

DSH

#### Description

This is a process identification program and simple shell. This program will introduce unix environment, system calls, signals, the proc filesystem and the fork / exec system calls. It will be a command line program with executable name: dsh. It should present a prompt with a prompt string: dsh> and accept commands to be executed at the prompt.

- THIS WILL ONLY RUN ON LINUX -
- SIGNAL WILL ONLY WORK IF YOU HAVE PERMISSION TO USE KILL -

#### Algorithms and libraries used:

As for Algorithms, nothing significant was used.

#### List of Libraries:

```
//input
    <iostream>
//string functions
    <string>, <string.h>

//for system function commands
    <stdio.h>, <stdlib.h>, <sys/types.h>, <unistd.h>

//to open files
    <fstream>

//for kill command
    <signal.h>
```

#### Functions and Program structure

Structure: the main program uses something very close to a switch statement.

However this is done as if elses for the use of strings. The Program is sequential. To add to modularity, and make main easier to read, many chunks

of code were pulled out into smaller functions. All of which can be found below main.

#### List of functions:

```
//function taken from sample code
spawn - creates a fork and executes on it

// primary functions for loop
cmdnm - displays the command line call for a process id
help - displace information for custom commands (command is helpThis)
cwd - displays current working directory
signal - sends a signal to a process

systat - displays system statics
//systat helper functions
displayProcFile - displays the first line of a file
displayProcFileMeminfo - displays 2 lines of meminfo file
displayProcFileCPUInfo - displays lines 2 - 9 of cpuinfo file
```

- Note Many of these are not direct commands in the program
- Note spawn was taken from under the Gnu Public License. Thus this code is now as well. You can find out more information about Gnu codes and the GPL at <http://www.gnu.org/> .

Compiling the program:

There is a make file provide. Using the make command will compile the program. Also the command: "g++ -o dsh dsh.cpp -Wall -g -std=c++11" will as well

Testing and Verification:

The code was tested by manually runing the program. all of the custom commands wer run as well as many common commands such as ls. Even the shell

was run itside of itself.

Bug - for none custom commands, "dsh > " will not be displayed after.

Submitted Files:

progl.pdf, dsh.cpp, Makefile

progl.pdf = This descriptive document of this project

dsh.cpp = The code for this project

Makefile = compiling tool for code