

M/U/1 Queue - 50 CUSTOMER

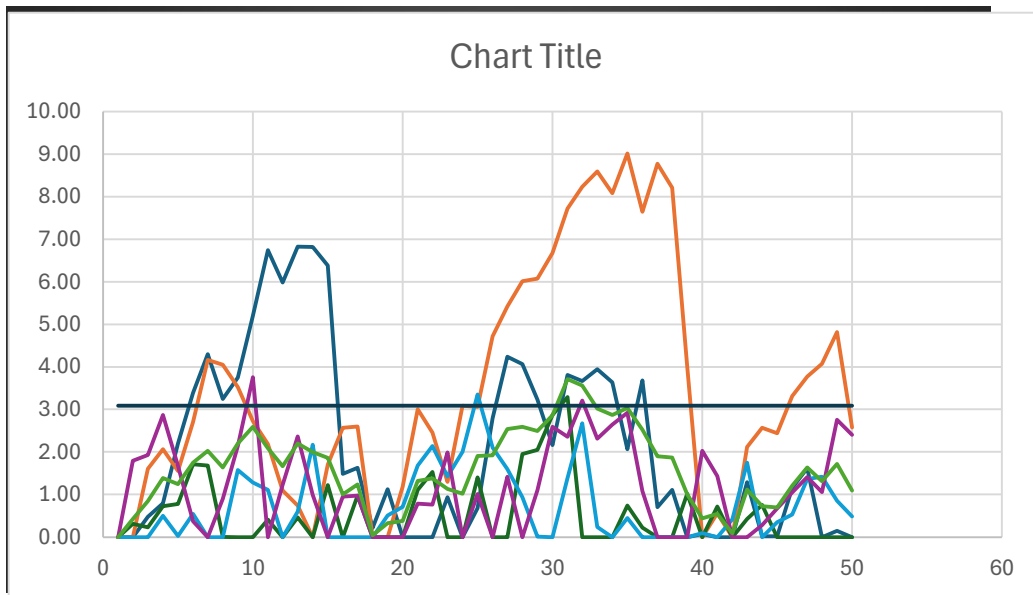
INPUT DATA
Mean interarrival time = 1.6
Min service time = 0.27
Max service time = 2.29

calculated values
E(SERVICE TIME) = 1.28
VAR(SERVICE TIME) = 0.34
Steady-state expected mean wait time in queue = 3.09

long run (steady state mean waiting time in queue calculated so that it is not the same as our tot average waiting time

try to extend your data to 200 or 500 you will see that the value approaches to the calculated ont

