

# CAOS Assignment 1

## Make your own shell

### Commands being executed:

Internal:

cd', 'echo', 'history', 'pwd' and 'exit'

External:

ls', 'cat', 'date', 'rm' and 'mkdir'

For external commands, all options such as '-v', i.e. verbose flag, '-r', '-f', etc. all will work in this shell

For internal command, 'echo', option '-n' and '-E' will work.

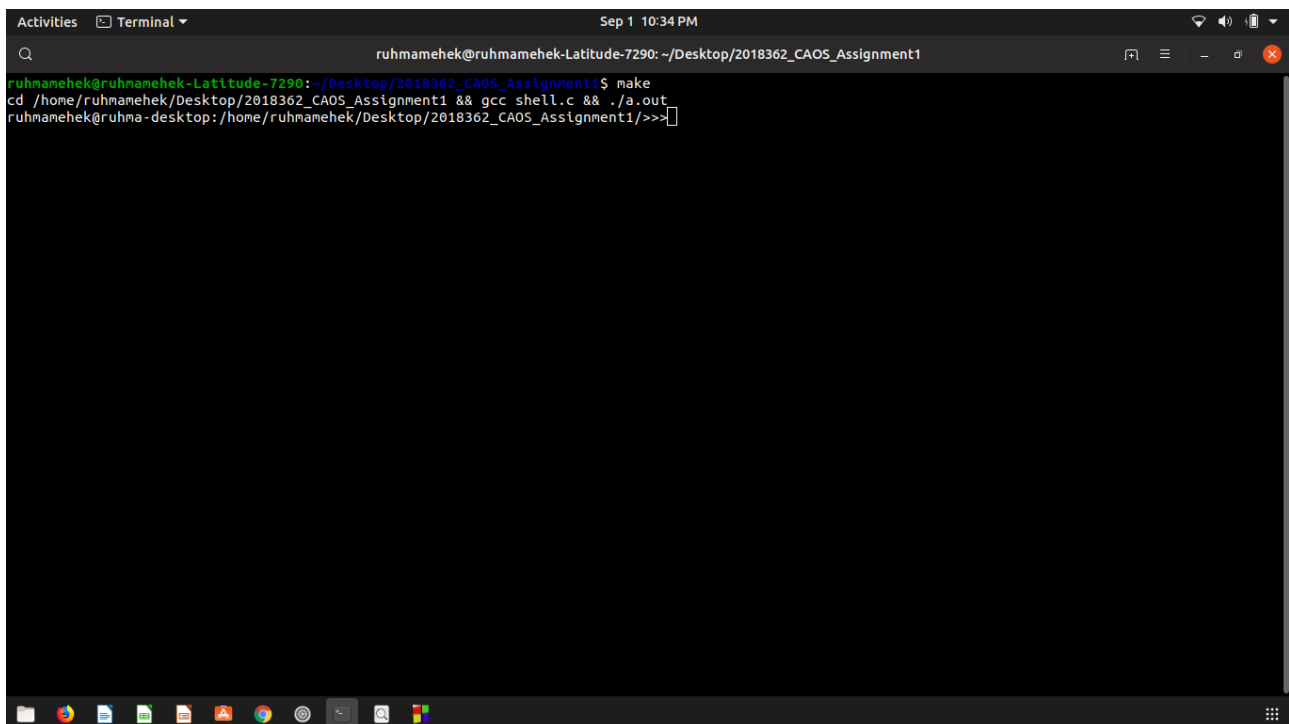
For internal command, 'history', option '-c' and '-n' will work.

For internal command 'pwd', option '-L' and '-P' will work.

Error cases such as trying to remove an invalid directory, using a wrong option for pwd, using echo for a blank line, trying to open a file that does not exist, trying to create a directory with the same name, etc. are handled by the shell

Screenshots are attached below to show the working of the shell:

Makefile:



```
Activities Terminal Sep 1 10:34 PM
ruhnamehek@ruhnamehek-Latitude-7290: ~/Desktop/2018362_CAOS_Assignment1
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ make
cd /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1 && gcc shell.c && ./a.out
ruhnamehek@ruhnamehek-desktop:/home/ruhnamehek/Desktop/2018362_CAOS_Assignment1/>>>>
```

