Safaa Hassan Wally 34

Lab1[Shell]

1-How the program Is organized:

1-I made a function(getCommand) handles the all commands in interactive mode or batch mode.

2-The code is separated into function which performs a specific task like split,getCommand,isEmpty,parseCommand,executeComma-nd…etc.

2-Main functions:

parseCommand(char* cmd,char ** args)

this function takes the command the user entered and start parsing it to the form that function execv requires like that

args[0] = "ps"

args[1] = "-ael"
args[2] = NULL

 so the function execute will be ready to execute .

---

executeCommand(char** args, int wait)

the main function in the program this take argument

and make fork if pid <0 then there is error

else if pid ==0

then this is the child and the process is executed if it true command

else

then it is the parent and it wait for all the children to be executed.

---

getCommand(char *cmd)

the function handles If the forms of command if in history and others liks !!,ps,cat…..etc

then call the function parse and execv, also it handles error .

3-How to compile code:

In the folder there is make file to compile my shell then if you want to run the shell just change the directory and after make command make in the terminal you can now run the shell by entering commands [./shell file.txt]

Or [./shell] interactive mode

Also the the file for history called file.txt.

4-Sample runs:

Interactive mode:

```
shell >
shell >
shell >
shell > ps
  PID TTY          TIME CMD
22704 pts/0    00:00:00 cb_console_runn
22705 pts/0    00:00:00 sh
22706 pts/0    00:00:00 Shell
22878 pts/0    00:00:00 ps
ls shell >
bin file.txt  include  main  main.c  main.o  obj  safaa  Shell.cbp  Shell.depend  Shell.layout  src
ps shell >             -l
F S   UID   PID  PPID  C PRI  NI ADDR SZ WCHAN  TTY          TIME CMD
0 S  1000 22704 22703  0  80   0 -  3859 wait   pts/0    00:00:00 cb_console_runn
0 S  1000 22705 22704  0  80   0 -  1127 wait   pts/0    00:00:00 sh
0 S  1000 22706 22705  0  80   0 -  1090 hrtime pts/0    00:00:00 Shell
4 R  1000 22881 22706  0  80   0 -  7230 -      pts/0    00:00:00 ps
shell > who
safaa    tty7         2016-10-15 20:50 (:0)
shell > mkdir ss
shell > gedit
ls
ps
shell > bin  file.txt  include  main  main.c  main.o  obj  safaa  Shell.cbp  Shell.depend  Shell.layout  src  ss
shell >   PID TTY          TIME CMD
22704 pts/0    00:00:00 cb_console_runn
22705 pts/0    00:00:00 sh
22706 pts/0    00:00:00 Shell
22896 pts/0    00:00:00 ps
shell > gedit&
shell > /bin/ls
bin  file.txt  include  main  main.c  main.o  obj  safaa  Shell.cbp  Shell.depend  Shell.layout  src  ss
shell > bin/ls
bin  file.txt  include  main  main.c  main.o  obj  safaa  Shell.cbp  Shell.depend  Shell.layout  src  ss
shell > /bin/ls        -l
total 42
drwxrwxrwx 1 safaa safaa     0 十月  5 16:06 bin
-rwxrwxrwx 1 safaa safaa    44 十月 16 03:18 file.txt
drwxrwxrwx 1 safaa safaa     0 十月 13 20:44 include
-rwxrwxrwx 1 safaa safaa 13688 十月  6 00:44 main
-rwxrwxrwx 1 safaa safaa  8373 十月 16 03:30 main.c
-rwxrwxrwx 1 safaa safaa  4104 十月  6 00:44 main.o
drwxrwxrwx 1 safaa safaa     0 十月  5 16:06 obj
drwxrwxrwx 1 safaa safaa     0 十月 15 22:08 safaa
-rwxrwxrwx 1 safaa safaa  1120 十月 14 06:09 Shell.cbp
-rwxrwxrwx 1 safaa safaa   205 十月 16 03:25 Shell.depend
-rwxrwxrwx 1 safaa safaa   359 十月 16 03:19 Shell.layout
drwxrwxrwx 1 safaa safaa     0 十月 13 20:44 src
drwxrwxrwx 1 safaa safaa     0 十月 16 03:33 ss
```

