Digital signal processing

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(1)

Impulse response:

$$y(n) = 0.3\delta(n) + 0.5\delta(n-1) + 0.3\delta(n-2)$$

(2)

The filter is not memoryless, since it takes 2 future samples into account.

(3)

The filter is not causal. It doesn't care about any past samples.

(4)

This filter is a bandpass filter.

(5)

It attenuates frequencies out of the set range.

(6)

The filter doesn't induce phase distortion.