



Discrete-Time Signal Processing

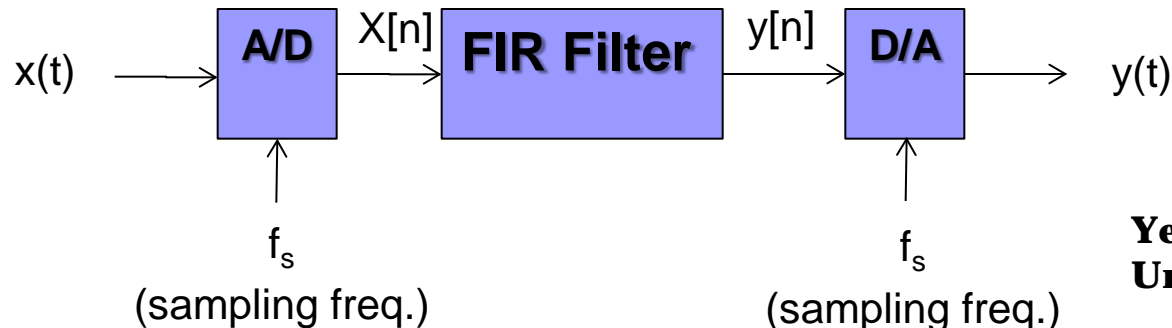
Term Project : Filter Design



Problem Formulation

- Input signal $x(t) = \sum_{k=1}^3 \cos(2\pi \cdot 100 \cdot k \cdot t)$
- Output signal $y(t) = A \cos(2\pi \cdot 200 \cdot t + \phi)$
(A : arbitrary amplitude, ϕ : arbitrary phase)

- Problem
 - Design FIR filter (length : 12) which can generate the above output $y(t)$ from the above input $x(t)$
 - Provide the whole design procedure in your report



Notice

- Write your report using MS Word or HWP!! (5 pages or more)
- Submission
 - Due date : 6/22
 - Submission : lecture support system in MS Word or HWP file.
(ex. 학번_이름.hwp or 학번_이름.doc)
- In your report, you must include
 - Draw pole-zero plot of the designed filter
 - Provide the transfer function of the designed filter
 - Provide the Impulse Response of the designed filter
 - Plot the input $x[n]$ (← sampled version of $x(t)$) and its frequency response [write down the corresponding matlab code in your report]
 - Plot the filter impulse response and its frequency response [write down the corresponding matlab code in your report]
 - Plot the output $y[n]$ (← sampled version of $x(t)$) and its frequency response [write down the corresponding matlab code in your report]