**German University in Cairo**

**Faculty of Digital Media Engineering and Technology**

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**Course Project**

**JPEG2000 Lossy**

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**Main.m file runs the project.**

**JPEG2000Proj.m**

**This file contains the algorithm we followed.**

**Input: image and quantization value.**

**Output: arrays of encoded image.**

**First image is changed to grayscale if it is not.**

**We have four main steps which are:**

**1- Centering the grayscale intensities around 0 so we subtract 127 from the pixels.**

**2- We transform the image using Discrete wavelet transform with ‘db1’ filter, we do 3 iterations so we have 11 blocks to work on later.**

**3- Quantization of all 11 blocks using formula:**

**Floor (Intensity of current pixel / quantization value) \* quantization value.**

**4- Encoding part which is the last part is divided into two parts.**

**First, each pixel is changed to binary and each bit is placed in a matrix.**

**Final Step, these matrices are iterated on and run length coding is performed.**

**Output: arrayOne least significant bit**

**arrayEight most significant bit**