NAME:-ADWAITH SHINOD
ROLL NO:-12
S6 CSE

IMPLEMENTATION OF FILE SERVER

CODE

Server

```
#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#include <unistd.h>

#include <sys/types.h>

#include <sys/socket.h>

#include <netinet/in.h>

#include <arpa/inet.h>

#include <sys/wait.h>

#include <errno.h>


#define PORT 8080

#define MAX_PENDING_CONNECTIONS 10

#define MAX_BUFFER_SIZE 1024


void handle_client_request(int client_socket) {

    char buffer[MAX_BUFFER_SIZE];

    ssize_t bytes_received;

    ssize_t bytes_sent;
```

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```
pid_t pid = getpid();


// Receive filename from client

bytes_received = recv(client_socket, buffer, sizeof(buffer), 0);

if (bytes_received < 0) {

        perror("Error receiving data from client");

        exit(EXIT_FAILURE);

}


// Null terminate the received data

buffer[bytes_received] = '¥0';


// Check if the requested file exists

FILE* file = fopen(buffer, "rb");

if (file != NULL) {

        // If file exists, send the file contents to the client

        while ((bytes_sent = fread(buffer, 1, sizeof(buffer), file)) > 0) {

                if (send(client_socket, buffer, bytes_sent, 0) != bytes_sent) {

                        perror("Error sending file to client");

                        exit(EXIT_FAILURE);

                }

        }

        fclose(file);

} else {

        // If file doesn't exist, send appropriate message
```

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```
            const char* message = "File not found.";

            if (send(client_socket, message, strlen(message), 0) < 0) {

                perror("Error sending message to client");

                exit(EXIT_FAILURE);

            }

        }


        // Send PID of server to client

        snprintf(buffer, sizeof(buffer), "%d", pid);

        if (send(client_socket, buffer, strlen(buffer), 0) < 0) {

            perror("Error sending PID to client");

            exit(EXIT_FAILURE);

        }


        // Close the client socket

        close(client_socket);

    }


    int main() {

        int server_socket, client_socket;

        struct sockaddr_in server_addr, client_addr;

        socklen_t client_addr_len = sizeof(client_addr);

        pid_t pid;


        // Create socket
```

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```
if ((server_socket = socket(AF_INET, SOCK_STREAM, 0)) < 0) {

        perror("Error creating socket");

        exit(EXIT_FAILURE);

}


// Initialize server address struct

memset(&server_addr, 0, sizeof(server_addr));

server_addr.sin_family = AF_INET;

server_addr.sin_addr.s_addr = htonl(INADDR_ANY);

server_addr.sin_port = htons(PORT);


// Bind socket to address

if (bind(server_socket, (struct sockaddr*)&server_addr, sizeof(server_addr)) < 0) {

        perror("Error binding socket");

        exit(EXIT_FAILURE);

}


// Listen for incoming connections

if (listen(server_socket, MAX_PENDING_CONNECTIONS) < 0) {

        perror("Error listening on socket");

        exit(EXIT_FAILURE);

}


printf("Server listening on port %d...¥n", PORT);
```

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```
    // Accept incoming connections and handle requests

    while (1) {

        // Accept connection from client

        if ((client_socket = accept(server_socket, (struct sockaddr*)&client_addr, &client_addr_len)) <
0) {

            perror("Error accepting connection");

            exit(EXIT_FAILURE);

        }


        // Fork a child process to handle client request

        pid = fork();

        if (pid < 0) {

            perror("Error forking child process");

            exit(EXIT_FAILURE);

        } else if (pid == 0) {

            // Child process

            close(server_socket); // Close server socket in child process

            handle_client_request(client_socket);

            exit(EXIT_SUCCESS);

        } else {

            // Parent process

            close(client_socket); // Close client socket in parent process

            waitpid(-1, NULL, WNOHANG); // Reap zombie processes

        }

    }
    // Close server socket

    close(server_socket);


    return 0;

}
```

Client

```
#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#include <unistd.h>

#include <sys/types.h>

#include <sys/socket.h>

#include <netinet/in.h>

#include <arpa/inet.h>


#define SERVER_IP "127.0.0.1"

#define PORT 8080

#define MAX_BUFFER_SIZE 1024


int main() {

    int client_socket;

    struct sockaddr_in server_addr;

    char filename[MAX_BUFFER_SIZE];

    ssize_t bytes_received;
```

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```
// Create socket

if ((client_socket = socket(AF_INET, SOCK_STREAM, 0)) < 0) {

    perror("Error creating socket");

    exit(EXIT_FAILURE);

}


// Initialize server address struct

memset(&server_addr, 0, sizeof(server_addr));

server_addr.sin_family = AF_INET;

server_addr.sin_port = htons(PORT);

server_addr.sin_addr.s_addr = htonl(INADDR_ANY);


// Connect to server

if (connect(client_socket, (struct sockaddr*)&server_addr, sizeof(server_addr)) < 0) {

    perror("Error connecting to server");

    exit(EXIT_FAILURE);

}


// Get filename from user input

printf("Enter filename: ");

fgets(filename, sizeof(filename), stdin);

filename[strcspn(filename, "¥n")] = '¥0'; // Remove newline character


// Send filename to server

if (send(client_socket, filename, strlen(filename), 0) < 0) {
        perror("Error sending filename to server");

        exit(EXIT_FAILURE);

