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Assignment

Q1. An application layer protocol defines how the application processes running on different systems, pass the messages to each other.
- DNS stands for Domain Name System.
- DNS is a directory service that provides a mapping between the name of a host on the network and its numerical address.
- DNS is required for the functioning of the internet.
- Each node in a tree has a domain name, and a full domain name is a sequence of symbols specified by dots.
- DNS is a service that translates the domain name into I P addresses.

DNS is a TCP/IP protocol used on different platforms. The domain name spaces is divided into 3 different sections : generic, country & inverse domains.

GENERIC DOMAIN
- Defines the registered hosts according to their generic behaviour.
- Each node in a tree defines the domain name, which is an index to the DNS database
- It uses 3- character labels and these ~~labels~~ labels describe the organizational type.

COUNTRY DOMAIN
The format is same as generic domain, but it uses 2-d character country abbreviation.
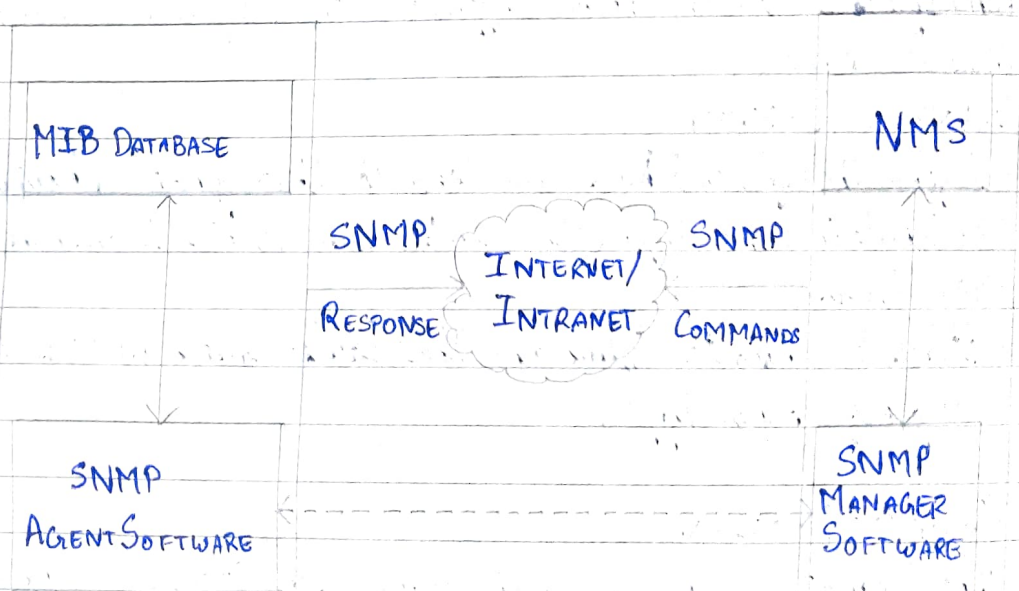
INVERSE DOMAIN

Used for mapping an address to a name. When the server has recieved a request from the client, and the server contains the files of only authorized clients.

Q2.

a. SNMP

If an organization has 1000 of devices then to check all devices, one by one everyday, are working properly or not is a hectic task. To ease these up, Simple Network Management Protocol is used.

SNMP is an application layer protocol which uses UDP port number 161/162. SNMP is used to monitor the network, detect network faults and sometimes even ~~ever~~ used to configure remote ~~devices~~ devices.

MIB DATABASE

NMS

SNMP
RESPONSE

INTERNET/
INTRANET

SNMP
COMMANDS

SNMP
AGENT SOFTWARE

SNMP
MANAGER
SOFTWARE

Components of SNMP

There are 4 main components in an SNMP-managed network:

