Computer Networking

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EXPERIMENT 3

Objective 1
To implement echo server-client using UDP sockets.

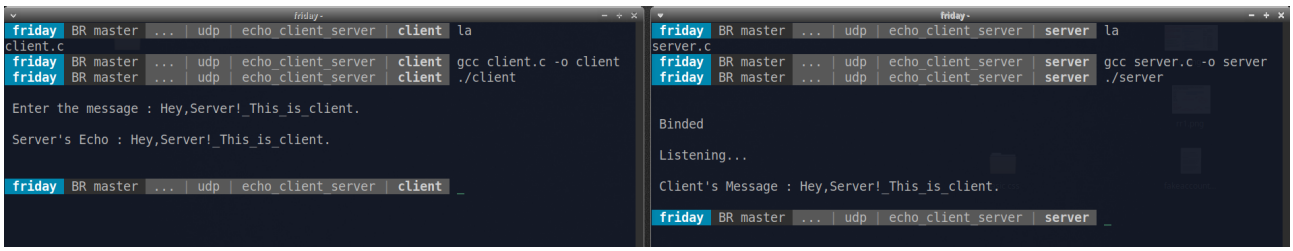
Code:
server.c

```
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<unistd.h>
#include<netdb.h>
#include<stdio.h>
#include<string.h>
#include<arpa/inet.h>
#define MAXLINE 1024
int main(int argc,char **argv)
{
        int sockfd;
        int n;
        socklen_t len;
        char msg[1024];
        struct sockaddr_in servaddr,cliaddr;
        sockfd=socket(AF_INET,SOCK_DGRAM,0);

        //bzero(&servaddr,sizeof(servaddr));
        servaddr.sin_family=AF_INET;
        servaddr.sin_addr.s_addr=INADDR_ANY;
        servaddr.sin_port=htons(5035);
        printf("\n\n Binded");
        bind(sockfd,(struct sockaddr*)&servaddr,sizeof(servaddr));

        printf("\n\n Listening...");
        printf("\n ");
        len=sizeof(cliaddr);
        n=recvfrom(sockfd,msg,MAXLINE,0,(struct sockaddr*)&cliaddr,&len);

        printf("\n Client's Message : %s\n",msg);
        if(n<6)
        perror("send error");
        sendto(sockfd,msg,n,0,(struct sockaddr*)&cliaddr,len);

        return 0;
}
```

client.c

```
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<string.h>
#include<arpa/inet.h>
#include<string.h>
#include<arpa/inet.h>
#include<stdio.h>
#define MAXLINE 1024
int main(int argc,char* argv[])
{
        int sockfd;
        int n;
        socklen_t len;
        char sendline[1024],recvline[1024];
        struct sockaddr_in servaddr;
        strcpy(sendline,"");

        printf("\n Enter the message : ");
        //scanf("%s",sendline);
        fgets(sendline,1024,stdin);
        sockfd=socket(AF_INET,SOCK_DGRAM,0);

        //bzero(&servaddr,sizeof(servaddr));
        servaddr.sin_family=AF_INET;
        servaddr.sin_addr.s_addr=inet_addr("127.0.0.1");
        servaddr.sin_port=htons(5035);

        //connect(sockfd,(struct sockaddr*)&servaddr,sizeof(servaddr));
        len=sizeof(servaddr);
        sendto(sockfd,sendline,MAXLINE,0,(struct sockaddr*)&servaddr,len);
        n=recvfrom(sockfd,recvline,MAXLINE,0,NULL,NULL);
        recvline[n]=0;

        printf("\n Server's Echo : %s\n\n",recvline);

        return 0;
}
```

Output



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Objective 2
To implement a UDP program where client sends a string to the server. Server reverse the string and display at the client end.

