EE5150: Communication Networks

August - December 2017

1. Problem 3.29: Customers arrive at a grocery store's checkout counter according to a Poisson process with rate 1 per minute. Each customer carries a number of items that is uniformly distributed between 1 and 40. The store has two checkout counters, each capable of processing items at a rate of 15 per minute. To reduce the customer waiting time in queue, the store manager considers dedicating one of the two counters to customers with x items or less and dedicating the other counter to customers with more than x items. Write a small computer program to find the value of x that minimizes the average customer waiting time.

Instructions:

1. Submit the assignment as a zip file.
2. Kindly submit the plot of the average customer waiting time versus x in pdf format. Ensure that the plots have clear xlabel, ylabel, title and legends.
3. Kindly submit the code (preferably in C or C++). Kindly add comments in the code to enable review.
4. The deadline for the submission is 23 September 2017.
5. The assignment carries 3 marks.