**Image Processing Laboratory (EC69502)**

**Experiment No 1**

Write C/C++ modular functions to read, perform transformations, and then write BMP image files. All functions must support 24-bit RGB and 8-bit grayscale image formats.

(a) **Read BMP**:

***a. Input:*** Filename of input image

***b. Output:*** BMP header structure printing height, width, bit width, File size in bytes, offset size, image pixel array loaded onto memory.

*If the Image is not a BMP it should print the message.*

(b) **Geometrical Transforms**:

***a. Input:*** Image pixel array

***b. Output:*** 1. Grayscale-converted (if it is color)

2. diagonally flipped (transposed) pixel array

3. 90-degree rotated pixel array

4. 45-degree rotated pixel array

5. scale the pixel array two times

*All the operations should be implemented for both square and rectangular images. Use nearest neighbor interpolation if required.*

(c) **Write BMP**:

***a. Input:*** Filename of output (grayscale) image, BMP header structure, Image pixel array

***b. Output:*** BMP file of grayscale and different geometrical transformed images (for both square and rectangular images) written on disk

Submit C/C++ code, read me file, Report in PDF format, input images, output images, executable in a zip file and name it “Exp-01-Gr-<Group No>