

Table 1: Results on Data Set Config

Config	<	=	>	h.avg	a.avg	best ratio	worst ratio
80_500	17	29	4	26.14	69.38	13.7895	0.92
80_400	21	26	3	25.72	55.8	11.7368	0.9
80_300	16	30	4	29.7	58.94	11.6667	0.172093
80_200	21	28	1	23.92	47.46	9.47368	0.947368
80_100	13	34	3	22.84	32.34	4.73684	0.532258
80_50	17	30	3	19.54	23.04	2.9375	0.485714
80_40	22	25	3	19.32	24.06	2.3125	0.684211
80_30	19	25	6	16.76	19.5	2.23077	0.695652
80_20	19	29	2	14.48	15.36	1.8	0.764706
80_10	3	47	0	8.62	8.7	1.28571	1
70_500	17	28	5	21.88	41.98	14.1429	0.789474
70_400	12	35	3	22.84	40.44	14.7368	0.525641
70_300	19	30	1	22.08	45.58	8.7	0.805556
70_200	17	32	1	21.4	37.1	6.88235	0.777778
70_100	24	25	1	21.78	38.44	5.16667	0.897727
70_50	22	22	6	20.04	25.9	3.91667	0.565217
70_40	12	34	4	17.28	20.4	2.46667	0.772727
70_30	17	29	4	16.6	18.44	2.15385	0.565217
70_20	16	32	2	13.66	14.74	1.8	0.928571
70_10	2	47	1	8.36	8.38	1.125	0.888889
60_500	18	30	2	19.4	50.22	15.6429	0.736842
60_400	20	28	2	19.18	49.62	14.1765	0.7
60_300	8	36	6	19.16	34.76	11.8824	0.518519
60_200	22	25	3	18.48	41.82	10.2308	0.703704
60_100	19	30	1	17.4	30.38	6.69231	0.666667
60_50	14	32	4	16.12	19.7	3.09091	0.583333
60_40	19	28	3	14.88	18.26	2.83333	0.823529
60_30	15	30	5	14.44	16.2	2.07692	0.772727
60_20	20	29	1	12.42	13.88	2.11111	0.785714
60_10	7	43	0	8.56	8.74	1.5	1
50_500	21	27	2	15.64	37.34	13.1818	0.925926
50_400	18	31	1	16.1	40.32	14.75	0.9375
50_300	16	31	3	16	34.7	10.6154	0.685714
50_200	11	34	5	16.12	26.22	8.4375	0.6875
50_100	17	29	4	14.42	22.72	6.53846	0.777778
50_50	12	33	5	14.08	18.9	5	0.785714
50_40	18	30	2	14.62	18.8	3.08333	0.833333
50_30	22	22	6	13.54	17.06	2.66667	0.653846
50_20	20	28	2	11.42	13.22	2	0.846154
50_10	12	36	2	7.72	8.16	1.5	0.777778
40_400	15	31	4	12.84	20.12	9.88889	0.818182

40_300	19	30	1	12.26	32.52	13.5556	0.769231
40_200	16	29	5	11.34	19.98	7.55556	0.818182
40_100	24	26	0	11.92	27.9	7	1
40_50	17	29	4	11.72	14.74	4.66667	0.652174
40_40	17	32	1	10.58	14.38	4.25	0.714286
40_30	19	31	0	9.64	12.32	2.5	1
40_20	14	29	7	10.34	11.12	2.42857	0.714286
40_10	13	35	2	7.08	7.48	1.6	0.875
30_200	20	29	1	9.64	20.82	9	0.8125
30_100	22	27	1	9.68	17.08	6	0.882353
30_50	17	29	4	8.96	12.72	4.66667	0.857143
30_40	15	31	4	8.82	12.52	3.5	0.73913
30_30	18	29	3	8.08	11.28	3.57143	0.785714
30_20	16	29	5	8.02	9.2	2.66667	0.6
30_10	13	36	1	6.18	6.7	2.25	0.875
20_40	12	36	2	5.18	5.72	2	0.625
20_30	14	32	4	6.06	7.34	3.5	0.615385
20_20	15	31	4	6.24	7.74	3.6	0.75
20_10	19	29	2	6.14	8.04	5.75	0.7
10_20	13	36	0	3.18	3.64	2.33333	1
10_10	10	40	0	3.58	4.38	3	0.75

