

How to Execute

In order to execute the programs, first, you have to open two terminals in your Raspberry or in Ubuntu. In one of them, you'll execute the Server and in the other the client.

When you have done that you execute Server.c when you enter all the data to the server (like the image below),

```
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ ./server
Can you give me a source filename, please? input.txt
Can you give me a destination filename, please? inputOUT.txt
Choose the request to be sent to server from options below
    Enter 1 in order to send the content to Client.c
    Enter 2 in order to receive the content from Client.c
1_
```

Then you execute Client.c.

Finally, you'll have all done.

EXECUTION

```
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ ./server
Can you give me a source filename, please? input.txt
Can you give me a destination filename, please? a.txt
Choose the request to be sent to server from options below
    Enter 1 in order to send the content to Client.c
    Enter 2 in order to receive the content from Client.c
1
***Reply from client is OK***
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ ./server
Can you give me a source filename, please? input.txt
Can you give me a destination filename, please? b.txt
Choose the request to be sent to server from options below
    Enter 1 in order to send the content to Client.c
    Enter 2 in order to receive the content from Client.c
2
OK
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ ./server
Can you give me a source filename, please? server
Can you give me a destination filename, please? a
Choose the request to be sent to server from options below
    Enter 1 in order to send the content to Client.c
    Enter 2 in order to receive the content from Client.c
1
***Reply from client is OK***
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ ./server
Can you give me a source filename, please? server
Can you give me a destination filename, please? b
Choose the request to be sent to server from options below
    Enter 1 in order to send the content to Client.c
    Enter 2 in order to receive the content from Client.c
2
OK

eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ ./client
Program chosen is : 1
OK
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ ./client
Program chosen is : 2
***Reply from server is OK***
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ ./client
Program chosen is : 1
OK
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ ./client
Program chosen is : 2
***Reply from server is OK***
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$
```

```
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ diff input.txt a.txt
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ diff input.txt b.txt
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ diff server a
eespunes@DESKTOP-QJ9CNA9:/mnt/d/Escriptori/Universitat/Sistemas Operatius/C/Prac_2$ diff server b
```

Server.c

CODE

```
//Authors: Sofian Ben Ayata && Erik Espuñes Juberó

#include <stdio.h>
#include <stdlib.h>
#include <string.h>
```

```
#include <fcntl.h>
#include <sys/stat.h>
#include <sys/types.h>
#include <unistd.h>

int main() {
    char name_fifo_server[32] = "/tmp/fifo_server",
    name_fifo_client[32] = "/tmp/fifo_client";
    int fifo_server=-1, fifo_client=-1, file=-1;
    char srcfilename[100]="", dstfilename[100]="";
    int choice=0;

    //Ask for source filename, destination filename and which program
    use
    printf("Can you give me a source filename, please? ");
    scanf("%s", srcfilename);
    printf("Can you give me a destination filename, please? ");
    scanf("%s", dstfilename);

    printf("Choose the request to be sent to server from options
    below");
    printf("\n\t\t Enter 1 in order to send the content to Client.c\n
    \
\t\t\t\t Enter 2 in order to recieve the content from
    Client.c\n");
    scanf("%d", &choice);

    //delete the previous pipes
    unlink(name_fifo_server);
    unlink(name_fifo_client);
    if (choice == 1 || choice == 2) {
        //if the program chose ins between 1 or 2 means that are the
        correct values to choose the program, and creates the two pipes, one
        for to read from server and the other to read from client
        fifo_server = mkfifo(name_fifo_server, 0666);
        if (fifo_server < 0) {
            perror("Unable to create a fifo_server");
            exit(-1);
        }
        fifo_client = mkfifo(name_fifo_client, 0666);
        if (fifo_client < 0) {
            perror("Unable to create a fifo_client");
            exit(-1);
        }
        //We open the pipes
        fifo_server = open(name_fifo_server, O_RDWR);
        if (fifo_server < 0) {
            perror("Error in opening fifo_server");
            exit(-1);
        }
        fifo_client = open(name_fifo_client, O_RDWR);

        //We write the chosen program
        write(fifo_client, &choice, 1);

        if (fifo_client < 0) {
            perror("Error in opening fifo_client");
            exit(-1);
        }
        if (choice == 1) {
            //If program is 1 we open the source file and send the
```

```
destination filename to the client
    if ((file = open(srcfilename, O_RDONLY)) < 0) {
        perror("Error! opening source file from Server.c");
        exit(-1);
    }
    write(fifo_client, dstfilename, sizeof(dstfilename));
    //We write to the client pipe the information that it's in
the source file
    char line[256];
    int size;
    while ((size=read(file, line, sizeof(line))) > 0) {
        write(fifo_client, line, size* sizeof(char));
    }
    //We wait for the result from client
    char *buf = malloc(10 * sizeof(char));
    read(fifo_server, buf, 10 * sizeof(char));
    printf("\n ***Reply from client is %s***\n", buf);
} else {
    //else it's the other program and we open destination file
and we send to the client the source filename
    if ((file = open(dstfilename, O_WRONLY|O_CREAT|O_TRUNC)) <
0) {
        perror("Error! opening destination file from
Server.c");
        exit(-1);
    }

    write(fifo_client, srcfilename, sizeof(srcfilename));
    //We write to the destination file what's inside the
server pipe

    char line[256]="";
    int size;
    while ((size=read(fifo_server, line, sizeof(line))) > 0) {
        write(file, line, size* sizeof(char));
        if(size<256)
            break;
    }
    write(fifo_client, "OK", 10 * sizeof(char));
    printf("OK\n");
}
close(file);
close(fifo_server);
close(fifo_client);
} else {
    perror("Error! the number must be 1 or 2");
    exit(1);
}
return 0;
}
```