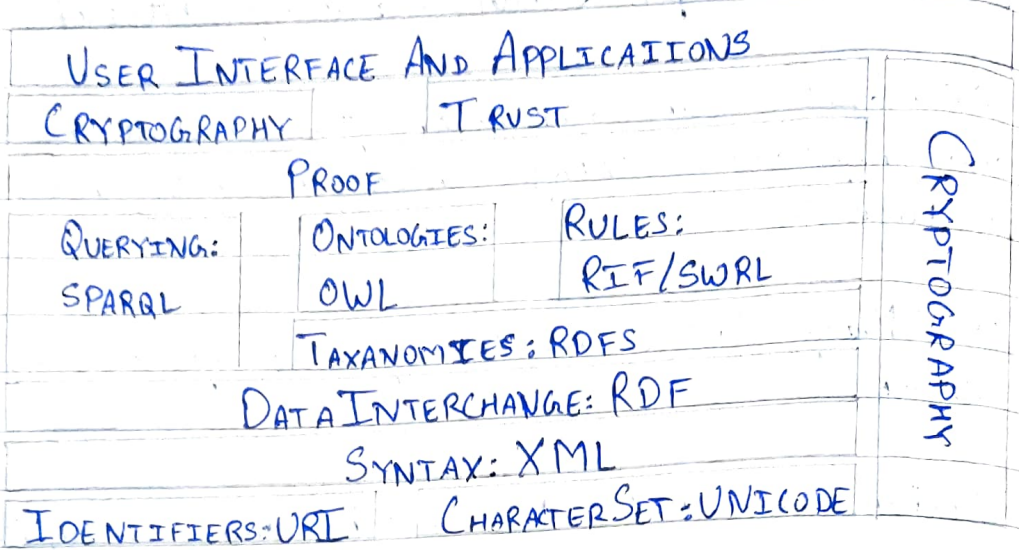1. SNMP Agent : Software management software module installed on a managed device. Managed devices can be network devices like PC, Router etc.

2. SNMP Manager [NMS]: Centralised system used for to monitor network.

3. SNMP-managed devices : Nodes on which devices run agents run.

4. Management Information Base [MIB]: Consist of information of resources that are to be managed. These are organised hierarchically. It consist of objects instances which are essentially variables.

b. SMTP

Simple Mail Transfer Protocol is the procedure behind the email flow on the internet.

- Its an Application Level / Connection Oriented / Text Based Protocol.
- It handles exchange of messages between e-mail servers over TCP/IP networks
- It also provides notification regarding incoming mail.
- When you send e-mail, your e-mail client sends it to your e-mail server for further it contacts the recipent mail server using SMTP client.
- These commands specify the senders & recievers address along with message to be sent.
- The exchange of commands between users servers is carried out without any user intervention.

Q3. WWW ARCHITECTURE

USER INTERFACE AND APPLICATIONS			
CRYPTOGRAPHY	TRUST		
	PROOF		
QUERYING: SPARQL	ONTOLOGIES: OWL	RULES: RIF/SWRL	
	TAXANOMIES: RDFS		
	DATA INTERCHANGE: RDF		
	SYNTAX: XML		
IDENTIFIERS: URI	CHARACTER SET: UNICODE		

(CRYPTOGRAPHY shown along the right side)

1. Identifiers and Character Sets
URI [Uniform Resource Identifier] is used to uniquely identify resourses on the web and UNICODE makes it possible to built web pages that can be read and to write in human languages

2. Syntax
XML [Extensible Markup Language] helps to define common syntax in semantic web.

3 Data & Interchange
RDF [Resource Description Framework] helps in defining core representation of data for web. RDF represents data about resource in graph form.

4. Taxonomies
RDFS [RDF Schemas] allows more standardized description of taxonomies and other ontological constructs.

5. Ontologies

OWL [Web Ontology Language] offers more constructs over RDFS.
It comes in 3 versions :-
 - OWL Lite for taxonomies and simple constraints
 - OWL DL for full description login support.
 - OWL for more syntactic freedom of RDF.

6. Rules

RIF and SWRL offers rules beyond the constructs that are
available from RDF's and OWL. SPARQL [Simple Protocol &
RDF Query Language] is SQL like language used for querying
RDF data and & OWL ontologies.

7. Proof

All Semantic and rules that & are executed at layers below Proof
and their result will be used to prove deductions.

8. Cryptography

Digital signatures for verification of the origin of source is
used.

9. User Interface & Applications

Built for User Interaction.

Q4.

BOOTP	DHCP
1. Stands for BOOTstrap Protocol.	Stands for Dynamic Host Configuration Protocol.
2. Does not provide temporary IP addressing.	Provides temporary IP addressing for only limited amount of time.
3. Does not support DHCP clients	Support BOOTP clients.
4. Manual configuration takes place.	Auto configuration takes place.
5. Does not support mobile machines.	Supports mobile machines.
6. Can have errors due to manual-configuration.	Errors do not occur due to auto configuration.