## Program 2 Result Long Tran

1) Level 1 + Level 2 + Level 3: A solution which reads in a command line with and without arguments

```
exiting fro... Aa Abl **
                 cBook-Pro:~/Personal/ComputerScience/CS474/Program2$ make
 longtran@Lo
gcc -c program2.c
gcc program2.o utilities.o -o program2
                                            rScience/CS474/Program2$ ./program2
/Users/longtran/Personal/ComputerScience/CS474/Program2% /bin/ls
CONSTANTS.h Makefile a b c
                                                                                                                                                       test_file things_to_do utilities.c utilities.h utilities.o
                                                                           program2.c program2.o
/Users/longtran/Personal/ComputerScience/CS474/Program2% /bin/ls -l
total 232
            1 longtran staff
1 longtran staff
 -rw-r--r--
                                421 Sep 26 23:20 CONSTANTS.h
 -rw-r--r--
                                319 Sep 26 23:04 Makefile
                                135 Sep 24 22:10 a
-rw-r--r--
           1 longtran staff
                                 12 Sep 24 13:07 b
 -rw-r--r--
            1 longtran staff
 -rw-r--r-- 1 longtran staff
                                  12 Sep 24 16:29 c
                              27012 Sep 26 23:26
 -rwxr-xr-x
            1 longtran staff
 -rw-r--r-- 1 longtran staff 32281 Sep 26 23:26 program2.c
-rw-r--r-- 1 longtran staff 16096 Sep 26 23:26 program2.o
drwxr-xr-x 5 longtran staff
                                160 Sep 23 14:09
                                576 Sep 24 23:56
drwxr-xr-x 18 longtran staff
drwxr-x--x 2 longtran staff
drwxr-x--x 2 longtran staff
                                 64 Sep 24 15:34
                                 64 Sep 24 15:37
 -rw-r--r--
            1 longtran staff
                                 32 Sep 26 23:08 test_file
                                794 Sep 24 23:30 things_to_do
 -rw-r--r-- 1 longtran staff
 -rw-r--r-- 1 longtran staff 1427 Sep 26 23:06 utilities.c
                                312 Sep 26 23:05 utilities.h
 -rw-r--r-- 1 longtran staff
 -rw-r--r 1 longtran staff 976 Sep 26 23:08 utilities.o
/Users/longtran/Personal/ComputerScience/CS474/Program2%
```

