



MITx: 6.041x Introduction to Probability - The Science of Uncertainty



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Exercise: The busy tellers

(1/1 point)

When you enter the bank, you find that there are only two tellers, both busy serving other customers, and that there are no other customers in queue. Assume that the service times for you and for each of the customers being served are independent identically distributed exponential random variables, with parameter $\lambda = 1$. What is the expected time from your arrival until you and the other two customers are all finished being served?



Answer: 2


Answer:

The time until the first service completion is exponential with parameter 2 and mean 1/2. (This is similar to waiting for the first of two independent exponential lightbulbs to burn out.) After the service completion, both tellers are again busy with their respective customers. Using the fresh-start property, the time until the next service completion is also


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Unit overview

Lec. 21: The Bernoulli process

Exercises 21 due May 11, 2016 at 23:59 UTC 

Lec. 22: The Poisson process


Exercises 22 due May 11, 2016 at 23:59 UTC 

Lec. 23: More on the Poisson process

exponential with parameter 2 and mean 1/2. Subsequently, there will be only one person being served, and the expected time until the last service completion is 1. Thus, the overall expected time until all customers are served is

$$\frac{1}{2} + \frac{1}{2} + 1 = 2.$$


You have used 2 of 2 submissions

Exercises 23 due May 11, 2016
at 23:59 UTC 

Solved problems

**Additional theoretical
material**

Problem Set 9

Problem Set 9 due May 11,
2016 at 23:59 UTC 

Unit summary

► Unit 10: Markov
chains

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