Written Assignment 1

1. Consider a multiple-server queue with two (2) servers. The first four customers arriving to the system have the following interarrival times: {25.1, 16.4, 55.2, 16.0}. Service times for the first four customers served are, in order, {104.9, 28.7, 54.5, 40.9}. Perform a hand simulation of this system until there have been four customer service completions. Assume that the fifth customer arrives long after the first four have been served.
2. For each event as it occurs, show the current time, the current event, the current state values, and the current state of the event list. Be sure to exhibit *all* the events on the event list after the occurence of each event (and don’t “lose” any events!).
3. Compute the average number of customers in the system (# in queue + number in service) at the time of the fourth customer service completion.
4. Compute the average time in the system (“time in the system” is the time between arrival to end of service) for the first four customers.
5. Compute the average arrival rate to the system at the time of the fourth customer service completion.
6. Compute the average utilization of the servers at the time of the fourth customer service completion.
7. Verify that Little’s formula holds at the time of the fourth customer completion.
8. Is the overall system first-in first-out? Explain.