

FCFS Output

Minute 1.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
1	0	6	7	7	0	7
2	2	12	16	23	5	21
3	4	8	9	32	19	28
4	6	10	10	42	26	36
5	8	4	8	50	34	42

Minute 1.0

Average service time = 8.00000

Average turn around time = 26.80000

Ratio of Turn around time to Service time = 3.35000

Throughput = 0.027777777777777776

Minute 2.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
6	10	9	12	62	40	52
7	12	10	22	84	50	72
8	14	6	8	92	70	78
9	16	9	11	103	76	87
10	18	6	6	109	85	91
11	20	7	7	116	89	96

Minute 2.0

Average service time = 7.83333

Average turn around time = 79.33333

Ratio of Turn around time to Service time = 10.12766

Throughput = 0.033333333333333333

Minute 3.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
12	22	10	13	129	94	107
13	24	13	19	148	105	124
14	26	8	13	161	122	135
15	28	4	8	169	133	141

Minute 3.0

Average service time = 8.75000

Average turn around time = 126.75000

Ratio of Turn around time to Service time = 14.48571

Throughput = 0.022222222222222223

Minute 4.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
16	30	17	19	188	139	158
17	32	8	11	199	156	167
18	34	14	18	217	165	183
19	36	2	6	223	181	187
20	38	10	12	235	185	197

Minute 4.0

Average service time = 10.20000

Average turn around time = 178.40000

Ratio of Turn around time to Service time = 17.49020

Throughput = 0.027777777777777776

Minute 5.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
21	40	11	13	248	195	208
22	42	1	1	249	206	207
23	44	15	18	267	205	223
24	46	16	20	287	221	241

Minute 5.0

Average service time = 10.75000

Average turn around time = 219.75000

Ratio of Turn around time to Service time = 20.44186

Throughput = 0.022222222222222223

Minute 6.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
25	48	17	26	313	239	265
26	50	20	26	339	263	289

Minute 6.0

Average service time = 18.50000

Average turn around time = 277.00000

Ratio of Turn around time to Service time = 14.97297

Throughput = 0.011111111111111112

Minute 7.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
27	52	25	31	370	287	318
28	54	16	20	390	316	336

29	56	13	14	404	334	348
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Minute 7.0
Average service time = 18.00000
Average turn around time = 334.00000
Ratio of Turn around time to Service time = 18.55556
Throughput = 0.016666666666666666

Minute 8.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
30	58	17	26	430	346	372
31	60	13	15	445	370	385
32	62	19	24	469	383	407

Minute 8.0
Average service time = 16.33333
Average turn around time = 388.00000
Ratio of Turn around time to Service time = 23.75510
Throughput = 0.016666666666666666

Minute 9.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
33	64	5	13	482	405	418
34	66	7	8	490	416	424
35	68	18	27	517	422	449
36	70	10	14	531	447	461

Minute 9.0
Average service time = 10.00000
Average turn around time = 438.00000
Ratio of Turn around time to Service time = 43.80000
Throughput = 0.022222222222222223

Minute 10.0

Processes around time	Arrival time	Service time	Burst time	Finish time	Response time	Turn
37	72	15	24	555	459	483
38	74	16	19	574	481	500
39	76	15	17	591	498	515

Minute 10.0
Average service time = 15.33333
Average turn around time = 499.33333
Ratio of Turn around time to Service time = 32.56522

Throughput = 0.016666666666666666

Minute 11.0 and beyond

Processes	Arrival time	Service time	Burst time	Finish time	Response time	Turn around time
40	78	17	27	618	513	540
41	80	12	14	632	538	552
42	82	5	7	639	550	557
43	84	3	6	645	555	561
44	86	8	8	653	559	567
45	88	10	12	665	565	577
46	90	15	17	682	575	592
47	92	17	26	708	590	616
48	94	13	29	737	614	643

Minute 11.0 and beyond

Average service time = 11.11111

Average turn around time = 578.33333

Ratio of Turn around time to Service time = 52.05000

Throughput = 0.05

Total

Average service time = 11.29167

Average turn around time = 0.00000

Ratio of Turn around time to Service time = 0.00000

Throughput = 0.06512890094979647

Round Robin

Minute 1.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
22	42	1	10	10	53

Minute 1.0

Average service time = 1.00000

Average turn around time = 11.00000

Ratio of Turn around time to Service time = 11.00000

Throughput = 0.005555555555555556

Minute 2.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
1	0	7	0	57	64

Minute 2.0

Average service time = 6.00000

Average turn around time = 64.00000

Ratio of Turn around time to Service time = 10.66667

Throughput = 0.005555555555555556

Minute 3.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					

Minute 4.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					

10	18	6	6	187	211	193
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Minute 4.0

Average service time = 6.00000

Average turn around time = 193.00000

Ratio of Turn around time to Service time = 32.16667

Throughput = 0.005555555555555556

Minute 5.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					

3	4	9	1	237	250	246
4	6	10	0	279	295	289
5	8	8	3	236	252	244
8	14	8	0	233	255	241
11	20	7	5	230	257	237
19	36	6	13	223	265	229

