

## Assignment #2

### Jesus Gutierrez

### **LINUX UNIX COMMANDS:**

sleep: suspends program execution for a specified time in seconds.

pwd: writes the full pathname of the current working directory.

echo: outputs the strings it is being passed as arguments.

cat: reads files sequentially, writing them to standard output.

wc: newline count, word count, and byte count

ls: ls lists the files in the current working directory.

**Task-1: Basic shell implementation** Your shell must execute all simple Linux commands like **ls, wc, cat, echo, pwd** and **sleep**.

Ls command:

```
jesusgtz@Jesuss-MacBook-Pro hw2 % ./m
minershell $ ls
Assignment2.docx      exampleshell.c      text
PythonOS              m                   ~$signment2.docx
ex                    minershell.c
```

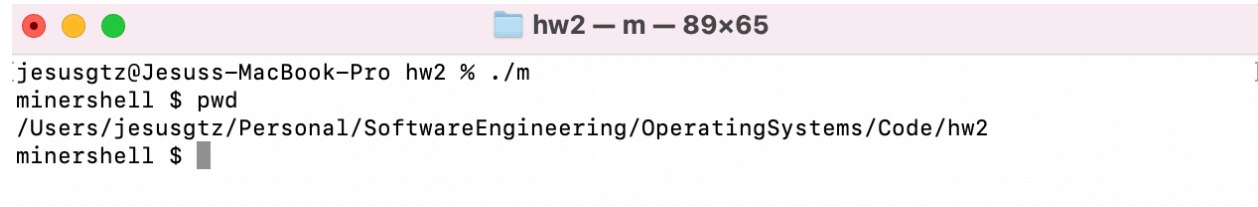
Wc command:

```
minershell $ wc minershell.c
   63   161  1163 minershell.c
minershell $
```

Echo command:

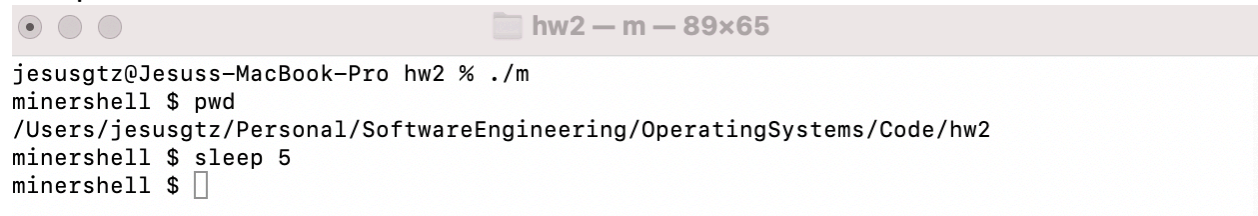
```
jesusgtz@Jesuss-MacBook-Pro hw2 % ./m
minershell $ echo HELLO WORLD THIS IS MY SHELL
HELLO WORLD THIS IS MY SHELL
minershell $
```

### Pwd command:



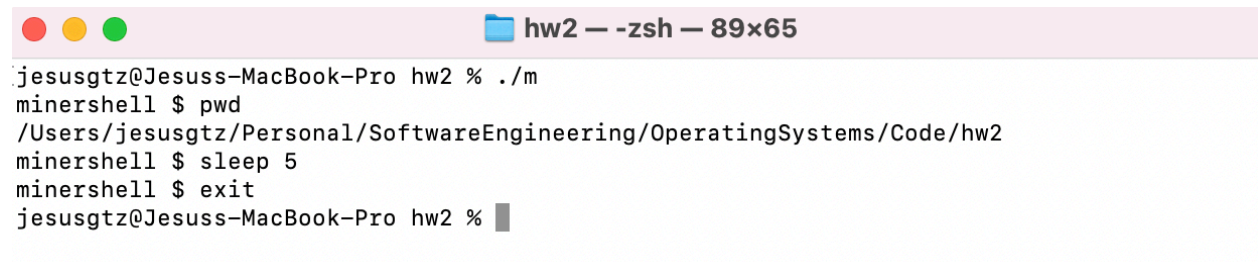
```
jesusgtz@Jesuss-MacBook-Pro hw2 % ./m
minershell $ pwd
/Users/jesusgtz/Personal/SoftwareEngineering/OperatingSystems/Code/hw2
minershell $
```

