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PROJECT 2: Distributed Shell

# Walk through

## Terminal 1: Server (Local and AWS)

### Port is optional, default is 4513

### $ ./server -p 1234

### 'user1' is accessing information with the 'ls' command!

### 'user1' entered password incorrectly.

## Terminal 2: Client (localhost and 18.222.16.160)

### Port is optional, default is 4513

### Password is optional, default asks you for the password

### ﻿$ ./client -s localhost -p 1234 -u user1 -w pass1 -c "ls"

### ﻿$ ./client -s 18.222.16.160 -p 1234 -u user1 -w pass1 -c "ls"

### Username: user1

### Password: pass1

### \*\* Password is correct. Accessing information. \*\*

### ﻿$ ./client -s localhost -p 1234 -u user1 -w pass2 -c "ls"

### ﻿$ ./client -s 18.222.16.160 -p 1234 -u user1 -w pass2 -c "ls"

### Username: user1

### Password: pass2

### \*\* ERROR: Credentials don't match. Exiting... \*\*

# DESIGN

## Programs / Scripts

### Common.c

#### void useage();

#### void flagCheck(int argc, char\*\* argv);

#### char\* concat(char\* s1, char\* s2);

#### Int containToken(char\* recevieMessageFromClient, int size);

### ERROR Handlers

#### ERROR\_socket\_call();

#### ERROR\_connect\_call();

#### ERROR\_bind\_call();

#### ERROR\_listen\_call();

#### ERROR\_accept\_call();

#### ERROR\_waitpid\_call();

#### ERROR\_execvp\_call();

### Client.c

#### getHost();

#### checkServer();

#### sendMessageToServer(char\* message, int sock);

#### receiveMessageFromServer(int sock);

#### checkUsername();

#### checkPassword();

#### checkCredentials();

#### submitInput(int sock);

### Server.c

#### countInputs(char\* command);

#### void storeInputs(char\*\* command\_array, char\* command, int size\_array);

#### void setServer();

#### void openServer();

#### int sendMessageToClient(char\* msg, int sock);

#### char\* receiveMessageFromClient(int sock) ;

#### void getUsername() ;

#### char\* validUsername(char\* name) ;

#### void getPassword() ;

#### char\* validPassword(char\* name) ;

## How many runs performed

I performed 20 rounds each to test for Correct and Incorrect password connections. I did for both the local server and AWS. I averaged each test to get an accurate representation of how long it takes for a connection between client and server. I ran these tests on “ls” and “mv” commands to test to see how the server reacted. For the “mv” command I created 20 files ranging from 1MB to 20MB with random data to see how the file size affects connection speed.

## Recorded Data

## I recorded the data for 20 attempts for each test. I graphed the data to represent change between constraints.

## System Conditions

## I did each test on the Ubuntu system provided by the professor.

## Other Information

# RESULTS

## Tables or Graphs

### Network per-byte Cost (making file on server)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (ms) | Local Correct | Local Incorrect | AWS Correct | AWS Incorrect |
| Total | **2542** | **651** | **41920** | **4041** |
| Average | **254.2** | **65.1** | **4192** | **404.1** |
| STD | **43.685** | **11.130** | **3307.399** | **159.968** |

### Local vs. Remote Costs (Connect to Server

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (ms) | Local Correct | Local Incorrect | AWS Correct | AWS Incorrect |
| Total | **1397.7** | **525** | **4100** | **2707** |
| Average | **139.8** | **52.5** | **410** | **270.7** |
| STD | **1.767** | **2.915** | **27.829** | **7.484** |

## Statistical Analysis (Mean and STD)

### “head -c $((i\*1000000)) /dev/urandom > test\_documents/test$i.txt” command

### I have calculated that it takes on average 254 milliseconds to make files on the local computer server and 4192 milliseconds to make files on the AWS server.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (ms) | Local Correct | Local Incorrect | AWS Correct | AWS Incorrect |
| Total | **2542** | **651** | **41920** | **4041** |
| Average | **254.2** | **65.1** | **4192** | **404.1** |
| STD | **43.685** | **11.130** | **3307.399** | **159.968** |

### 

### “ls” command

### I have calculated that it takes on average 140 milliseconds to connect to the local computer server and 410 milliseconds to connect to the AWS server.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Time (ms) | Local Correct | Local Incorrect | AWS Correct | AWS Incorrect |
| Total | **1397.7** | **525** | **4100** | **2707** |
| Average | **139.8** | **52.5** | **410** | **270.7** |
| STD | **1.767** | **2.915** | **27.829** | **7.484** |

# ANALYSIS

## Interpret Results

## Results Meaning From the results, I got the average time it takes to connect and make files on the local and remote server (AWS).

## Subjective Analysis I can conclude that it takes longer to connect to the AWS server than the Local server. The “Making files” command takes longer than the “ls” command: about twice as much for local and about 10 times longer than connect on the AWS.