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Pseudocode for Linux Shell program.

// This is the pseudocode for the main function which will contain the main while loop
// this is to demonstrate the order which I think the logic should be handled
// details for the algorithms I intend to use for each function can be found below the main function's pseudo code.

```
#define
Int 0 = internalCommand
Int 1 = externalCommand
#define
Int 2 = PipeCommand
Int 3 = redirectiCommand

Main () {

// to count and store the users input arguments
Int argc;
Int *argv;;
// flag to tell if we should execute immediately this will be set to 1 if we detect & at the end of cmd
Int execNow =0;

// display welcome message and great user
welcomeMsg ();

        // run program until user selects to exit
        // main while loop
        While (running == true)
        {

                // display prompt which should show working directory
                promtUser ();

                Str = getUserInput ();

                // check for redirect symbol
                HandleRedirect();

                //check for piping symbol
                HandlePipe();

                // parse input
                parseArgs(Str);

                // if command is internal command
                If (internal command)
                {
                HandleInternal()

                }else if(!internal command) // else assume this is a file in current directory to open
                {
                Int result =HandleOpenFile ()
```

```
                *}*
                // otherwise if it was nothing else then assume it was external command
                else if (!result)
                HandleExternal()

                // if all else fails the display error message
                *// else std error message*

        } // end while

        //free memory if needed

} // end main


////////////////////////////////////////////////////////////////////////////FUNCTIONS////////////////////////////////////////////////////////////////////////////
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Int parseArgs(){

//I will use the strok() function to tokenize the input, using a space a delimiter

strok(input," ") = token;
// while the string is not null break it apart using white space as delimiter
//also we will push each separate command to the arguments array
while (strok(input," ") != NULL) {  argc ++; argv[i] = token ; i++}
//- Store the number of strings in the command in the integer variable argc
//- Store the C-Strings in an array of character pointers declared like this: char* argv[100];

Look at first argv[0] to determine what type of command this is
*If(!arg(0) ==  list[i] ; I ++)*
If internal type = 0;
Else type =1;

} // end parse args
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////
welcomeMsg () {}; // end welcomeMsg
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getUserInput (){
  *//getUserInput will make one long string of chars containing everything typed*
use readline to read in user input until user hits enter
}// end getUserInput
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promtUser (){ print the name of the working directory followed by any symbol};
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*// Enter switch case to handle internal command*
//return 0 if succesful
HandleInternal(){
```

```
Switch (internalCommandType)
        // quit
        Case{
        Running = false;
        Return 0;
        } break
        // cd
        Case{
        //change working directory to input argv[0]
        Use the chdir() function and pass it the 1 index in the array of arguments
        •If the <directory> argument is not present, print the current directory
        •If the specified directory is invalid, generate an error
        •This command should also set the PWD environment variable for the shell to <directory>.
        } break
        // dir
        Case{
        // display working directory files
        } break
        // clr
        Case{
        // this clears the console using escape sequences
        // printf("\033[H\033[J")
        } break
        // echo
        Case{
        // just reprint argv[0…n]
        } break
        // help
        Case{
        // print the user manual using printf()
        } break
        // pause
        Case{
        // don't do anything until user hits enter again
        } break
        // environ
        Case{
        // print the environment strings
        •Current user
        •User's home path
        •Shell name
        •OS type
        •Hostname
        •Directories to search to find an executable.
        } break

} // end handleInternal
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//return 0 if succesful
// this function will assume that the input given is a file in the local directory and will attempt to open it
HandleOpenFile (){}
////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////////

//return 0 if succesful
```

HandleExternal() {
// here we will assume that the argv[0] is the first argument in an external command
// we fork then exec the child of the fork giving it arg[0] as the first command, and up to argv[argc]
} // end HandleExternal
//

HandlePipe();
//

HandleRedirect();
//

//this will be the function that gets called to exec any desired external program
// it takes the command to be executed along with any arguments to be passed with it
execArg(char* cmd , char args**)
{
int fork();
// if 0 then exec because we are in new child process
if fork == 0 {
exec(arg[0], argv);
}
// if not 0 then we are in main process ,i.e the shell, and we should check if we need to wait or not
// for child to compete
else {
if (execNow =0)
wait(NULL)

//other wise we don't wait because we detected &
} // end else

} // end execArgs
//