0.625	1	1.98
0.4		
4.946083333		



satter with straight lines insert option

Customer	Replication 1			Replication 2			Replication 3		
	IA	S	WQ 1	LA	S	WQ 2	LA	S	WQ 3
1		1.80	0.00		0.94	0.00		1.73	0.00
2	3.27	0.54	0.00	1.48	1.89	0.00	1.42	1.58	0.31
3	0.07	0.94	0.47	0.29	1.23	1.61	1.66	0.97	0.23
4	0.62	1.46	0.79	0.77	0.85	2.06	0.48	1.47	0.73
5	0.06	2.12	2.20	1.36	1.30	1.55	1.42	1.98	0.78
6	0.93	1.87	3.38	0.15	2.06	2.70	1.05	0.41	1.71
7	0.95	1.54	4.30	0.60	0.78	4.16	0.43	0.72	1.68
8	2.60	1.03	3.24	0.90	0.84	4.05	2.40	0.95	0.00
9	0.53	1.86	3.75	1.36	0.98	3.53	1.66	1.72	0.00
10	0.41	1.70	5.20	1.78	0.94	2.72	2.86	2.09	0.00
11	0.16	1.21	6.74	1.48	0.74	2.18	1.68	1.00	0.41
12	1.96	2.16	5.99	1.83	1.56	1.09	6.14	1.63	0.00
13	1.32	0.80	6.82	1.92	1.06	0.74	1.17	0.94	0.46
14	0.79	1.44	6.82	1.82	1.83	0.00	1.87	1.83	0.00
15	1.88	1.16	6.38	0.13	2.00	1.70	0.61	1.69	1.22
16	6.05	1.67	1.49	1.14	0.37	2.57	6.65	1.36	0.00
17	1.53	1.20	1.63	0.34	1.00	2.60	0.39	1.16	0.97
18	2.61	1.26	0.21	3.90	1.26	0.00	2.30	0.55	0.00
19	0.34	0.55	1.13	2.49	1.30	0.00	2.03	0.59	0.00
20	4.25	1.21	0.00	0.12	2.03	1.18	0.66	1.38	0.00
21	5.49	0.31	0.00	0.21	0.49	3.00	0.27	1.03	1.11
22	0.72	1.85	0.00	1.04	1.29	2.45	0.61	1.92	1.53
23	0.91	2.22	0.94	2.44	1.84	1.30	4.13	2.24	0.00
24	3.50	1.65	0.00	0.05	2.08	3.09	2.76	1.47	0.00
25	0.97	2.24	0.68	2.11	1.71	3.06	0.07	1.44	1.40
26	0.13	1.86	2.79	0.05	1.88	4.72	3.99	1.58	0.00
27	0.42	0.42	4.24	1.18	0.67	5.42	1.90	2.19	0.00
28	0.60	0.32	4.06	0.07	1.12	6.02	0.24	1.03	1.95
29	1.16	1.17	3.23	1.06	1.64	6.07	0.93	1.82	2.04
30	2.24	2.04	2.16	1.04	1.11	6.67	1.00	1.86	2.87
31	0.39	1.39	3.81	0.06	0.69	7.72	1.44	0.92	3.29
32	1.53	0.70	3.67	0.18	0.68	8.23	4.95	2.00	0.00
33	0.42	1.42	3.95	0.32	0.30	8.60	3.13	1.60	0.00
34	1.73	1.70	3.63	0.82	1.46	8.08	3.18	0.80	0.00
35	3.28	2.00	2.06	0.53	1.07	9.01	0.07	0.55	0.74
36	0.39	1.05	3.68	2.44	1.16	7.64	1.07	1.04	0.22
37	4.03	0.57	0.70	0.03	1.67	8.77	4.92	0.43	0.00

How to draw steady state mean wait time in queue
 In other words how to draw a horizontal line ?
 Y= constant
 to draw a line i need two poiints only
 for example (1,3.09) and (50,3.09)
 add ---> then x-axis chose 1and 50 using ctrl and in y-axis chose
 3.09 twice using ctrl again

38	0.17	1.80	1.11	2.23	0.34	8.21	0.91	1.50	0.00
39	3.81	1.41	0.00	4.55	1.38	4.00	0.48	1.70	1.02
40	1.34	2.23	0.07	6.06	1.56	0.00	3.59	1.32	0.00
41	3.70	0.85	0.00	1.00	1.63	0.56	0.60	0.39	0.71
42	2.63	1.81	0.00	2.57	2.22	0.00	3.60	0.54	0.00
43	0.52	1.48	1.29	0.10	1.65	2.12	0.11	0.40	0.42
44	2.75	1.71	0.02	1.20	2.03	2.57	0.06	1.74	0.76
45	1.71	1.74	0.02	2.16	1.45	2.44	5.09	1.33	0.00
46	0.60	0.92	1.15	0.58	2.03	3.31	2.17	0.45	0.00
47	0.45	0.96	1.62	1.57	1.67	3.77	0.67	1.32	0.00
48	4.08	0.99	0.00	1.37	0.76	4.07	2.38	1.79	0.00
49	0.85	1.52	0.15	0.01	0.78	4.82	2.03	1.97	0.00
50	2.19	1.53	0.00	3.03	0.97	2.57	3.44	1.39	0.00
Average	1.70	1.39	2.11	1.30	1.29	3.45	1.97	1.31	0.53

