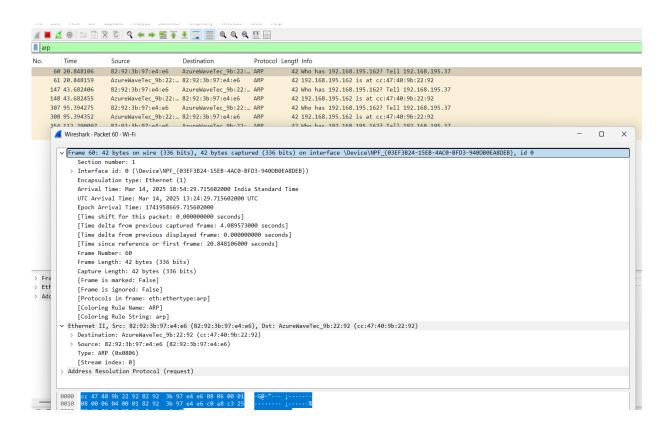
Q1. Capture and analyze ARP packets using Wireshark. Inspect the ARP request and reply frames when your device attempts to find the router's MAC address. Discuss the importance of ARP in packet forwarding.

```
Command Prompt
    Connection-specific DNS Suffix
    Link-local IPv6 Address . . . .
                                               : fe80::5684:b125:9f2:3f3e%10
    IPv4 Address. . . . . . . . . . . . .
                                                  192.168.224.1
                                                  255.255.255.0
   Default Gateway
Wireless LAN adapter Wi-Fi:
   Connection-specific DNS Suffix .
                                  . . . . : 2401:4900:67a5:7997:2f83:add8:7543:4e41
. . . . : 2401:4900:67a5:7997:7080:43d2:1a42:72a4
   fe80::c6d3:c85d:d9bd:d131%3
                        IPv4 Address. . . . . . . . . . . .
   Subnet Mask .
   Default Gateway . . . . .
                                                : fe80::8092:3bff:fe97:e4e6%3
                                                  192.168.195.37
C:\Users\brindha>ping 192.168.195.37
Pinging 192.168.195.37 with 32 bytes of data:
Reply from 192.168.195.37: bytes=32 time=10ms TTL=64
Reply from 192.168.195.37: bytes=32 time=4ms TTL=64
Reply from 192.168.195.37: bytes=32 time=5ms TTL=64
Reply from 192.168.195.37: bytes=32 time=3ms TTL=64
Ping statistics for 192.168.195.37:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 3ms, Maximum = 10ms, Average = 5ms
```

Wireshark Analysis



ARP Request

Source MAC Address: 82:92:3b:97:e4:e6

Destination MAC Address: cc:47:40:9b:22:92

Protocol: ARP (0x0806)

ARP Reply

Source MAC Address: cc:47:40:9b:22:92

Destination MAC Address: 82:92:3b:97:e4:e6

Packet forwarding

This ARP exchange allows a device to find out the MAC address linked to an IP address before sending any data.

192.168.195.37 is the default gateway, then the system now knows how to send packets outside the local network.

This process is essential for packet forwarding, as without knowing the MAC address, the device wouldn't be able to communicate.

Packet forwarding ensures data reaches the right device