**CSC 338 Parallel and Distributed Computing**

**Exercise No. 1, August 25, 2016**

**Introduction to the programming environment**

**Goal**

Become familiar with the Unix command line

**Procedure**

1. Start Cygwin from the start menu
2. Find the current working directory (pwd)
3. Create a directory named *temp* (mkdir temp)
4. Change directory to temp (cd temp)
5. Create a new file named *hello.c* (touch hello.c)
6. Enter code into hello.c:

vi hello.c

i //Enter insert mode

#include <stdio.h>

void main() {

printf("Hello world!\n");

}

//Press the escape key to exit insert mode

:wq //Write and quit

1. Compile hello.c (gcc hello.c)
2. List the files in your directory (ls)
3. Execute a.exe (./a)
4. Compile hello.c again but give it a name this time (gcc -o hello hello.c)
5. List the files in your directory
6. Execute hello
7. Copy hello.c to hello10.c (cp hello.c hello10.c)
8. Modify hello10.c to print the Hello world! 10 times:

vi hello10.c

Position your cursor on the void main() line (use arrow keys or hjkl)

Enter insert mode at the end of the line (*A* for add at end of line)

Add the code, beginning with newline, then exit insert mode (*ESC*)

15. Compile hello10.c; designate the output to go to hello10

16. Execute hello10

17. List the files with their size and date of creation (ls –l) (that’s a lower case L)

18. See if there are any hidden files (ls –a)

19. List only the files ending in exe (ls \*.exe)

20. Remove the executable files (rm \*.exe)

21. Remove the c source files (rm \*.c)

22. Return to the parent directory (cd ..)

23. Remove the temp directory (rmdir temp)

24. Change to the root directory (cd /)

25. List the files in the root directory; how many of them are directories (ls –l)

26. Change to c: (cd cygdrive; cd c)

27. Change to your Documents folder (Users/your\_user\_name/Documents)

28. Make a directory for CSC338

29. Write a Python program to find out how many cores your system has:

idle count\_cores.py

import multiprocessing as mp

print(“There are”, mp.cpu\_count(), “cores on this machine”)

print(“By the way, 3/5 is”, 3/5)

30. Execute the program in IDLE (F5 or Run Module)

31. Exit IDLE

32. Execute count\_cores.py from the command line (python count\_cores.py)

33. Execute count\_cores.py from the command line again; redirect the output to a file:

python3 count\_cores.py > core\_count.txt

34. Print the core\_count.txt to the screen (cat core\_count.txt)

35. Create a new text file:

echo “Peter Piper picked a peck of pickled peppers” > .peter.txt

36. List the files in your working directory; where’s peter? (try ls –a)

37 Go back to your home directory (cd)

38. Devise an experiment to find out if Cygwin is case sensitive

**Notes**

5/6. You could just type vi hello.c but the file will not be created if you don’t write it

8. On Linux or Unix, the output file would be a.out—not a.exe

9. The current directory is usually not in the search path on Unix-style systems (‘.’ is the current working directory)

10. The space after –o is optional

20/21. You can remove all files in the working directory with rm \*; be very, very careful if you ever use this

*“An ohnosecond is the time between hitting ENTER and the disappearance of all your files”*

24. / is the Unix root directory

25. ls –l (long format) also tells you read/write/execute permissions of files and directories

32. IDLE opens in Python 3.5 (Anaconda distribution on Windows); the command line uses Cygwin’s default 2.7 distribution; I have no idea why that happens but we’ll probably do most of our Python programming on Windows

33. > redirects stdout to a file

34. cat “concatenates” a file to stdout

36. File names starting with ‘.’ are hidden. ls –a lists all files, including hidden ones

37. cd with no argument returns you, like Ulysses, to your Unix home (minus the Cyclops and Sirens)

~ also is a shorthand for your home directory. If you have a “stuff” directory in your home directory, you can type cd ~/stuff to go directly there from anywhere

38. Unix and Linux are case sensitive—CSC338 is not the same directory as csc338