Code
server.c

```
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<unistd.h>
#include<netdb.h>
#include<stdio.h>
#include<string.h>
#include<arpa/inet.h>
#define MAXLINE 1024

void strrev(char *s)
{
   int length, c;
   char *begin, *end, temp;
   length = strlen(s);
   begin = s;
   end = s;

   for(c = 0; c < length - 1; c++)
        end++;

   for (c = 0; c < length/2; c++)
   {
                temp   = *end;
                *end   = *begin;
                *begin = temp;
                begin++;
                end--;
   }
}

int main(int argc,char **argv)
{
        int sockfd;
        int n;
```

```
        socklen_t len;
        char msg[1024];
        struct sockaddr_in servaddr,cliaddr;
        sockfd=socket(AF_INET,SOCK_DGRAM,0);

        //bzero(&servaddr,sizeof(servaddr));
        servaddr.sin_family=AF_INET;
        servaddr.sin_addr.s_addr=INADDR_ANY;
        servaddr.sin_port=htons(5035);
        printf("\n\n Binded");
        bind(sockfd,(struct sockaddr*)&servaddr,sizeof(servaddr));

        printf("\n\n Listening...");
        printf("\n ");
        len=sizeof(cliaddr);
        n=recvfrom(sockfd,msg,MAXLINE,0,(struct sockaddr*)&cliaddr,&len);

        printf("\n Client's Message : %s\n",msg);
        printf("\n Reversing the string...\n");
        strrev(msg);
        if(n<6)
        perror("send error");
        sendto(sockfd,msg,n,0,(struct sockaddr*)&cliaddr,len);
        printf(" Sent\n\n");
        return 0;
}
```

client.c

```
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<string.h>
#include<arpa/inet.h>
#include<string.h>
#include<arpa/inet.h>
#include<stdio.h>
#define MAXLINE 1024
int main(int argc,char* argv[])
{
        int sockfd;
        int n;
        socklen_t len;
        char sendline[1024],recvline[1024];
        struct sockaddr_in servaddr;
        strcpy(sendline,"");

        printf("\n Enter the message : ");
        //scanf("%s",sendline);
        fgets(sendline,1024,stdin);
        sockfd=socket(AF_INET,SOCK_DGRAM,0);
```

```
        //bzero(&servaddr,sizeof(servaddr));
        servaddr.sin_family=AF_INET;
        servaddr.sin_addr.s_addr=inet_addr("127.0.0.1");
        servaddr.sin_port=htons(5035);

        //connect(sockfd,(struct sockaddr*)&servaddr,sizeof(servaddr));
        len=sizeof(servaddr);
        sendto(sockfd,sendline,MAXLINE,0,(struct sockaddr*)&servaddr,len);
        n=recvfrom(sockfd,recvline,MAXLINE,0,NULL,NULL);
        recvline[n]=0;

        printf("\n Server's Response : %s\n\n",recvline);

        return 0;
}
```

Output

***

Objective 3

To implement a UDP client-server program to check if the given string is a pallindrome or not.

Code

server.c

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

```
#define MAXLINE 1024

int checkPallindrome(char* string)
{
   char *ptr, *rev;
   ptr = string;

   while (*ptr != '\0') {
      ++ptr;
   }
   --ptr;

   for (rev = string; ptr >= rev;) {
      if (*ptr == *rev) {
         --ptr;
         rev++;
      }
      else
         break;
   }

   if (rev > ptr)
      return 1;
   else
      return 0;
}

int main(int argc,char **argv)
{
        int sockfd;
        int n;
        socklen_t len;
        char msg[1024];
        struct sockaddr_in servaddr,cliaddr;
        sockfd=socket(AF_INET,SOCK_DGRAM,0);

        //bzero(&servaddr,sizeof(servaddr));
        servaddr.sin_family=AF_INET;
        servaddr.sin_addr.s_addr=INADDR_ANY;
        servaddr.sin_port=htons(5035);
        printf("\n\n Binded");
        bind(sockfd,(struct sockaddr*)&servaddr,sizeof(servaddr));

        printf("\n\n Listening...");
        printf("\n ");
        len=sizeof(cliaddr);
        n=recvfrom(sockfd,msg,MAXLINE,0,(struct sockaddr*)&cliaddr,&len);

        printf("\n Client's Message : %s\n",msg);
        printf("\n Checking for Pallindrome...");

        msg[strlen(msg)-1] = '\0';
```