    }


    // Receive data from server

    char buffer[MAX_BUFFER_SIZE];

    while ((bytes_received = recv(client_socket, buffer, sizeof(buffer), 0)) > 0) {

        fwrite(buffer, 1, bytes_received, stdout);

    }

    if (bytes_received < 0) {

        perror("Error receiving data from server");

        exit(EXIT_FAILURE);

    }


    // Close socket

    close(client_socket);


    return 0;

}
```

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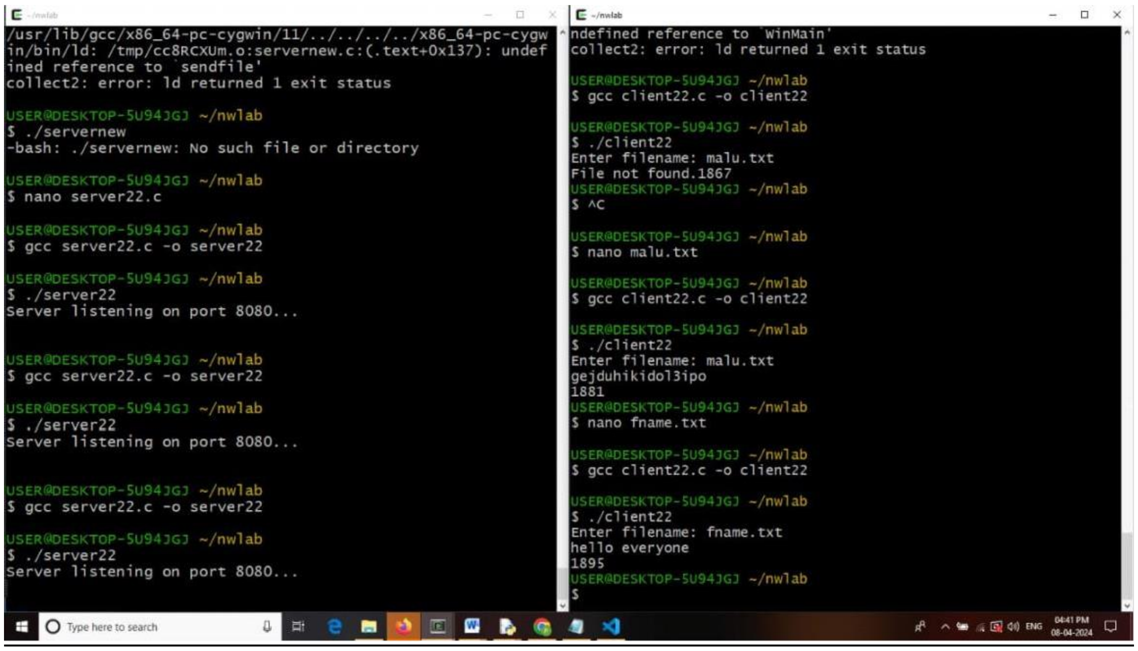
OUTPUT



```
/usr/lib/gcc/x86_64-pc-cygwin/11/../../../../x86_64-pc-cygw
in/bin/ld: /tmp/cc8RCXUm.o:servernew.c:(.text+0x137): undef
ined reference to `sendfile'
collect2: error: ld returned 1 exit status

USER@DESKTOP-5U94JGJ ~/nwlab
$ ./servernew
-bash: ./servernew: No such file or directory

USER@DESKTOP-5U94JGJ ~/nwlab
$ nano server22.c

USER@DESKTOP-5U94JGJ ~/nwlab
$ gcc server22.c -o server22

USER@DESKTOP-5U94JGJ ~/nwlab
$ ./server22
Server listening on port 8080...


USER@DESKTOP-5U94JGJ ~/nwlab
$ gcc server22.c -o server22

USER@DESKTOP-5U94JGJ ~/nwlab
$ ./server22
Server listening on port 8080...


USER@DESKTOP-5U94JGJ ~/nwlab
$ gcc server22.c -o server22

USER@DESKTOP-5U94JGJ ~/nwlab
$ ./server22
Server listening on port 8080...
```

```
ndefined reference to `WinMain'
collect2: error: ld returned 1 exit status

USER@DESKTOP-5U94JGJ ~/nwlab
$ gcc client22.c -o client22

USER@DESKTOP-5U94JGJ ~/nwlab
$ ./client22
Enter filename: malu.txt
File not found.1867
USER@DESKTOP-5U94JGJ ~/nwlab
$ ^C

USER@DESKTOP-5U94JGJ ~/nwlab
$ nano malu.txt

USER@DESKTOP-5U94JGJ ~/nwlab
$ gcc client22.c -o client22

USER@DESKTOP-5U94JGJ ~/nwlab
$ ./client22
Enter filename: malu.txt
gejduhikidol3ipo
1881
USER@DESKTOP-5U94JGJ ~/nwlab
$ nano fname.txt

USER@DESKTOP-5U94JGJ ~/nwlab
$ gcc client22.c -o client22

USER@DESKTOP-5U94JGJ ~/nwlab
$ ./client22
Enter filename: fname.txt
hello everyone
1895
USER@DESKTOP-5U94JGJ ~/nwlab
$
```