MAP 6264 Homework 4 (Finite-Source Input, BCC) 30 Points

Adapt the simulation program of Homework 1 (Blocked Customers Cleared) to account for finite-source input. Consider the three cases:

1. Exponential think times (quasirandom input), exponential service times.

2. Exponential think times, constant service times.

3. Constant think times, exponential service times.

Assume that $s = 10$ servers; and, for each value of n (number of sources), calculate $\hat{a}$ (offered load per idle source) so that a^* (intended offered load) is 9.6 erlangs. Run each simulation for as many arrivals as necessary to attain statistical stability. When $n = \infty$ (in Case 1 and Case 2) use the simulation of Homework 1. (Note that for every value of n, the theory values are the same for each case, because of insensitivity of the equilibrium probabilities to the think times and the service times). Fill in the tables. Attach code for simulation and theory; and explain all calculations.

$$P_s[n]$$

		---------- simulation ----------		
n	***theory***	***1***	***2***	***3***
10				
11				
12				
13				
14				
15				
25				
50				
100				
1000				
∞				

$\Pi_s[n]$

		---------- simulation ----------		
n	***theory***	***1***	***2***	***3***
10				
11				
12				
13				
14				
15				
25				
50				
100				
1000				
∞				

ρ

		---------- simulation ----------		
n	***theory***	***1***	***2***	***3***
10				
11				
12				
13				
14				
15				
25				
50				
100				
1000				
∞				