1.

THE CLIENT-SERVER PARADIGM.

Which of the characteristics below are associated with a client-server approach to structuring network applications (as opposed

- [x] HTTP uses this application structure.
- [x] There is a server that is always on.
- [ ] There is *not* a server that is always on.
- [ ] A process requests service from those it contacts and will provide service to processes that contact it.
- [x] There is a server with a well known server IP address.

That's Correct!

CHECK →

THE PEER-TO-PEER (P2P) PARADIGM.

Which of the characteristics below are associated with a P2P approach to structuring network applications (as opposed to a client-server approach)?

- [ ] There is a server with a well known server IP address.
- [ ] HTTP uses this application structure.
- [ ] There is a server that is always on.
- [x] A process requests service from those it contacts and will provide service to processes that contact it.
- [x] There is *not* a server that is always on.

That's Correct!

← CHECK →

UDP SERVICE.

When an application uses a UDP socket, what transport services are provided to the application by UDP? Check all that apply.

- [ ] *Congestion control.* The service will control senders so that the senders do not collectively send more data than links in the network can handle.
- [ ] *Loss-free data transfer.* The service will reliably transfer all data to the receiver, recovering from packets dropped in the network due to router buffer overflow.
- [ ] *Throughput guarantee*. The socket can be configured to provide a minimum throughput guarantee between sender and receiver.
- [ ] *Real-time delivery.* The service will guarantee that data will be delivered to the receiver within a specified time bound.
- [x] *Best effort service.* The service will make a best effort to deliver data to the destination but makes no guarantees that any particular segment of data will actually get there.
- [ ] *Flow Control.* The provided service will ensure that the sender does not send so fast as to overflow receiver buffers.

That's Correct!

TCP SERVICE.

When an application uses a TCP socket, what transport services are provided to the application by TCP? Check all that apply.

- [ ] *Throughput guarantee*. The socket can be configured to provide a minimum throughput guarantee between sender and receiver.
- [ ] *Best effort service.* The service will make a best effort to deliver data to the destination but makes no guarantees that any particular segment of data will actually get there.
- [x] *Congestion control.* The service will control senders so that the senders do not collectively send more data than links in the network can handle.
- [x] *Flow Control.* The provided service will ensure that the sender does not send so fast as to overflow receiver buffers.
- [ ] *Real-time delivery.* The service will guarantee that data will be delivered to the receiver within a specified time bound.
- [x] *Loss-free data transfer.* The service will reliably transfer all data to the receiver, recovering from packets dropped in the network due to router buffer overflow.

That's Correct!

← CHECK

2

HTTP/2 VERSUS HTTP/1.1.

Which of the following are changes between HTTP 1.1 and HTTP/2? Note: select one or more answers.

- [x] HTTP/2 allows a large object to be broken down into smaller pieces, and the transmission of those pieces to be interleaved with transmission other smaller objects, thus preventing a large object from forcing many smaller objects to wait their turn for transmission.
- [x] HTTP/2 allows objects in a persistent connection to be sent in a client-specified priority order.
- [ ] HTTP/2 provides enhanced security by using transport layer security (TLS).
- [ ] HTTP/2 has many new HTTP methods and status codes.

That's Correct!

← CHECK →

.

“HTTP IS STATELESS.”

What do we mean when we say “HTTP is stateless”? In answering this question, assume that cookies are not used. Check all answers that apply.

- [ ] We say this when an HTTP server is not operational.
- [ ] The HTTP protocol is not licensed in any country.
- [ ] An HTTP *client* does not remember anything about what happened during earlier steps in interacting with any HTTP server.
- [x] An HTTP *server* does not remember anything about what happened during earlier steps in interacting with this HTTP client.
- [ ] An HTTP client does not remember the identities of the servers with which it has interacted.

That's Correct!

CHECK →

WHY WEB CACHING?

Which of the following are advantages of using a web cache? Sselect one or more answers.

- [x] Caching generally provides for a faster page load time at the client, if the web cache is in the client's institutional network, because the page is loaded from the nearby cache rather than from the distant server.
- [x] Caching uses less bandwidth coming into an institutional network where the client is located, if the cache is also located in that institutional network.
- [ ] Caching allows an origin server to more carefully track which clients are requesting and receiving which web objects.
- [ ] Overall, caching requires fewer devices/hosts to satisfy a web request, thus saving on server/cache costs.

That's Correct!

← CHECK →

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- [x] There is a server with a well known server IP address.

That's Correct!

CHECK →

3.

COMPARING AND CONTRASTING HTTP AND SMTP.

Which of the following characteristics apply to HTTP only (and do *not* apply to SMTP)? Note: check one or more of the charact

- [ ] Is able to use a persistent TCP connection to transfer multiple objects.
- [ ] Uses server port 25.
- [x] Uses a blank line (CRLF) to indicate end of request header.
- [ ] Uses CRLF.CRLF to indicate end of message.
- [ ] Has ASCII command/response interaction, status codes.
- [x] Operates mostly as a “client pull” protocol.
- [x] Uses server port 80.
- [ ] Operates mostly as a “client push” protocol.

