

## 17. Exercise: Bank tellers

### Exercise: Bank tellers

1/1 point (graded)

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.

✓ Answer: 0.5

#### Solution:

The answer is  $\frac{1}{2}$ . 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,  $\frac{1}{2}$ , of being the last to leave.

你已经尝试了1次（总共可以尝试3次）

❗ Answers are displayed within the problem

## 讨论

主题：Unit 9 / Lec. 22 / 17. Exercise: Bank tellers