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HW1

CS164

1. 1.Suppose within your Web browser you click on a link to obtain a Web page. The IP address for the associated URL is not cached in your local host, so a DNS lookup is necessary to obtain the IP address. Suppose that your local DNS server has cached the TLD Name Server's address. Thus, a number N of DNS servers are visited (starting with your local DNS server which has the cached entry for the TLD DNS) before your host receives the IP address from DNS. What is the number N of DNS servers visited? Assume the successive visits (including the local DNS) incur an RTT of RTT_1 , . . ., RTT_N . Further suppose that the Web page associated with the link contains exactly one object, consisting of a small amount of HTML text. Let RTT_0 denote the RTT between the local host and the server containing the object. Assuming zero transmission time of the object, how much time elapses from when the client clicks on the link until the client receives the object? Ignore all transport protocol effects.
   a. **Two RTT, one RTT_1 for obtaining the IP address, the other RTT_0 for connection establishment**
2. Referring to Problem 1, suppose the HTML file references three (3) very small objects on the same server. Neglecting transmission times, how much time elapses with a. Non-persistent HTTP (with no parallel TCP connections)? b. Persistent HTTP (with no parallel TCP connections)
   a. **8RTT, 2* 3 RTT_0 for data and connection establishment, 2 RTT for IP address and connection establishment**
   b. **3RTT, 1 RTT_0 for data and IP address, 2 RTT_1 for IP and connection establishment**
3. How does the "Last Modified" header line help in the HTTP protocol? (5 points)
   a. **It contains the date and time at which the server believes the resource was last modified. It is used to determine if a resource received or stored is the same**
4. Describe the use of the "If-Modified-Since" header in the HTTP protocol
   a. **The if_Modified-since header tells the server if they need to send the pages to client again. With the used of this, loading web page could be faster since the client doesn't need to load everything again when client connect to the same website every time**
5. What is the role of a HTTP proxy server in network? What does it do when it gets requests from a client browser and response from a server? What does it do when it gets a subsequent request from a different client?
   a. **Satisfy client request without involving origin server. When proxy server gets request from client, it first check if it has the most recent copy of http file client needs. If it has the file client needs, it would send it to client, this can save the bandwidth used between client and the main server website clients want to access.   When the next client request the same website, the proxy server would do the same thing to decrease bandwidths use by other people.**