# THE UNIVERSITY OF WESTERN ONTARIO

DEPARTMENT OF COMPUTER SCIENCE LONDON CANADA

## Software Tools and Systems Programming

(Computer Science 2211a)

## ASSIGNMENT 1

Due date: Tuesday, September 22, 2020, 11:55 pm Eastern Daylight Time

(Wednesday, September 23, 2020, 3:55 am Greenwich Mean Time)

Assignment overview

We would like students to get experience with Unix basics, C compilation, and assignment submission process.

For questions 1, 2, and 3, the answers should be typed and then converted to a pdf file,

asn1 answer.pdf.

1. Answer the following questions.
   1. What is an operating system? It is system software that manage computer hardware, software resources, and provides common services for computer programs.
   2. What is a kernel of an operating system? It is a computer program at the core of a computer’s operating system with complete control over everything in the system.
   3. What is a shell in Unix? A Unix shell is a command-line interpreter or shell that provides a command line user interface for Unix-like operating systems.
2. Answer the following questions. For this question, we assume that your current working directory is ∼*/courses/cs2211a/Asn/asn1/q2and3*. You should create directories along the path if they do not exist. In *q2and3*, create two directories, *dir0* and *dir1*, and two files, *df0* and *df1*. In *dir0* create a file *dir0*. In *dir1* create a file *df1*.
   1. What command do you use to create a directory? mkdir
   2. What command do you use to create a file? vi
3. Answer the following questions for the use of ls command assuming that your current working directory is ∼*/courses/cs2211a/Asn/asn1/q2and3*. For this question, please use

/usr/bin/ls in *compute.gaul.csd.uwo.ca*.

* 1. What is the result of command ls dir0 dir1 df0 df1? dir0:df1 dir1: df0
  2. What ls option(s) should we use if we want to display permission information? ls -l
  3. What option(s) should we add to ls dir0 dir1 to display permission information of

*dir0* and *dir1* but not their contents? Ls - l

* 1. Compare the results of commands ls and ls . , are the results different and why? (Are there actually any difference?)

Now demonstrate your answers by typing the appropriate commands and capture the screen (record your session) in a file called asn1 q3.script with the folowing steps.

* Type script asn1 q3.script to begin your screen capture session.
* Type date to show date and time
* Type who am i to show your user name.
* Type pwd to show your current working directory
* Type commands to demonstrate your answers
* Type exit to stop and exit your screen capture session.
* Type mv asn1 q3.script .. to move this file to the parent directory.

1. Your first C program. For this question, we assume that your current working directory is ∼*/courses/cs2211a/Asn/asn1*. Use a Unix editor, i.e. vi or emacs, to create a new C program file, named asn1.c. Your program should output the exact following to the screen:

Hello World!

Compile your program with gcc and ensure that the executable is labeled: asn1. The following step will record your screen session and complete question 4 with a file called asn1 q4.script.

* Type script asn1 q4.script to begin your screen capture session.
* Type date to show date and time
* Type who am i to show your user name.
* Type pwd to show your current working directory
* Compile your program again ensuring the executable is named: asn1
* Run the program.
* Type exit to stop and exit your screen capture session.

For assignment 1, in your Gaul account, you should have the following files in directory

∼*/courses/cs2211a/Asn/asn1* to be submitted:

* Asn SubmissionForm.txt (fill with the required information)
* asn1 answer.pdf (for question 1 to 3)
* asn1 q3.script (for question 3)
* asn1.c (for question 4)
* asn1 q4.script (for question 4)
* asn1 (for question 4)
* q2and3 (for question 2 and 3)

Change your current working directory to ∼*/courses/cs2211a/Asn*. Create a file named YourUserName asn1.tar.gz and submit this file for assignment 1. YourUserName should be your UWO email account user name which is the same as your Gual account

login user name. (For detailed information, please check *CS2211a Assignment Submission Guidelines*).

For asn1 answer.pdf, the following six lines should appear on the first page. CS2211a 2020

Assignment number Your name

Your student number Your UWO User Name Date Completed

For asn1.c, the following six lines should appear from line 1 to line 6 as comments.

// CS2211a 2020

// Assignment number

// Your name

// Your student number

// Your UWO User Name

// Date Completed

Please check CS2211a Assignment Submission Guidelines on OWL website for de- tailed information of submission process.

For assignment 1, we listed all steps for script command, all information needed for .pdf and .c files, and all files to be submitted, though the information can be found in CS2211a Assignment Submission Guidelines. This is to help you to get familiar with the submission process. Starting from assignment 2, we may not provide all these details.