeline additional requests and

responses through same single connection for a period of time. This saves time.