That's Correct!

← CHECK →

COMPARING AND CONTRASTING HTTP AND SMTP (2).

Which of the following characteristics apply to SMTP only (and do *not* apply to HTTP)? Note: check one or more of the chara

- [ ] Uses server port 80.
- [ ] Operates mostly as a “client pull” protocol.
- [ ] Uses a blank line (CRLF) to indicate end of request header.
- [x] Uses server port 25.
- [ ] Has ASCII command/response interaction, status codes.
- [ ] Is able to use a persistent TCP connection to transfer multiple objects.
- [x] Uses CRLF.CRLF to indicate end of message.
- [x] Operates mostly as a “client push” protocol.

That's Correct!

← CHECK →

COMPARING AND CONTRASTING HTTP AND SMTP (3).

Which of the following characteristics apply to both HTTP and SMTP? Note: check one or more of the characteristics below.

- [ ] Operates mostly as a “client pull” protocol.
- [ ] Operates mostly as a “client push” protocol.
- [ ] Uses CRLF.CRLF to indicate end of message.
- [x] Is able to use a persistent TCP connection to transfer multiple objects.
- [ ] Uses a blank line (CRLF) to indicate end of request header.
- [x] Has ASCII command/response interaction, status codes.

That's Correct!

← CHECK →

WHICH E-MAIL PROTOCOL?

Match the functionality of a protocol with the name of a the email protocol (if any) that implements that functionality.

QUESTION LIST:

Pushes email from a mail client to a mail server.

Pulls mail from one mail server to another mail server.

Pulls email to a mail client from a mail server.

ANSWER LIST:

A. Neither SMTP nor IMAP does this.

B. IMAP

C. SMTP

That's Correct!

← CHECK

4.

WHY DOES THE DNS PERFORM CACHING?

What is the value of caching in the local DNS name server? Check all that apply.

- [x] DNS caching provides for faster replies, if the reply to the query is found in the cache.
- [x] DNS caching results in less load elsewhere in DNS, when the reply to a query is found in the local cache.
- [ ] DNS caching provides the ability to serve as authoritative name server for multiple organizations.
- [ ] DNS caching provides prioritized access to the root servers, since the DNS request is from a local DNS cache.

That's Correct!

← CHECK →

WHAT'S IN THE DNS TYPE A RESOURCE RECORD?

What information does the type “A” resource record hold in the DNS database? Check all that apply.

- [ ] A name and the name of the SMTP server associated with that name.
- [ ] An alias name and a true name for a server.
- [ ] A domain name and the name of the authoritative name server for that domain.
- [x] A hostname and an IP address.

That's Correct!

DNS FUNCTIONS.

Match the function of a server to a given type of DNS server in the DNS server hierarchy.

QUESTION LIST:

Provides authoritative hostname to IP mappings for organization's named hosts.

3

Replies to DNS query by local host, by contacting other DNS servers to answer the query.

C

Responsible for a domain (e.g., *.com, *.edu); knows how to contact authoritative name servers.

D

Highest level of the DNS hierarchy, knows how to reach servers responsible for a given domain (e.g., *.com, *.edu).

A

ANSWER LIST:

A. DNS root servers

B. Authoritative DNS server

C. Local DNS server

D. Top Level Domain (TLD) servers

THE DNS AUTHORITATIVE NAME SERVER.

What is the role of an authoritative name server in the DNS? (Check all that apply)

- [ ] It provides the IP address of the DNS server that can provide the definitive answer to the query.
- [x] It provides the definitive answer to the query with respect to a name in the authoritative name server's domain.
- [ ] It provides a list of TLD servers that can be queried to find the IP address of the DNS server that can provide the definitive answer to this query.
- [ ] It is a local (to the querying host) server that caches name-to-IP address translation pairs, so it can answer authoritatively and can do so quickly.

That's Correct!

THE LOCAL DNS SERVER.

Check all of the phrases below that state a true property of a *local* DNS server.

- [x] The local DNS server record for a remote host is sometimes different from that of the authoritative server for that host.
- [x] The local DNS server can decrease the name-to-IP-address resolution time experienced by a querying local host over the case when a DNS is resolved via querying into the DNS hierarchy.
- [ ] The local DNS server is only contacted by a local host if that local host is unable to resolve a name via iterative or recursive queries into the DNS hierarchy.
- [ ] The local DNS server holds hostname-to-IP translation records, but not other DNS records such as MX records.

That's Correct!

DNS AND HTTP CACHING.

We learned that in HTTP web browser caching, HTTP local web server caching, and in local DNS caching, that a user benefits (e.g., shorter delays over the case of no caching) from finding a local/nearby copy of a requested item. In which of the following forms of caching does a user benefit from its not only from its own recent requests (and cached replies) *but also from recent requests made from other users*?

- [x] Local DNS server caching
- [x] HTTP local web caching
- [ ] HTTP browser caching

That's Correct!

← CHECK