## Shell commands:

```
Activities Terminal Sep 1 10:22 PM
ruhnamehek@ruhnamehek-Latitude-7290: ~/Desktop/2018362_CAOS_Assignment1

ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ gcc shell.c
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ ./a.out
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ ls
a.out catcommand.c datecommand.c hello hello.txt lscommand.c Makefile mkdir.c rm.c shell.c Writeup.odt
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ ls -all
total 80
drwxr-xr-x 3 ruhnamehek ruhnamehek 4096 Sep 1 22:19 .
drwxr-xr-x 12 ruhnamehek ruhnamehek 4096 Sep 1 22:06 ..
-rwxr-xr-x 1 ruhnamehek ruhnamehek 17944 Sep 1 22:19 a.out
-rw-r--r-- 1 ruhnamehek ruhnamehek 808 Sep 1 18:08 catcommand.c
-rw-r--r-- 1 ruhnamehek ruhnamehek 809 Sep 1 2019 datecommand.c
drwxr-xr-x 2 ruhnamehek ruhnamehek 4096 Sep 1 22:18 hello
-rw-r--r-- 1 ruhnamehek ruhnamehek 0 Sep 1 22:19 hello.txt
-rw-rw-r-- 1 ruhnamehek ruhnamehek 100 Sep 1 22:17 .lock.Writeup.odt#
-rw-r--r-- 1 ruhnamehek ruhnamehek 807 Sep 1 2019 lscommand.c
-rw-r--r-- 1 ruhnamehek ruhnamehek 110 Sep 1 21:55 Makefile
-rw-r--r-- 1 ruhnamehek ruhnamehek 810 Sep 1 18:09 mkdir.c
-rw-r--r-- 1 ruhnamehek ruhnamehek 807 Sep 1 18:08 rm.c
-rw-rw-r-- 1 ruhnamehek ruhnamehek 5282 Sep 1 22:15 shell.c
-rw-rw-r-- 1 ruhnamehek ruhnamehek 11307 Sep 1 22:17 Writeup.odt
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ mkdir -v testfile
mkdir: created directory 'testfile'
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ rm -v hello
rm: cannot remove 'hello': Is a directory
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ rm -v hello.txt
removed 'hello.txt'
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ echo -E \ t
t
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ echo -n hey
hey
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ echo
hey
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ pwd
Current working dir is: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ pwd -L
/home/ruhnamehek/Desktop/2018362_CAOS_Assignment1
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ pwd -l
/home/ruhnamehek/Desktop/2018362_CAOS_Assignment1
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ pwd -l
Invalid option
```

```
Activities Terminal Sep 1 10:22 PM
ruhnamehek@ruhnamehek-Latitude-7290: ~/Desktop/2018362_CAOS_Assignment1

ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ ls
a.out catcommand.c datecommand.c hello hello.txt lscommand.c Makefile mkdir.c rm.c shell.c Writeup.odt
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ ls -all
total 80
drwxr-xr-x 3 ruhnamehek ruhnamehek 4096 Sep 1 22:19 .
drwxr-xr-x 12 ruhnamehek ruhnamehek 4096 Sep 1 22:06 ..
-rwxr-xr-x 1 ruhnamehek ruhnamehek 17944 Sep 1 22:19 a.out
-rw-r--r-- 1 ruhnamehek ruhnamehek 808 Sep 1 18:08 catcommand.c
-rw-r--r-- 1 ruhnamehek ruhnamehek 809 Sep 1 2019 datecommand.c
drwxr-xr-x 2 ruhnamehek ruhnamehek 4096 Sep 1 22:18 hello
-rw-r--r-- 1 ruhnamehek ruhnamehek 0 Sep 1 22:19 hello.txt
-rw-rw-r-- 1 ruhnamehek ruhnamehek 100 Sep 1 22:17 .lock.Writeup.odt#
-rw-r--r-- 1 ruhnamehek ruhnamehek 807 Sep 1 2019 lscommand.c
-rw-r--r-- 1 ruhnamehek ruhnamehek 110 Sep 1 21:55 Makefile
-rw-r--r-- 1 ruhnamehek ruhnamehek 810 Sep 1 18:09 mkdir.c
-rw-r--r-- 1 ruhnamehek ruhnamehek 807 Sep 1 18:08 rm.c
-rw-rw-r-- 1 ruhnamehek ruhnamehek 5282 Sep 1 22:15 shell.c
-rw-rw-r-- 1 ruhnamehek ruhnamehek 11307 Sep 1 22:17 Writeup.odt
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ mkdir -v testfile
mkdir: created directory 'testfile'
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ rm -v hello
rm: cannot remove 'hello': Is a directory
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ rm -v hello.txt
removed 'hello.txt'
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ echo -E \ t