4) Level 4 - performs chdir (cd), pwd, echo, and exit

## 5) Level 5 - IO redirection

```
longtran@Longs-MacBook-Pro:~/Persona
make: Nothing to be done for `all'.
                                                                nal/ComputerScience/CS474/Program2$ make
longtran@Longs-MacBook-Pro:~/Personal/ComputerScience/CS474/Program2$ ./program2
/Users/longtran/Personal/ComputerScience/CS474/Program2% /bin/ls -l > my_file.txt
/Users/longtran/Personal/ComputerScience/CS474/Program2% /bin/ls -l
total 240
                                                              421 Sep 26 23:20 CONSTANTS.h
319 Sep 26 23:04 Makefile
135 Sep 24 22:10 a
12 Sep 24 13:07 b
12 Sep 24 16:29 c
 -rw-r--r--
                        1 longtran staff
 -rw-r--r--
                        1 longtran staff
 -rw-r--r--
                        1 longtran
                                             staff
                        1 longtran
 -rw-r--r--
                                              staff
 -rw-r--r--
                        1 longtran
                                             staff
                                                           1146 Sep 26 23:34 my_file.txt
64 Sep 26 23:32
27012 Sep 26 23:26 program2
32281 Sep 26 23:26 program2.c
                        1 longtran
 -rw-r--r--
                                              staff
                        2 longtran
1 longtran
drwxr-x--x
                                              staff
 -rwxr-xr-x
                                              staff
 -rw-r--r--
                        1 longtran
                                             staff
                                                           16096 Sep 26 23:26 program2.o
-rw-r--- 1 longtran staff 16096 Sep 26 23:26 program2.o
drwxr-xr-x 5 longtran staff 160 Sep 23 14:09
drwxr-xr-x 18 longtran staff 576 Sep 24 23:56 test
drwxr-x--- 2 longtran staff 64 Sep 24 15:34 test
drwxr-x--- 1 longtran staff 64 Sep 24 15:37 test
drwxr-x--- 1 longtran staff 32 Sep 26 23:08 test_file
-rw-r--- 1 longtran staff 794 Sep 24 23:30 things_to_do
-rw-r---- 1 longtran staff 1427 Sep 26 23:08 utilities.c
-rw-r---- 1 longtran staff 312 Sep 26 23:08 utilities.h
-rw-r---- 1 longtran staff 976 Sep 26 23:08 utilities.o
/Users/longtran/Personal/ComputerScience/CS474/Program2% /usr/bin/more my_file.txt
total 232
                        1 longtran
                                              staff
total 232
                                                              421 Sep 26 23:20 CONSTANTS.h
319 Sep 26 23:04 Makefile
135 Sep 24 22:10 a
                        1 longtran staff
 -rw-r--r--
 -rw-r--r--
                        1 longtran
                                             staff
                        1 longtran
 -rw-r--r--
                                             staff
                                                                12 Sep 24 13:07 b
  -rw-r--r--
                        1 longtran
                                              staff
 -rw-r--r--
                        1 longtran
                                              staff
                                                                12
                                                                      Sep 24 16:29 c
                                                          12 Sep 24 16:29 c

0 Sep 26 23:34 my_file.txt

64 Sep 26 23:32 my_folder

27012 Sep 26 23:26 program2

32281 Sep 26 23:26 program2.c

16096 Sep 26 23:26 program2.o

160 Sep 23 14:09 references

576 Sep 24 23:56 test

64 Sep 24 15:34 test2

64 Sep 24 15:37 test3
 -rw-r--r--
                        1 longtran
                                              staff
drwxr-x--x
                        2 longtran
                                              staff
-rwxr-xr-x
                        1 longtran
                                              staff
 -rw-r--r--
                        1 longtran
                                              staff
                        1 longtran
 -rw-r--r--
                                             staff
drwxr-xr-x
                        5 longtran
                                              staff
drwxr-xr-x 18 longtran
                                             staff
                      2 longtran
2 longtran
1 longtran
drwxr-x--x
                                              staff
                                                                64 Sep 24 15:37 test3
32 Sep 26 23:08 test_file
                                             staff
drwxr-x--x
 -rw-r--r--
                                              staff
                                                             794 Sep 24 23:30 things_to_do
1427 Sep 26 23:06 utilities.c
312 Sep 26 23:05 utilities.h
 -rw-r--r--
                        1 longtran
                                             staff
                        1 longtran
 -rw-r--r-
                                             staff
 -rw-r--r--
                        1 longtran
                                             staff
                        1 longtran
                                                              976 Sep 26 23:08 utilities.o
                                              staff
/Users/longtran/Personal/ComputerScience/CS474/Program2% /bin/cat < my_file.txt > my_file1.txt /Users/longtran/Personal/ComputerScience/CS474/Program2% /usr/bin/more my_file1.txt
total 232
                                                          421 Sep 26 23:20 CONSTANTS.h
319 Sep 26 23:04 Makefile
135 Sep 24 22:10 a
12 Sep 24 13:07 b
12 Sep 24 16:29 c
0 Sep 26 23:34 my_file.txt
64 Sep 26 23:32 my_folder
27012 Sep 26 23:26 program2
32281 Sep 26 23:26 program2.c
16096 Sep 26 23:26 program2.o
160 Sep 23 14:09 references
576 Sep 24 23:56 test
-rw-r--r--
                        1 longtran
                        1 longtran
1 longtran
 -rw-r--r--
                                            staff
 -rw-r--r--
                                             staff
 -rw-r--r--
                        1 longtran
                                              staff
 -rw-r--r--
                        1 longtran
                                             staff
                        1 longtran
2 longtran
 -rw-r--r--
                                              staff
                                             staff
drwxr-x--x
                        1 longtran
                                             staff
 -rwxr-xr-x
 -rw-r--r--
                                             staff
                        1 longtran
 -rw-r--r--
                        1 longtran
                                             staff
                            longtran
drwxr-xr-x
                                             staff
drwxr-xr-x 18
                                                               576 Sep 24 23:56 test
                            longtran
                                              staff
                            longtran
                                              staff
                                                                64
                                                                      Sep 24 15:34 test2
drwxr-x--x
                            longtran
                                              staff
                                                                      Sep 24 15:37 test3
  -rw-r--r--
                        1 longtran
                                              staff
                                                                32 Sep 26 23:08 test_file
```

## (Part 1)

```
-rw-r--r-- 1 longtran staff 794 Sep 24 23:30 things_to_do
-rw-r--r-- 1 longtran staff 1427 Sep 26 23:06 utilities.c
-rw-r--r-- 1 longtran staff 312 Sep 26 23:05 utilities.h
-rw-r--r-- 1 longtran staff 976 Sep 26 23:08 utilities.o
/Users/longtran/Personal/ComputerScience/CS474/Program2% /bin/ls
CONSTANTS.h a c my_file1.txt program2 program2.o task things_to_do utilities.h
Makefile b my_file.txt program2.c task test_file utilities.c utilities.o
/Users/longtran/Personal/ComputerScience/CS474/Program2% []
```