What's wrong in Question 9?

question posted about a month ago by **rafael_obelheiro**

I tried to answer Question 9, but couldn't get it right. I'm calculating R (sojourn time) using lambda=1.5 and mu=2: R=1/(mu*(1-rho))=1/(2*0.25)=2. However, this answer is flagged as incorrect. What am I doing wrong?

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2 responses

HindCastel (Staff)

about a month ago

Hi Rafael,

The mean number of customers waiting for the service is 3. With this information, and knowing the value of the mean service time, you can easily compute the mean waiting time. The mean response time is the sum of the mean service time and the mean waiting time. We hope that it helps you to answer the question.

Not a dentist I'd like
to visit. :-)

posted about a month ago by **mrBB**

Bonjour Hind,

Thanks for your response. It turns out that my error was assuming that the queue is M/M/1 (it isn't).

As feedback, I'd like to point out that students might find a bit confusing to have to deal with a non-M/M/1 queue in lessons discussing M/M/1 queues; in fact, it seems natural to assume an M/M/1 queue here (at least to me). Another point is that interpreting rho as the mean number of customers in the server itself (excluding the buffer) might not be obvious to everyone -- I don't recall it being discussed in any lesson.

posted about a month ago by**rafael_obelheiro**

Hi Rafael, Just to point out that sometimes questions are confusing. And this is done on purpose. This is just to make the quizz a little bit more challenging. If nothing is said about arrivals and departures then the queue may not be a M/M/something queue. It's true that we have not said anything about the server's utilization rate in the general case. Thank you for bringing that point to our attention.

posted about a month ago by**Sandrine_VATON** (Staff)

I tried two times to get the waiting time without succes. How can the waiting time be calculated?

posted about a month ago by**maaooff**

Hi maaooff,

The average number of customers being served is ρ. From the statement of this question we know that $N_{\text{wait}} = 3$. So, it is easy to compute the average number of customers in the system (buffer+server). Then from Little's law you can get the value of the mean sojourn time in the system.

posted about a month ago by**Sandrine_VATON** (Staff)

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Badra-Assia
about a month ago

Hello, In the question 10, why is it not an M/M /1 queue?

Thank you

Hi Badra, because the problem says that there are 3 customers in the queue, N=3. But for M/M/1 queues, the number of customers in the queue can be calculated by N = rho/1-rho. In this problem, rho=2/3. When you calculate the value of N, it gives you 2, which is different from the value stated in the problem description. So, it cannot be an M/M/1 queue.

posted about a month ago by **amandavarella**

Hi Amandavarella,

Thank you for this anewer

Best regards,

Badra

posted about a month ago by **Badra-Assia**