

Assignment 2

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Firstly checks the number of arguments passed and accepts the number of 0 or 1 arguments, else a message be printed and terminates execution. The only accepted argument is '--help' that prints to the console what is cen354s and gives some information about built-in commands and features. If the shell is called with no argument, it simply starts execution. The first step is the path initialization and it is done by 'first_Init()' method.

Then it goes into an infinite loop and gets input from user until 'exit' command is inputted.

Inside the loop, it first initializes itself with 'shell_Init()', in order to remove former changes that been created by previous commands to accept new commands.

After the initializations, it gets the user input with 'getline()' function and sends its output to the 'Input_Parser()' method. I did not prefer the 'strsep()' method, instead I used my own parser that separates arguments contain meaningful character (ASCII characters between 0x21 and 0x7e), remove whitespaces and stops checking when '\n' (ASCII 0xA) occurs. Then simply creates 'args' table. After parsing, it looks for the redirection sign inside the arguments table and stores its count and location. Also it must be mentioned that since my parser is intended to parse the redirection sign as a single argument, redirection sign requires at least one whitespace after it.

Then, cen354s calls 'checkIfBuiltIn()' method to determine if the command is a built-in command – which are exit, cd, and path -, or not. After determination it calls 'syntaxCheck()' method to check syntax in order to decide if the user input can be acceptable. If it accepts, shell continues the current operation without any doubt and if it not, stops the current operation and reinitializes it to get new user inputs, just after the error message or messages. The next step is to execute the appropriate command according to the result of 'checkBuiltIn()' method. If 'checkBuiltIn()' method is detected that user inputted a built-in command, shell call 'doBuiltIn()' method to execute the appropriate one. Else, user is inputted a non-built-in command and the shell goes into the next step.

In the next step, cen354s checks the first arguments, args[0], in order to determine if the app that it going to run has absolute path or not. The check operation be done by 'ifAPath()' method and its result be sent to the 'executeCommand()' method which the actual execution be done inside it. Inside the 'executeCommand()' method, shell checks the variable passed by 'ifAPath'. Inside the 'executeCommand()' method, shell checks the variable passed by 'ifAPath' method to do the appropriate job. If it has got an absolute path, shell checks if the application exists with 'access()' method. If it exists, shell copies its all arguments to a new table, **pass, and continues execution and if it not exist, cen354sh reinitializes itself to accept new user inputs just after the error message. Else if it hasn't got an absolute path, shell concatenates its first argument with the elements of 'path' table and checks the application's existence with the all path elements until with one of them it exists. If it does not exist with any path element, shell reinitializes itself but, if exists with one of the path elements, shell copies its arguments, with concatenated path, into 'pass' table and resumes execution. After the existence check, shell call 'fork()' method in order to create a child process that executes the command. After the fork, shell determines the standard output method according to the redirection sign, if exists. Then it calls 'execv()' and passes the appropriate arguments within the pass table and execution begins in a real manner.