Topic 2: ApplicationLayer

Questionnaire 4: DNS – The Internet's Directory Service

Q1. The *Internet's Domain Name System* (DNS):

A. is an application-layer protocol that runs over TCP for reliable data transfer.

B. does not use the client-server model.

C. performs *load distribution* as a result of a resolver function call, in particular, `gethostname()`.

D. translates hostnames to IP addresses among other services such as *host aliasing*, which allows to obtain the canonical hostname through an alias hostname (more mnemonic than the canonical hostname).

Q2. An Authoritative DNS server:

A. is a top-level domain server.

B. is not strictly part of the hierarchy of DNS servers.

C. provides DNS records that translate hostnames to IP addresses of publicly accessible institutional hosts such as Web servers and mail servers.

D. contacts root DNS server if hostname mapping unknown.

Q3. DNS caching:

A. is often applied in TLD servers by caching the IP addresses of Local DNS servers.

B. is often applied in TLD servers by caching the IP addresses of Authoritative servers.

C. Improves the delay performance.

D. does not reduce the number of queries to the Root DNS servers.

Q4. A DNS resource record is a four-tuple `(Name, Value, Type, TTL)`, where:

A. `Name` is a domain and `value` is the IP address for the hostname if `Type=A`.

B. the hostname-to-IP-address translation is obtained if `Type=NS`.

C. `Value` is the canonical name of a mail server for the alias hostname `Name` if `Type=CNAME`.

D. an authoritative DNS server for a particular hostname keeps a `Type=A` record for the hostname.

Q5. DNS protocol specifies query and reply messages with the same message format, which includes:

A. an identification (16-bit number) shared by the query and corresponding reply.

B. A header section composed of two fields: identification and a flag field.

C. A question section that contains only the queried hostname.

D. An answer section that contains the only possible resource record for the queried hostname.