

## Program 2 Result Long Tran

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

```
longtran@longs-MacBook-Pro:~/Personal/ComputerScience/CS474/Program2$ make
gcc -c program2.c
gcc program2.o utilities.o -o program2
longtran@longs-MacBook-Pro:~/Personal/ComputerScience/CS474/Program2$ ./program2
/Users/longtran/Personal/ComputerScience/CS474/Program2% /bin/ls
CONSTANTS.h  Makefile      a              b              c              program2      program2.c    program2.o    references    test          test2         test3         test_file    things_to_do  utilities.c    utilities.h    utilities.o
/Users/longtran/Personal/ComputerScience/CS474/Program2% /bin/ls -l
total 232
-rw-r--r--  1 longtran  staff   421 Sep 26 23:20 CONSTANTS.h
-rw-r--r--  1 longtran  staff   319 Sep 26 23:04 Makefile
-rw-r--r--  1 longtran  staff   135 Sep 24 22:10 a
-rw-r--r--  1 longtran  staff    12 Sep 24 13:07 b
-rw-r--r--  1 longtran  staff    12 Sep 24 16:29 c
-rwxr-xr-x  1 longtran  staff 27012 Sep 26 23:26 program2
-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 references
drwxr-xr-x 18 longtran  staff   576 Sep 24 23:56 test
drwxr-xr-x  2 longtran  staff    64 Sep 24 15:34 test2
drwxr-xr-x  2 longtran  staff    64 Sep 24 15:37 test3
-rw-r--r--  1 longtran  staff    32 Sep 26 23:08 test_file
-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% █
```

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

```
longtran@longs-MacBook-Pro:~/Personal/ComputerScience/CS474/Program2$ make
make: Nothing to be done for 'all'.
longtran@longs-MacBook-Pro:~/Personal/ComputerScience/CS474/Program2$ ./program2
/Users/longtran/Personal/ComputerScience/CS474/Program2% pwd
/Users/longtran/Personal/ComputerScience/CS474/Program2
/Users/longtran/Personal/ComputerScience/CS474/Program2% /bin/ls -l
total 232
-rw-r--r--  1 longtran  staff   421 Sep 26 23:20 CONSTANTS.h
-rw-r--r--  1 longtran  staff   319 Sep 26 23:04 Makefile
-rw-r--r--  1 longtran  staff   135 Sep 24 22:10 a
-rw-r--r--  1 longtran  staff    12 Sep 24 13:07 b
-rw-r--r--  1 longtran  staff    12 Sep 24 16:29 c
-rwxr-xr-x  1 longtran  staff 27012 Sep 26 23:26 program2
-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 references
drwxr-xr-x 18 longtran  staff   576 Sep 24 23:56 test
drwxr-xr-x  2 longtran  staff    64 Sep 24 15:34 test2
drwxr-xr-x  2 longtran  staff    64 Sep 24 15:37 test3
-rw-r--r--  1 longtran  staff    32 Sep 26 23:08 test_file
-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% cd test
/Users/longtran/Personal/ComputerScience/CS474/Program2/test% pwd
/Users/longtran/Personal/ComputerScience/CS474/Program2/test
/Users/longtran/Personal/ComputerScience/CS474/Program2/test% /bin/ls
a      a.out  asdf   bana   dir    loop.c  one    penguin test  test.c  test.txt test1   test2   test2.c three   two
/Users/longtran/Personal/ComputerScience/CS474/Program2/test% echo Hello World!!! This is Long Tran
Hello World!!! This is Long Tran
/Users/longtran/Personal/ComputerScience/CS474/Program2/test% exit
exiting...
: Undefined error: 0
longtran@longs-MacBook-Pro:~/Personal/ComputerScience/CS474/Program2$ █
```

## 5) Level 5 - IO redirection

```
longtran@Longs-MacBook-Pro:~/Personal/ComputerScience/CS474/Program2$ make
make: Nothing to be done for `all'.
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
-rw-r--r--  1 longtran  staff   421 Sep 26 23:20 CONSTANTS.h
-rw-r--r--  1 longtran  staff   319 Sep 26 23:04 Makefile
-rw-r--r--  1 longtran  staff   135 Sep 24 22:10 a
-rw-r--r--  1 longtran  staff    12 Sep 24 13:07 b
-rw-r--r--  1 longtran  staff    12 Sep 24 16:29 c
-rw-r--r--  1 longtran  staff  1146 Sep 26 23:34 my_file.txt
drwxr-xr-x  2 longtran  staff    64 Sep 26 23:32 my_folder
-rwxr-xr-x  1 longtran  staff 27012 Sep 26 23:26 program2
-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 references
drwxr-xr-x 18 longtran  staff   576 Sep 24 23:56 test
drwxr-xr-x  2 longtran  staff    64 Sep 24 15:34 test2
drwxr-xr-x  2 longtran  staff    64 Sep 24 15:37 test3
-rw-r--r--  1 longtran  staff    32 Sep 26 23:08 test_file
-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% /usr/bin/more my_file.txt
total 232
-rw-r--r--  1 longtran  staff   421 Sep 26 23:20 CONSTANTS.h
-rw-r--r--  1 longtran  staff   319 Sep 26 23:04 Makefile
-rw-r--r--  1 longtran  staff   135 Sep 24 22:10 a
-rw-r--r--  1 longtran  staff    12 Sep 24 13:07 b
-rw-r--r--  1 longtran  staff    12 Sep 24 16:29 c
-rw-r--r--  1 longtran  staff    0 Sep 26 23:34 my_file.txt
drwxr-xr-x  2 longtran  staff    64 Sep 26 23:32 my_folder
-rwxr-xr-x  1 longtran  staff 27012 Sep 26 23:26 program2
-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 references
drwxr-xr-x 18 longtran  staff   576 Sep 24 23:56 test
drwxr-xr-x  2 longtran  staff    64 Sep 24 15:34 test2
drwxr-xr-x  2 longtran  staff    64 Sep 24 15:37 test3
-rw-r--r--  1 longtran  staff    32 Sep 26 23:08 test_file
-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/cat < my_file.txt > my_file1.txt
/Users/longtran/Personal/ComputerScience/CS474/Program2% /usr/bin/more my_file1.txt
total 232
-rw-r--r--  1 longtran  staff   421 Sep 26 23:20 CONSTANTS.h
-rw-r--r--  1 longtran  staff   319 Sep 26 23:04 Makefile
-rw-r--r--  1 longtran  staff   135 Sep 24 22:10 a
-rw-r--r--  1 longtran  staff    12 Sep 24 13:07 b
-rw-r--r--  1 longtran  staff    12 Sep 24 16:29 c
-rw-r--r--  1 longtran  staff    0 Sep 26 23:34 my_file.txt
drwxr-xr-x  2 longtran  staff    64 Sep 26 23:32 my_folder
-rwxr-xr-x  1 longtran  staff 27012 Sep 26 23:26 program2
-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 references
drwxr-xr-x 18 longtran  staff   576 Sep 24 23:56 test
drwxr-xr-x  2 longtran  staff    64 Sep 24 15:34 test2
drwxr-xr-x  2 longtran  staff    64 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  test       test2       test3       things_to_do  utilities.h
Makefile     b          my_file.txt  my_folder    program2.c  references  test3      test_file   utilities.c   utilities.o
/Users/longtran/Personal/ComputerScience/CS474/Program2% □
```

(Part 2)