System Settings

```
total 42
drwxrwxrwx 1 safaa safaa     0 十月  5 16:06 bin
-rwxrwxrwx 1 safaa safaa    44 十月 16 03:18 file.txt
drwxrwxrwx 1 safaa safaa     0 十月 13 20:44 include
-rwxrwxrwx 1 safaa safaa 13688 十月  6 00:44 main
-rwxrwxrwx 1 safaa safaa  8373 十月 16 03:30 main.c
-rwxrwxrwx 1 safaa safaa  4104 十月  6 00:44 main.o
drwxrwxrwx 1 safaa safaa     0 十月  5 16:06 obj
drwxrwxrwx 1 safaa safaa     0 十月 15 22:08 safaa
-rwxrwxrwx 1 safaa safaa  1120 十月 14 06:09 Shell.cbp
-rwxrwxrwx 1 safaa safaa   205 十月 16 03:25 Shell.depend
-rwxrwxrwx 1 safaa safaa   359 十月 16 03:19 Shell.layout
drwxrwxrwx 1 safaa safaa     0 十月 13 20:44 src
drwxrwxrwx 1 safaa safaa     0 十月 16 03:33 ss
shell > !2
shell > mkdir ss
mkdir: cannot create directory 'ss': File exists
shell > history
mkdir ss
gedit
ls
ps
gedit&
/bin/ls
bin/ls
/bin/ls        -l
/bin/ls        -l
mkdir ss
shell >
```

