Assignment One mysh Report

Structure

The program is split into main two parts. First part is where the input from the user is analyzed and broken down into a command. Initially, the input is split on the pipe character ("|"). Each of the right and left side of the pipe is one Program. The Program string is then split on the space character (" ") to split the name of the program and it's Arguments. The arguments are later stored in a form of a List of strings. The Arguments, Input file redirect, Output file redirect are stored in a struct called Pipe *(Figure 1.)*.

```
19   struct Pipe{
20          char arguments[100][100]; //{LIST}
21          char inputFile[100];
22          char outputFile[100];
23          struct Arguments *args; //{ARGUMENTS}
24          struct Pipe *next;
25   };
26
27   struct Arguments{
28          char data[512];
29          struct Arguments *next;
30   };
```

Figure 1. Pipe Is each Program.

- Line 20: list of arguments, its initialized as having 100 arguments each 100 characters long.
- Line 21: Name of input file for redirection.
- Line 22: Name of output file for redirection.
- Line 23: Next Program on the pipe.
- Line 27: This is a struct of a linked list of arguments. This attribute is initialized and populated for each Pipe instance, however it is not utilized in the execution of the program.

Later on in the program, the list of arguments are reduced to their specific minimum required length. These are then passed on the execvp function as argvs.

Shortcomings

This program is not complete. It has several shortcomings that are listed below:

1. Multiple space characters in sequence is not handled.
2. "< file.txt" or "> file.txt" are not handled properly, these will produce unexpected results. Only "<file.txt" and ">file.txt" are accepted (space character).
3. testFile1, testFile2, testFile3 and textFile4 are not implemented to test the full functionality of the program. These files only output their respective argv.

Example Outputs

```
rimus@DESKTOP-45IJOJB:~/Desktop/Systems Programming/Assignment 1/first-assignment-musabbirbaki$ ./mysh
My Shell
# testFile2 arg1 input|testFile3 >output|testFile4 output
------TASK 4------------------------
arg0: ./testFile4
arg1: output

# exit
```

Input: testFile2 arg1 input|testFile3 >output|testFile4 output

```
rimus@DESKTOP-45IJOJB:~/Desktop/Systems Programming/Assignment 1/first-assignment-musabbirbaki$ ./mysh
My Shell
# testFile1 arg1 <input|testFile2 arg1 arg2|testFile3 >output|testFile4 >output
# exit
rimus@DESKTOP-45IJOJB:~/Desktop/Systems Programming/Assignment 1/first-assignment-musabbirbaki$ cat output
------TASK 4------------------------
arg0: ./testFile4
```

Input: testFile1 arg1 <input|testFile2 arg1 arg2|testFile3 >output|testFile4 >output