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EXPERIMENT:18

AIM: To implement of server-client using UDP socket programming.

ALGORITHM:

Server Side:

1. Create a socket: Create a UDP socket to listen for incoming client datagrams.
2. Bind the socket to an IP address and port number: Specify the IP address and port number for the server to listen on.
3. Receive datagrams from clients: Use the `recvfrom()` function to receive datagrams from clients.
4. Process the data: Process the received datagram as required by the application.
5. Send response to the client: Use the `sendto()` function to send a response back to the client, specifying the client's IP address and port number.
6. Repeat steps 3 to 5 as required to handle multiple clients.

PROCEDURE:

Client Side:

1. Create a socket: Create a UDP socket to send datagrams to the server.
2. Send data to the server: Use the `sendto()` function to send datagrams to the server, specifying the server's IP address and port number.
3. Receive response from the server: Use the `recvfrom()` function to receive a response from the server.
4. Process the response: Process the received response as required by the application.
5. Close the socket: Use the `close()` function to close the socket.
6. Exit the program: Exit the program as required.

The figure displays a Wireshark network traffic analysis. The top pane shows the packet list with 27 packets. The middle pane shows the packet details for the selected packet (No. 27), which is a Multicast Domain Name System (response). The bottom pane shows the raw packet data in hexadecimal and ASCII.

No.	Time	Source	Destination	Protocol	Length	Info
552	fe80::f01f:c7ff:fee... f002::fb			106	Standard query 0x0000 PTR _companion-link_tcp.local, "QM" question	
555	172.20.10.3	224.0.0.251	MNMS	119	Standard query 0x0000 PTR _apple-mobdev_tcp.local, "QM" question P1B 01659be9_sub_apple-mobdev2_tcp.local, "QM" question	
5915	172.20.10.3	224.0.0.251	MNMS	511	Standard query 0x0000 PTR, cache flush LAPTOP-R3AS70T1.local PTR, cache flush LAPTOP-R3AS70T1.local PTR, cache flush LAP...	
689	137.413321	fe80::199:6450:e07... fe80::f01f:c7ff:fee...	DNS	109	Standard query 0x34bc A context-enroll.ccs.mcafee.com	
690	137.522389	fe80::199:6450:e07... fe80::f01f:c7ff:fee...	DNS	109	Standard query 0x0811 AAAA context-enroll.ccs.mcafee.com	
692	137.602493	172.20.10.3	172.20.10.1	DNS	199	Standard query response 0x34bc A context-enroll.ccs.mcafee.com CNAME context-enroll.ausmcafeccs.mcafee.com A 24.237.230.37 A 52...
693	137.614782	fe80::f01f:c7ff:fee... fe80::199:6450:e07...	DNS	89	Standard query 0x0811 AAAA context-enroll.ccs.mcafee.com	
694	137.618035	172.20.10.1	172.20.10.1	DNS	232	Standard query response 0x0811 AAAA context-enroll.ccs.mcafee.com CNAME context-enroll.ausmcafeccs.mcafee.com SOA ns-701.awsdsn...
746	192.058230	fe80::199:6450:e07... fe80::f01f:c7ff:fee...	DNS	98	Standard query 0x069f A edge.microsoft.com	
747	192.059237	fe80::199:6450:e07... fe80::f01f:c7ff:fee...	DNS	98	Standard query 0x6757 AAAA edge.microsoft.com	
748	192.059973	fe80::199:6450:e07... fe80::f01f:c7ff:fee...	DNS	98	Standard query 0x3fad HTTPS edge.microsoft.com	
750	192.203372	fe80::f01f:c7ff:fee... fe80::199:6450:e07...	DNS	201	Standard query response 0x69f7 A edge.microsoft.com CNAME edge-microsoft-com.dual-a-0036.a-msedge.net CNAME dual-a-0036.a-msedge...	
750	192.203372	fe80::f01f:c7ff:fee... fe80::199:6450:e07...	DNS	225	Standard query response 0x6757 AAAA edge.microsoft.com CNAME edge-microsoft-com.dual-a-0036.a-msedge.net CNAME dual-a-0036.a-msedge...	
751	192.210616	fe80::f01f:c7ff:fee... fe80::199:6450:e07...	DNS	216	Standard query response 0x3fad HTTPS edge.microsoft.com CNAME edge-microsoft-com.dual-a-0036.a-msedge.net CNAME dual-a-0036.a-msedge...	
754	204.063772	172.20.10.3	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
775	205.081132	172.20.10.3	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1
776	206.093327	172.20.10.3	239.255.255.250	SSDP	217	M-SEARCH * HTTP/1.1

