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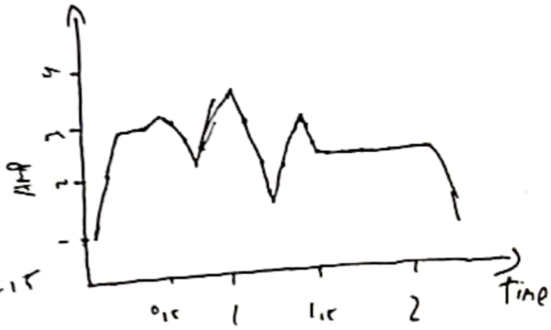
1) NIM = [1,2,1,1,4,0,0,6,8] Fs = 8, Periode = 1/8

- Moving average = 1 orde = 7

-> [1,2,1,1,4,0,0,6,8,1,2,1,1,4,0,0,6,8] -> Grafik Moving Avg.



#(grafiknya kurang lebih seperti ini)

Index [0] = (1+2+1+1+4+0+0) / 7 = 1,2
Index [1] = (2+1+1+4+0+0+6) / 7 = 2
Index [2] = (1+1+4+0+0+6+8) / 7 = 2,8
Index [3] = (1+4+0+0+6+8+1) / 7 = 2,8
Index [4] = (4+0+0+6+8+1+2) / 7 = 3
Index [5] = (0+0+6+8+1+2+1) / 7 = 2,5
Index [6] = (0+6+8+1+2+1+1) / 7 = 2,7
Index [7] = (6+8+1+2+1+1+4) / 7 = 3,2
Index [8] = (8+1+2+1+1+4+0) / 7 = 2,4
Index [9] = (1+2+1+1+4+0+0) / 7 = 1,2
Index [10] = (2+1+1+4+0+0+6) / 7 = 2
Index [11] = (1+1+4+0+0+6+8) / 7 = 2,8
Index [12] = (1+4+0+0+6+8+0) / 7 = 2,7
Index [13] = (4+0+0+6+8+0+0) / 7 = 2,5
Index [14] = (0+0+6+8+0+0+0) / 7 = 2
Index [15] = (0+6+8+0+0+0+0) / 7 = 2
Index [16] = (6+8+0+0+0+0+0) / 7 = 2
Index [17] = (8+0+0+0+0+0+0) / 7 = 1,1

-> Calculating time

#karena jumlah sampel sebanyak 18, maka total waktu

$T = \frac{total\ n}{Fs} = \frac{18}{8} = 2,125$

#Untuk waktu setiap sampel, cukup bagi seperti berikut

$t = 1/Fs = 1/8 = 0,125$ (setiap nilai muncul setiap 0,125 detik)

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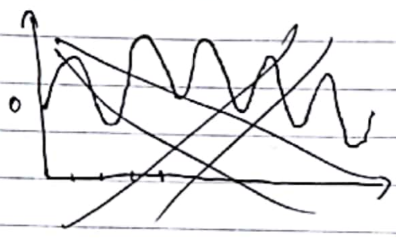
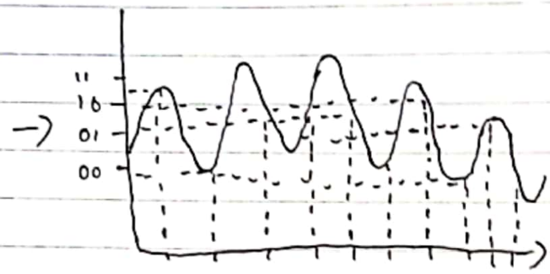
2) Sampling

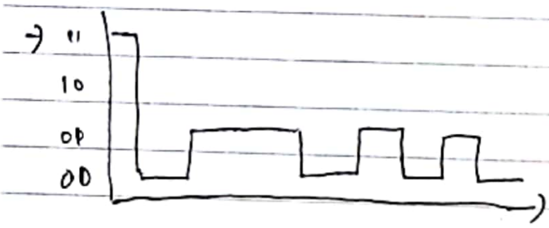
- Nim = 121190068
- Fs = 8 + 2 = 10 Hz
- Durasi = 6 + 1 = 7 sec
- Bit depth = 2 [00, 01, 10, 11]

-> graph





-> [11, 00, 01, 01, 01, 00, 10, 00, 01, 00]



Sampling rate yang buruk, tapi kalau misalkan lebih banyak sampling rate yang digunakan dan bit-depth yang lebih banyak serta gambar yang lebih bagus, maka didapatkan hasil ADC yang lebih baik

3) - Diberikan fungsi $Y[n] = 3 \times X[n]$

- $X_1[n]$ = [1, 2, 11, 4, 0, 0, 6, 8]
- $X_2[n]$ = [8, 6, 0, 0, 4, 1, 1, 2, 1]

$X_1 + X_2 = X_3$ = [9, 8, 1, 1, 8, 1, 1, 8, 9]

Jika, dilakukan proses $Y[n] = Y(X_1[n] + X_2[n])$
= 3 × [9, 8, 1, 1, 8, 1, 1, 8, 9]
= [27, 24, 3, 3, 24, 3, 3, 24, 27]

Jika, dilakukan proses $Y(X_1[n]) + Y(X_2[n])$

-> $Y(X_1[n])$ = 3 × [1, 2, 1, 1, 7, 0, 0, 6, 8]
= [3, 6, 3, 3, 12, 0, 0, 18, 24]

-> $Y(X_2[n])$ = 3 × [8, 6, 0, 0, 4, 1, 1, 2, 1]
= [24, 18, 0, 0, 12, 3, 3, 6, 3]

Jumlahkan, dan didapatkan

$Y(X_1[n]) + Y(X_2[n])$ = [27, 24, 3, 3, 24, 3, 3, 24, 27]

maka berdasarkan ini dapat dibuktikan bahwa linear sistem memiliki sifat superposisi

proof by example