University of Central Punjab
(Incorporated by Ordinance No. XXIV of 2002 promulgated by Government of the Punjab)
FACULTY OF INFORMATION TECHNOLOGY

Introduction to Image Processing

Assignment 2 **Total Marks: 30**

Note:

1. **The Assignment is related to Point Processing.**
2. **NO LATE SUBMISSION**
3. **Deadline: 28-08-2023 11:59 PM**

Hint:

The Libraries that you might need to use are

- Numpy
- Matplotlib (sub-package: pyplot)
- Scikit-Image (sub-package: io)

Implement the following functionalities in Python. The function prototypes are given below as well

- Identity Image
  - `def identity(img)`
- Negative of an Image
  - `def negative(img)`
- Thresholding
  - `def threshold(img, cuttoff_value, direction = 1)`
- Image Scaling by Scalar Multiplication
  - `def sacle(img, multiplier)`
- Log Transformation
  - `def logImage(img, base, constant)`
- Antilog Transformation
  - `def exponent(img, base, constant)`
- Gamma Correction of the Image (Both <1 & >1)
  - `def power(img, power, constant)`
- Piecewise Linear Transformation
  - `def piecewiseTransform(img, anchors, functions)`
- Gray Level Slicing
  - `def gray_slice(img, slice_start, slice_end)`

Points:

- You can hardcode the image and parameters for Piecewise Linear Transforms and Gray Level Slicing
- Your application should at least include the images in the given package (available within the folder) and when run display a menu interface asking the user the image, he/she wants to process and the operation (and optional parameters) to be applied on that image.
- The application should then display the original image as well as the processed image with correct labels.