State machines

A mobile phone repair shop, due do Pandemic Restrictions, can only allow a costumer at a time to enter. As soon as a new costumer enters, a first attendant determines whether her request can be satisfied or not. This takes an *Erlang<0.1 s^{-1},3>* distributed amount of time. The request can be accepted with 80% probability. If accepted, the costumer can go to the service stage, that takes an exponentially Exp<0.01 s^{-1}> distributed amount of time; otherwise she leave. As soon as the costumer leaves, another one enters immediately with probability 50%. Otherwise the average time after which a new costumer will arrive is exponentially *Exp<0.005 s^{-1}>* distributed.

- Draw a state machine based model of the system
- Implement it in a programming language of your choice
- Compute the probability of having a costumer in the first stage, in the second stage, or having the shop empty and waiting for a new costumer.
- Determine the utilization of the system.