

Assignment 3 Client Design

Wilson Sue
October 18, 2023

Structures	3
State	3
Command	3
Functions	4
Main	4

Structures

State

Field	Purpose
CMD_FIFO	The path to the command FIFO.
OUT_FIFO	The path to the output FIFO (constructed from CMD_FIFO).
buffer	A buffer to read data from the output FIFO.
bytesRead	The number of bytes read from the FIFO in one iteration.

Command

main	The primary function where the execution begins.
strcmp	To compare two strings. Used to validate the -fifo argument.
write	To write data to a file descriptor (like STDOUT_FILENO or a FIFO).
argv	The arguments passed to the command
strlen	To compute the length of a string.
open	To open a file or FIFO for reading or writing.
snprintf	To format and store a string in the specified buffer.
read	To read data from a file descriptor (like a FIFO).
close	To close an open file descriptor.

Finite State Machine

State Table

From State	To State	Action
CLIENT_INIT	SET_FIFO_NAMES	set_fifo_names
SET_FIFO_NAMES	WRITE_CMD	write_command_to_fifo
WRITE_CMD	READ_OUT	read_output_from_fifo
READ_OUT	CLIENT_EXIT	exit_client
*	ERROR_STATE	handle_error
ERROR_STATE	CLIENT_EXIT	exit_client

Functions

main

Purpose

a program that acts as a client in a client-server communication model using named pipes (FIFOs). Its purpose is to send a command to a server application and read the output of that command from the server.

Return

Type	Next State
Success	Sends command to server and reads output from server
Failure	ERROR

Pseudocode

```
DEFINE MAX_BUFFER_SIZE
```

```
BEGIN MAIN:
```

```
    IF wrong number of arguments OR incorrect flag provided  
    THEN
```

```
        DISPLAY error message  
        EXIT with failure
```

```
    END IF
```

```
    SET CMD_FIFO based on provided argument path  
    SET OUT_FIFO by appending "_out" to CMD_FIFO
```

```
    OPEN CMD_FIFO for writing  
    IF unable to open THEN  
        HANDLE the error and EXIT  
    END IF
```

```
    WRITE user-provided command to CMD_FIFO  
    CLOSE CMD_FIFO
```

```
OPEN OUT_FIFO for reading
IF unable to open THEN
    HANDLE the error and EXIT
END IF

DO WHILE data is available in OUT_FIFO:
    READ data from OUT_FIFO into buffer
    WRITE buffer content to standard output
END DO WHILE

CLOSE OUT_FIFO

EXIT with success

END MAIN
```