Packet Details:

- Frame 3: 534 bytes on wire (4272 bits), 534 bytes captured (4272 bits) on interface \Device\NPF{3AB7A1D4-0000-0000-0000-0000} Ethernet II, Src: Chongqin 3a:1d:45 (72:b3:3a:1d:45), Dst: IPv6multicast_fb (01:00:0e:00:00:fb)
- Internet Protocol Version 4, Src: 172.20.10.3, Dst: 224.0.0.251
- User Datagram Protocol, Src Port: 5353, Dst Port: 5353
- Multicast Domain Name System (response)

Raw Data:

```

0000  01 00 5e 00 00 00 ff 12 b3 3a 1d 45 08 00 45 00  ...t...E:E
0010  02 08 06 86 00 00 ff 11 4c 4b ac 14 0a 03 40 00  ...      LK.....
0020  00 0f 14 e9 14 e9 01 f4 9c 24 00 00 84 00 00 00  ...$.....
0030  00 08 00 00 00 00 01 33 02 31 30 02 32 30 03 31  ...      10 20 1
0040  37 32 07 69 6e 26 01 64 62 74 02 72 70 61 00 72  ..in-ad-rarpa
0050  00 00 00 00 00 00 00 78 00 17 0f 4c 41 50 54 4f  ...x...LAPTO
0060  0000 50 2d 62 63 61 41 35 37 4f 54 49 05 6c 6f 63 61  P-R3AS70 TI local
0070  0000 00 01 42 01 45 31 06 41 42 01 38 01 42 01 08 6 E 6 B 8 B 8
0080  46 01 31 01 32 01 42 01 44 01 36 01 44 01 38 01 F 1 2 B 6 D 8
0090  33 01 43 01 30 01 42 01 35 01 46 01 31 01 44 01 C 0 0 8 5 F 1 D
0100  34 01 30 01 37 01 30 01 31 01 39 01 30 01 34 01 4 0 7 0 4 9 0 4
0110  0000 32 03 69 70 36 c0 20 00 0c 01 00 00 78 00 x 2 5 p s
0120  00c0 02 c0 30 01 42 01 46 01 31 31 01 37 01 44 01 0 8 F 1 7 D 1
0130  00d0 42 01 38 01 39 01 39 01 38 01 38 01 45 01 32 01 B 8 9 9 8 8 E 2
0140  00e0 30 01 42 c0 67 00 c0 80 01 00 00 78 00 02 c 0 b g .....x...
0150  00f0 30 01 36 01 37 01 37 01 35 01 37 01 30 01 46 01 0 6 7 7 5 7 0 F
0160  0100 45 01 30 01 35 01 34 01 36 01 39 01 39 01 31 01 E 0 5 4 6 9 9 1
0170  0110 30 01 30 01 30 01 30 01 30 01 30 01 30 01 30 01 0 0 0 0 0 0 0
0180  0120 30 01 30 01 30 01 30 01 30 01 30 01 38 01 45 01 0 0 0 0 0 8 E
0190  0130 46 c0 87 00 c0 80 01 00 00 78 00 02 c0 38 00 F .....x...
01a0 30 00 01 80 01 00 00 78 00 04 c1 14 03 x 0
01b0 30 00 1c 80 01 00 00 78 00 10 29 40 70 4d 0 x $ Bpl
    
```

Therefore implementation of server—client using UDP socket programming.