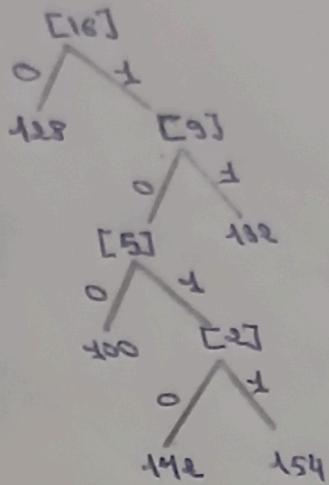


Exercise 4:

1.

128	7	0	1
152	4	1	2
98	3	2	3
112	3	3	4
154	4	4	



0	11	0	11
1011	0	11	0
100	100	0	0
100	1010	0	11

2. Entropie:

$$H(x) = - \left[\frac{3}{16} \times \log_2 \left(\frac{3}{16} \right) + \frac{4}{16} \times \log_2 \left(\frac{4}{16} \right) + \frac{3}{16} \times \log_2 \left(\frac{3}{16} \right) + 2 \times \frac{1}{16} \times \log_2 \left(\frac{1}{16} \right) \right]$$

$$H(x) = 1,975 \text{ bits/pixel}$$

$$L = \left(\frac{3}{16} \times 1 + \frac{4}{16} \times 2 + \frac{3}{16} \times 3 + \frac{1}{16} \times 4 + \frac{1}{16} \times 4 \right) = \left(\frac{3}{16} + \frac{3}{16} + \frac{3}{16} + \frac{4}{16} + \frac{4}{16} \right) = \frac{32}{16} = 2 \text{ bits/pixel}$$

$$\text{Efficacité} = \frac{H(x)}{L} = \frac{1,975}{2} = 98,75\%$$