PROGRAM CODE:

SERVER:

```
#include<stdio.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<stdlib.h>
#include<string.h>
#include<unistd.h>
#include<arpa/inet.h>


int main()
{

struct sockaddr_in server,client;
char mac_add[100],ip_add[100],d_ip[100],d_mac[100]="00-00-
00-00-00-00";
char data[100]="\0",r_str[100],str[100],new_str[100]="\0";
int newfd1,j,num,k,x,y,n,i=0;

int sfd=socket(AF_INET,SOCK_STREAM,0);
if(sfd<0)
{
  perror("Cannot create socket");
  exit(1);
}

bzero(&server,sizeof(server));
server.sin_family=AF_INET;
server.sin_port=htons(3000);
server.sin_addr.s_addr=htonl(INADDR_ANY);
int bs=bind(sfd,(struct sockaddr*)&server,sizeof(server));

if(bs<0)
{
 perror("Bind error");
 exit(1);
}

int ls=listen(sfd,3);
if(ls<0)
{
 perror("listen error");
 exit(1);
}
```

```
printf("\nEnter the Server's IP address: ");
gets(ip_add);
printf("\nEnter the Server's MAC address: ");
gets(mac_add);
printf("\nEnter the details of packet received:");
printf("\nEnter Destination IP : ");
gets(d_ip);
printf("\nEnter the 16 bit data: ");
gets(data);
printf("\nDeveloping ARP Request packet..");

strcpy(str,"1|");
strcat(str,mac_add);
strcat(str,"|");
strcat(str,ip_add);
strcat(str,"|");
strcat(str,d_mac);
strcat(str,"|");
strcat(str,d_ip);
printf("\n\nThe ARP request packet is:\n%s ",str);

int clientlen=sizeof(client);
printf("\nThe ARP Request packet is broadcasted.\n\nWaiting
for ARP Reply...\n");

strcpy(r_str,str);

for(j=0;j<3;j++)
{

newfd1=accept(sfd,(struct sockaddr*)&client,&clientlen);
if(newfd1<0)
{
 perror("accept error");
 exit(0);
}

write(newfd1,str,sizeof(str));
read(newfd1,r_str,sizeof(str));

if (strcmp(r_str,"n")!=0)
{
     printf("\nARP Reply received:\n%s\n",r_str);
     char* token=strtok(r_str,"|");
     token=strtok(NULL,"|");
     strcpy(d_mac,token);
     printf("\nSending data packet to: %s\n",d_mac);
        write(newfd1, data, sizeof(data));
```

```
}
}
close(newfd1);
close(sfd);
return 0;
}
```

CLIENT:

```
#include<stdio.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<stdlib.h>
#include<string.h>
#include<unistd.h>
#include<arpa/inet.h>

int main(int argc,char **argv)
{

struct sockaddr_in server,client;
char buff[1024], ip_add[100], mac_add[100],s_mac[100]="\0",
s_ip[100]="\0", str[100]="\0",new_str[100]="\0";
int newfd1,i,j,n;

int sfd=socket(AF_INET,SOCK_STREAM,0);
if(sfd<0)
{
  perror("Cannot create socket");
  exit(1);
}

bzero(&server,sizeof(server));
server.sin_family=AF_INET;
server.sin_port=htons(3000);
server.sin_addr.s_addr=inet_addr(argv[1]);

int cn=connect(sfd,(struct sockaddr*)&server,
sizeof(server));
if(cn<0)
{
 perror("Connect error");
 exit(1);
}
else
 printf("Connected to the server..\n");

printf("\nEnter the IP address: ");
```

```
gets(ip_add);
printf("\nEnter the MAC address: ");
gets(mac_add);

read(sfd,str,sizeof(str));

printf("\nARP Request Received: \n%s",str);

char* token=strtok(str,"|");
token=strtok(NULL,"|");
strcpy(s_mac,token);
token=strtok(NULL,"|");
strcpy(s_ip,token);
token=strtok(NULL,"|");
token=strtok(NULL,"|");

if(strcmp(token,ip_add)==0)
{
     strcpy(new_str,"2|");
     strcat(new_str,mac_add);
     strcat(new_str,"|");
     strcat(new_str,ip_add);
     strcat(new_str,"|");
     strcat(new_str,s_ip);
     strcat(new_str,"|");
     strcat(new_str,s_mac);
     printf("\n\nIP address matches\n\nARP Reply Sent:
     \n%s\n",new_str);
     write(sfd,new_str,sizeof(new_str));
     read(sfd,new_str,sizeof(new_str));
     printf("\nReceived data Packet from : %s\n",s_mac);
     printf ("\nData received: %s\n",new_str);
}

else
{
  strcpy(str,"n");
  printf("\nThe IP address does not match\n");
  write(sfd,str,sizeof(str));
}

close(sfd);
return 0;
}
```

OUTPUT:

```
csec86@ccl-06:~/nwlab$ ./as

Enter the Server's IP address: 123.128.34.56

Enter the Server's MAC address: AF-45-E5-00-97-12

Enter the details of packet received:
Enter Destination IP : 155.157.65.128

Enter the 16 bit data: 1010110010100011

Developing ARP Request packet..

The ARP request packet is:
1|AF-45-E5-00-97-12|123.128.34.56|00-00-00-00-00-00|155.157.65.128
The ARP Request packet is broadcasted.

Waiting for ARP Reply...

ARP Reply received:
2|45-DA-62-21-1A-B2|155.157.65.128|123.128.34.56|AF-45-E5-00-97-12

Sending data packet to: 45-DA-62-21-1A-B2
csec86@ccl-06:~/nwlab$
```

```
csec86@ccl-06:~/nwlab$ ./ac 127.0.0.1
Connected to the server..

Enter the IP address: 15.143.158.18

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

ARP Request Received:
1|AF-34-E5-00-97-12|123.128.34.56|00-00-00-00-00-00|155.157.65.128
The IP address does not match
csec86@ccl-06:~/nwlab$
```

```
csec86@ccl-06:~/nwlab$ ./ac 127.0.0.1
Connected to the server..

Enter the IP address: 155.157.65.128

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

ARP Request Received:
1|AF-34-E5-00-97-12|123.128.34.56|00-00-00-00-00-00|155.157.65.128

IP address matches

ARP Reply Sent:
2|45-DA-62-21-1A-B2|155.157.65.128|123.128.34.56|AF-34-E5-00-97-12

Received data Packet from : AF-34-E5-00-97-12

Data received: 1010110010100011
csec86@ccl-06:~/nwlab$
```

```
csec86@ccl-06:~/nwlab$ ./ac 127.0.0.1
Connected to the server..

Enter the IP address: 165.43.158.158

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

ARP Request Received:
1|AF-34-E5-00-97-12|123.128.34.56|00-00-00-00-00-00|155.157.65.128
The IP address does not match
csec86@ccl-06:~/nwlab$
```