Table 2: Results on Data Set Gnp  $p = 0.2$

Gnp 0.2	<	=	>	h.avg	a.avg	best ratio	worst ratio
80_500	20	23	7	16.36	37.66	13.8462	0.722222
80_400	19	27	4	16.04	45.82	21.125	0.736842
80_300	14	33	3	15	28.24	10.6154	0.809524
80_200	23	24	3	15.56	28.32	9.42857	0.85
80_100	17	31	2	14.52	24.96	8	0.866667
80_50	14	30	6	13.66	17.56	3.88889	0.518519
80_40	19	26	5	13.6	17.64	2.75	0.705882
80_30	19	27	4	12.4	15.5	3.5	0.8
80_20	23	24	3	11.14	12.8	1.88889	0.785714
80_10	15	34	1	7.5	7.94	1.33333	0.875
70_500	16	56	8	13.76	40.36	15.4545	0.75
70_400	15	25	10	14.14	30.28	13	0.727273
70_300	14	31	5	13.72	24.44	11	0.625
70_200	22	24	4	13.74	29.84	11.2222	0.857143
70_100	22	27	1	13.1	23	6.90909	0.842105

70_50	13	32	5	12.32	14.5	4.18182	0.6875
70_40	21	24	5	12.46	17.1	3.66667	0.571429
70_30	22	25	3	11.64	13.92	2.375	0.47826
70_20	19	25	6	9.8	11.44	2.42857	0.846154
70_10	15	30	5	7.22	7.66	2.25	0.777778
60_500	22	25	3	12.54	34.84	11.7692	0.733333
60_400	19	25	6	12.48	29.68	12.4	0.8125
60_300	20	23	7	12.08	29.04	12.5	0.769231
60_200	23	25	2	11.64	26.4	10.3	0.846154
60_100	24	21	5	11.74	22.4	6.9	0.647059
60_50	12	36	2	10.08	15.26	6.14286	0.857143
60_40	19	24	7	10.62	14.12	4.125	0.666667
60_30	26	19	5	9.7	13.88	5	0.666667
60_20	23	18	9	9.3	10.94	2.66667	0.764706
60_10	21	28	1	6.98	7.56	1.6	0.888889
50_500	10	35	5	11.1	19.5	9.375	0.818182
50_400	16	32	2	10.16	21.86	10.9	0.846154
50_300	14	34	2	9.82	21.74	10.375	0.785714
50_200	22	24	4	10.38	25.2	8.55556	0.833333
50_100	18	30	2	9.32	15.74	7.85714	0.727273
50_50	23	25	2	9.6	15.38	5.375	0.529412
50_40	22	24	4	8.88	12.66	4.57143	0.777778
50_30	19	28	3	8.72	12.4	4.16667	0.625
50_20	23	24	3	7.84	9.9	3.2	0.727273
50_10	19	29	2	6.28	6.86	1.6	0.714286
40_400	23	23	4	8.94	19	10.1429	0.777778
40_300	14	32	4	8.32	16.96	9.2	0.75
40_200	16	32	2	8.14	15.16	7	0.875
40_100	20	25	5	8.4	14.44	8.16667	0.666667
40_50	24	23	3	8.04	13.8	5.83333	0.588235
40_40	18	28	4	7.66	10.08	4.14286	0.692308
40_30	18	30	2	7.04	10.08	3.5	0.7
40_20	22	26	2	6.64	8.22	3.4	0.875
40_10	22	26	2	5.2	5.9	2	0.857143
30_200	16	28	6	6.58	11.02	8.5	0.666667
30_100	13	32	5	5.82	9.46	18	0.75
30_50	15	31	4	6.32	9.16	5	0.75
30_40	15	33	2	5.9	8.58	4.75	0.6
30_30	17	29	4	5.88	7.94	3	0.72
30_20	23	26	1	5.56	7.72	3.5	0.7
30_10	16	31	3	4.48	4.98	3	0.72
20_40	16	33	1	4.36	5.74	6	0.86
20_30	17	30	3	3.88	5.2	4.5	0.71

