Homework 6, ISyE 2027

Due on Monday, March 6

Problem 1: Suppose you are sitting in Starbucks, watching people buy drinks. Provide a reasonable guess for the distribution of each of the following:
(a) The number of people out of the next 10 that buy a mocha.
(b) The number of people that buy drinks until the first hot chocolate purchaser.
(c) The number of people that buy drinks in the next hour.
(d)The number of people that buy drinks until the fourth latte purchaser.
(e) Whether or not the second person buys a hot chocolate.

Problem 2: Hayter, Problem 3.1.7

Problem 3: Hayter, Problem 3.2.2

Problem 4: Hayter, Problem 3.2.8

Problem 5: An urn contains 4 white and 4 black balls. We randomly choose 4 balls. If 2 of them are white and 2 are black, we stop. If not, we replace the balls in the urn and again randomly select 4 balls. This continues until exactly 2 of the 4 chosen are white. What is the probability that we shall make exactly n selections?

Problem 6: An airline company sells 200 tickets for a plane with 198 seats, knowing that the probability a passenger will not show up for the flight is 0.01. Use the Poisson approximation to compute the probability they will have enough seats for all the passengers who show up.

Problem 7: Hayter, Problem 3.4.6.

Problem 8: Hayter, Problem 4.1.2.