### Sleep command:



```
jesusgtz@Jesuss-MacBook-Pro hw2 % ./m
minershell $ pwd
/Users/jesusgtz/Personal/SoftwareEngineering/OperatingSystems/Code/hw2
minershell $ sleep 5
minershell $
```

### Exit command:



```
jesusgtz@Jesuss-MacBook-Pro hw2 % ./m
minershell $ pwd
/Users/jesusgtz/Personal/SoftwareEngineering/OperatingSystems/Code/hw2
minershell $ sleep 5
minershell $ exit
jesusgtz@Jesuss-MacBook-Pro hw2 %
```

Cat command:



```
jesusgtz@Jesuss-MacBook-Pro hw2 % cat minershell.c
/* Basic Shell Implementation
   @Author: Jesus Gutierrez
   @Last Modified: September 17th, 2021
*/

#include <stdio.h>
#include <sys/types.h>
#include <stdlib.h>
#include <string.h>
#include <unistd.h>

#define MAX_INPUT_SIZE 1024
#define MAX_TOKEN_SIZE 64
#define MAX_NUM_TOKENS 64

void parse(char *line, char **argv) {
    while(*line != '\0') {
        while(*line == ' ' || *line == '\t' || *line == '\n')
            *line++ = '\0';
        *argv++ = line;
        while(*line != '\0' && *line != ' ' &&
              *line != '\t' && *line != '\n')
            line++;
    }
}

void execute(char **argv) {
    pid_t p;
    int i;

    /* Forking a child process */
    if((p = fork()) < 0) {
        exit(1);
    }
    else if(p == 0) {
        if(execvp(*argv, argv) < 0) {
            /* Executes the command for the child process */
            printf("Please enter a valid command.\n");
            exit(1);
        }
    }
    /* Parent process */
    else {
        while(wait(&i) != p)
            ;
    }
}

int main(void) {
    char line[MAX_INPUT_SIZE];
    char *argv[MAX_TOKEN_SIZE];

    while(1) {
        printf("minershell $ ");
        scanf("%s", line);
        getchar();

        parse(line, argv);
        if (strcmp(argv[0], "exit")==0)
            exit(0);

        execute(argv);
        chdir(*argv);
    }
}

jesusgtz@Jesuss-MacBook-Pro hw2 %
```

**Task-2: Enabling change of directory** proceed to implement support for the **cd** command in your shell using the **chdir** system call.

```
jesusgtz@Jesuss-MacBook-Pro hw2 % ./m
minershell $ ls
Assignment2.docx      exampleshell.c      text
PythonOS             m                   ~$signment2.docx
es                   mine
ex                   minershell.c

minershell $ cd ..
minershell $ cd ..
minershell $ ls
ArtificialIntelligence DatabaseManagement    SoftwareI
ComputerSecurity       OperatingSystems     SoftwareII
DataMining             ProgrammingLanguages

minershell $ cd ..
minershell $ ls
DatabaseManagement    Resume               WebsiteDevelopment
Graduation            SoftwareEngineering
RealEstate            Videos

minershell $ cd ..
minershell $ ls
Applications    Downloads    Music    Pictures
Desktop         Library     OneDrive  Public
Documents       Movies      Personal  get-pip.py
minershell $ cd .. Personal
minershell $ ls
..:
Shared      jesusgtz

Personal:
DatabaseManagement    Resume               WebsiteDevelopment
Graduation            SoftwareEngineering
RealEstate            Videos
```

DISCLAIMER, my shell does '**cd ..**' to go back which is the right command, although for moving forward to an existing directory then '**cd .. <directory name>**' can be used.