20_20	25	24	1	3.74	5.36	5	0.8
20_10	17	32	1	3.36	4	2.33	0.75
10_20	14	35	1	2.22	2.66	2.5	0.75
10_10	10	39	1	2.2	2.42	3	0.67

Table 3: Results on Data Set Gnp  $p = 0.5$

Gnp 0.5	<	=	>	h.avg	a.avg	best ratio	worst ratio
80_500	19	22	9	39.02	81.72	10.6857	0.765957
80_400	17	25	8	37.14	66.02	8.73684	0.9
80_300	23	20	7	36.84	87.34	7.73529	0.651163
80_200	20	24	6	36.26	65.6	5.82759	0.846154
80_100	14	30	6	33.9	41.24	3.48148	0.492754
80_50	12	27	11	27.86	29.16	1.79167	0.617647
80_40	17	25	8	25.3	26.92	1.63636	0.575758
80_30	17	22	11	22.44	23.18	1.45	0.769231
80_20	13	34	3	16.7	17	1.2	0.789474
80_10	0	50	0	9.6	9.6	1	1
70_500	26	20	4	33.5	81.94	9.79412	0.789474
70_400	19	28	3	33.22	70.72	9.71875	0.804878
70_300	21	25	4	32.48	74.46	8.06452	0.852941
70_200	21	24	5	33.74	57.8	5.4375	0.492063
70_100	19	25	6	30.18	43.32	3.48148	0.418919
70_50	13	30	7	25.12	28.24	1.95833	0.714286
70_40	21	17	12	24.56	26.96	2.07143	0.625
70_30	21	23	6	20.84	22.66	1.75	0.678571
70_20	16	29	5	16.3	16.8	1.35714	0.833333
70_10	0	50	0	9.32	9.32	1	1
60_500	22	22	6	28.8	76.4	12.6522	0.84375
60_400	23	20	7	28.98	60.1	9.65385	0.641509
60_300	18	25	7	28.82	62.16	7.85714	0.852941
60_200	18	25	7	27.62	48.52	5.88	0.8
60_100	17	30	3	24.76	37.04	3.7619	0.888889
60_50	21	24	5	22.64	26.94	2.42105	0.611111
60_40	19	26	5	21.18	24.98	2.05882	0.638889
60_30	15	29	6	18.8	20.16	2.07692	0.615385
60_20	19	25	6	15.76	16.46	1.35714	0.842105
60_10	3	47	0	9.22	9.3	1.28571	1
50_500	21	22	7	23.84	63.64	10.8571	0.75
50_400	20	25	5	24.26	44.86	9.31818	0.8

