DSIP Assignment

AMEY THAKUR
BE COMPS B-50

Q. For the 3 bit image shown perform:

Soln:

① Thresholding (T = 3)

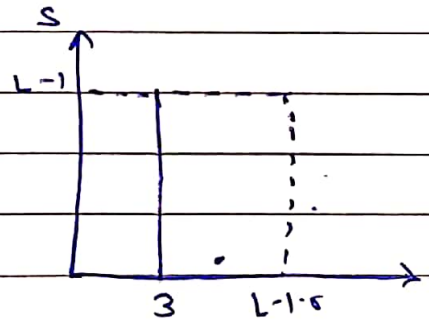
Since the given image is 3 bit $L = 2^3 = 8$

Here,

$s = L - 1 = 7 \quad ; r \geq 3$

$s = 0 \quad ; r < 3$

∴ The final image would be



4	3	2	5
0	2	1	6
7	6	5	2
1	2	3	5

Given Image

1	1	0	1
0	0	0	1
1	1	1	0
0	0	1	1

Resultant Image

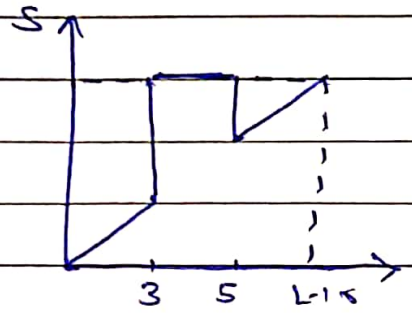
Amey.

AMEY THAKUR BE COMPS B-50

(2) Gray level slicing with background $T_1 = 3$ and $T_2 = 5$

$S = L-1 = 7$; $3 \leq r \leq 5$

$S = r$; otherwise



Hence all the values between 3 and 5 are made equal to 7 and the remaining value remain unchanged

∴ Resultant Image

7	7	2	7
0	2	1	6
7	6	7	2
1	2	7	7

Amey

AMEY THAKUR BE COMPS B-50

③ Bit Plane slicing

100	011	010	101
000	010	001	110
111	110	101	010
001	010	011	101

∴ The bitplanes are

1	0	0	1
0	0	0	1
1	1	1	0
0	0	1	1

MSB Plane

0	1	1	0
0	1	0	1
1	1	0	1
0	1	1	0

0	1	0	1
0	0	1	0
1	0	1	0
1	0	1	1

LSB Plane

④ Image Negation

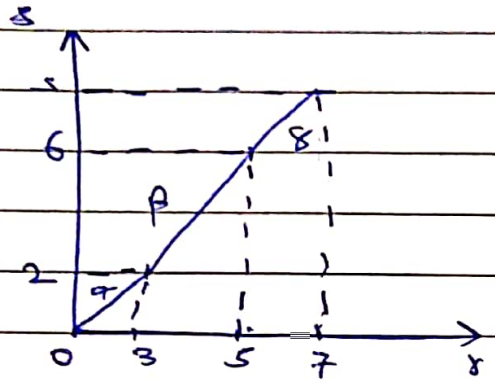
Resultant image (7-5) =

3	4	5	2
7	5	6	1
0	1	2	5
6	5	4	2

Amey

AMEY THAKUR BE COMPS B-50

⑤ Contrast streched Image



$(r_1, s_1) = (3, 2)$

$(r_2, s_2) = (5, 6)$

Now calculate α, β, γ

$\alpha = 2/3 = 0.67$

$\beta = 4/2 = 2$

$\gamma = 1/2 = 0.5$

∴ Resultant image =

4	2	1.3	6
0	1.3	0.6	6.5
7	6.5	6	1.3
0.6	1.3	2	6

Amey