Homework based on Chapter 12, 15
Computational Probability and Statistics, Section 002
Due: 9:00 AM, Friday, Mar. 27, 2015

Question 1. The number of customers that visit a bank on a day is modeled by a Poisson distribution. It is known that the probability of no customers at all is 0.00001. What is the expected number of customers ?

Question 2. Let X have a P ois(2) distribution. What is P ($X \leq 1$)?

Question 3. The flow of traffic can be treated as a Poisson process. Suppose that on average 11.5 cars arrive in 20 minutes.

(1) What is the intensity (or rate) λ in cars per second?

(2) What is the expected number of car arrivals in 20 seconds?

(3) What is the expectation of the interarrival time between cars?

(4) What is the probability for 0 car to arrive within 10 seconds? [Hint: Pois(μ) is defined by $p(k) = P(X = k) = \mu^k e^{-\mu}/k!$, and you can leave e in the answer.]

(5) What is the probability for less than 2 cars to arrive within 10 seconds?

Question 3.(1) According to the definition in the textbook, draw a histogram for the following numbers in [0, 100), using the given grid (i.e., letting the width of bins be 10). Mark the height of the bins in the histogram according to the textbook definition of histogram.

79.3, 44.2, 36.4, 65.2, 37, 62.4, 12.7, 43.8, 96.8, 83.1,

94.7, 26.7, 80.7, 86.7, 71.4, 2.5, 87.8, 65, 41.7, 94.3