

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.

- a. What is an operating system?
- b. What is a kernel of an operating system?
- c. What is a shell in Unix?

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`.

- a. What command do you use to create a directory?
- b. What command do you use to create a file?

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`.

- a. What is the result of command `ls dir0 dir1 df0 df1`?
- b. What `ls` option(s) should we use if we want to display permission information?

- c. What option(s) should we add to **ls dir0 dir1** to display permission information of *dir0* and *dir1* but not their contents?
- d. Compare the results of commands **ls** and **ls .**, are the results different and why?

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 following 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.

4. 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 detailed 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.