50_300	17	23	10	23.84	42.84	8.11111	0.714286
50_200	17	26	7	23.02	37.62	6.43478	0.904762
50_100	16	29	5	22.88	33.04	4.35	0.488889
50_50	24	23	3	19.74	26.64	2.61111	0.875
50_40	28	17	5	18.58	23.18	2.1875	0.826087
50_30	16	27	7	16.5	17.92	1.64706	0.727273
50_20	22	25	3	14.42	15.8	1.9	0.875
50_10	1	48	1	8.96	8.96	1.125	0.888889
40_400	21	25	4	18.8	36.44	7.61111	0.842105
40_300	15	26	9	19.12	38.02	6.875	0.782609
40_200	17	28	5	18.8	34.46	6.63158	0.714286
40_100	17	28	5	17.9	25.5	4.64706	0.62069
40_50	20	27	3	16.68	22.58	2.93333	0.823529
40_40	16	30	4	15.54	17.96	2.76923	0.761905
40_30	17	27	6	14.06	16.2	2.36364	0.583333
40_20	16	29	5	12.46	13.24	1.5	0.722222
40_10	7	43	0	8.3	8.44	1.125	1
30_200	16	26	8	13.94	21.28	5.21429	0.764706
30_100	14	34	2	13.9	23.26	5.58333	0.9375
30_50	24	24	2	12.88	18.46	4.33333	0.923077
30_40	21	22	7	12.68	15.3	2.83333	0.583333
30_30	16	29	5	11.98	13.7	2.3	0.619048
30_20	23	26	1	10.06	12.08	2.375	0.769231
30_10	18	29	3	7.42	7.88	1.5	0.875
20_40	18	30	2	8.68	12.18	3.85714	0.833333
20_30	19	27	4	8.36	10.7	4.25	0.642857
20_20	20	26	4	8.22	9.78	2.42857	0.666667
20_10	12	36	2	6	6.34	2.25	0.857143
10_20	19	27	4	4.46	5.24	2.66667	0.75
10_10	14	34	2	3.72	4.06	1.75	0.8

Table 4: Results on Data Set Gnp  $p = 0.8$

Gnp 0.8	<	=	>	h.avg	a.avg	best ratio	worst ratio
80_500	17	26	7	60.86	116.86	7.73684	0.555556
80_400	20	26	4	59.4	111.1	6.65455	0.848485
80_300	13	31	6	60.3	89.78	5.24074	0.242009
80_200	16	27	7	57.26	84.14	3.57407	0.384615
80_100	21	20	9	50.86	58.28	2.16279	0.479167
80_50	18	22	10	37.38	38.26	1.33333	0.714286

80_40	13	29	8	32	32.94	1.44444	0.794872
80_30	9	33	8	26.34	26.4	1.12	0.827586
80_20	2	46	2	18.88	18.9	1.11765	0.947368
80_10	0	50	0	9.92	9.92	1	1
70_500	14	28	8	56.02	88.04	6.27083	0.851852
70_400	13	29	8	51.24	73.72	7.54348	0.844828
70_300	21	24	5	50.2	82	5.46939	0.947368
70_200	19	23	8	48.74	76.56	4.27273	0.571429
70_100	17	22	11	42.3	52.06	2.69444	0.671875
70_50	24	19	7	34.24	38.46	1.58065	0.729167
70_40	22	21	7	30.1	32.2	1.56	0.837838
70_30	13	28	9	25.06	25.56	1.27273	0.785714
70_20	8	41	1	18.34	18.5	1.11765	0.947368
70_10	0	50	0	9.92	9.92	1	1
60_500	21	23	6	45.68	111.32	8.1875	0.895833
60_400	20	18	12	44.5	71.72	6.4	0.875
60_300	21	19	10	43.82	76.62	6.04762	0.897959
60_200	18	22	10	42.82	69.04	4.66667	0.833333
60_100	17	24	9	38.34	51.02	2.74286	0.6
60_50	15	25	10	31.44	33.84	1.62069	0.727273
60_40	22	23	5	27.94	30.82	1.65217	0.756757
60_30	17	24	9	23.86	24.36	1.36842	0.758621
60_20	12	35	3	17.48	17.78	1.26667	0.947368
60_10	0	50	0	9.9	9.9	1	1
50_500	11	29	10	37.92	62.02	8.07692	0.840909
50_400	20	23	7	37.04	57.9	7.11111	0.916667
50_300	20	19	11	37.08	68.36	6.27027	0.825
50_200	25	23	2	35.58	71.52	5.21875	0.868421
50_100	18	25	7	33.7	44.84	3.2963	0.358696
50_50	21	27	2	27.24	32.26	2	0.794118
50_40	20	26	4	25.12	27.96	1.7619	0.771429
50_30	17	23	10	22.44	23.28	1.55556	0.777778
50_20	18	22	10	16.92	17.48	1.35714	0.866667
50_10	0	50	0	9.74	9.74	1	1
40_400	25	20	5	30.24	63.98	6.71875	0.852941
40_300	22	22	6	29.54	53.46	6.62963	0.878788
40_200	22	22	6	28.86	52.36	5.27586	0.8
40_100	19	24	7	26.36	36.66	3.44	0.766667
40_50	17	25	8	24.68	28.94	2.42105	0.522727
40_40	18	26	6	21.7	24.08	1.85	0.791667
40_30	18	25	7	19.84	21.34	1.61111	0.8
40_20	16	28	6	15.72	16.26	1.26667	0.894737
40_10	0	50	0	9.32	9.32	1	1

