Department of Computer Science and Engineering

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UCS1511 - Networks Laboratory

Exercise 1: Echo Server using TCP

Objective:

Develop a socket program to simulate Echo Server.
Echo Server: The client sends data to server. The server in turn sends the message back to the client. Send multiple lines of text.

Code:

Server:

```
#include<stdio.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
```

```c
#include<string.h>

int main(int argc,char **argv){
    int len;
    int sockfd, newfd, n;
    struct sockaddr_in serveraddr, clientaddr;
    char buffer[1024];
    char str[1000];
    sockfd = socket(AF_INET, SOCK_STREAM, 0);
    if(sockfd < 0)
        perror("Error: Unable to create socket");

    bzero(&serveraddr, sizeof(serveraddr));

    serveraddr.sin_family = AF_INET;
    serveraddr.sin_addr.s_addr = INADDR_ANY;
    serveraddr.sin_port = htons(4500);

    if(bind(sockfd, (struct sockaddr*)&serveraddr, sizeof(
    serveraddr))<0)
        perror("Bind error");

    listen(sockfd, 2);

    len = sizeof(clientaddr);
    newfd = accept(sockfd, (struct sockaddr*)&clientaddr, &
    len);

    //Receiving the message
    n = read(newfd, buffer, sizeof(buffer));
    printf("\nMessage from Client: %s\n", buffer);

    n = write(newfd, buffer, sizeof(buffer));
    printf("\nMessage sent: %s\n", buffer);
    close(sockfd);
    close(newfd);
    return 0;
}
```

Client:

```c
#include<stdio.h>
#include<sys/types.h>
#include<sys/socket.h>
#include<netinet/in.h>
#include<string.h>

int main(int argc,char** argv){
    int len;
    int sockfd, n;
    struct sockaddr_in serveraddr, clientaddr;
    char str[1000];
    char buffer[1024];

    sockfd = socket(AF_INET, SOCK_STREAM, 0);
    if(sockfd < 0)
        perror("Error: Unable to create socket");

    bzero(&serveraddr, sizeof(serveraddr));

    serveraddr.sin_family = AF_INET;
    serveraddr.sin_addr.s_addr = inet_addr(argv[1]);
    serveraddr.sin_port = htons(4500);

    if(bind(sockfd, (struct sockaddr*)&serveraddr, sizeof(
    serveraddr))<0)
        perror("Bind error");

    connect(sockfd, (struct sockaddr*)&serveraddr, sizeof(
    serveraddr));
    //Sending Message
    len = sizeof(clientaddr);

    printf("Enter the message: ");scanf(" %[^\n]", buffer);
    n = write(sockfd, buffer, sizeof(buffer));

    listen(sockfd, 2);

    n = read(sockfd, buffer, sizeof(buffer));
    printf("Message from Server: %s", buffer);

    close(sockfd);
```

```
40      return 0;
41  }
```

Output:

Server:

```
1  Message from Client: hi this is from ssn cse
2
3  Message sent: hi this is from ssn cse
```

Client:

```
1
2  Enter the message: this is from ssn cse
3  Message from Server: this is from ssn cse
```