EE5150: Communication Networks

August - December 2017

1. Simulate an M/M/1 queue and plot the average number of customers N in the system (versus the offered load ρ) from the simulation and compare it with the analytical expression for N. You may consider a fixed average service time $\frac{1}{\mu} = 1$ seconds in your simulation. You may plot the average number of customers in the system N for the following values of the offered load $\rho = 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.92, 0.94, 0.96, 0.98$.

2. Simulate an M/D/1 queue and plot the average number of customers N in the system (versus the offered load ρ) from the simulation and compare it with the analytical expression for N. You may consider a fixed average service time $\frac{1}{\mu} = 1$ seconds in your simulation. You may plot the average number of customers in the system N for the following values of the offered load $\rho = 0, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 0.92, 0.94, 0.96, 0.98$.

Instructions:

1. Submit the assignment as a zip file.

2. Kindly submit the two plots in pdf format. Ensure that the plots have clear xlabel, ylabel, title and legends.

3. Kindly submit the code (preferably in C or C++). You may submit a single code for the two assignments. Kindly add comments in the code to enable review.

4. Kindly identify how we can modify the load to validate the simulation. You may add a README file to identify the files and for other instructions.

5. The deadline for the submission is 16 September 2017.

6. The assignment carries 3 marks.