

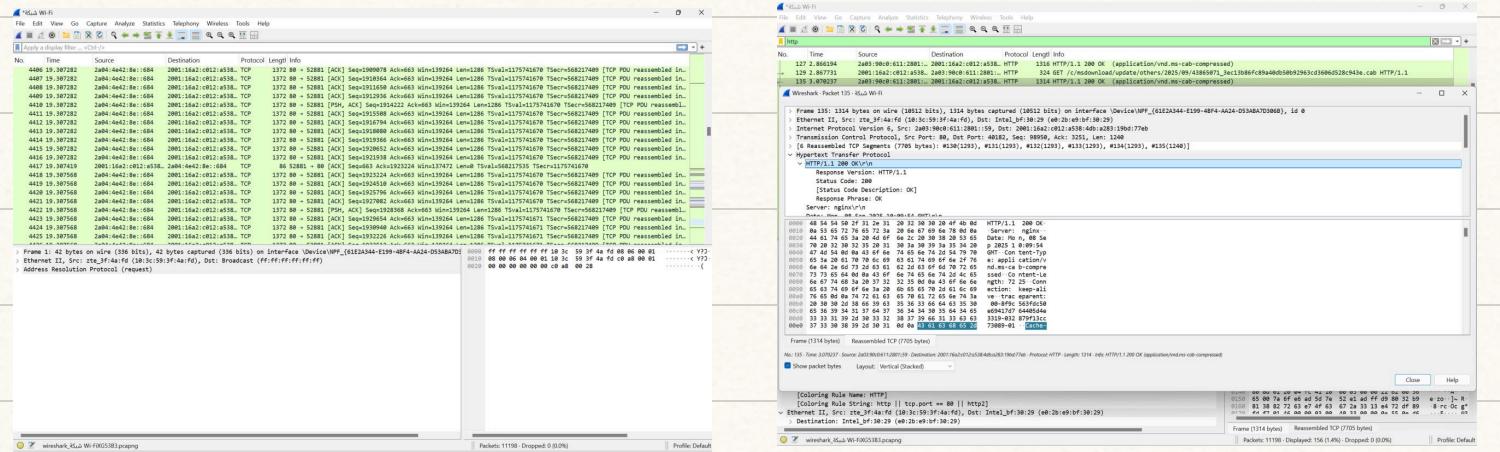
Part 1: Capturing HTTP Traffic

Task 1: Start Wireshark and capture packets

- Step 1: Open Wireshark.
 - Step 2: Select the network interface connected to the internet (e.g., Ethernet or Wi-Fi).
 - Step 3: Click the "Start Capturing Packets" button (the shark fin icon).
 - Step 4: Open your favorite web browser and navigate to (<https://qu.edu.sa>) website.
 - Step 5: After the website has fully loaded, stop capturing packets by clicking the red stop button in Wireshark.

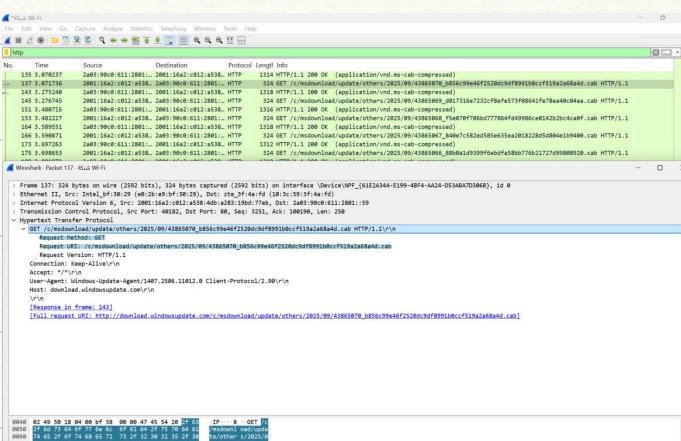
Task 2: Filter HTTP packets and analyze them

- Step 1: In the filter bar, type http and press Enter. This filters out only the HTTP packets from the capture.
 - Step 2: Select any HTTP packet to view its details.
 - Step 3: Observe the HTTP request and response messages. Note the method (GET, POST), URL, response codes (200 OK, 404 Not Found), etc.

