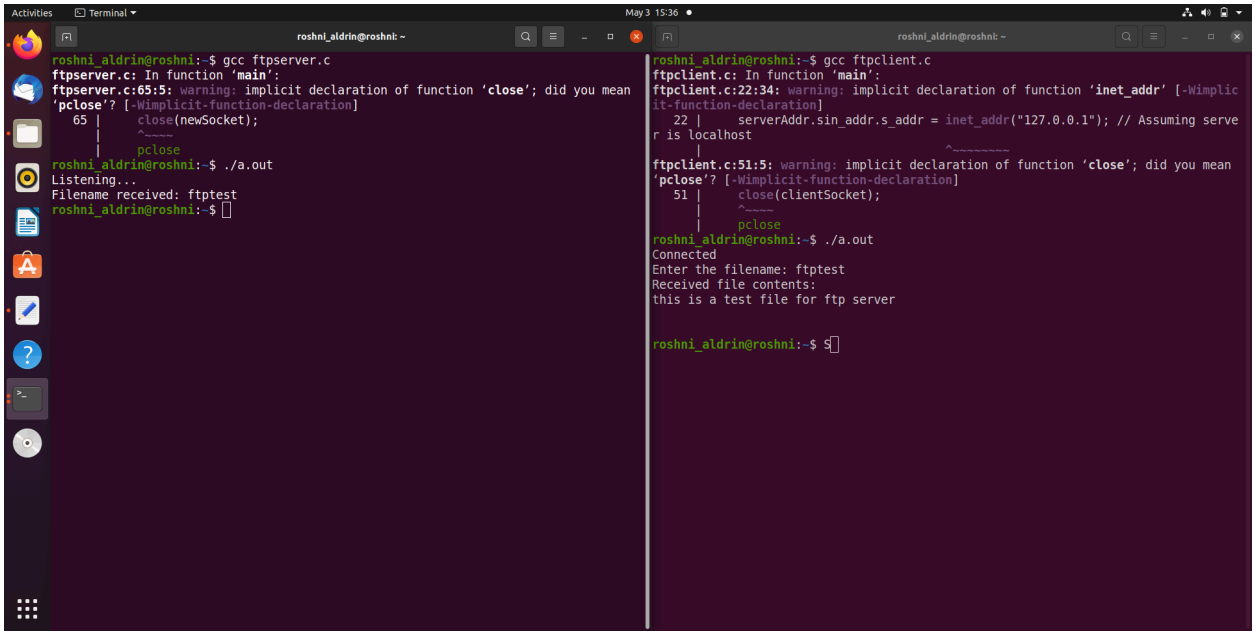
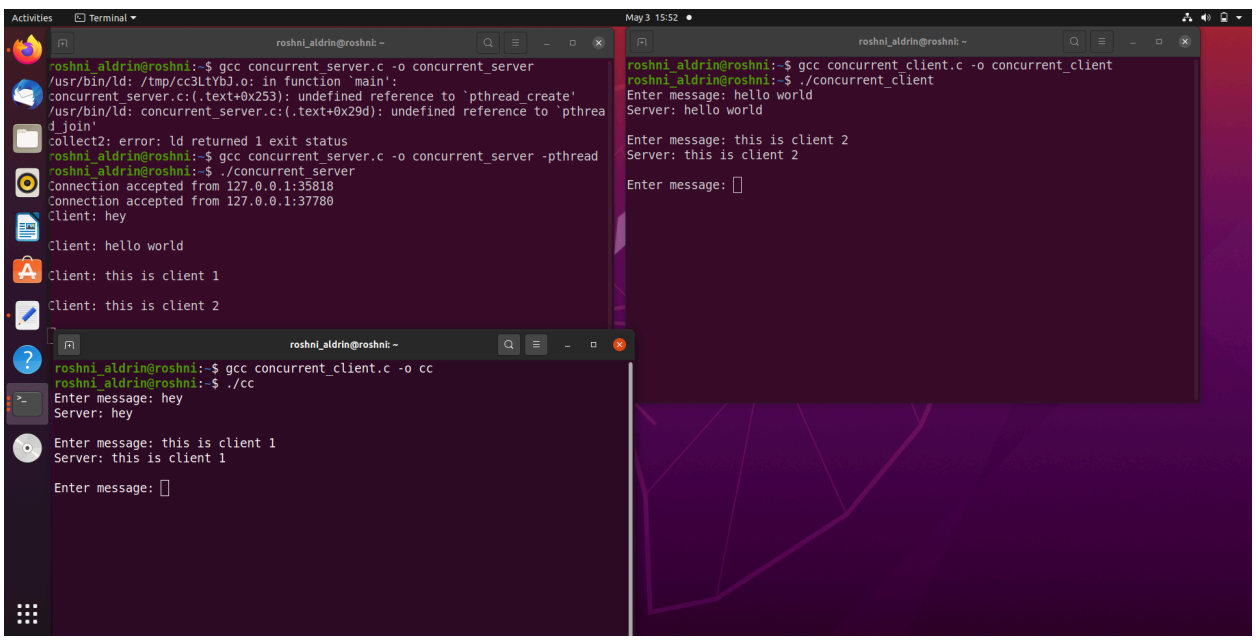
FTP SERVER



