Lab 09 (Due: Monday, April 18, 2016, 11 : 59 : 00pm Central Time)

CSCE 155N

1 Lab Objectives

- Choose the right mechanism for dealing with different types of files

- Incorporate file processing as part of a program

2 Prior to Laboratory

- Review the laboratory handout

- Read Chapter 9 in Attaway

3 Topics Covered in Lab

- Use `load`/`save` to restore/save MATLAB data

- High-level facilities for file I/O

  Import Wizard

- Parse and Process text files using low-level API

  `fopen`, `fscanf`, `fclose`, `csvread`, `csvwrite`

4 Activities/Exercises

Before You Begin

- **Download files from** http://cse.unl.edu/~cse155n/labs/09/ **to your** `Z:\csce155n` **directory**

4.1 `tik.m` and `tok.m`

- Run `tik`, restart MATLAB and run `tok` 3 times

  Use `help system` to determine the data structure of what is returned by the `clock` function call in both M-files

- Add a comment to the "magic" number 86400. What is it?

- Modify the behavior of `tok` such that it returns **elapsed time in seconds** if it is called with one output argument, otherwise, it just returns the elapsed time in a string, in DD-HH-MM-SS form.

  Why can't the program just output "hours", "minutes", and "seconds", instead of recomputing adjusted values "hour", "minute", and "second" after the total seconds is determined?

  HINT: `datenum` returns the number of days since Jan-1-0000

4.2   Import Wizard

- Activate the Import Wizard by clicking `Import Data` from the `HOME` tab

- Specify the name of the file `pas5.txt` that you want to import

- Choose the "space" as the delimiter and set 1 as the variable names row

- Choose the variables that you want to import by clicking the columns that they are in

- Click the Check Mark Button

  In the Workspace window, click on the imported variables. Check the content of each of these variables. Are they what you want to import?

  Think of at least one advantage and one disadvantage of using the import wizard.

4.3   `text.txt`

- Create a file `text.txt` that stores on each line a letter, a space, and a real number. See the example below

- Modify `fileIO.m` to use `textscan` to

  Read `text.txt`

  Return the sum of the numbers in the file

- Error-check the opening and closing of the file and return error messages as necessary

4.3.1   Example

```
h 7.5
r 2.6
r 5.1
e 7.0
d 8.9
m 9.6
y 5.5
i 1.4
p 1.5
f 2.6
```

4.4   `student.m`

- Modify `student.m` so that the function saves a `.csv` file, with the specified filename, that stores a student's identification number, followed by three (3) quiz grades

4.4.1   Example

```
15469,98,96,93
19575,75,90,97
19648,91,98,84
11576,58,83,88
19705,72,52,88
```

4.5   `csvio.m`

- Modify `csvio.m` so that the function reads in a `.csv` file containing the identification number and three (3) quiz scores for a collection of n students and computes a $n \times 1$ vector of each student's average

- Write the identification numbers, quiz grades, and averages back to the file

5   Code Documentation

Remember to document your files in the way that we did for the previous labs. It will come in handy when you look back at code after a long time, or when someone else is trying to understand what your code does.

6   What to Submit

You will be submitting seven (7) files (`tik.m`, `tok.m.`, `fileIO.m`, `student.m`, `csvio.m`, `contributions09lab.txt`, and `members09lab.txt`).

7   Additional Resources

Online MATLAB Documentation
CSE Webhandin
CSE webgrader

8 Point Allocation

Component	Points
`tik.m`	16
`tok.m`	16
`fileIO.m`	16
`student.m`	16
`csvio.m`	16
`members09lab.txt`	5
`contributions09lab.txt`	5
webgrader PDF	10
Total	100