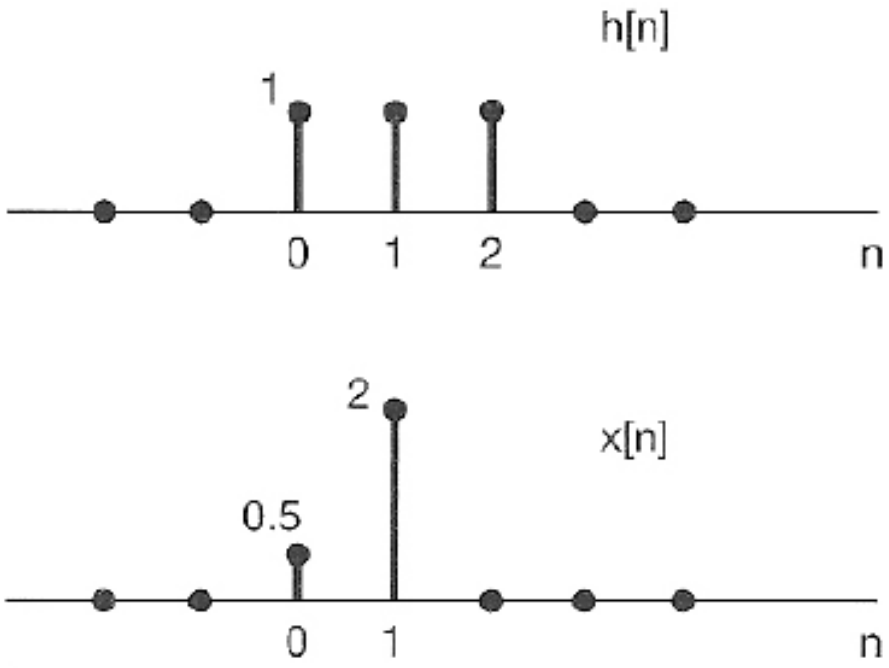
DT CONVOLUTION – PROBLEM SESSION

DT Convolution – Problem 1



$$y[n] = \sum_{k=\infty}^{\infty} x[k]h[n-k]$$

$$y[n] = x[n] * h[n]$$

DT Convolution – Problem 2

- Consider an input x[n] and a unit impulse response h[n] given by:

$$x[n] = \alpha^n u[n]$$

$$h[n] = u[n]$$

with $0 < \alpha < 1$.

- Find

$$y[n] = x[n] * h[n]$$

DT Convolution – Problem 3

- Consider an input x[n] and a unit impulse response h[n] given by:

$$x[n] = \begin{cases} 1, & 0 \le n \le 4 \\ 0, & \text{otherwise} \end{cases}$$

$$h[n] = \begin{cases} \alpha^n, & 0 \le n \le 6,\ \alpha > 1 \\ 0, & \text{otherwise} \end{cases}$$

- Find

$$y[n] = x[n] * h[n]$$