IMAGE COMPRESSION

Original Matrix

1	2	3
4	5	6
7	8	9

PREDICTOR

1	2	3
4	X	Y
7	Z	W

Get x, y, z, w:
Add neighbor pixels between number of neighbor pixels

X = (1+2+3+4+7) / 5 = 3.4 => 3
Y = (2+3+3.4) / 3 = 2.8 => 3
Z = (4+7+X+Y) / 4 = 4.2 => 4
W = (X+Y+Z)/3 = 3.3 => 3

1	2	3
4	3	3
7	4	3

ERROR MATRIX:
OriginalMatrix - Predictor

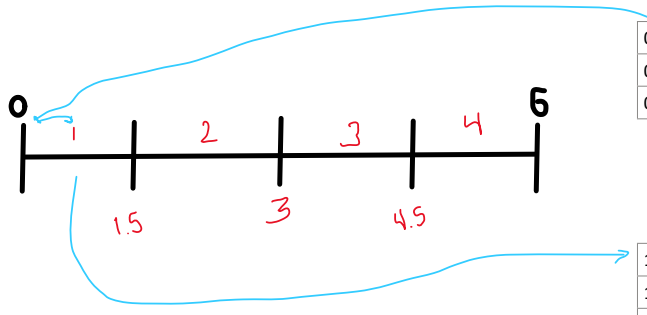
0	0	0
0	2	3
0	4	6

IMAGE COMPRESSION:
(Example is made with 2 bits/p)

- Insert bit/pixel to compress
- sampleNumbers = 2^nBits
- Intervalo size:

$$\varepsilon = \frac{ErrorMatrixMaxValue\ - ErrorMatrixMinValue}{SampleNumbers} = 1.5$$

- Generate Error Matrix Quatinfied: Error matrix values will be assigned according to the intervale



0	0	0
0	2	3
0	4	6

EMQ

1	1	1
1	2	3
1	3	4

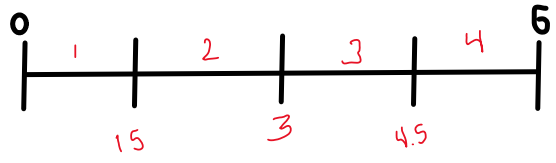
IMAGE DECODING

- Calculate MEQ^{-1}
  Is not the normal inverse type.
  Identify integer interval where value is in, substract inverval and split between 2

$$Value(i,j) = \frac{range2 + range1}{2}$$

EMQ

1	1	1
1	2	3
1	3	4



$$Value(1,1) = \frac{1.5 + 0}{2} = 0.75$$

EMQ inverse

0.75	0.75	0.75
0.75	2.25	3.75
0.75	3.75	5.25

- Finally, add predictor matrix to MEQ inverse

EMQ inverse

0.75	0.75	0.75
0.75	2.25	3.75
0.75	3.75	5.25

+

1	2	3
4	3	3
7	4	3

=

Recovered Matrix

2	3	4
5	5	7
8	8	8

IN ORDER TO CALCULATE THE NOISE BETWEEN ORIGINAL AND RECOVERED MATRIX:

$$\frac{S}{N} = 10log_{10}\frac{\sum[O]^2}{\sum[O-R]^2}$$