CS2613: Programming Languages Laboratory (FR02A)
Lab #15 – Winter 2024

Language: Octave (#3)
# of Tasks: 2
Topics:

- Various Additional Mathematical Functions
- Anonymous Functions
- Comparison Functions

*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: Describe the Program (submit via Dropbox D2L)
Submission Method: Move onto Task #2

Description:

You have been given code on D2L labelled L15_T1.m. Read this program over and describe what it is doing on each line in a PDF document. Submit the PDF on D2L.

Resources:

- GNU Octave Documentation:
  - 4.4.1
  - 11.12.2

Task #2

Task Style: Programming w/ on-the-spot Grading
Submission Method: Raise hand when you have a solution.

Description:

It is suggested that you read through this task entirely before starting a solution.

You are asked to create a function that fits the following description:

compareListPositions(f1, f2, compareTo, values)

Where:

f1 is a passed through function that takes a single value, performs a calculation, and returns a numeric value.

f2 is a passed through function that takes a single value, performs a calculation, and returns a numeric value.

compareTo is a passed through function that takes two values, compares them to each other using some comparison rule, and returns 0 if the comparison is False (a non-zero value otherwise).

values is a list of numeric values.

The function should traverse the list of values and do the following calculations f1(values(i-1)) and f2(values(i)). The function then compares the results of the two calculations using the compareTo function. This function returns the number of times that the compareTo function is true.

You may choose to use the functions given in Task #1 to test this function out before moving on.

How many times does $\left(\frac{i^2}{3} - 5 \right)$ less than or equal to $\log(x+1)$ (assume base 10) on all integer values in the range [1, 10]? Write three anonymous functions and use the compareTo function you created to solve.

Resources:

- GNU Octave Documentation
  - 10.5
  - 17.1