Overview: In this lab, you will work through online tutorials¹ covering regular expressions, the grep utility, and the AWK utility. You will then write some grep and AWK commands using regular expressions to process a given input file. You will work on this lab individually.

Tutorials:

• Start by working through the following tutorial on regular expressions:

https://regexone.com

• Now work through the following tutorial on the grep utility and regular expressions:

http://bit.ly/grep_regex

• Finally, work through the following tutorial on the AWK language:

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https://linuxhandbook.com/awk-command-tutorial/
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For convenience, the text file used by this tutorial is provided on the course web page as awk_input.txt.

Assignment: On the course web page, you will find an input file named lab8_input.txt containing (fake) student information that you will process using egrep and awk. Your answers must go in the cmsc240_lab8_netid.txt file which you must rename using your own netid.

- 1. Provide an appropriate egrep (or grep -E) command that will list the lines in lab8_input.txt for which students are taking any Jepson ("jsls") course. In your answer file, include the command and the resulting output.
- 2. Provide an appropriate egrep command that will list the lines in lab8_input.txt for which students are taking any 200-level CS ("cmsc") course. In your answer file, include the command and the resulting output.
- 3. Provide an appropriate egrep command that will list the lines in lab8_input.txt for which students are taking any sub-200 level Jepson course. (Note that there are two 1000-level Jepson courses present in the file, which should be excluded.) In your answer file, include the command and the resulting output.
- 4. Provide an appropriate egrep command that will list the lines in lab8_input.txt for which the GPA is at least 3.6. (Note that in a regular expression, you can send multiple patterns separated by the | as in egrep "*expr1*|*expr2*" *filename*.) In your answer file, include the command and the resulting output.
- 5. Provide an appropriate awk command that will print the name and year (separated by a tab) of any student listed in lab8_input.txt with GPA at least 3.6. Do not print the header line. In your answer file, include the command and the resulting output.
- 6. Provide an appropriate awk command that will print the average GPA of all students listed in lab8_input.txt. In your answer file, include the command and the resulting output.
- 7. Provide an appropriate awk command that will print the average GPA of any student listed in lab8_input.txt taking any Jepson course. (Note that regular expressions can be passed to awk, provided between forward slashes at the front end of the pattern, as in awk '/regex/ ...'.) In your answer file, include the command and the resulting output.
- 8. Provide an appropriate awk command that will print the average GPA of any student listed in lab8_input.txt taking a CS course numbered 325 or higher. (Note that in some situations, you may need to use [[:digit:]] rather than the \d shortcut given in the regex tutorial. Alternatively, [0-9] will work as well.) In your answer file, include the command and the resulting output.

¹Thanks goes to the authors of these tutorials for providing such useful online utilities free of charge.

Submitting: Submit your cmsc_240_lab8_*netid*.txt file to the appropriate Box folder in the usual manner, using the email address

Lab8.ejd1swbfzyp6ivk6@u.box.com.