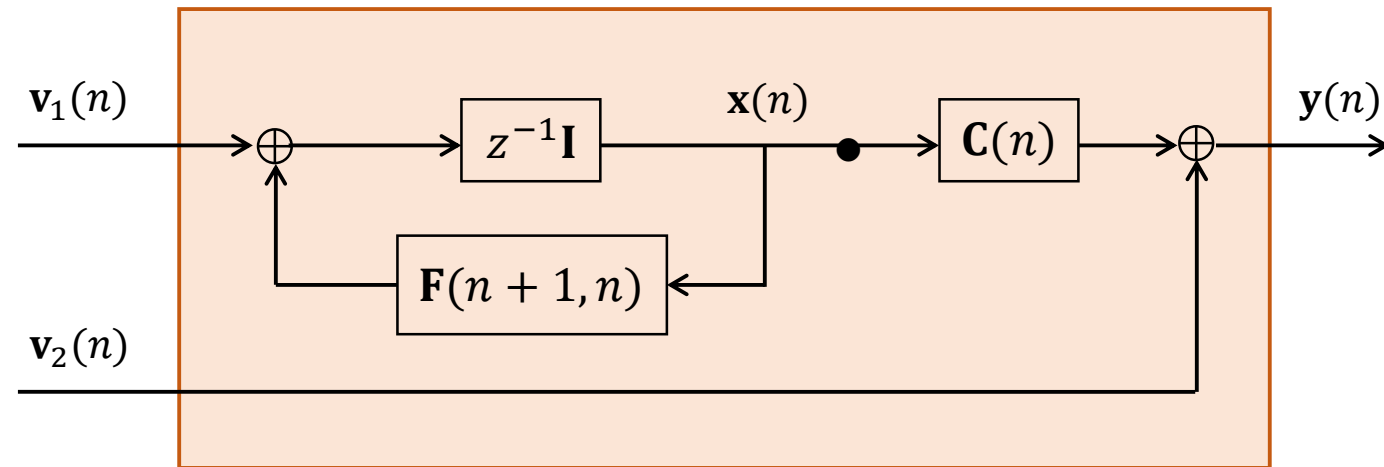


Given the state-space model, the observations, and the initial conditions, estimate the state vectors with respect to time.

- State-Space Model



- Process equation:  $\mathbf{x}(n+1) = \mathbf{F}(n+1, n)\mathbf{x}(n) + \mathbf{v}_1(n)$
- Measurement equation:  $\mathbf{y}(n) = \mathbf{C}(n)\mathbf{x}(n) + \mathbf{v}_2(n)$

$\mathbf{y}(n)$ : The observation  
 $\mathbb{E}[\mathbf{v}_1(n)] = \mathbb{E}[\mathbf{v}_2(n)] = \mathbf{0}$   
 $\mathbf{v}_1(n)$  and  $\mathbf{v}_2(n)$  are uncorrelated

- Kalman filter