Batch mode:

```
safaa@safaa:~$ cd Desktop
safaa@safaa:~/Desktop$ ./shell2 read.txt
shell > ls
arduino-arduinoide.desktop  file.txt  read.txt  shell2.c  Untitled Document
cs333                       makefile  shell2    shell.c
shell > ls -al
total 88
drwxr-xr-x  3 safaa safaa  4096  ⚓16 03:09 .
drwxr-xr-x 27 safaa safaa  4096  ⚓15 20:50 ..
-rwx------  1 safaa safaa   362  ⚓ 4 18:39 arduino-arduinoide.desktop
drwxrwxr-x  2 safaa safaa  4096  ⚓16 02:53 cs333
-rwxrwxrwx  1 safaa safaa   179  ⚓16 02:53 file.txt
-rw-rw-r--  1 safaa safaa    27  ⚓15 19:52 makefile
-rw-rw-r--  1 safaa safaa    65  ⚓16 03:09 read.txt
-rwxrwxr-x  1 safaa safaa 14560  ⚓16 02:36 shell2
-rw-rw-r--  1 safaa safaa  8274  ⚓16 02:36 shell2.c
-rw-rw-r--  1 safaa safaa  8237  ⚓15 22:30 shell.c
-rw-------  1 safaa safaa 12288  ⚓15 13:45 .swp
-rw-rw-r--  1 safaa safaa  6087  ⚓15 11:56 Untitled Document
shell > ls -a -l
total 88
drwxr-xr-x  3 safaa safaa  4096  ⚓16 03:09 .
drwxr-xr-x 27 safaa safaa  4096  ⚓15 20:50 ..
-rwx------  1 safaa safaa   362  ⚓ 4 18:39 arduino-arduinoide.desktop
drwxrwxr-x  2 safaa safaa  4096  ⚓16 02:53 cs333
-rwxrwxrwx  1 safaa safaa   179  ⚓16 02:53 file.txt
-rw-rw-r--  1 safaa safaa    27  ⚓15 19:52 makefile
-rw-rw-r--  1 safaa safaa    65  ⚓16 03:09 read.txt
-rwxrwxr-x  1 safaa safaa 14560  ⚓16 02:36 shell2
-rw-rw-r--  1 safaa safaa  8274  ⚓16 02:36 shell2.c
-rw-rw-r--  1 safaa safaa  8237  ⚓15 22:30 shell.c
-rw-------  1 safaa safaa 12288  ⚓15 13:45 .swp
-rw-rw-r--  1 safaa safaa  6087  ⚓15 11:56 Untitled Document
shell > /bin/ls -l -a
total 88
drwxr-xr-x  3 safaa safaa  4096  ⚓16 03:09 .
drwxr-xr-x 27 safaa safaa  4096  ⚓15 20:50 ..
-rwx------  1 safaa safaa   362  ⚓ 4 18:39 arduino-arduinoide.desktop
drwxrwxr-x  2 safaa safaa  4096  ⚓16 02:53 cs333
-rwxrwxrwx  1 safaa safaa   179  ⚓16 02:53 file.txt
-rw-rw-r--  1 safaa safaa    27  ⚓15 19:52 makefile
-rw-rw-r--  1 safaa safaa    65  ⚓16 03:09 read.txt
-rwxrwxr-x  1 safaa safaa 14560  ⚓16 02:36 shell2
```

```
-rw-------  1 safaa safaa 12288 |س15 13:45 .swp
-rw-rw-r--  1 safaa safaa  6087 |س15 11:56 Untitled Document
shell > ls -a -l
total 88
drwxr-xr-x  3 safaa safaa  4096 |س16 03:09 .
drwxr-xr-x 27 safaa safaa  4096 |س15 20:50 ..
-rwx------  1 safaa safaa   362 |س  4 18:39 arduino-arduinoide.desktop
drwxrwxr-x  2 safaa safaa  4096 |س16 02:53 cs333
-rwxrwxrwx  1 safaa safaa   179 |س16 02:53 file.txt
-rw-rw-r--  1 safaa safaa    27 |س15 19:52 makefile
-rw-rw-r--  1 safaa safaa    65 |س16 03:09 read.txt
-rwxrwxr-x  1 safaa safaa 14560 |س16 02:36 shell2
-rw-rw-r--  1 safaa safaa  8274 |س16 02:36 shell2.c
-rw-rw-r--  1 safaa safaa  8237 |س15 22:30 shell.c
-rw-------  1 safaa safaa 12288 |س15 13:45 .swp
-rw-rw-r--  1 safaa safaa  6087 |س15 11:56 Untitled Document
shell > /bin/ls -l -a
total 88
drwxr-xr-x  3 safaa safaa  4096 |س16 03:09 .
drwxr-xr-x 27 safaa safaa  4096 |س15 20:50 ..
-rwx------  1 safaa safaa   362 |س  4 18:39 arduino-arduinoide.desktop
drwxrwxr-x  2 safaa safaa  4096 |س16 02:53 cs333
-rwxrwxrwx  1 safaa safaa   179 |س16 02:53 file.txt
-rw-rw-r--  1 safaa safaa    27 |س15 19:52 makefile
-rw-rw-r--  1 safaa safaa    65 |س16 03:09 read.txt
-rwxrwxr-x  1 safaa safaa 14560 |س16 02:36 shell2
-rw-rw-r--  1 safaa safaa  8274 |س16 02:36 shell2.c
-rw-rw-r--  1 safaa safaa  8237 |س15 22:30 shell.c
-rw-------  1 safaa safaa 12288 |س15 13:45 .swp
-rw-rw-r--  1 safaa safaa  6087 |س15 11:56 Untitled Document
shell >         /bin/ls      -l
total 68
-rwx------ 1 safaa safaa   362 |س  4 18:39 arduino-arduinoide.desktop
drwxrwxr-x 2 safaa safaa  4096 |س16 02:53 cs333
-rwxrwxrwx 1 safaa safaa   179 |س16 02:53 file.txt
-rw-rw-r-- 1 safaa safaa    27 |س15 19:52 makefile
-rw-rw-r-- 1 safaa safaa    65 |س16 03:09 read.txt
-rwxrwxr-x 1 safaa safaa 14560 |س16 02:36 shell2
-rw-rw-r-- 1 safaa safaa  8274 |س16 02:36 shell2.c
-rw-rw-r-- 1 safaa safaa  8237 |س15 22:30 shell.c
-rw-rw-r-- 1 safaa safaa  6087 |س15 11:56 Untitled Document
shell > exit
safaa@safaa:~/Desktop$ 
```