

Socket Programming

Lab 9

[Objective]

1. Learn socket programming which might be useful for the project.

[Compilation]

gcc client.c -o client

gcc server.c -o server

[Sample code in C]

1) server.c

```
// Server side C/C++ program to demonstrate Socket programming
#include <unistd.h>
#include <stdio.h>
#include <sys/socket.h>
#include <stdlib.h>
#include <netinet/in.h>
#include <string.h>
#define PORT 8080
int main(int argc, char const *argv[])
{
    int server_fd, new_socket, valread;
    struct sockaddr_in address;
    int opt = 1;
    int addrlen = sizeof(address);
    char buffer[1024] = {0};
    char *hello = "Hello from server";

    // Creating socket file descriptor
    if ((server_fd = socket(AF_INET, SOCK_STREAM, 0)) == 0)
    {
        perror("socket failed");
        exit(EXIT_FAILURE);
    }

    // Forcefully attaching socket to the port 8080
```

```
if (setsockopt(server_fd, SOL_SOCKET, SO_REUSEADDR | SO_REUSEPORT,
&opt, sizeof(opt)))
{
    perror("setsockopt");
    exit(EXIT_FAILURE);
}
address.sin_family = AF_INET;
address.sin_addr.s_addr = INADDR_ANY;
address.sin_port = htons( PORT );

// Forcefully attaching socket to the port 8080
if (bind(server_fd, (struct sockaddr *)&address,
                                                sizeof(address))<0)
{
    perror("bind failed");
    exit(EXIT_FAILURE);
}
if (listen(server_fd, 3) < 0)
{
    perror("listen");
    exit(EXIT_FAILURE);
}
if ((new_socket = accept(server_fd, (struct sockaddr *)&address,
                        (socklen_t*)&addrlen))<0)
{
    perror("accept");
    exit(EXIT_FAILURE);
}
valread = read( new_socket , buffer, 1024);
printf("%s\n",buffer );
send(new_socket , hello , strlen(hello) , 0 );
printf("Hello message sent\n");
return 0;
}
```

2) client.c

// Client side C/C++ program to demonstrate Socket programming

```
#include <stdio.h>
#include <sys/socket.h>
#include <arpa/inet.h>
#include <unistd.h>
#include <string.h>
#define PORT 8080

int main(int argc, char const *argv[])
{
    int sock = 0, valread;
    struct sockaddr_in serv_addr;
    char *hello = "Hello from client";
    char buffer[1024] = {0};
    if ((sock = socket(AF_INET, SOCK_STREAM, 0)) < 0)
    {
        printf("\n Socket creation error \n");
        return -1;
    }

    serv_addr.sin_family = AF_INET;
    serv_addr.sin_port = htons(PORT);

    // Convert IPv4 and IPv6 addresses from text to binary form
    if(inet_pton(AF_INET, "127.0.0.1", &serv_addr.sin_addr)<=0)
    {
        printf("\nInvalid address/ Address not supported \n");
        return -1;
    }

    if (connect(sock, (struct sockaddr *)&serv_addr, sizeof(serv_addr))
    < 0)
    {
        printf("\nConnection Failed \n");
        return -1;
    }
    send(sock , hello , strlen(hello) , 0 );
    printf("Hello message sent\n");
    valread = read( sock , buffer, 1024);
```

```
printf("%s\n",buffer );  
return 0;  
}
```

3) Running the script

Remember to change the IP and port in the program to make them works.

4) Modifying the code

The above code is just a demonstration of sending messages between client and server. You might need to modifying the above code to transfer files.