MSG800/MVE170 Basic Stochastic Processes Fall 2014

Exercise Session 2

Chapter 5 in Hsu's book

Solved problems. Problems 5.10, 5.13, 5.21, 5.22, 5.23, 5.26, 5.30 and 5.36 in Hsu's book.

Supplementary problems for own work. Problems 5.83, 5.84, 5.85, 5.86 and 5.89 in Hsu's book.

Computer problem for own work. Consider a time homogeneous Markov chain $\{X_n\}_{n=0}^{\infty}$ with state space E, initial distribution $\mathbf{p}(0)$ and transition probability matrix P given by

$$E = \{0, 1, 2\}, \quad \mathbf{p}(0) = [1 \;\; 0 \;\; 0] \quad \text{and} \quad P = \begin{bmatrix} 1/2 & 1/3 & 1/6 \\ 0 & 2/3 & 1/3 \\ 0 & 0 & 1 \end{bmatrix},$$

respectively. Find by means of computer simulations an as good as is possible for you approximation of the expected value $E(T)$ of the time $T = \min\{n \in \mathbb{N} : X_n = 2\}$ it takes the chain to reach the state 2.