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Exercise 3: File Transfer

Server algorithm

1. Create socket.
2. Bind socket to port.
3. Listen for client connection.
4. Accept client connection.
5. Receive filename from client.
6. Open file for reading.
7. Send file data in chunks.
8. Close file and socket.

Client algorithm

1. Create socket.
2. Connect to server.
3. Input and send filename.
4. Receive file data.
5. Write data to new file.
6. Close socket.

server.c

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

#define PORT 8080
#define BUFSIZE 1024

int main() {
    int server_fd, client_fd;
    struct sockaddr_in server_addr, client_addr;
    socklen_t client_len = sizeof(client_addr);

    char filename[256];
    char buffer[BUFSIZE];
    FILE *file;
    size_t bytes_read;

    server_fd = socket(AF_INET, SOCK_STREAM, 0);
    server_addr.sin_family = AF_INET;
```

```
    server_addr.sin_addr.s_addr = INADDR_ANY;
    server_addr.sin_port = htons(PORT);

    bind(server_fd, (struct sockaddr*)&server_addr, sizeof(server_addr));
    listen(server_fd, 1);

    client_fd = accept(server_fd, (struct sockaddr*)&client_addr, &client_len);
    read(client_fd, filename, sizeof(filename));

    file = fopen(filename, "rb");
    if (file) {
        while ((bytes_read = fread(buffer, 1, BUFSIZE, file)) > 0) {
            write(client_fd, buffer, bytes_read);
        }
        fclose(file);
    }

    close(client_fd);
    close(server_fd);
    return 0;
}
```

client.c

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

#define PORT 8080
#define BUFSIZE 1024

int main() {
    int sockfd;
    struct sockaddr_in server_addr;
    char filename[256];
    char buffer[BUFSIZE];
    FILE *file;
    size_t bytes_read;

    sockfd = socket(AF_INET, SOCK_STREAM, 0);
    server_addr.sin_family = AF_INET;
    server_addr.sin_port = htons(PORT);
    server_addr.sin_addr.s_addr = inet_addr("127.0.0.1");
    connect(sockfd, (struct sockaddr*)&server_addr, sizeof(server_addr));

    printf("Enter filename: ");
```

```
    scanf("%s", filename);
    write(sockfd, filename, strlen(filename) + 1);

    strcat(filename, "_copy");
    file = fopen("received_file", "wb");
    while ((bytes_read = read(sockfd, buffer, BUFSIZE)) > 0) {
        fwrite(buffer, 1, bytes_read, file);
    }

    fclose(file);
    close(sockfd);
    return 0;
}
```

Output