DESIGN FOR ASSIGNMENT 2

IMPLEMENTATION OF DNS SERVERS

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Programs and files :

1. 2M_B130727CS#DNSclient.c – The client program
2. 2M_B130727CS#DNSserver#1.c – The localdns program
3. 2M_B130727CS#DNSserver#2.c – The rootdns program
4. 2M_B130727CS#DNSserver#3.c – The tlddns program
5. 2M_B130727CS#DNSserver#4.c – The authoritative dns program
6. cache – Binary file to store cache
7. roots - Binary file to store files corresponding to each domain
8. tldcom - Binary file to store each domain's subdomains
9. tldin - Binary file to store each domain's subdomains
10. authfb - Binary file to store hostnames for each domain
11. authtw - Binary file to store hostnames for each domain
12. authnitc - Binary file to store hostnames for each domain
13. authath - Binary file to store hostnames for each domain

Designs :

2M_B130727CS#DNSclient.c :

1. First, client creates a socket and binds the socket.
2. Structures for client and local dns addresses are created and assigned values
3. The input is taken from the user and the hostname alone is sent to the local dns
4. If the ipaddress corresponding to the hostname is in cache, the local dns sends the ip address directly. Else the hostname is iteratively queried all over and finally, the local dns returns the ip address is hostname is found, else returns appropriate error message.
5. The client finally displays the appropriate result accordingly and loops in to take user input again.

2M_B130727CS#DNSserver#1.c :

1. First, local dns creates a socket and binds the socket.
2. Structures for client, local dns, root dns, tld dns and authoritative dns addresses are created and assigned values
3. Hostname from client is received and checked if it is in the cache
4. If yes, then the corresponding ip address is returned to the client
5. Else, the hostname is sent to the root dns server.
6. If found, the root dns server returns the filename of the file which the tlddns has to search for or suitable error messages.
7. The filename and hostname is then sent to the tld server from the local dns and the tld dns server returns the filename of the file which the authoritative dns has to search for or suitable error messages.
8. The filename and hostname is then sent to the authoritative dns server from the local dns and the authoritative dns server returns ip address of the corresponding hostname or suitable error messages.

2M_B130727CS#DNSserver#2.c :

1. First, root dns creates a socket and binds the socket.
2. Structures for local dns and root dns addresses are created and assigned values
3. Then the root dns receives the filename and the hostname from the localdns.
4. It then extracts the domain name from the hostname and searches for the domain name in the file, whose name is received from the local dns server.

5. If the domain name is found, it retrieves the filename corresponding to the domain name and sends it to the localdns.
6. Else, it sends the corresponding error messages to the local dns server

2M_B130727CS#DNSserver#3.c :

1. First, tld dns creates a socket and binds the socket.
2. Structures for local and tld dns addresses are created and assigned values
3. Then the tld dns receives the filename and the hostname from the localdns.
4. It then extracts the subdomain name from the hostname and searches for the subdomain name in the file, whose name is received from the local dns server.
5. If the subdomain name is found, it retrieves the filename corresponding to the subdomain name and sends it to the localdns.
6. Else, it sends the corresponding error messages to the local dns server

2M_B130727CS#DNSserver#4.c :

1. First, authoritative dns creates a socket and binds the socket.
2. Structures for local and authoritative dns addresses are created and assigned values
3. Then the authoritative dns receives the filename and the hostname from the localdns.
4. It then searches for the host name in the file, whose name is received from the local dns server.
5. If the subdomain name is found, it retrieves the ipaddress corresponding to the hostname and sends it to the localdns.
6. Else, it sends the corresponding error messages to the local dns server