Minute 5.0

Average service time = 6.16667

Average turn around time = 247.66667

Ratio of Turn around time to Service time = 40.16216

Throughput = 0.033333333333333333

Minute 6.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					

15	28	8	1	266	302	274
43	84	6	20	238	328	244

Minute 6.0

Average service time = 3.50000

Average turn around time = 259.00000

Ratio of Turn around time to Service time = 74.00000

Throughput = 0.01111111111111112

Minute 7.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
6	10	12	2	386	408
9	16	11	7	383	410
34	66	8	29	320	394
42	82	7	21	276	328
44	86	8	19	308	283
				402	316

Minute 7.0

Average service time = 7.60000

Average turn around time = 343.80000

Ratio of Turn around time to Service time = 45.23684

Throughput = 0.02777777777777776

Minute 8.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
2	2	16	0	455	473
12	22	13	4	440	475
14	26	13	2	438	477
17	32	11	15	404	447
20	38	12	12	430	480
					442

Minute 8.0

Average service time = 9.60000

Average turn around time = 446.40000

Ratio of Turn around time to Service time = 46.50000

Throughput = 0.02777777777777776

Minute 9.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
21	40	13	11	455	508
45	88	12	18	427	527
					468
					439

Minute 9.0

Average service time = 10.50000

Average turn around time = 453.50000

Ratio of Turn around time to Service time = 43.19048

Throughput = 0.01111111111111112

Minute 10.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
29	56	14	3	471	541
31	60	15	1	492	567
33	64	13	30	468	545
36	70	14	27	486	570
41	80	14	22	481	575

Minute 10.0

Average service time = 10.60000

Average turn around time = 493.60000

Ratio of Turn around time to Service time = 46.56604

Throughput = 0.02777777777777776

Minute 11.0 and beyond

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
7	12	22	1	619	653
13	24	19	3	577	620
16	30	19	0	572	621
18	34	18	14	570	622
23	44	18	9	561	623
24	46	20	8	588	654
25	48	26	7	642	716
26	50	26	6	641	717
27	52	31	5	654	737
28	54	20	4	584	658
30	58	26	2	635	719
32	62	24	0	615	701
35	68	27	28	635	730
37	72	24	26	616	712
38	74	19	25	570	663
39	76	17	24	541	634
40	78	27	23	626	731
46	90	17	17	529	636
47	92	26	16	609	727
48	94	29	15	613	736

Minute 11.0 and beyond

Average service time = 16.25000

Average turn around time = 622.60000

Ratio of Turn around time to Service time = 38.31385

Throughput = 0.1111111111111111

Total

Throughput = 0.06512890094979647

1	0	7	0	0	7	7
3	4	9	3	3	16	12
5	8	8	8	8	24	16
8	14	8	30	30	52	38
10	18	6	6	6	30	12
11	20	7	10	10	37	17
15	28	8	24	24	60	32
19	36	6	1	1	43	7
22	42	1	1	1	44	2

Throughput = 0.05

4	6	10	54	54	70	64
9	16	11	62	62	89	73
34	66	8	4	4	78	12
42	82	7	13	13	102	20
43	84	6	5	5	95	11
44	86	8	16	16	110	24

Throughput = 0.033333333333333333

Turn-Around Time

6	10	12	111	111	133	123
12	22	13	135	135	170	148
17	32	11	78	78	121	89
20	38	12	95	95	145	107
45	88	12	57	57	157	69

Minute 3.0

Average service time = 9.40000

Average turn around time = 107.20000

Ratio of Turn around time to Service time = 11.40426

Throughput = 0.02777777777777776

Minute 4.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
14	26	13	144	144	183
21	40	13	143	143	196
29	56	14	153	153	223
33	64	13	132	132	209
36	70	14	153	153	237

Minute 4.0

Average service time = 9.40000

Average turn around time = 158.40000

Ratio of Turn around time to Service time = 16.85106

Throughput = 0.02777777777777776

Minute 5.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
2	2	16	264	264	282
31	60	15	191	191	266
39	76	17	206	206	299
41	80	14	157	157	251

Minute 5.0

Average service time = 13.00000

Average turn around time = 220.00000

Ratio of Turn around time to Service time = 16.92308

Throughput = 0.02222222222222223

Minute 6.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
18	34	18	282	282	334
23	44	18	290	290	352

46	90	17	209	209	316	226
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Minute 6.0
Average service time = 14.66667
Average turn around time = 278.00000
Ratio of Turn around time to Service time = 18.95455
Throughput = 0.016666666666666666

Minute 7.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
13	24	19	328	328	371
16	30	19	341	341	390
38	74	19	316	316	409

Minute 7.0
Average service time = 15.33333
Average turn around time = 347.33333
Ratio of Turn around time to Service time = 22.65217
Throughput = 0.016666666666666666

Minute 8.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
7	12	22	437	437	471
24	46	20	363	363	429
28	54	20	375	375	449