Replication 4			Replication 5			Cross replication
LA	S	WQ4	LA	S	WQ5	Avg.WQ
	0.35	0.00		2.00	0.00	0.00
0.37	0.77	0.00	0.20	1.33	1.79	0.42
0.92	0.63	0.00	1.19	0.99	1.93	0.85
0.13	1.38	0.50	0.05	2.17	2.86	1.39
1.85	1.29	0.03	3.36	2.06	1.67	1.24
0.77	1.37	0.55	3.36	0.40	0.37	1.74
2.07	1.15	0.00	2.45	1.99	0.00	2.03
1.36	2.19	0.00	1.10	1.92	0.89	1.64
0.61	1.86	1.57	0.68	1.88	2.13	2.20
2.15	1.99	1.28	0.25	0.49	3.76	2.59
2.16	1.21	1.11	4.52	1.76	0.00	2.09
3.63	2.23	0.00	0.53	1.78	1.23	1.66
1.64	2.28	0.60	0.65	1.29	2.36	2.20
0.71	1.36	2.17	2.67	0.53	0.98	2.00
4.73	0.42	0.00	1.52	1.15	0.00	1.86
2.04	1.90	0.00	0.20	2.03	0.95	1.00
5.84	0.47	0.00	2.00	0.39	0.97	1.23
0.79	2.19	0.00	5.05	1.68	0.00	0.04
1.69	0.45	0.50	6.16	0.45	0.00	0.33
0.25	1.67	0.71	2.26	1.57	0.00	0.38
0.69	0.53	1.68	0.79	0.61	0.78	1.31
0.07	0.34	2.13	0.63	2.14	0.76	1.38
1.05	2.18	1.42	0.91	0.64	1.99	1.13
1.60	1.43	2.00	3.33	2.10	0.00	1.02
0.07	1.71	3.36	1.09	0.58	1.01	1.90
2.96	0.39	2.10	1.59	1.61	0.00	1.92
0.90	1.64	1.59	0.19	1.33	1.42	2.53
2.30	0.28	0.93	5.28	1.63	0.00	2.59
1.20	1.24	0.01	0.53	1.77	1.10	2.49
1.79	1.60	0.00	0.28	0.63	2.59	2.86
0.21	1.45	1.38	0.86	1.82	2.35	3.71
0.16	2.24	2.67	0.96	0.74	3.21	3.56
4.68	0.80	0.24	1.64	1.25	2.31	3.02
1.21	1.96	0.00	0.91	1.10	2.64	2.87
1.52	0.74	0.45	0.82	0.49	2.92	3.04
1.53	0.99	0.00	2.34	1.79	1.08	2.52
2.12	1.24	0.00	3.00	1.06	0.00	1.90

1.42	0.75	0.00	2.54	1.44	0.00	1.86
1.34	0.74	0.00	1.79	2.27	0.00	1.00
0.65	1.36	0.09	0.25	1.81	2.03	0.44
4.83	2.19	0.00	2.40	0.85	1.43	0.54
1.77	1.43	0.42	2.59	1.63	0.00	0.08
0.10	1.18	1.75	1.79	0.39	0.00	1.12
3.84	0.43	0.00	0.11	2.10	0.28	0.72
0.08	0.61	0.35	1.70	0.75	0.67	0.70
0.43	0.88	0.53	0.38	0.39	1.04	1.21
0.04	1.26	1.37	0.03	0.39	1.41	1.63
1.21	1.16	1.41	0.75	1.98	1.05	1.31
1.72	0.81	0.85	0.28	1.68	2.75	1.71
1.18	1.30	0.49	2.04	0.99	2.40	1.09
1.56	1.24	0.72	1.63	1.32	1.18	1.60

1.60