TECHNO MAIN ,SALT LAKE

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DEPT.....Electronics and Communication.....

SUBJECT NAME & CODE.....EC-692.....

.....Computer Network Lab.....

Experiment - 6

server.c

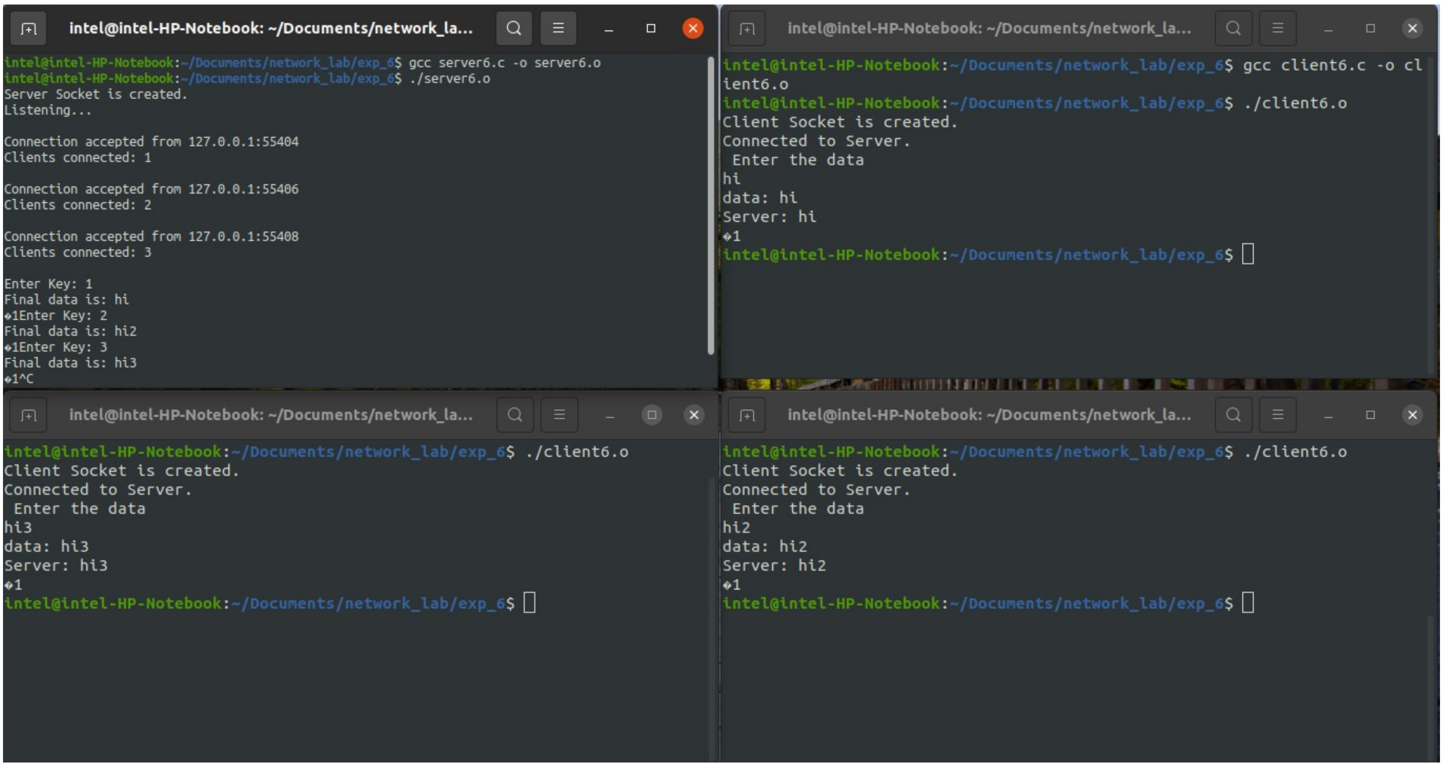
```
#include <arpa/inet.h>
#include <netinet/in.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <sys/socket.h>
#include <sys/types.h>
#include <unistd.h>
#define PORT 4444
char* crc(char *input, char *out){
    int i,j,keylen,msglen, outlen;
    char key[30],temp[30],quot[100],rem[30],key1[30];
    printf("Enter Key: ");
    fgets(key,30,stdin);
    keylen=strlen(key);
    msglen=strlen(input);
    strcpy(key1,key);
    for (i=0;i<keylen-1;i++) {
        input[msglen+i]='0';}
    for (i=0;i<keylen;i++)
     temp[i]=input[i];
    for (i=0;i<msglen;i++) {
        quot[i]=temp[0];
        if(quot[i]=='0')
         for (j=0;j<keylen;j++)
         key[j]='0'; else
         for (j=0;j<keylen;j++)
         key[j]=key1[j];
        for (j=keylen-1;j>0;j--) {
            if(temp[j]==key[j])
             rem[j-1]='0'; else
             rem[j-1]='1';}
        rem[keylen-1]=input[i+keylen];
        strcpy(temp,rem);}
    strcpy(rem,temp);
     j=0;
    for (i=0;i<msglen-1;i++){
    out[j]=input[i];
    j++;}
    for (i=0;i<keylen-1;i++){
     out[j]=rem[i];
     j++;}
     outlen=strlen(out);
    printf("Final data is: ");
    for(i=0;i<outlen;i++)
        printf("%c", out[i]);
    return out;}
int main(){char buffer[1024], out[130], *ptr;
    // Server socket id
    int sockfd, ret, clientSocket;
    // Server socket address structures
    struct sockaddr_in serverAddr;
    // Client socket address structures
    struct sockaddr_in cliAddr;
    // Stores byte size of server socket address
    socklen_t addr_size;
    // Child process id
    pid_t childpid;
    // Creates a TCP socket id from IPV4 family
    sockfd = socket(AF_INET, SOCK_STREAM, 0);
    if (sockfd < 0) {
        printf("Error in connection.\n");
        exit(1);}
    printf("Server Socket is created.\n");
    // Initializing address structure with NULL
    memset(&serverAddr, '\0',sizeof(serverAddr));
    // Assign port number and IP address to the socket created
    serverAddr.sin_family = AF_INET;
    serverAddr.sin_port = htons(PORT);
    // 127.0.0.1 is a loopback address
    serverAddr.sin_addr.s_addr
        = inet_addr("127.0.0.1");
    // Binding the socket id with the socket structure
    ret = bind(sockfd,
            (struct sockaddr*)&serverAddr,
            sizeof(serverAddr));
    if (ret < 0){printf("Error in binding.\n");exit(1);}
    // Listening for connections (upto 10)
    if (listen(sockfd, 10) == 0) {
        printf("Listening...\n\n");}int cnt = 0;
    while (1) {
        // Accept clients andstore their information in cliAddr
        clientSocket = accept(sockfd,(struct
sockaddr*)&cliAddr, &addr_size);
        if (clientSocket < 0) {exit(1);}
        // Displaying information of connected client
        printf("Connection accepted from %s:%d\n",
            inet_ntoa(cliAddr.sin_addr),
            ntohs(cliAddr.sin_port));
        // Print number of clients connected till now
        printf("Clients connected: %d\n\n", ++cnt);
        // Creates a child process
        if ((childpid = fork()) == 0) {
            // Closing the server socket id
            if(recv(clientSocket, buffer, 1024, 0)< 0) {
            printf("Error in receiving data.\n");}
            ptr = crc(buffer, out);
            close(sockfd);
            // Send a confirmation message to the client
            send(clientSocket, out,strlen(out), 0);}}
    close(clientSocket);
    return 0;}
```