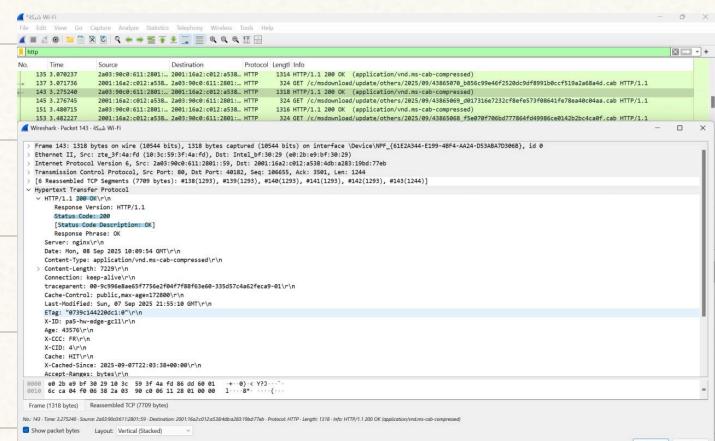


Task (1)

Task (2.1+2)



Task (2-3) request



Task (2-3) response

Part 2: Analyzing TCP/IP Traffic

Task 1: Filter TCP packets

Step 1: Clear the previous filter and type TCP to focus on TCP packets

Step 2: Select a TCP packet related to your HTTP request/response.

Step 3: Right-click on the packet and select "Follow" -> "TCP Stream".

Step 4: This shows the entire conversation between the client and server.

Task 2: Analyze TCP handshake and investigate Data Transfer and Termination

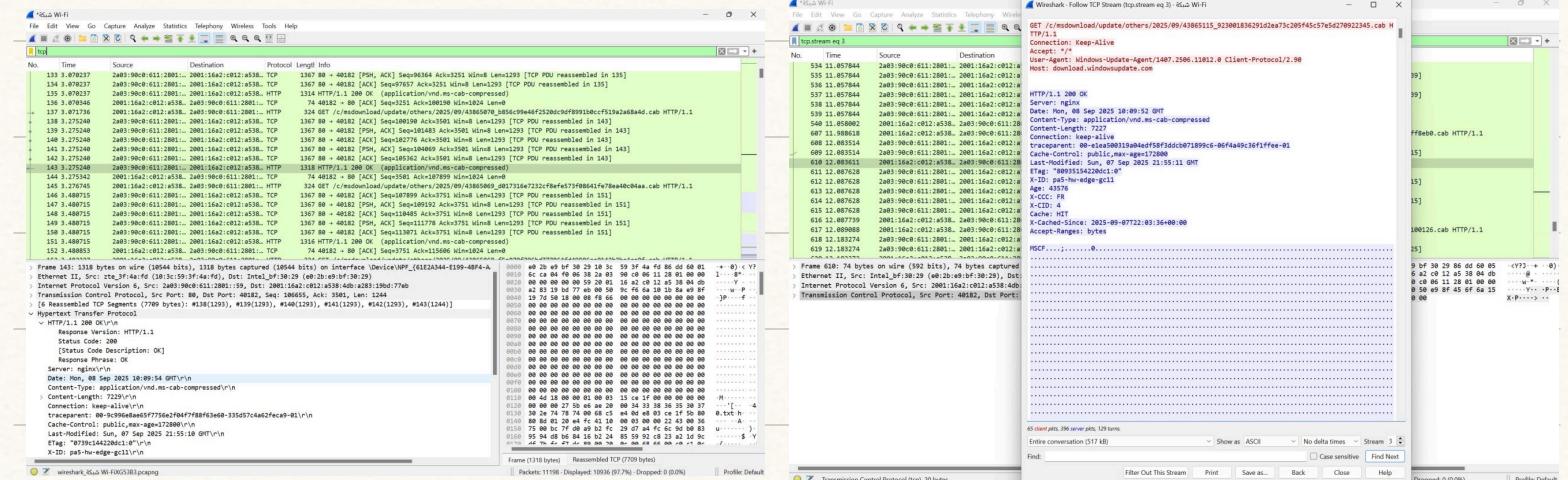
Step 1: Find and select packets related to the TCP three-way handshake

- o SYN: Initiates a connection.
 - o SYN-ACK: Acknowledges and responds to the SYN.
 - o ACK: Acknowledges the SYN-ACK and establishes the connection

Step 2: Note the sequence and acknowledgment numbers. Screenshot and upload your image to your online git repository.

