Ex: 9

ADDRESS RESOLUTION PROTOCOL (ARP)

Simulate ARP using socket programming.

Server should perform the following:

1. Consider the server as a host or a router.
2. Enter hosts/routers' IP address and MAC address.
3. Listen for any number of client (for broadcasting purpose)
4. Enter the packet details received from a host or its own packet to sent to a destination.
   The details are:
   i. Source IP address
   ii. Source MAC address
   iii. Destination IP address
   iv. 16 bit data
5. Develop an ARP Request packet which is to be broadcasted to all clients. Query packet should contain

   SourceIP | SourceMAC | DestinationIP
6. When an ARP Reply is received with the Destination MAC address, send the packet to the corresponding destination with format

   SourceIP | SourceMAC | DestinationIP|Destination MAC Address|16 bit data
7. Also check the validity of IP and MAC address.

Client should do the following:

1. Can have any number of clients(depends on the backlog). A single program is enough for any number of clients.
2. Enter the clients own IP and MAC.
3. When an ARP Request packet is received check whether the Destination IP is its own IP.
4. If not no reply.
5. If yes respond with ARP Reply packet.

   SourceIP | SourceMAC | DestinationIP | DestinationMAC
6. Then receive the packet from the server and display it.

Sample Input and Output

Server

Enter the details of packet received.

Destination IP :**155.157.65.128**

Source IP :**123.128.34.56**

Source MAC :**AF-45-E5-00-97-12**

16 bit data :1011110000101010

Developing ARP Request packet

123.128.34.56 | **AF-45-E5-00-97-12** | **155.157.65.128**

The ARP Request packet is broadcasted.

Waiting for ARP Reply...

ARP Reply received **123.128.34.56** | **AF-45-E5-00-97-12** |
155.157.65.128| **45-DA-62-21-1A-B2**

Sending the packet to : **45-DA-62-21-1A-B2**

Packet Sent: **123.128.34.56** | **AF-45-E5-00-97-12** |
155.157.65.128| **45-DA-62-21-1A-B2** | 011110000101010

Client 1

Enter the IP address : 165.43.158.158

Enter the Mac address : 09-DF-90-26-6C-09

ARP Request Received : **123.128.34.56** | **AF-45-E5-00-97-12** | **155.157.65.128**

IP address does not match.

Client 2

Enter the IP address : **155.157.65.128**

Enter the Mac address **: 45-DA-62-21-1A-B2**

ARP Request Received : **123.128.34.56** | **AF-45-E5-00-97-12** | **155.157.65.128**

IP address matches

ARP Reply Sent : **123.128.34.56** | **AF-45-E5-00-97-12** |

155.157.65.128| **45-DA-62-21-1A-B2**

Received Packet is : **123.128.34.56** | **AF-45-E5-00-97-12** |
155.157.65.128| **45-DA-62-21-1A-B2** | 011110000101010

Client 3

Enter the IP address : 15.143.158.18

Enter the Mac address : 19-0F-01-63-C7-D4

ARP Request Received : **123.128.34.56** | **AF-45-E5-00-97-12** | **155.157.65.128**

IP address does not match.