a) What is the IP address of the client that initiates the conversation?

The IP address of the client that initiates the conversation is 131.247.95.216. This is the IP that sends the initial DNS request in frame 1 and establishes the TCP connection in frame 3.

b) Use the first two packets to identify the server that is going to be contacted. List the common name, and three IP addresses that can be used for the server.

- **Common Name (CN):** The DNS query in packet 1 is for `www.google.com`, which is the server being contacted.
- **Three IP addresses for the server:**
    - 64.233.161.99
    - 64.233.161.104
    - 64.233.161.147
      These are provided in the DNS response in frame 2.

c) What is happening in frames 3, 4, and 5?

- **Frame 3:** The client (`131.247.95.216`) initiates a TCP connection to the server (`64.233.161.99`) by sending a SYN packet to port 80 (HTTP).
- **Frame 4:** The server (`64.233.161.99`) responds with a SYN-ACK packet, acknowledging the SYN from the client, indicating it is ready to establish a connection.
- **Frame 5:** The client responds with an ACK packet, completing the TCP three-way handshake. Now, the connection is established, and data can be transmitted.

d) What is happening in frames 6 and 7?

- **Frame 6:** The client sends an HTTP GET request to retrieve the root resource (`/`) from the server (`64.233.161.99`), initiating an HTTP session.
- **Frame 7:** The server acknowledges the HTTP GET request with a TCP ACK packet, acknowledging the receipt of the GET request.

e) Ignore frame eight. However, for your information, frame eight is used to manage flow control.

Flow control helps to prevent the receiver's buffer from overflowing by adjusting the rate of data flow.

f) What is happening in frames nine and ten? How are these two frames related?

- **Frame 9:** The server (`64.233.161.99`) sends an HTTP response with a chunk of data (length = 1430 bytes). This is the first part of the response that contains an HTML file.
- **Frame 10:** The second chunk of the response, a smaller packet, contains the HTTP 200 OK status and indicates that the server has successfully processed the client's request and is sending back the requested resource.

These two frames are part of the same HTTP response from the server. Frame 9 carries a data segment that is reassembled into the complete response shown in frame 10.

g) What happens in packet 11?

In packet 11, the client acknowledges the receipt of the data sent by the server. This is a TCP ACK packet, confirming that the client has successfully received the data up to a certain point (sequence number 1652).

h) After the initial set of packets is received, the client sends out a new request in packet 12. This occurs automatically without any action by the user. Why does this occur?

In packet 12, the client sends another HTTP GET request for `/intl/en/images/logo.gif`. This occurs automatically because the HTML page received from the server contains references to additional resources (such as images, CSS files, or JavaScript). The client browser automatically requests these resources to render the web page correctly.

i) What is occurring in packets 13 through 22?

- Packets 13 to 22 are TCP segments being sent by the server (`64.233.161.99`) to the client in response to the second GET request. These segments contain the requested image (`/intl/en/images/logo.gif`), and they are being reassembled on the client-side.

j) Explain what happens in packets 23 through 26.

- **Packet 23:** The client sends an HTTP GET request for `/favicon.ico`, which is a common request for the browser to display the favicon (small icon) in the browser tab.
- **Packets 24 to 26:** These packets represent the server's HTTP response to the client's request for the favicon. The server sends the favicon file, which is acknowledged by the client.

k) In one sentence describe what the user was doing (Reading email? Accessing a web page? FTP? Other?).

The user was accessing a web page, specifically `www.google.com`, which triggered multiple HTTP GET requests for the page's content, including images and a favicon.