SSIE 660: Stochastic Systems

Homework assignment 7 - Hint

1. Solve Chapter 4. Problem 14.

   See lecture notes.

2. Solve Chapter 4. Problem 30.

   Letting X_n be 0 if the n^{th} vehicle is a car and letting it be 1 if the vehicle is a truck gives rise to a two-state Markov chain with transition probabilities. For example,

   $$P_{00} = 4/5$$

   . Find the rest of such probabilities, then steady state probabilities.

3. Solve Chapter 4. Problem 42.

   See lecture notes.

4. Solve Chapter 4. Problem 52.

   Let the state be the successive zonal pickup locations. Then, $P_{A,A} = .6, P_{B,A} = .3$. Find the one-step transition probability matrix and steady statte probabilities. Let X denote the profit in a trip. Find $E[X]$.