client.c

```
// Client Side program to test
// the TCP server that returns
// a 'hi client' message

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

// PORT number
#define PORT 4444
int main(){
    int clientSocket, ret;
    char input[100];
    struct sockaddr_in cliAddr;
    struct sockaddr_in serverAddr;
    char buffer[1024];
    clientSocket = socket(AF_INET, SOCK_STREAM, 0);
    if (clientSocket < 0) {
        printf("Error in connection.\n");
        exit(1);}
    printf("Client Socket is created.\n");
    // Initializing socket structure with NULL
    memset(&cliAddr, '\0', sizeof(cliAddr));
    // Initializing buffer array with NULL
    memset(buffer, '\0', sizeof(buffer));
    memset(input, '\0', sizeof(input));
    // Assigning port number and IP address
    serverAddr.sin_family = AF_INET;
    serverAddr.sin_port = htons(PORT);
    // 127.0.0.1 is Loopback IP
    serverAddr.sin_addr.s_addr
        = inet_addr("127.0.0.1");
    ret = connect(clientSocket,struct sockaddr*)&serverAddr,
                sizeof(serverAddr));
    if (ret < 0) {
        printf("Error in connection.\n");
        exit(1);}
    printf("Connected to Server.\n");
        printf(" Enter the data\n");
        fgets(input,100,stdin);
        send(clientSocket, input, strlen(input), 0);
        printf("data: %s",input);
        if(recv(clientSocket, buffer, 1024, 0)< 0) {
            printf("Error in receiving data.\n");}
        // Printing the message on screen
        else {
            printf("Server: %s\n", buffer);
            bzero(buffer, sizeof(buffer));
    }return 0;}
```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```
intel@intel-HP-Notebook:~/Documents/network_lab/exp_6$ gcc server6.c -o server6.o
intel@intel-HP-Notebook:~/Documents/network_lab/exp_6$ ./server6.o
Server Socket is created.
Listening...

Connection accepted from 127.0.0.1:55404
Clients connected: 1

Connection accepted from 127.0.0.1:55406
Clients connected: 2

Connection accepted from 127.0.0.1:55408
Clients connected: 3

Enter Key: 1
Final data is: hi
�1Enter Key: 2
Final data is: hi2
�1Enter Key: 3
Final data is: hi3
�1^C
```

```
intel@intel-HP-Notebook:~/Documents/network_lab/exp_6$ gcc client6.c -o cl
ient6.o
intel@intel-HP-Notebook:~/Documents/network_lab/exp_6$ ./client6.o
Client Socket is created.
Connected to Server.
 Enter the data
hi
data: hi
Server: hi
�1
intel@intel-HP-Notebook:~/Documents/network_lab/exp_6$
```

```
intel@intel-HP-Notebook:~/Documents/network_lab/exp_6$ ./client6.o
Client Socket is created.
Connected to Server.
 Enter the data
hi3
data: hi3
Server: hi3
�1
intel@intel-HP-Notebook:~/Documents/network_lab/exp_6$
```

```
intel@intel-HP-Notebook:~/Documents/network_lab/exp_6$ ./client6.o
Client Socket is created.
Connected to Server.
 Enter the data
hi2
data: hi2
Server: hi2
�1
intel@intel-HP-Notebook:~/Documents/network_lab/exp_6$
```