CONCURRENT SERVER



Expt3.5 - FTP

Client

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <sys/socket.h>
#include <netinet/in.h>
int main(){
   int clientSocket;
   struct sockaddr_in serverAddr;
   socklen_t addr_size;
   clientSocket = socket(AF_INET, SOCK_STREAM, 0);
   if (clientSocket < 0) {
      perror("Error in socket creation");
      exit(EXIT_FAILURE);
   }
   serverAddr.sin_family = AF_INET;
   serverAddr.sin_port = htons(7891); // Assuming port 7891
   serverAddr.sin_addr.s_addr = inet_addr("127.0.0.1");
   memset(serverAddr.sin_zero, '\0', sizeof serverAddr.sin_zero);
   addr_size = sizeof serverAddr;
   if (connect(clientSocket, (struct sockaddr *)&serverAddr, addr_size) < 0) {
      perror("Connect failed. Error");
      exit(EXIT_FAILURE);
   }
   printf("Connected\n");
   char buffer[1024];
   printf("Enter the filename: ")
   scanf("%s", buffer);
   send(clientSocket, buffer, strlen(buffer), 0);
   char received_buffer[1024];
   int bytes_received = recv(clientSocket, received_buffer,
    sizeof(received_buffer), 0);
   if (bytes_received < 0) {
      perror("Error receiving file contents");
      exit(EXIT_FAILURE);
   }
   printf("Received file contents:\n%s\n", received_buffer);
   close(clientSocket);
   return 0;
}
```

Server

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <sys/socket.h>
#include <netinet/in.h>
int main(){
   int welcomeSocket, newSocket;
   char buffer[1024];
   struct sockaddr_in serverAddr;
   struct sockaddr_storage serverStorage;
   socklen_t addr_size;
   FILE *fp;
   char str[150];
   welcomeSocket = socket(AF_INET, SOCK_STREAM, 0);
   if (welcomeSocket == -1) {
      perror("Error in socket creation");
      exit(EXIT_FAILURE);
   }
   serverAddr.sin_family = AF_INET;
   serverAddr.sin_port = htons(7891); // Assuming port 7891
   serverAddr.sin_addr.s_addr = INADDR_ANY;
   memset(serverAddr.sin_zero, '\0', sizeof serverAddr.sin_zero);
   if (bind(welcomeSocket, (struct sockaddr *)&serverAddr, sizeof(serverAddr)) == -1) {
      perror("Bind failed. Error");
      exit(EXIT_FAILURE);
   }
   if (listen(welcomeSocket, 5) == 0) {
      printf("Listening...\n");
   } else {
      printf("Error in listening\n");
      exit(EXIT_FAILURE);
   }
   addr_size = sizeof(serverStorage);
   newSocket = accept(welcomeSocket, (struct sockaddr *)&serverStorage, &addr_size);
   recv(newSocket, buffer, sizeof(buffer), 0);
   printf("Filename received: %s\n", buffer);
   fp = fopen(buffer, "r");
   if (fp == NULL) {
      printf("Error opening file\n");
      exit(EXIT_FAILURE);
   }
   while (fgets(str, sizeof(str), fp) != NULL) {
      send(newSocket, str, strlen(str), 0);
   }
   fclose(fp);
   close(newSocket);
   close(welcomeSocket);
   return 0;
}
```

