COMP2021 Spring 2016 Homework #1

(Due Saturday Mar 26 11:59PM)

Name: _____ **Stu ID:** _____

Note:

- **This is an individual assignment; all of the work should be your own. You can discuss with your classmates, but every single line of code/answer should be done by yourself.**
- **For Question 1, put your answer in a .pdf file.**
- **For Question 2 store your program in a .sh file.**
- **Test your command/script on lab2 Unix machine**
- **Naming policy: for student id 1234567, two files 1234567.pdf and 1234567.sh should be submitted.**
- **Submission is electronically via Canvas.**

Question 1: Unix Utility and Regular Expression

You've learned several frequently used Unix commands during lecture and lab. To answer this question you need to teach yourself a new command "`sed`", then use it with regular expression to solve problem.

"`sed`" stands for Stream EDitor. `sed` is a non-interactive editor, written by Lee E. McMahon in 1970's. Instead of altering a file interactively by moving the cursor on the screen (as with a word processor), the user sends a script of editing instructions to `sed`, plus the name of the file to edit (or the text to be edited may come as output from a pipe). In this sense, `sed` works like a filter -- deleting, inserting and changing characters, words, and lines of text. Its range of activity goes from small, simple changes to very complex ones.

There are lots of online resources available, http://www.grymoire.com/Unix/Sed.html may serve as a starting point.

a) Please share one (or more if you want) web link of good `sed` reference.

Use `sed` to implement the following tasks:

b) Given a file `IPaddress` containing IP addresses, replace every and only instance of '`255.255.0.1`' to '`deleted`'. Below is an example:

Input:

```
255.255.0.1
255.255.0.11
255.255.0.1
255.255.0.111
255a255a0a1
```

Output:

```
deleted
255.255.0.11
deleted
255.255.0.111
255a255a0a1
```

Briefly explain your answer.

c) Match a phrase beginning with '<' and ending with '>', and containing any number of characters in between. This phrase will be deleted (replaced with an empty string). Below is an example.

Input:

```
<b>This</b> is what <b>I</b> meant.
```

Output:

```
This is what I meant.
```

Briefly explain your answer.

Question 2: Autograder Shell Script

Write a shell script to help automate grading of programming assignments. The script takes care of a lot of the painful and time-consuming grunt-work associated with grading programs. At the high level it has the following input/output behavior:

Inputs:

The `.sh` scripts to be graded (i.e. `001.sh`, `002.sh` and `003.sh` which are named as `<stuid>.sh`), organized in sub-directory `hw1/`

A file `test.txt` with testing cases, assume 1 point for each testing case

A file `answer.txt` with expected answers

Outputs:

A comma-delimited file `grade.csv` of `stuid,score` lines, summarizing scores of all students

A set of `<stuid>.output` files for execution result (i.e. `001.output` saves the execution result of `001.sh` given `test.txt` as input)

A set of `<stuid>.report` files for detailed grading report (i.e. `001.report` tells all correct and wrong testing cases for student `001`, and summarize the overall points)

The files are organized as below:

Before executing `autograder.sh`	After executing `autograder.sh`
COMP2021HW1/ | autograder.sh | test.txt | anwer.txt | hw1/ |01.sh |02.sh |03.sh	COMP2021HW1/ | autograder.sh | test.txt | anwer.txt | 001.output | 001.report | 002.output | 002.report | 003.output | 003.report | grade.csv | hw1/ |01.sh |02.sh |03.sh

Download `autograder.tar.gz` before you start. The format of `*.report` files is for your reference. You can define your own format of `*.report` files, as long as it lists out all correct cases, all wrong cases, count how many cases for each group, and total score for a student.