Minute 8.0
Average service time = 14.00000
Average turn around time = 412.33333
Ratio of Turn around time to Service time = 29.45238
Throughput = 0.016666666666666666

Minute 9.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
32	62	24	409	409	495
37	72	24	423	423	519

Minute 9.0
Average service time = 17.00000
Average turn around time = 440.00000
Ratio of Turn around time to Service time = 25.88235
Throughput = 0.011111111111111112

Minute 10.0

Processes	Arrival Time	Burst Time	Response Time		Waiting Time	Finish Time
Turn-Around Time						
25	48	26	471	471	545	497
26	50	26	495	495	571	521
30	58	26	513	513	597	539

Minute 10.0

Average service time = 18.00000

Average turn around time = 519.00000

Ratio of Turn around time to Service time = 28.83333

Throughput = 0.016666666666666666

Minute 11.0 and beyond

Processes	Arrival Time	Burst Time	Response Time		Waiting Time	Finish Time
Turn-Around Time						
27	52	31	654	654	737	685
35	68	27	555	555	650	582
40	78	27	572	572	677	599
47	92	26	505	505	623	531
48	94	29	583	583	706	612

Minute 11.0 and beyond

Average service time = 18.00000

Average turn around time = 601.80000

Ratio of Turn around time to Service time = 33.43333

Throughput = 0.027777777777777776

Total

Average service time = 11.29167

Average turn around time = 0.00000

Ratio of Turn around time to Service time = 0.00000

Throughput = 0.06512890094979647

HRRN Output

Minute 1.0

Processes	Arrival Time	Burst Time	Response Time		Waiting Time	Finish Time
Turn-Around Time						
1	0	7	0	0	7	7
4	6	10	1	1	17	11
9	16	11	1	1	28	12
15	28	8	0	0	36	8
19	36	6	0	0	42	6
21	40	13	3	3	56	16

22 42 1 0 0 43 1

Average service time = 6.14286
Average turn around time = 8.71429
Ratio of Turn around time to Service time = 1.41860
Throughput = 0.03888888888888889

Minute 2.0

Average service time = 6.14286
Average turn around time = 8.71429
Ratio of Turn around time to Service time = 1.41860
Throughput = 0.03888888888888889

Minute 3.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
47	92	26	44	44	162
48	94	29	13	13	70

Average service time = 15.00000
Average turn around time = 56.00000
Ratio of Turn around time to Service time = 3.73333
Throughput = 0.01111111111111112

Minute 4.0

Average service time = 15.00000
Average turn around time = 56.00000
Ratio of Turn around time to Service time = 3.73333
Throughput = 0.01111111111111112

Minute 5.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
30	58	26	189	189	273
35	68	27	152	152	247
37	72	24	201	201	297

Average service time = 16.66667
Average turn around time = 206.33333
Ratio of Turn around time to Service time = 12.38000
Throughput = 0.016666666666666666

Minute 6.0

Average service time = 16.66667
 Average turn around time = 206.33333
 Ratio of Turn around time to Service time = 12.38000
 Throughput = 0.016666666666666666

Minute 7.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
28	54	20	338	338	412
32	62	24	287	287	373
38	74	19	299	299	392

Average service time = 17.00000
 Average turn around time = 329.00000
 Ratio of Turn around time to Service time = 19.35294
 Throughput = 0.016666666666666666

Minute 8.0

Average service time = 17.00000
 Average turn around time = 329.00000
 Ratio of Turn around time to Service time = 19.35294
 Throughput = 0.016666666666666666

Minute 9.0

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					
13	24	19	466	466	509
16	30	19	441	441	490
23	44	18	465	465	527

Average service time = 15.00000
 Average turn around time = 476.00000
 Ratio of Turn around time to Service time = 31.73333
 Throughput = 0.016666666666666666

Minute 10.0

Average service time = 15.00000
 Average turn around time = 476.00000
 Ratio of Turn around time to Service time = 31.73333
 Throughput = 0.016666666666666666

Minute 11.0 and beyond

Processes	Arrival Time	Burst Time	Response Time	Waiting Time	Finish Time
Turn-Around Time					

3	4	9	680	680	693	689
5	8	8	701	701	717	709
6	10	12	643	643	665	655
8	14	8	687	687	709	695
10	18	6	713	713	737	719
11	20	7	704	704	731	711
12	22	13	606	606	641	619
14	26	13	589	589	628	602
17	32	11	633	633	676	644
20	38	12	603	603	653	615
33	64	13	526	526	603	539
34	66	8	627	627	701	635
42	82	7	635	635	724	642
44	86	8	590	590	684	598
45	88	12	515	515	615	527

Average service time = 7.40000

Average turn around time = 639.93333

Ratio of Turn around time to Service time = 86.47748

Throughput = 0.0833333333333333

Minute 12.0 and beyond

Average service time = 7.40000

Average turn around time = 639.93333

Ratio of Turn around time to Service time = 86.47748

Throughput = 0.0833333333333333

Throughput = 0.06512890094979647