

## Separable Filter Frequency Response Tutorial Exercise

Prove that if  $h(n_1, n_2) = f(n_1)g(n_2)$  then  $H(\omega_1, \omega_2) = F(\omega_1)G(\omega_2)$ . By using this property, calculate the frequency response of:

$$h(n_1, n_2) = \begin{cases} 0.125, & n_1 = \pm 1, n_2 = \pm 1 \\ 0.25, & n_1 = \pm 1, n_2 = 0 \\ 0.25, & n_1 = 0, n_2 = \pm 1 \\ 0.5, & n_1 = n_2 = 0 \\ 0, & \text{otherwise} \end{cases}$$