Client.c

CODE

```
//Authors: Sofian Ben Ayata && Erik Espuñes Juberó

#include <stdio.h>
#include <stdlib.h>
```

```
#include <string.h>
#include <fcntl.h>
#include <sys/stat.h>
#include <sys/types.h>
#include <unistd.h>

int main() {
    char name_fifo_server[32] = "/tmp/fifo_server",
    name_fifo_client[32] = "/tmp/fifo_client", filename[100];
    int fifo_server=-1, fifo_client=-1, file=-1;
    int choice = 0;
    char *buf = "OK";

    //We open the pipes
    fifo_client = open(name_fifo_client, O_RDWR);
    if (fifo_client < 0) {
        perror("Error opening fifo_client");
        exit(-1);
    }
    fifo_server = open(name_fifo_server, O_RDWR);
    if (fifo_server < 0) {
        perror("Error opening fifo_server");
    }
    //Read the program chosen and the filename
    read(fifo_client, &choice, 1);
    read(fifo_client, filename, sizeof(filename));
    printf("Program chosen is : %d\n", choice);
    if (choice == 1) {
        //if it's program 1 we open destination file
        if ((file = open(filename, O_WRONLY|O_CREAT|O_TRUNC)) < 0) {
            buf = "ERROR";
            write(fifo_client, buf, sizeof(buf));
            perror("Error! opening destination file from Client.c");
            exit(-1);
        }
        //we write to the destination file what it's inside the pipe
        char line[256]="";
        int size;
        while (((size=read(fifo_client, line, sizeof(line))) > 0)) {
            write(file, line, size* sizeof(char));
            if(size<256)
                break;
        }
        printf("%s\n", buf);
        //We tell the server if the program was successful or wrong
        write(fifo_server, buf, sizeof(buf));
    } else {
        //else it's program 2 and we open source file
        if ((file = open(filename, O_RDONLY)) < 0) {
            buf = "ERROR";
            write(fifo_server, buf, sizeof(buf));
            perror("Error! opening source file from Client.c");
            exit(-1);
        }
        //we write to the server pipe, what's in the source file
        char line[256]="";
        int size;
        while ((size=read(file, line, sizeof(line))) > 0) {
            write(fifo_server, line, size* sizeof(char));
        }
        //Finally we wait to the Server result
    }
```

```
    buf = malloc(10 * sizeof(char));  
    read(fifo_client, buf, 10 * sizeof(char));  
    printf("\n ***Reply from server is %s***\n", buf);  
}  
close(file);  
close(fifo_server);  
close(fifo_client);  
return 0;  
}
```