CS2613: Programming Languages Laboratory (FR02A)
Lab #9 – Winter 2024

Language: Octave (#2)
# of Tasks: 2
Topics:

- Strings
- Characters
- Cells Array
- File I/O

*All tasks are to be completed individually in line with the academic offense guidelines detailed on the syllabus and are **due before the end of the lab period** unless stated otherwise.*

Task #1

Task Style: Programming
Submission Method: Move onto Task #2

Description:
Write a function called countLetters that takes a string and returns a vector of the frequency of all the characters. You may ignore any non-letter characters. Assume that case can be ignored (‘a’ == ‘A’) for this function.

Resources:

- GNU Octave Documentation:
  - 5.6
  - 8.5.2
  - 10.5

Examples:

This function call:

```
disp(countLetters("Hello Programming Languages Lab!"));
```

Creates this output:

```
Columns 1 through 22:

   4   1   0   0   2   0   4   1   1   0   0   4   2   2   2   1   0   2   1   0   1   0

 Columns 23 through 26:

   0   0   0   0
```

Task #2

Task Style: Programming
Submission Method: Submit on D2L (as a .zip with Task #1)

Description:
You are given some starter code on D2L that reads in from a .txt file and creates a basic cell matrix that stores each sentence and its length. Use this code as a starting point to complete the rest of this Task.

Write a function that opens a file called “Input.txt” and loops through each line of the file. For each line, find the most common letter by iterating over the vector returned from the function created in Task #1. When the most common letter for a line is found, store the letter as a string and the frequency of that letter in a new cell stored in a cell vector. If there is a tie for most frequent letter, simply select one of them.

Resources:

- GNU Octave Documentation
  - 5.3.2
  - 6.2.1
  - 6.2.3
- https://octave.sourceforge.io/octave/function/char.html
  - Cast an integer to a character.

Example returned value with provided Input.txt file:

```
{
  [1,1] = t
  [2,1] = o
  [3,1] = e
  [4,1] = e
  [1,2] = 5
  [2,2] = 7
  [3,2] = 8
  [4,2] = 9
}
```