

More Concepts in Discrete-Event Simulation (using AnyLogic)



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Multiple sources, and multiple resources

Problem: Patches Beauty Salon

Patches Beauty Salon offers two different services to dogs and cats in the Boston area: beauty baths and nail polishing.

Every hour, ~20 dogs arrive to the salon: 70% come for baths, and the other 30% for nails. Likewise, ~20 cats arrive every hour: only 10% for baths, and the other 90% for nails.

The salon has 7 members in its staff, 4 tubs and 3 tables.

A beauty bath requires one available member of the staff and one available tub. It takes on average 10 minutes, with a minimum of 5 minutes and a maximum of 15 minutes.

Polishing nails requires one available member of the staff and one available table. It takes on average 5 minutes, with a minimum of 3 minutes and a maximum of 7 minutes.

Assuming exponential distributions for the arrivals and triangular distributions for the delays, build a simulation that runs for 70000 minutes, and answer these questions:

Q1) What is the utilization of:

- a) the staff?
- b) the tubs?
- c) the tables?

Q2) What is the average time required for a beauty bath (including waiting in line)?

Q3) What is the average time required for having your nails polished (including waiting in line)?

Assuming exponential distributions for the arrivals and triangular distributions for the delays, build a simulation that runs for 70000 minutes, and answer these questions:

Q1) What is the utilization of:

a) the staff? Answer: ~66%

b) the tubs? Answer: ~66%

c) the tables? Answer: ~66%

Q2) What is the average time required for a beauty bath (including waiting in line)? Answer: ~12.2 minutes

Q3) What is the average time required for having your nails polished (including waiting in line)? Answer: ~7.1 minutes