# Computer Assignment - 02

IEC 240, DSAA

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## I. QUANTIZATION

Choose a discrete signal $x[n]$ and write a matlab script for generating the quantized signal given by

$$x_q[n] = \Delta \left[ \frac{x[n]}{\Delta} \right] \tag{1}$$

Also plot the quantization error.

## II. SIGNAL TRANSFORMATIONS

- Given $u(t)$ the unit step signal, plot the following
  - $u(t-3)$
  - $u(3-t)$
  - $u(t+4)$
- Given $r(t)$ the ramp signal, plot the following
  - $r(t-4)$
  - $r(4-t)$
  - $r(1-2t)$
- Given $sin(\Omega_0 t)$, plot the following: Assume the unknown values
  - $sin(\Omega_0(t-t_0))$
  - $sin(\Omega_0(t+t_0))$
- Given the signal $x(t)$ in the Fig 1, Answer the following:
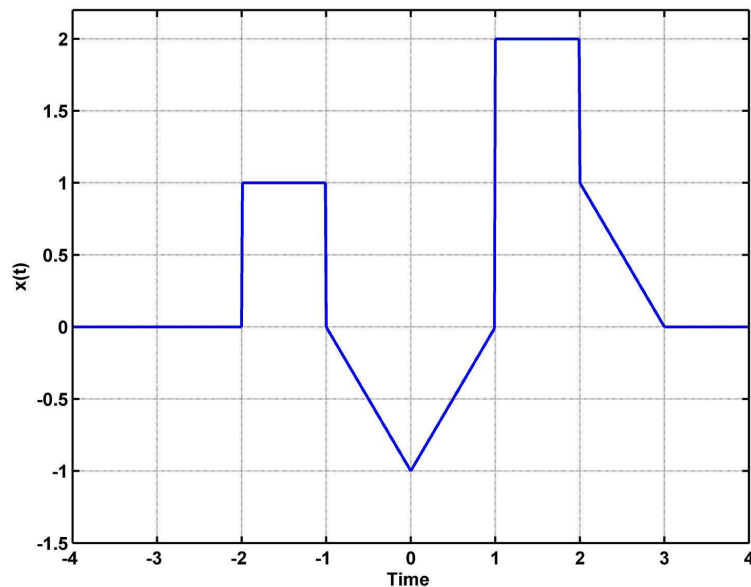  - Derive the signal $x(t)$ in terms of the basic signals.
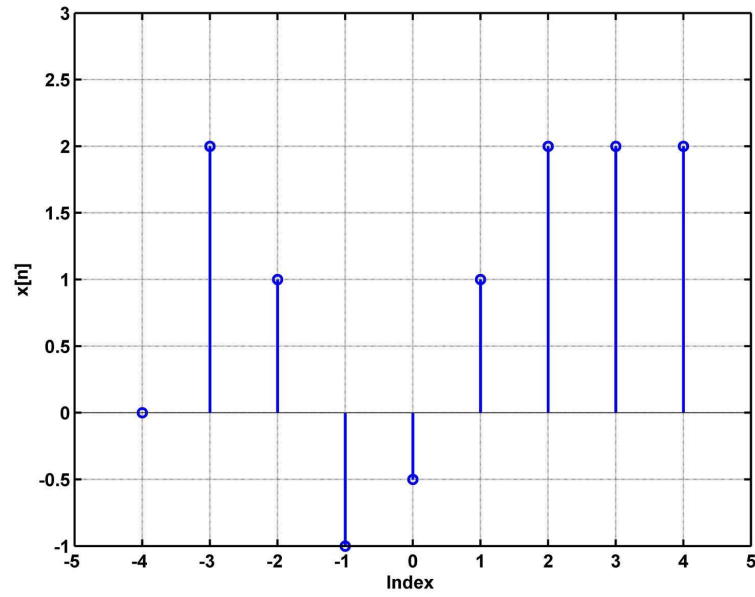  - Plot the following



Fig. 1. Mixed Signal

Fig. 2. Discrete Signal

   * $x(t-1)$
   * $x(t+1)$
   * $x(2t-3)$
   * $x(1-2t)$
- Given the discrete signal in the Fig 2, plot the following transformations
  - $x[n-1]$
  - $x[n+2]$
  - $x[2-n]$
  - $x[1-2n]$
  - $x[2n+3]$

## III. INSTRUCTIONS AND GRADING SCHEME

Instructions for the report Merge all the sections into a single pdf file and upload.
- Section 1: Matlab code and results for quantization (Grade: 4 points)
- Section 2: Matlab code and results for signal transformations (Grade: 4 points)
- Section 3: Discussion (Grade: 2 points)