Name: Tan Han Nguyen

NetID: TXN200004

Week 09 Lab 2

0. Log in

Pre-authentication banner message from server:

| University of Texas at Dallas

| Department of Computer Science

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| Use of UTD Information Systems is subject to

| the UTD Information Security and Acceptable Use Policy.

|

| Pursuant to Texas Administrative Code 202:

| (1) Unauthorized use is prohibited;

| (2) Usage may be subject to security testing and monitoring;

| (3) Misuse is subject to criminal prosecution; and

| (4) No expectation of privacy except as otherwise provided by applicable

| privacy laws.

|

| ATTENTION: utdnetid != utdnetid@utdallas.edu (UTD != Google!)

|

| \*\*\*\*\* This system will require a connection to the GlobalProtect VPN startin

> g

| on the following dates:

|

| cslinux1.utdallas.edu - June 15, 2020

| cslinux2.utdallas.edu - June 22, 2020

|

| \*\*\*\*\* GlobalProtect VPN Instructions: https://www.utdallas.edu/oit/howto/vpn

> /

|

End of banner message from server

Keyboard-interactive authentication prompts from server:

| Password:

End of keyboard-interactive prompts from server

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│ • MobaXterm Personal Edition v24.2 • │

│ (SSH client, X server and network tools) │

│ │

│ ⮞ SSH session to txn200004@cslinux2.utdallas.edu │

│ • Direct SSH : ✓ │

│ • SSH compression : ✓ │

│ • SSH-browser : ✓ │

│ • X11-forwarding : ✓ (remote display is forwarded through SSH) │

│ │

│ ⮞ For more info, ctrl+click on help or visit our website. │

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Last login: Thu Oct 17 10:40:22 2024 from 10.150.178.98

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csgrads1.utdallas.edu - CentOS Linux 7.9

--All CS Graduate Students should use csgrads1--

cs1.utdallas.edu - CentOS Linux 7.9

cs2.utdallas.edu - CentOS Linux 7.9

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This system is for use by CS students who need a general purpose Linux system

to complete homework assignments. Computationally or resource intensive

simulations will be throttled automatically.

Thank you,

CS Lab Manager

cs-labs@utdallas.edu

/scratch disk space can be used for temporary files.

All files within /scratch will be erased on a regular basis (Sunday 0300).

{cslinux2:~} mkdir week09Lab2; cd week09Lab2

1-2. Implement myShell3.c

{cslinux2:~/week09Lab2} vim myShell3.c

{cslinux2:~/week09Lab2} cat myShell3.c

This part has been cut off for a more concise documentation. The original log is kept in log file

Signal Handler

//======================== Signal Handler ====================//

void mysig\_handler(int signal) {

printf("\n\*\*This is a message from Week09 lab 2 - Signal Handler!\*\*\n");

if (signal == SIGALRM) {

printf("Alarm Triggered! Shell terminated due to inactivity.\n");

exit(0); // exit the shell

} else {

//printf("Caught Signal: %d\n", signal);

exit(0);

}

}

//=============================================================//

// define buffer size

#define max\_line 4096

#define max\_arg 64

int main(void) {

// handle signal

signal(SIGINT, mysig\_handler);

signal(SIGALRM, mysig\_handler);

This part has been cut off for a more concise documentation. The original log is kept in log file

Alarm

// alarm case

else if (strcmp(argv[0], "alarm") == 0) {

int seconds = atoi(argv[1]);

if (seconds >= 0) {

alarm(seconds);

}

else {

printf("Invalid alarm time\n");

}

printf("%s", prompt);

continue;

}

// expand wildcards

expand\_wildcards(argv, expanded\_argv);

execute(expanded\_argv); // child execute other commands

printf("%s", prompt); // prompt again

}

return 0;

