THE UNIVERSITY OF WESTERN ONTARIO

DEPARTMENT OF COMPUTER SCIENCE
LONDON CANADA

Software Tools and Systems Programming
(Computer Science 2211a)

LAB 7
The week of October 25-31, 2020
Due date: Monday, November 2, 2020, 11:55 pm Eastern Daylight Time
(Tuesday, November 3, 2020, 4:55 am Greenwich Mean Time)

The purpose of this lab is to get experience with Unix regular expression. We will use **grep** and **vi** commands in this lab.

1. Exercise with Unix regular expression using **grep** command. Answer questions **1.a)** to **1.l)**. Please use **grep** in **compute.gaul.csd.uwo.ca**. In this question, you may want to use dictionary file at **/usr/share/dict/words** and Unix commands at **/usr/bin/**.

a) Find all the English words that begin with "qu" and end with "y" grep ^qu words | grep y$

b) Find all the English words that contains all five vowels – a, e, i, o, u – in that order.

c) Find all the English words that do not contain any of the five vowels, – a, e, i, o, u. grep -i -v 'a\|e\|i\|o\|u' words.

d) Find all the Unix commands that begin with "t". grep -r ^t .

e) Find all the Unix commands with length 2.

f) Find all the Unix commands that end with a digit.

g) Find all the lines in a file that contain at least one alphabetic character.
hint: one can use [[**:alpha:**]] to replace [**a-zA-Z**]. grep [[:alpha:]] filename.

h) Find all the lines in a file that contain at least one non-alphabetic character. grep [[:punct:]] | [0-9] filename

i) Find all the lines in a file that do not contain even a single alphabetic character. grep -v. [[:alpha:]].

j) Find all the lines in a file that do not contain even a single non-alphabetic character. grep [^[[:punct:]] | [0-9]) filename.

k) Display the number of the empty lines in a file. grep '^$' filename | wc -l.

l) Find all the lines in a file, display all the lines found, preceded by their line numbers.
hint: use **cat** with an option.

2. Exercise with vi search and replace using regular expression. Please answer **2.c)**.

a) In your *~/courses/cs2211a/Labs/lab7* directory, use **vi** to create a file named **sr_w_re**, with the following 13 lines.

```
03-01-2020 04-01-2021
03-02-2020 04-02-2021
03-03-2020 04-03-2021
03-04-2020 04-04-2021
03-05-2020 04-05-2021
03-06-2020 04-06-2021
03-07-2020 04-07-2021
03-08-2020 04-08-2021
03-09-2020 04-09-2021
03-10-2020 04-10-2021
03-11-2020 04-11-2021
03-12-2020 04-12-2021
03-13-2020 04-13-2021
```

b) With one **vi** search and replace command using regular expression (regular expression recall), change the above 13 lines in **sr_w_re** to the following 13 lines.

```
20-03-01 21-04-01
20-03-02 21-04-02
20-03-03 21-04-03
20-03-04 21-04-04
20-03-05 21-04-05
20-03-06 21-04-06
20-03-07 21-04-07
20-03-08 21-04-08
20-03-09 21-04-09
20-03-10 21-04-10
20-03-11 21-04-11
20-03-12 21-04-12
20-03-13 21-04-13
```

c) What **vi** command do you use to accomplish **b)**.

:s/03-01-2020/20-03-01.

For lab 7, you should have the following files in directory *~/courses/cs2211a/Labs/lab7*.

- **Lab_SubmissionForm.txt**
  Fill with the required information.
- **lab7_answer.pdf**
  This file should contain your answers for questions from **1.a)** to **1.l)** and question **2.c)**.
- **sr_w_re**

Change your current working directory to *~/courses/cs2211a/Labs*. Create file **YourUserName_lab7.tar.gz** and submit this file for lab 7. (For detailed information, please check *CS2211a Lab Submission Guidelines*).