Day - 6 LSP Assignment [Task 1]

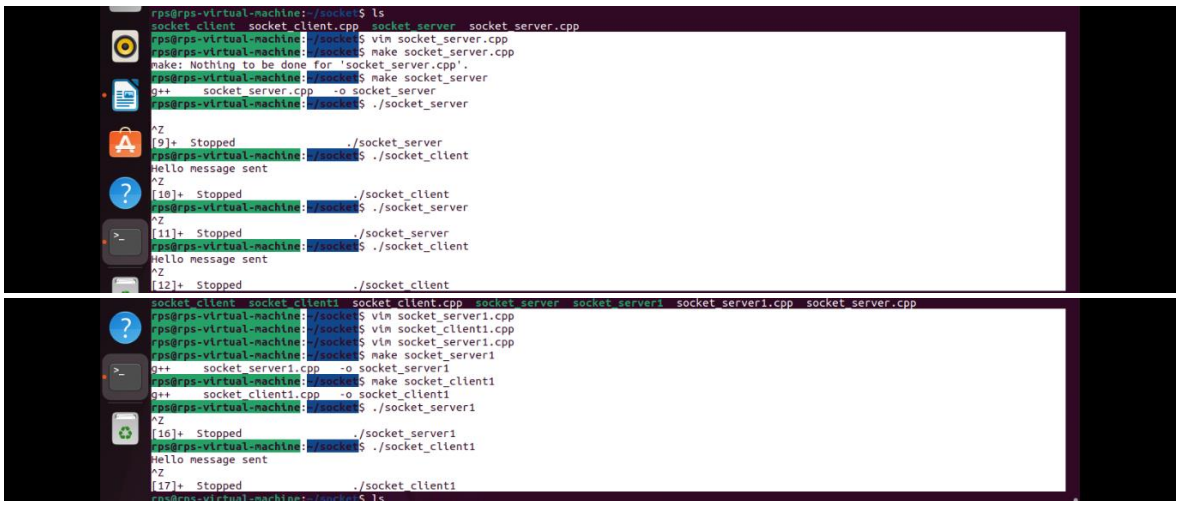
Task-1 Client – Server Code

Client-server Sockets connection

1. **Socket_server**

```
#include <iostream>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <unistd.h>
#include <cstring>

#define PORT 8080

int main() {
    int server_fd, new_socket;
    struct sockaddr_in address;
    int opt = 1;
    int addrlen = sizeof(address);
    char buffer[1024] = {0};
    const 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);
    }
    read(new_socket, buffer, 1024);
    std::cout << "Message from client: " << buffer << std::endl;
    send(new_socket, hello, strlen(hello), 0);
    std::cout << "Hello message sent\n";
    close(new_socket);
    close(server_fd);
    return 0;
}
```



2. **Socket_client**

```
#include <iostream>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <arpa/inet.h>
#include <unistd.h>
#include <cstring>

#define PORT 8080

int main() {
    int sock = 0, valread;
    struct sockaddr_in serv_addr;
    const char *hello = "Hello from client";
    char buffer[1024] = {0};

    if ((sock = socket(AF_INET, SOCK_STREAM, 0)) < 0) {
        std::cout << "Socket creation error" << std::endl;
        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) {
        std::cout << "Invalid address/ Address not supported" << std::endl;
        return -1;
    }

    if (connect(sock, (struct sockaddr *)&serv_addr, sizeof(serv_addr)) < 0) {
        std::cout << "Connection Failed" << std::endl;
        return -1;
    }
    send(sock, hello, strlen(hello), 0);
    std::cout << "Hello message sent\n";
    valread = read(sock, buffer, 1024);
    std::cout << "Message from server: " << buffer << std::endl;
    close(sock);
```

```
    return 0;
}
```

2. **Task 2: Socket connection**

   Server side

```
#include <unistd.h>
#include <stdio.h>
#include <sys/socket.h>
#include <stdlib.h>
#include <netinet/in.h>
#include <string.h>
#include <signal.h>
#include <iostream>

#define PORT 8080

volatile sig_atomic_t Sendflag = 0;

void signalHandler(int signum) {
    Sendflag = 1;
}

int main() {
    int server_fd, new_socket;
    struct sockaddr_in address;
    int opt = 1;
    int addrlen = sizeof(address);
    char buffer[1024] = {0};
    const char *hello = "Hello from server";
    signal(SIGINT, signalHandler);

    // 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);
    }

    while (Sendflag != 1);
    read(new_socket, buffer, 1024);
    std::cout << "Message from client: " << buffer << std::endl;
    send(new_socket, hello, strlen(hello), 0);
    std::cout << "Hello message sent\n";
    close(new_socket);
    close(server_fd);
    return 0;
}
```

Client Side :

```
#include <stdio.h>
#include <sys/socket.h>
#include <arpa/inet.h>
#include <unistd.h>
```

```
#include <string.h>

#define PORT 8080

int main() {
    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);
    close(sock);
    return 0;
}
```