BONUS Week 7 Homework

ⓘ This is a preview of the published version of the quiz

Started: Jul 2 at 7:54am

Quiz Instructions

Question 1

1 pts

Lesson 5.25: A Re-entrant Queue

BONUS: Consider the demo model from class, in which we observe crazier and crazier behavior as time passes,

Module05-25 - ReentrantQueue.doe

In particular, the various queues build up and them calm down; but the peaks tend to get bigger and bigger as time passes.

One of the issues is due to the fact that we have strange priorities on the two servers depending on where the customer is in the model. Those priorities are set in the Process modules, just to the right of the Seize-Delay-Release sequence.

Question: What happens when you set the priorities to “Medium” in each of the 5 process modules?

- ◯ a. All of the queues still exhibit that crazy behavior.
- ◯ b. A couple of the queues (but not all of them) still exhibit crazy behavior.
- ◯ c. Surprisingly, things pretty much calm down!

Question 2

1 pts

(Lesson 5.26: SMARTS Files and Rockwell Demos.) BONUS: Let’s look at one of the Rockwell SMARTS demo models from class, in which the arrival rate changes over the week (a different arrival rate each day),

Module05-26 - SMARTS - Arrivals Varying Rate via Expression.doe

Salient features of the model:

- day_rate is a vector of length 7 defined in the Variable spreadsheet in the Basic Process template. It keeps track of 7 daily customer arrival rates.
- The first Create module generates customers with *constant* interarrival times 1/(day_rate(day)), which obviously depends on the day of the week.
- The second Create module generates fake customers once every day to update the day of the week (1,2,…,7).
- The constant interarrival times are relatively large compared to the smaller service times given in the first Process module. So there's never really a line… VERY BORING!

Here's what I want you to do:

- Instead of constant interarrival times every day, let's make the interarrivals *random*.
- To this end, augment the Time Between Arrivals Expression in the first Create module to EXPO(1/(day_rate(day))), and tell me what happens.

- ◯ a. Still no line, ever.
- ◯ b. Occasional small line.
- ◯ c. Gigantic line forms.
- ◯ d. I from University of Georgia. What "SMARTS" meaning? Question make brain hurt.

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