t
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ echo -n hey
hey
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ echo
hey
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ pwd
Current working dir is: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ pwd -L
/home/ruhnamehek/Desktop/2018362_CAOS_Assignment1
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ pwd -l
/home/ruhnamehek/Desktop/2018362_CAOS_Assignment1
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ pwd -l
Invalid option
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ cd hello
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1/hello$ cd ..
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ date
Sun Sep 1 22:21:03 IST 2019
ruhnamehek@ruhnamehek-Latitude-7290:~/Desktop/2018362_CAOS_Assignment1$ cat Writeup.odt
```

```
Activities Terminal Sep 1 10:23 PM
ruhnamehek@ruhnamehek-Latitude-7290: ~/Desktop/2018362_CAOS_Assignment1

C-%@&META-INF/manifest.xmlPK* ruhnamehek@ruhnamehek-desktop: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1/>>>cat shell.c
#include <sys/wait.h>
#include <sys/types.h>
#include <ctype.h>
#include <unistd.h>
#include <stdlib.h>
#include <stdio.h>
#include <string.h>
#include <unistd.h>
#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
#include <stdlib.h>
#include <errno.h>

#include "datecommand.c"
#include "lscommand.c"
#include "catcommand.c"
#include "rm.c"
#include "mkdir.c"

#define MAX_LINE 10000

int func_cd(char **args);
int func_exit(char **args);
int func_pwd(char **args);
int func_ls(char **args);
int func_date(char **args);
int func_cat(char **args);
int func_rm(char **args);
int func_mkdir(char **args);
void func_history(char **args);
char *hist[1024];
int run_func;
```

```
Activities Terminal Sep 1 10:25 PM
ruhnamehek@ruhnamehek-Latitude-7290: ~/Desktop/2018362_CAOS_Assignment1

hey ruhnamehek@ruhnamehek-desktop: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1/>>>echo bye
bye
ruhnamehek@ruhnamehek-desktop: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1/>>>history
ls
pwd
echo hello
echo -n hey
echo bye
history
ruhnamehek@ruhnamehek-desktop: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1/>>>pwd
Current working dir is: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1
ruhnamehek@ruhnamehek-desktop: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1/>>>ls
a.out catcommand.c datecommand.c hello lscommand.c Makefile mkdir.c rm.c shell.c testfile Writeup.odt
ruhnamehek@ruhnamehek-desktop: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1/>>>ls -all
total 84
drwxr-xr-x  4 ruhnamehek ruhnamehek 4096 Sep  1 22:24 .
drwxr-xr-x 12 ruhnamehek ruhnamehek 4096 Sep  1 22:06 ..
-rwxr-xr-x  1 ruhnamehek ruhnamehek 17944 Sep  1 22:24 a.out
-rw-r--r--  1 ruhnamehek ruhnamehek  808 Sep  1 18:08 catcommand.c
-rw-r--r--  1 ruhnamehek ruhnamehek  809 Sep  1 2019 datecommand.c
drwxr-xr-x  2 ruhnamehek ruhnamehek 4096 Sep  1 22:18 hello
-rw-rw-r--  1 ruhnamehek ruhnamehek  100 Sep  1 22:17 ~/.lock.Writeup.odt#
-rw-r--r--  1 ruhnamehek ruhnamehek  807 Sep  1 2019 lscommand.c
-rw-r--r--  1 ruhnamehek ruhnamehek  110 Sep  1 21:55 Makefile
-rw-r--r--  1 ruhnamehek ruhnamehek  810 Sep  1 18:09 mkdir.c
-rw-r--r--  1 ruhnamehek ruhnamehek  807 Sep  1 18:08 rm.c
-rw-rw-r--  1 ruhnamehek ruhnamehek 5305 Sep  1 22:23 shell.c
drwxr-xr-x  2 ruhnamehek ruhnamehek 4096 Sep  1 22:19 testfile
-rw-rw-r--  1 ruhnamehek ruhnamehek 11307 Sep  1 22:17 Writeup.odt
ruhnamehek@ruhnamehek-desktop: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1/>>>history -n
pwd
ls
ls -all
history -n
ruhnamehek@ruhnamehek-desktop: /home/ruhnamehek/Desktop/2018362_CAOS_Assignment1/>>>exit
ruhnamehek@ruhnamehek-Latitude-7290: ~/Desktop/2018362_CAOS_Assignment1$
```