ECE 520.435 Digital Signal Processing with MATLAB

Problem Set 4 & 5

Problem 1: Implement an Analog to Digital Converter in MATLAB by implementing the **Successive Approximation Algorithm** as discussed in the lecture. Develop a code for the backward process i.e. Digital to Analog Converter in MATLAB.

Problem 2: Implement a complete **Continuous-time processing of Discrete Time signals** in MATLAB with plots of Time and Frequency Domain perspective at each stage. The function should be a generic one i.e. accepts any input signal, sampling rate: up-sampling and down-sampling rates. The output should be the reconstructed signal. The block diagram for the system is shown below.
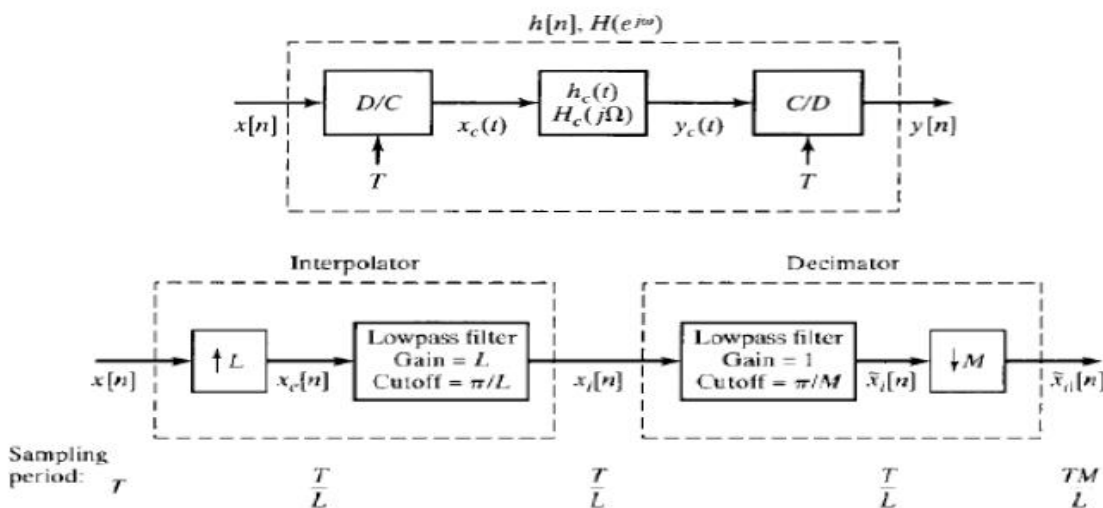

Figure 1: The above schematics are courtesy: *Discrete-Time Signal Processing by Oppenheim, Shafer and Buck*