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Stochastik 2 - Presence-Exercises 10:

Presence-Exercise 10.I:

Remember **Presence-Exercise 9.1** where we computed $p_{11}(t)$ of the Q-matrix

$$Q = \begin{pmatrix} -2 & 1 & 1 \\ 1 & -1 & 0 \\ 2 & 1 & -3 \end{pmatrix}.$$

Compute an invariant distribution of Q and compare it with $\lim_{t \nearrow \infty} p_{1,1}(t)$.

Presence-Exercise 10.II:

Consider a fleet of $N = 3$ buses. Each bus breaks down independently at rate μ, when it is sent to the depot for repair. The repair shop can only repair one bus at a time and each bus takes an exponential time of parameter λ to repair. Find the invariant distribution of the number of buses in service.

Presence-Exercise 10.III:

Consider the above **Presence-Exercise 10.II**, but...

1. ... consider that the repair shop can repair 2 buses at once.

2. ... consider that the repair shop can repair 3 buses at once.