Expt3.6 – TCP Concurrent Server

Client

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <arpa/inet.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#define PORT 8080
#define SERVER_IP "127.0.0.1"
int main() {
    int client_socket;
    struct sockaddr_in server_addr;
    char buffer[1024] = {0};
    client_socket = socket(AF_INET, SOCK_STREAM, 0);
    if (client_socket == -1) {
        perror("Socket creation failed");
        exit(EXIT_FAILURE);
    }
    server_addr.sin_family = AF_INET;
    server_addr.sin_port = htons(PORT);
    if (inet_pton(AF_INET, SERVER_IP, &server_addr.sin_addr) <= 0) {
        perror("Invalid address/ Address not supported");
        exit(EXIT_FAILURE);
    }
    if (connect(client_socket, (struct sockaddr *)&server_addr, sizeof(server_addr)) < 0) {
        perror("Connection failed");
        exit(EXIT_FAILURE);
    }
    while (1) {
        printf("Enter message: ");
        fgets(buffer, sizeof(buffer), stdin);
        send(client_socket, buffer, strlen(buffer), 0);
        memset(buffer, 0, sizeof(buffer));
        read(client_socket, buffer, sizeof(buffer));
        printf("Server: %s\n", buffer);
    }
    close(client_socket);
    return 0;
}
```

Server

```c
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>
#include <arpa/inet.h>
#include <sys/types.h>
#include <sys/socket.h>
#include <netinet/in.h>
#include <pthread.h>
#define PORT 8080
#define MAX_CLIENTS 5
void *handle_client(void *arg) {
    int client_socket = *((int *)arg);
    char buffer[1024];
    while (1) {
        memset(buffer, 0, sizeof(buffer));
        read(client_socket, buffer, sizeof(buffer));
        printf("Client: %s\n", buffer);
        write(client_socket, buffer, strlen(buffer));
    }
}
int main() {
    int server_socket, client_socket;
    struct sockaddr_in server_addr, client_addr;
    pthread_t tid[MAX_CLIENTS];
    int client_count = 0;
    server_socket = socket(AF_INET, SOCK_STREAM, 0);
    if (server_socket == -1) {
        perror("Socket creation failed");
        exit(EXIT_FAILURE);
    }
    int opt = 1;
    if (setsockopt(server_socket, SOL_SOCKET, SO_REUSEADDR | SO_REUSEPORT, &opt, sizeof(opt))) {
        perror("Setsockopt failed");
        exit(EXIT_FAILURE);
    }
    server_addr.sin_family = AF_INET;
    server_addr.sin_addr.s_addr = INADDR_ANY;
    server_addr.sin_port = htons(PORT);
    if (bind(server_socket, (struct sockaddr *)&server_addr, sizeof(server_addr)) < 0) {
        perror("Bind failed");
        exit(EXIT_FAILURE);
    }
    if (listen(server_socket, 5) < 0) {
        perror("Listen failed");
        exit(EXIT_FAILURE);
    }
    while (1) {
        socklen_t client_len = sizeof(client_addr);
        client_socket = accept(server_socket, (struct sockaddr *)
        &client_addr, &client_len);
        if (client_socket < 0) {
            perror("Accept failed");
            exit(EXIT_FAILURE);
        }
        printf("Connection accepted from %s:%d\n", inet_
        ntoa(client_addr.sin_addr), ntohs(client_addr.sin_port));
        if (pthread_create(&tid[client_count++], NULL,
        handle_client, (void *)&client_socket) != 0) {
            perror("Thread creation failed");
            exit(EXIT_FAILURE);
        }
        if (client_count >= MAX_CLIENTS) {
            client_count = 0;
            while (client_count < MAX_CLIENTS) {
                pthread_join(tid[client_count++], NULL);
            }
            client_count = 0;
        }
    }
    close(server_socket);
    return 0;
```