Langara College

# Department of Computing Science & Information Systems

# CPSC 1150 – Program Design

###### **Lab10: Command-Line Parameters and 2D Array**

**Objectives:**

* Solving problems
* Use the command-line to pass parameters to the main method
* Using 2D arrays
* Using method abstraction
* Creating and using data structures.

**Instructions:**

1. Create a folder named **Lab10** to store all the files from this lab
2. Create an external documentation file (filename: **Lab10Ext.docx**) to store the summary, algorithm(s), and sample input and output for each problem.
3. All your programs must have good internal and external documentations

**Problems [40 marks]**

**Problem 1: [10 marks] Finding the number of uppercase letters in a string** (CountUppercaseLetters.java)

Write a program that passes a sentence with an unspecified number of words to the main method and display the number of uppercase letters in the sentence.

To run this program, you must enter the program name and the command-line arguments from the SciTE output window or from a Command prompt.

For example, from the SciTE output window (after you have successfully compiled your program), type:

**java CountUppercaseLetters How is John doing today?**

The output is:

**The total number of uppercase letters is 2**

**Problem 2: [5 marks] Matrix Addition** (filename: **TestAddMatrix.java**)

Write a method that returns the addition of two matrices that are passed to the method as two parameters.

The method header is as follows:

// Precondition: the two matrices must have the same dimensions.

// Postcondition: the method does not change the two matrices passed to the method.

**public static int[][] addMatrix(int[][] m1, int[][] m2)**

Write a test program to test the method above.

**Problem 3: [25 marks] Checker Board** (filename: **CheckerBoard.java**)

Design and write a program that randomly fills in 0s and 1s into an 8 x 8 checker board, prints the board, and finds the rows, columns, major diagonal, and minor diagonal with all 0s or 1s. Use a two-dimensional array to represent a checker board. Here is a sample run of the program:

10101000

10100001

11100011

10100001

11100111

10000001

10100111

00100001

All 0’s on column 3

All 0’s on the minor diagonal.

**What to hand in**

**Zip the folder** which contains the documentation file and all the Java source files from this lab and **submit the zipped folder to BrightSpace**.

**When to hand in**

By 10:29 am, Monday, Mar 29, 2021