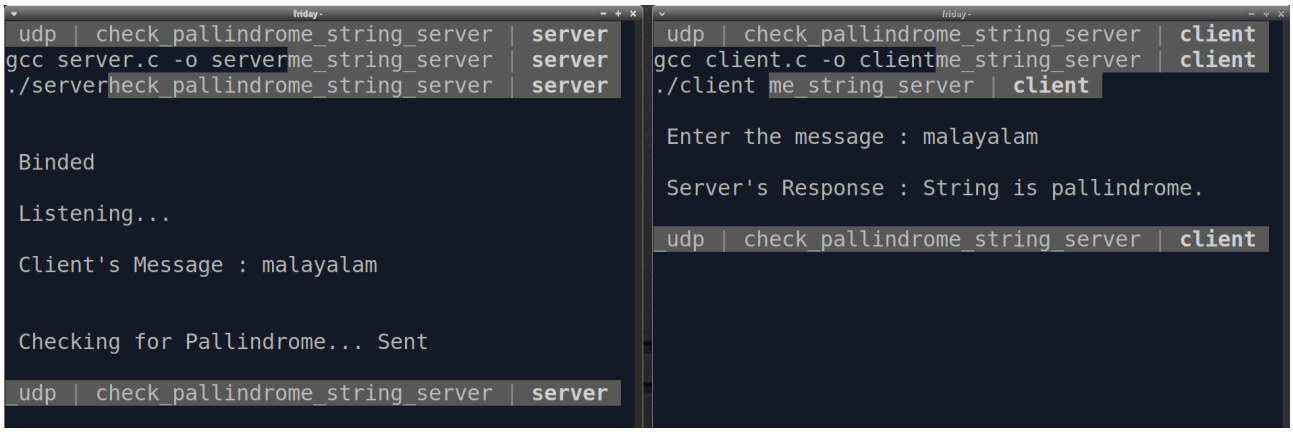
```
        int temp = checkPallindrome(msg);
        char res[1024];
        if(temp)
                strcpy(res, "String is pallindrome.");
        else
                strcpy(res, "String is not pallindrome.");

        if(n<6)
        perror("send error");
        sendto(sockfd,res,n,0,(struct sockaddr*)&cliaddr,len);
        printf(" Sent\n\n");
        return 0;
}
```

client.c

```
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<string.h>
#include<arpa/inet.h>
#include<string.h>
#include<arpa/inet.h>
#include<stdio.h>
#define MAXLINE 1024
int main(int argc,char* argv[])
{
        int sockfd;
        int n;
        socklen_t len;
        char sendline[1024],recvline[1024];
        struct sockaddr_in servaddr;
        strcpy(sendline,"");

        printf("\n Enter the message : ");
        //scanf("%s",sendline);
        fgets(sendline,1024,stdin);
        sockfd=socket(AF_INET,SOCK_DGRAM,0);

        //bzero(&servaddr,sizeof(servaddr));
        servaddr.sin_family=AF_INET;
        servaddr.sin_addr.s_addr=inet_addr("127.0.0.1");
        servaddr.sin_port=htons(5035);

        //connect(sockfd,(struct sockaddr*)&servaddr,sizeof(servaddr));
        len=sizeof(servaddr);
        sendto(sockfd,sendline,MAXLINE,0,(struct sockaddr*)&servaddr,len);
        n=recvfrom(sockfd,recvline,MAXLINE,0,NULL,NULL);
        recvline[n]=0;
```

```
        printf("\n Server's Response : %s\n\n",recvline);

        return 0;
}
```

Output



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Source: Subham Sagar Paira

https://github.com/subhamsagar524/Computer-Networking/tree/master/server_client/udp

Submitted by-

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