**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));

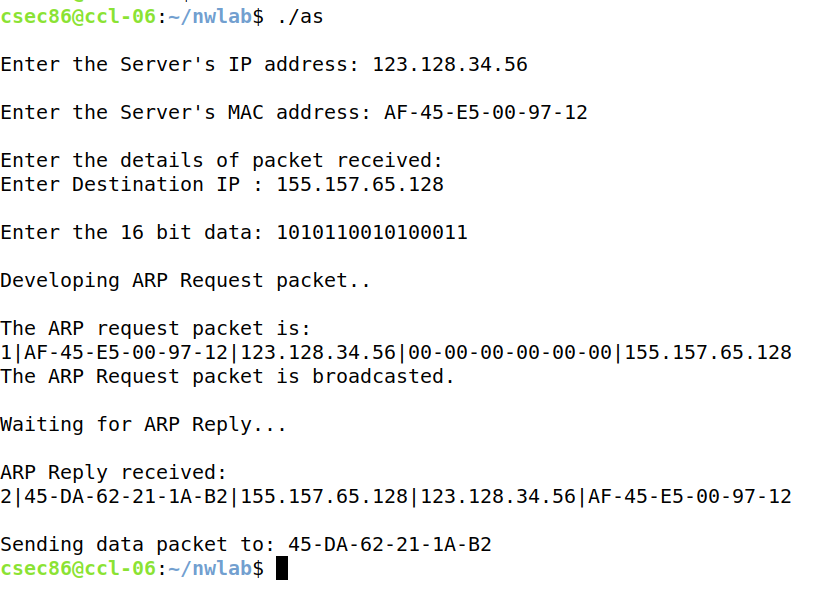
}

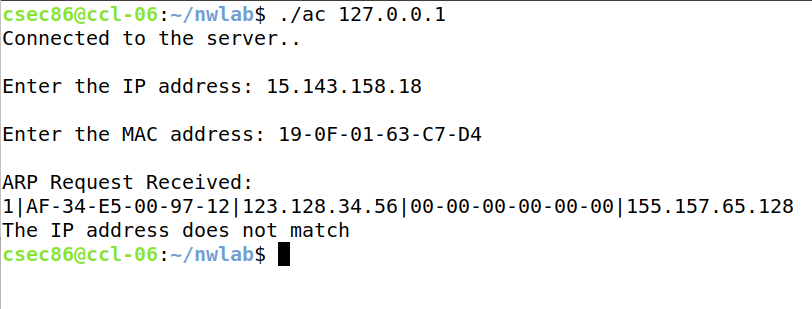
close(sfd);

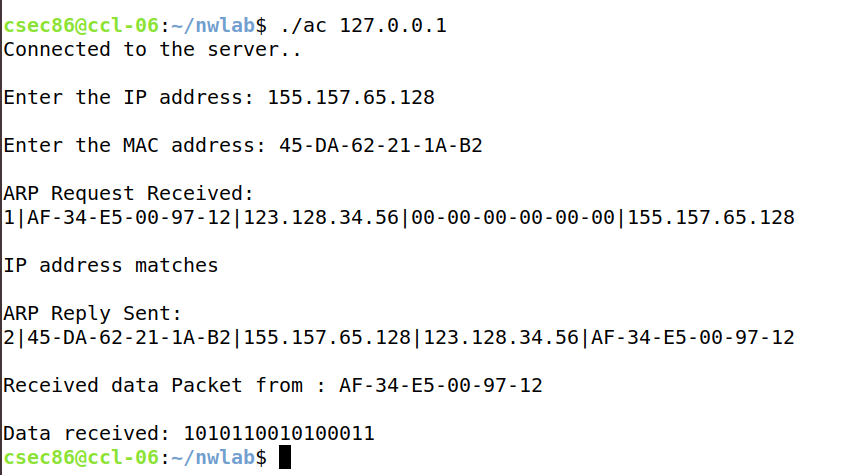
return 0;

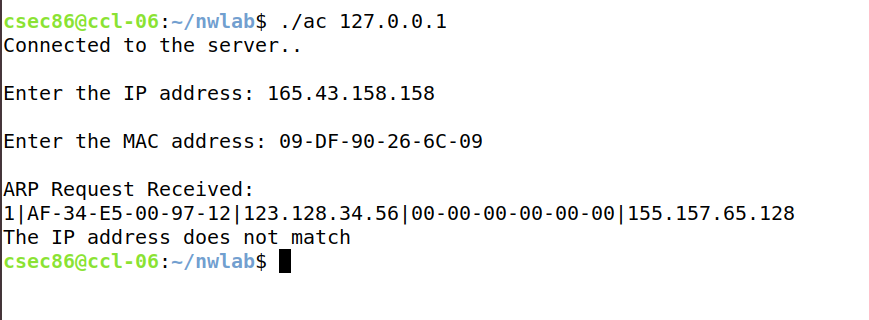
}

**OUTPUT:**

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