}

3. Compile and run test cases

{cslinux2:~/week09Lab2} gcc myShell3.c -o myShell3 -std=gnu99

Test Case 1

{cslinux2:~/week09Lab2} ./myShell3

{myShell3}$ date

Thu Oct 17 22:49:58 CDT 2024

{myShell3}$ ps

PID TTY TIME CMD

2016 pts/3 00:00:01 bash

2282 pts/3 00:00:00 myShell3

2287 pts/3 00:00:00 ps

{myShell3}$ ps -aux | grep txn200004

root 1995 0.0 0.0 186940 5960 ? Ss 22:41 0:00 sshd: txn200004 [priv]

txn2000+ 2002 0.0 0.0 187256 2640 ? S 22:41 0:00 sshd: txn200004@pts/3

root 2009 0.0 0.0 186940 5960 ? Ss 22:41 0:00 sshd: txn200004 [priv]

txn2000+ 2139 0.0 0.0 186940 2412 ? S 22:41 0:00 sshd: txn200004@notty

{myShell3}$ ls -l

total 48

-rwx--x--x 1 txn200004 se 14216 Oct 17 22:49 myShell3

-rw------- 1 txn200004 se 15750 Oct 17 22:48 myShell3.c

{myShell3}$ alarm 100

{myShell3}$ ^C

\*\*This is a message from Week09 lab 2 - Signal Handler!\*\*

Signal handler working

Test Case 2

{cslinux2:~/week09Lab2} ./myShell3

{myShell3}$ date

Thu Oct 17 22:51:04 CDT 2024

{myShell3}$ ps

PID TTY TIME CMD

2016 pts/3 00:00:01 bash

2307 pts/3 00:00:00 myShell3

2312 pts/3 00:00:00 ps

{myShell3}$ ps -aux | grep txn200004

root 1995 0.0 0.0 186940 5960 ? Ss 22:41 0:00 sshd: txn200004 [priv]

txn2000+ 2002 0.0 0.0 187256 2640 ? S 22:41 0:00 sshd: txn200004@pts/3

root 2009 0.0 0.0 186940 5960 ? Ss 22:41 0:00 sshd: txn200004 [priv]

txn2000+ 2139 0.0 0.0 186940 2412 ? S 22:41 0:00 sshd: txn200004@notty

{myShell3}$ ls -l

total 48

-rwx--x--x 1 txn200004 se 14216 Oct 17 22:49 myShell3

-rw------- 1 txn200004 se 15750 Oct 17 22:48 myShell3.c

{myShell3}$ alarm 10

{myShell3}$

\*\*This is a message from Week09 lab 2 - Signal Handler!\*\*

Alarm Triggered! Shell terminated due to inactivity.

Alarm working

Test Case 3

{cslinux2:~/week09Lab2} ./myShell3

{myShell3}$ date

Thu Oct 17 22:52:12 CDT 2024

{myShell3}$ ps

PID TTY TIME CMD

2016 pts/3 00:00:01 bash

2330 pts/3 00:00:00 myShell3

2339 pts/3 00:00:00 ps

{myShell3}$ ps -aux | grep txn200004

root 1995 0.0 0.0 186940 5960 ? Ss 22:41 0:00 sshd: txn200004 [priv]

txn2000+ 2002 0.1 0.0 187256 2640 ? S 22:41 0:00 sshd: txn200004@pts/3

root 2009 0.0 0.0 186940 5960 ? Ss 22:41 0:00 sshd: txn200004 [priv]

txn2000+ 2139 0.0 0.0 186940 2412 ? S 22:41 0:00 sshd: txn200004@notty

{myShell3}$ ls -l

total 48

-rwx--x--x 1 txn200004 se 14216 Oct 17 22:49 myShell3

-rw------- 1 txn200004 se 15750 Oct 17 22:48 myShell3.c

{myShell3}$ alarm 30

{myShell3}$ alarm 0

Alarm turns off, nothing happens after 30 seconds

{myShell3}$ exit

End Lab and Exit

{cslinux2:~/week09Lab2} date

Thu Oct 17 22:55:35 CDT 2024

{cslinux2:~/week09Lab2} ls -l

total 48

-rwx--x--x 1 txn200004 se 14216 Oct 17 22:49 myShell3

-rw------- 1 txn200004 se 15750 Oct 17 22:48 myShell3.c

{cslinux2:~/week09Lab2} uname -a

Linux cslinux2.utdallas.edu 3.10.0-1160.119.1.el7.x86\_64 #1 SMP Tue Jun 4 14:43:51 UTC 2024 x86\_64 x86\_64 x86\_64 GNU/Linux

{cslinux2:~/week09Lab2} exit

logout

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Session stopped

- Press <Return> to exit tab

- Press R to restart session

- Press S to save terminal output to file