Exercise: Bank tellers

(1/1 point)

When you enter your bank, you find that there are only two tellers, both busy serving other customers, and that there are no other customers in line. Assume that the service times for you and for each of the customers being served are independent identically distributed exponential random variables. Also assume that after a service completion, the next customer in line immediately begins to be served. What is the probability that you will be the last to leave? *Hint:* Think of the situation at the time that you start getting served.

1/2 ✔

Answer: 0.5

Answer:

The answer is $1/2$. To see this, focus at the moment when you start service with one of the tellers. Note that the probability that both customers currently being served have their service end at exactly the same time is zero, and so when you start service, there will be another customer still being served. Using the memorylessness property of the exponential, the remaining time of the other customer being served is exponential. The

time until your own service will be completed has the same exponential distribution and is independent. By symmetry, you and the other customer have equal probability, $1/2$, of being the last to leave.

You have used 1 of 2 submissions

- Unit 6: Further topics on random variables
- Unit 7: Bayesian inference
- Exam 2
- Unit 8: Limit theorems and classical statistics
- **Unit 9: Bernoulli and Poisson processes**

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

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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