Assignment 2

This is an individual assignment. This assignment is marked out of 5 points.

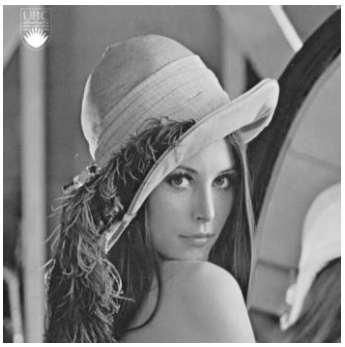
Due Date: October 7 Friday, 2022, 11:59PM

1. Arithmetic operations between grayscale images:
   (a) [1 point] Write a function $g = imArithmetic4e(f1, f2, op)$ for performing operations op on $f1$ and $f2$. Parameter op is a character string that indicates the following arithmetic operations between $f1$ and $f2$: 'add' ($f1 + f2$), 'subtract' ($f1 - f2$), 'multiply' ($f1 * f2$), 'divide' ($f1/f2$). These are elementwise operations. Output image g should be floating point. (*Hint*: Convert the input images to floating point to perform the arithmetic operations.)
   (b) [1 point] Read the image "LennaGray.jpg" and use A1 function $mask$ and the 'multiply' option in $imArithmetic4e$ to highlight Lenna's face from the top of the forehead to the bottom of the chin, and from the left to right ear. This is an example of how to define a *region of interest* (ROI) in an image. (Hint: Use A1 exercise function of $cursorValues4e$ to get the coordinates needed to define the mask image.)

User-defined ROI

2. Brightness correction:
   (a) [1 point] Write a function $g = brightnessCorr(f, percent, op)$ to perform brightness correction on monochrome images. It should take as arguments a monochrome image f, a number $percent$ between 0 and 100 (amount of brightness correction, expressed in percentage terms), and a third parameter op indicating whether the correction is intended to brighten ('brighten') or darken ('darken') the image.
   (b) [0.5 point] Read the image "LennaGray.jpg" and brighten it by 30%. Show the result.

3. Insert a small image into a large image:
   (a) [1 point] Write a function $g = insert(f1, f2, x, y)$ to insert a small image $f1$ into a large image $f2$ at the location of (x, y).
   (b) [0.5 point] Insert "small_ubc_logo.jpg" into "LennaGray.jpg" at location (10,10) and show the result.



Submission:

Submit everything as one zip file to Canvas.