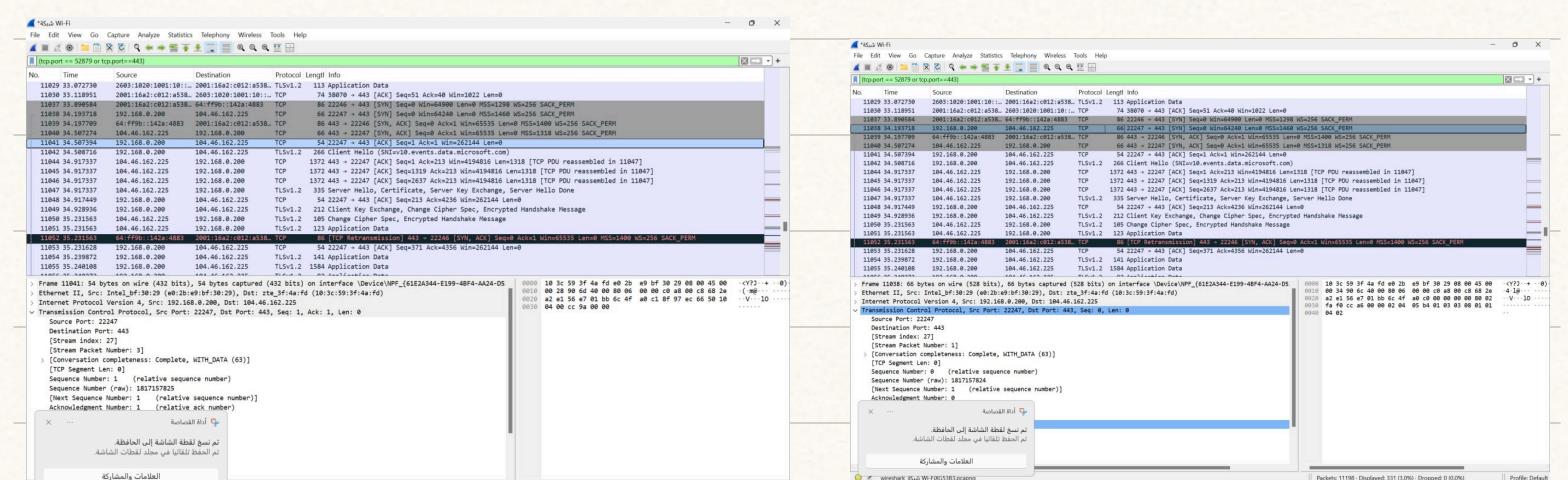
Step 3: Observe the data packets exchanged between the client and server. Take a screenshot and upload it to your online git repo.

Step 4: Look at the TCP termination process (FIN, ACK packets)



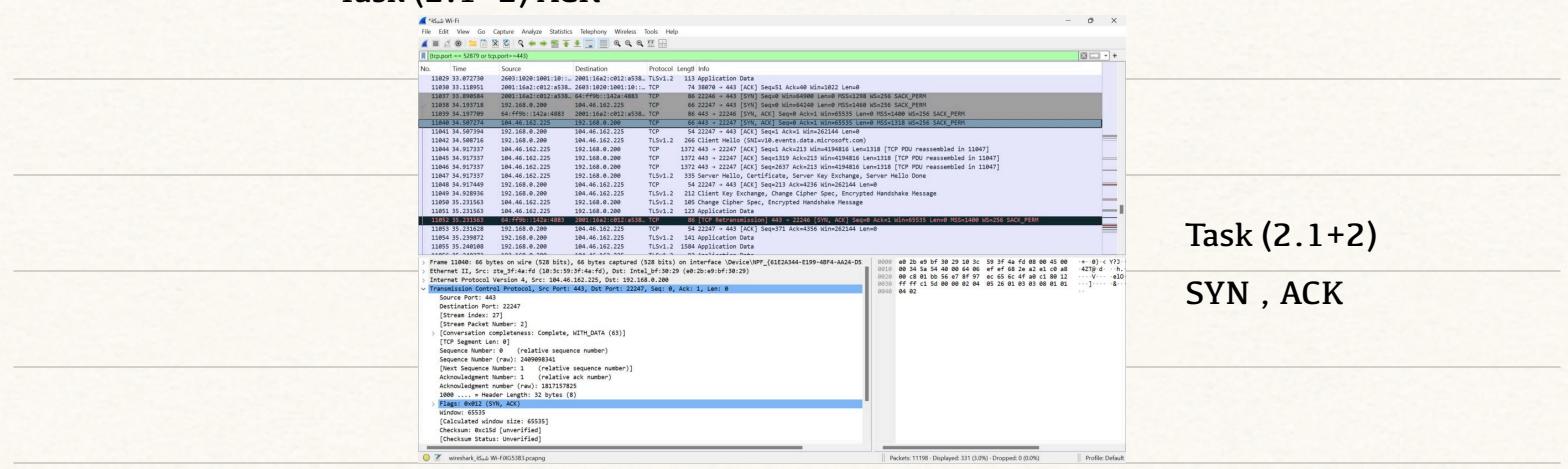
Task (1.1)

