Pseudo Code for Service Node Simulation

a : Arrival time array given
c : Completion time array
d : Computed delay time array
n: Number of jobs
$\overline{r}$: average interarrival time
$\overline{s}$: average service time
$\overline{d}$: average delay
$\overline{w}$: average wait
i : index of arrival time
j : index of compeltion time
l : job count in node
q : job count in queue
x : job count in service
τ : last event time
m_l : cumulated area of jobs in node
m_q : cumulated area of jobs in queue
m_x : cumulated area of jobs in service
NodePlot$(time, count)$: add a point to jobs in node
QueuePlot$(time, count)$: add a point to jobs in queue
ServicePlot$(time, count)$: add a point to jobs in service
T : cease time of job arrival
m_i^x : cumulated area of time times number of servicing jobs served by server i
$\overline{x}_i$: utilization (busy portion) of server i
k_i : number of jobs served by server i
m_i^s : cumulated service times provided by server i
$\overline{s}_i$: averaged service time of server i
m_s : cumulated service times of jobs
$\overline{s}$: averaged service time of jobs

DynamicStochasticMultiServerSingleQueueSimulation( )

1. $t_a \leftarrow Exponential(); j \leftarrow 0; q \leftarrow 0$
2. $\forall i, t_{ci} \leftarrow \infty$
3. $mj \leftarrow 0; mq \leftarrow 0; t \leftarrow 0; \forall i, m_{fi} \leftarrow 0; \forall i, m_{bi} \leftarrow 0; count \leftarrow 1$
4. $NodePlot(0,0); QueuePlot(0,0)$

5. $while\ t_a \neq \infty \vee j \neq 0$
6. $\quad Sort(t_{ci})$
7. $\quad if\ \forall i, t_{ci} > t_a$
8. $\quad\quad m_j \leftarrow m_j + j \times (t_a - t)$
9. $\quad\quad m_q \leftarrow m_q + q \times (t_a - t)$
10. $\quad\quad\quad j \leftarrow j + 1$
11. $\quad\quad\quad q \leftarrow q + 1$
12. $\quad\quad\quad NodePlot(t_a, j); QueuePlot(t_a, q)$
13. $\quad\quad\quad if\ \forall i, t_{ci} = \infty$
14. $\quad\quad\quad\quad q \leftarrow q - 1$
15. $\quad\quad\quad\quad QueuePlot(t_a, q)$
16. $\quad\quad\quad\quad t_{ci} \leftarrow t_a + Uniform()$
17. $\quad\quad\quad\quad GanttChart\big(i, (t_i, t_a)\big)$
18. $\quad\quad\quad\quad m_f \leftarrow m_f + (t_a - t_i)$
19. $\quad\quad\quad\quad t_i \leftarrow t_a$
20. $\quad\quad\quad x \leftarrow Exponential()$
21. $\quad\quad\quad if\ (t_a + x) > CeaseTime$
22. $\quad\quad\quad\quad t_a \leftarrow \infty$
23. $\quad\quad\quad else$
24. $\quad\quad\quad\quad t_a \leftarrow t_a + x$
25. $\quad\quad\quad\quad count \leftarrow count + 1$
26. $\quad\quad\quad t \leftarrow t_a$
27. $\quad\quad else$
28. $\quad\quad\quad m_j \leftarrow m_j + j \times (t_{ci} - t)$
29. $\quad\quad\quad m_q \leftarrow m_q + q \times (t_{ci} - t)$
30. $\quad\quad\quad j \leftarrow j - 1$
31. $\quad\quad\quad NodePlot(t_{ci}, j)$
32. $\quad\quad\quad GanttChart\big(i, (t_i, t_{ci})\big) \quad //busy$
33. $\quad\quad\quad m_b \leftarrow m_b + (t_{ci} - t)$
34. $\quad\quad\quad t_i \leftarrow t_{ci}$

35. $t \leftarrow t_{ci}$
36. $t_{ci} \leftarrow \infty$
37. $if\ q > 0$
38. $foreach\ i \in all\ servers$
39. $if\ t_{ci} = \infty$
40. $q \leftarrow q - 1$
41. $QueuePlot(t, q)$
42. $t_{ci} \leftarrow t + Uniform()$
43. $GanttChart\big(i, (t_i, t)\big)$
44. $m_f \leftarrow m_f + (t - t_i)$
45. $t_i \leftarrow t$
46. $break\ loop$
47. end
48. $foreach\ i \in all\ servers$
49. $GanttChart\big(i, (t_i, t)\big)$
50. $m_j \leftarrow m_j/t; Delay \leftarrow m_q/(count - 1);\ m_q \leftarrow m_q/t$
51. $\forall i, BusyRatio_i \leftarrow m_{bi}/(m_{bi} + m_{fi})$

Here is discuss to get the result.