

IE-231 In-Class Activity - Week 12

Dec 12, 2017

- Two friends (A and B) agree to meet on 4:00 PM. A usually arrives between 5 minutes early and 5 minutes late. B usually arrives between 5 minutes early and 15 minutes late. Their times of arrival are independent from each other.
 - What is the probability that B arrives definitely later than A?
 - What is the expected time that A waits B?
 - What is the probability that both meet early?
 - There are three computers, which provides answers to questions with speed according to exponential distribution with means $(1/\lambda)$ 6, 4 and 3 per hour, respectively. What is the probability that at least one machine provides an answer within the first hour?
 - Time between customer arrivals in a cafe is exponential with the mean value of 6 minutes.
 - What is the probability that no customers arrive in 15 minutes?
 - What is the interarrival time if the probability of a customer to arrive is 0.9?
 - What is the probability that 10 customers arrive in the first hour?
 - What is the probability of getting the first customer in 15 minutes if no customer arrived in the first 10 minutes?
- Hint: Check the relationship between Poisson and Exponential distributions.
- A pack of flour contains 1 kg of flour. Though a flour pouring machine has a standard deviation of 50 gr.
 - What is the probability that a randomly selected package contains between 925-1075 grams of flour?
 - If a proper flour package should contain between $1000-x$ and $1000+x$ grams of flour, what should x be that 80% of the packages are deemed proper?
 - Your customer strictly declared that 95% of the packages should contain at least 1000 grams of flour, so you should adjust the mean value. What should be the new mean value?
 - There are two different roads to get to Sariyer. Road A takes 35 minutes on average with standard deviation 5 minutes. Road B takes 32 minutes on average with standard deviation 8 minutes.
 - Which road has the higher advantage if one wants to reach Sariyer in 42 minutes?
 - What is the maximum time of arrival with 90% probability? Calculate for each road.