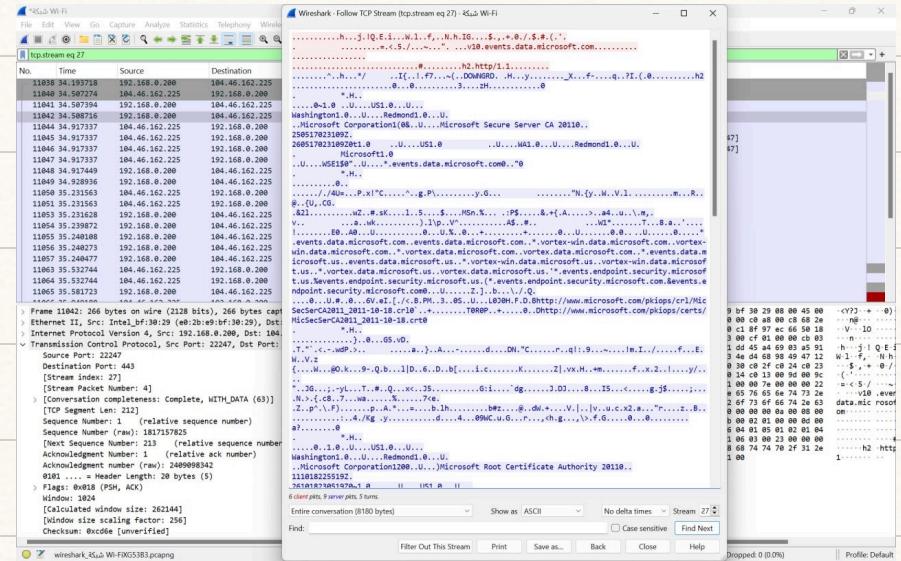
Task (1.2+3+4)



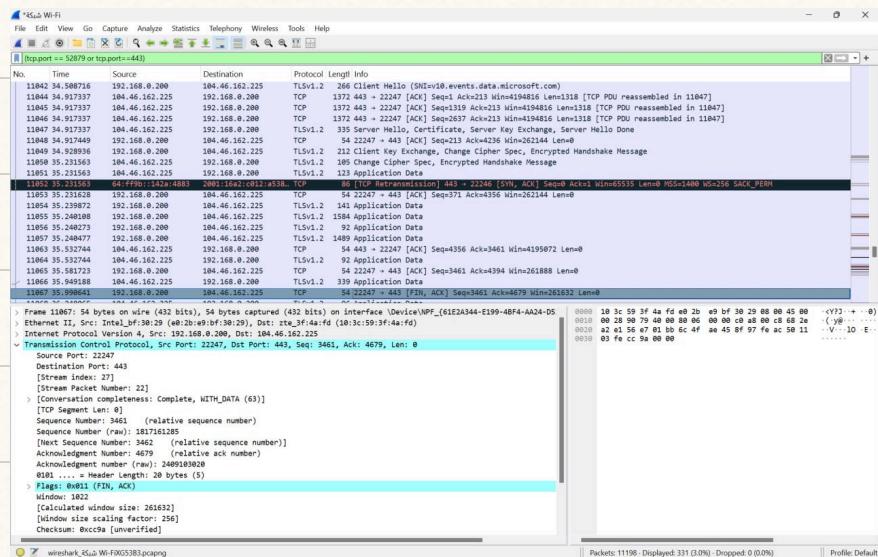
Task (2.1+2) ACK

Task (2.1+2)SYN





Task (2.3)



Task (2.4)

Part 3: Capturing and Analyzing UDP Traffic

Task 1: Generate UDP traffic and capture packets

Step 1: Open a network application that uses UDP (e.g., streaming video, VoIP software, or custom script).

Step 2: Start the application to generate UDP traffic.

Step 3: Start capturing packets in Wireshark while the UDP application is running.

Step 4: After sufficient traffic is generated, stop capturing packets.

Task 2: Filter and analysis UDP Packets

Step 1: In the filter bar, type UDP and press Enter.

Step 2: This filters out only the UDP packets from the capture.

Step 3: Select any UDP packet to view its details.

Step 4: Observe the source and destination ports, length, and data.

Step 5: Compare the simplicity of UDP headers with TCP headers.

