Lecture on July 6th, 2018
Introduction to Markov Chain II

1 Stationary Markov Chains (MC) - See Chap 3.2 - 3.3

- Theorem: A discrete-time stationary MC is completely specified by its initial distribution and transition probability matrix.
- n-step transition probability matrix and $P^{(n)=P^n}$.
- Example: Inventory Model - See Chap 3.3.1

2 Simple First Step Analysis - See Chap 3.4.1

- Idea: analyze the first step and then use LTP + Markov property(M.P.)
- Example: Let $\{X_n\}$ be a MC with

$$P = \begin{pmatrix} 1 & 0 & 0 \\ \alpha & \beta & \gamma \\ 0 & 0 & 1 \end{pmatrix}$$

where $0 < \alpha, \beta, \gamma < 1$.
Question:
(1) Probability of absorption in state 0? ($\frac{\alpha}{\alpha+\gamma}$)
(2) Mean time of absorption? ($\frac{1}{\alpha+\gamma}$)