

# Lab Assignment 1: Shell and System Calls

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N: 73

- **Code Organization:**

- Starts at main :
  - If file argument exists : runs in batch mode → reads each line
  - Else runs in interactive mode
- Call parsing function MyScan
- Save command in history
- Call Execute command:
  1. Checks whether the command is a comment or exit or history
  2. Else call other functions
- Check if the command is a series of environments to be set , if this is true set each of them and return -1
- If the returned value is not -1 , calls handle env to replace each \$ with its corresponding value if it exists ,otherwise replace it with empty string
- Call the execute function:
  1. If the command is cd call the handleCd Function
  2. Else if it's echo , call the handle echo that removes double quotes and print it
  3. Otherwise calls newProcess
- newProcess creates a child process to execute command

- **Main Functions:**

- Get Path: get all possible command path and store it in an array.
- Batch mode: reads from file and calls appropriate msgs.
- Execute command
- New Process
- Handler : to write in file the child terminates
- myScan : parser
- setEnv & handle Env

- **How to compile and run:**

- gcc Shell.c -o SHELL
- ./SHELL filename
- ./SHELL

- Sample runs

```
monica_salama:~/workspace $ ./SHELL
Shell> pwd
/home/ubuntu/workspace
Shell> ls
README.md SHELL Shell.c test
Shell> cd
Shell> pwd
/home/ubuntu
Shell> x="/home/ubuntu/workspace"
Shell> cd $x
Shell> pwd
/home/ubuntu/workspace
Shell> echo $x $y monica "monica"
/home/ubuntu/workspace monica monica
Shell> history
pwd
ls
cd
pwd
x="/home/ubuntu/workspace"
cd $x
pwd
echo $x $y monica "monica"
history
Shell> cd
Shell> ls
lib monica_history monica_log workspace
```

```
cd
pwd
x="/home/ubuntu/workspace"
cd $x
pwd
echo $x $y monica "monica"
history
Shell> cd
Shell> ls
lib monica_history monica_log workspace
Shell> cat monica_log
Child process was terminated
Child process was terminated
Child process was terminated
Child process was terminated
Child process was terminated
Shell> vim
Shell> x=5 y=10 z=$y
Shell> echo $x $y $z
5 10 10
Shell> ls -l
total 16
drwxr-xr-x 3 ubuntu ubuntu 4096 Oct 21 12:36 lib
-rw-r--r-- 1 ubuntu ubuntu 145 Oct 23 18:13 monica_history
-rw-r--r-- 1 ubuntu ubuntu 203 Oct 23 18:12 monica_log
drwxrwxr-x 3 ubuntu ubuntu 4096 Oct 23 18:02 workspace
Shell> 
```

```
Immediate (Javascript) x bash - "monica_sala" x +
monica_salama:~/workspace $ ./SHELL test
Command: pwd
/home/ubuntu/workspace
Command:
Command: ls
README.md SHELL Shell.c test
Command: x=5
Command: echo $x
5
Command:
Command: echo "MONICA" $x
MONICA 5
Command:
Command: #comments
Command:
Command: cat /home/ubuntu/monica_log
Child process was terminated
Child process was terminated
Command:
Command: ls -a
. .. .c9 .swp README.md SHELL Shell.c test
Command:
Command: cd
Command:
Command: shishs
Error: No such file or directory
Command:
Command:
Command: exit
monica_salama:~/workspace
```

```

bin main.c monica.cbp monica.depend obj
Shell> ls -al
total 20
drwxr-xr-x 4 ubuntu ubuntu 140 Oct 23 06:46 .
drwxr-xr-x 7 ubuntu ubuntu 140 Oct 23 06:38 ..
drwxr-xr-x 3 ubuntu ubuntu 60 Oct 23 06:41 bin
-rw-r--r-- 1 ubuntu ubuntu 8910 Oct 23 06:41 main.c
-rw-r--r-- 1 ubuntu ubuntu 1057 Oct 23 06:38 monica.cbp
-rw-r--r-- 1 ubuntu ubuntu 184 Oct 23 06:46 monica.depend
drwxr-xr-x 3 ubuntu ubuntu 60 Oct 23 06:41 obj
Shell> pwd
/home/ubuntu/Desktop/codeblocks/monica
Shell> mkdir cs333
Shell> touch cs333/lab1.txt
Shell> ls
bin cs333 main.c monica.cbp monica.depend obj
Shell> cd cs333
Shell> ls
lab1.txt
Shell> cd ~
Shell> ls
Desktop Downloads monica_history Music Public Videos
Documents logFile.txt monica_log Pictures Templates
Shell> cd ../
Shell> ls
ubuntu
Shell> cd ubuntu/Desktop
Shell> ls
codeblocks cs333 examples.desktop logFile.txt ubiquity-gtkui.desktop
Shell>

```



