Solution-Quiz5

Digital Image Processing

BESE14

Q1: Encode the following string using LZW Encoding

TOBEORNOTTOBE

Solution

T	O	B	E	O	R	N	O	T	T	O	B	E
19	14	1	4	14	17	13	14	19	26		28	

Index	Symbol	Index	Symbol
0	A	20	U
1	B	21	V
2	C	22	W
3	D	23	X
4	E	24	Y
5	F	25	Z
6	G	26	TO
7	H	27	OB
8	I	28	BE
9	J	29	EO
10	K	30	OR
11	L	31	RN
12	M	32	NO
13	N	33	OT
14	O	34	TT
15	P	35	TOB
16	Q	36	
17	R	37	
18	S	38	
19	T		

Q2: Convert the following Run Length Encoded string into an image (square).

(5,5),(3,3),(4,4),(6,4)

Solution

5	5	5	5
5	3	3	3
4	4	4	4
6	6	6	6

Q3: Consider a 10x10 image with 80 pixels having value 200 and 20 pixels having value 100. The following codes are used:

Value	Code
100	01
200	1010

What is the average number of bits per pixel required to encode this image.

Solution

Probability of pixel value 200 = 80/100 =0.8

Probability of pixel value 100 = 20/100 =0.2

Codeword length for pixel value 200 = 4

Codeword length for pixel value 100 = 2

Average number of bits = 0.8x4 + 0.2x2 = 3.6 bits per pixel

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