

COMP5422 Multimedia Computing: Quiz2

This is a closed book and closed notes test.

Name:

Student number:

Part A: Multiple choices. (3 points; 1 point each question)

1. In JPEG lossless predictive coding, what is the scanning order? [D]

A. Top to bottom, left to right;
C. Zig-zag;

B. Top to bottom, right to left;
D. Left to right, top to bottom.
2. “The 2D-DCT can be implemented by two sequential 1D-DCT” is [A]

A. True;

B. False.
3. “In JPEG, the quantization steps for high frequency components are finer than those of low frequency components” is [B]

A. True;

B. False.

Part B: Short Answers (2 questions; 3 points)

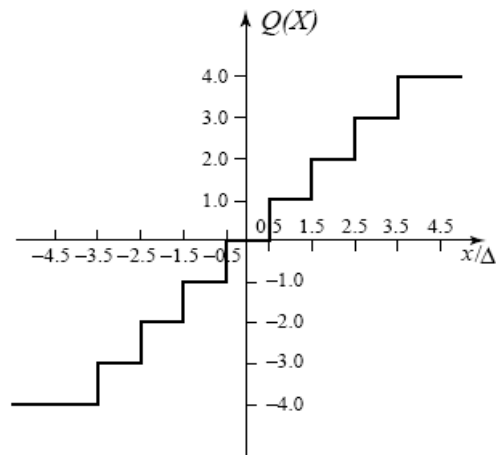
1. Suppose that the original signal is $f = [8, 12, 10, 8, 11, 15, 21, 19]$. By using Haar wavelet transform, find the output on the 1st level. (1 point)

Answer: $w = [10, 9, 13, 20, -2, 1, -2, 1]$ or $w = [10, 9, 13, 20, 2, -1, 2, -1]$

2. Suppose that the original signal is

$$x = [2.2, -3.8, 0.6, 3.3, -4.2, -1.7]$$

We quantize x based on the following quantizer:



- (a) What is the quantization output of x ? (1 point)
- (b) What is the mean square error of the quantized signal? (1 point)

Answer:

(a) $y = [2, -4, 1, 3, -4, -2]$

(b) $MSE = (0.2^2 + 0.2^2 + 0.4^2 + 0.3^2 + 0.2^2 + 0.3^2) / 6 = 0.46 / 6 = 0.07667$