30_200	14	33	3	22.36	30.52	5.18182	0.8
30_100	17	26	7	20.64	29.02	4.9375	0.791667
30_50	20	22	8	18.68	23.9	2.75	0.567568
30_40	23	24	3	17.96	21.62	2.5	0.941176
30_30	18	23	9	16.64	18.32	1.92857	0.666667
30_20	19	22	9	13.74	14.96	1.58333	0.8125
30_10	4	45	1	8.66	8.72	1.125	0.888889
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20_40	14	27	9	12.8	15.02	2.53846	0.56
20_30	23	22	5	11.9	14.94	2.75	0.590909
20_20	15	29	6	10.26	10.98	1.8	0.692308
20_10	20	28	2	7.62	8.12	1.6	0.777778
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10_20	11	31	8	6.2	6.68	2.2	0.7
10_10	15	33	2	5.4	5.72	1.75	0.666667

Table 5: Results on Data Set SPG

SPG	<	=	>	h.avg	a.avg	best ratio	worst ratio
70_79_500	19	26	5	7.36	8.04	4	0.625
70_79_400	19	25	6	8.94	9.58	5	0.714286
70_79_300	15	30	5	5.56	6.2	8	0.857143
70_79_200	20	25	5	5.86	6.34	7	0.733333
70_79_100	16	30	4	6.28	6.68	6	0.666667
70_79_50	24	20	6	5.12	5.78	2.33333	0.666667
70_79_40	17	29	4	4.7	5.2	3	0.714286
70_79_30	22	25	3	4.52	5.18	3	0.8
70_79_20	27	22	1	3.12	3.84	2.33333	0.8
70_79_10	15	34	1	3.16	3.5	2	0.833333
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60_69_500	17	26	7	6.62	6.92	3	0.625
60_69_400	22	21	7	7.4	8	5	0.666667
60_69_300	12	31	7	5.04	5.34	6	0.625
60_69_200	17	28	5	8.84	9.22	2	0.875
60_69_100	20	29	1	4.04	4.64	3	0.818182
60_69_50	22	26	2	5.82	6.44	2	0.75
60_69_40	16	31	3	3.58	4.04	2	0.666667
60_69_30	22	26	2	5.9	6.6	2.5	0.8
60_69_20	17	30	3	4.26	4.78	3	0.75
60_69_10	13	37	0	3.82	4.14	3	1
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50_59_500	12	29	9	6.32	6.6	6	0.666667
50_59_400	19	27	4	7.84	8.38	2	0.875
50_59_300	15	29	6	5.26	5.62	4	0.692308

50_59_200	17	30	3	5.38	6.02	7	0.666667
50_59_100	14	36	0	5	5.38	2	1
50_59_50	23	24	3	5.3	6.08	5	0.846154
50_59_40	16	32	2	4.16	4.66	3	0.8
50_59_30	15	29	6	4.2	4.5	3	0.666667
50_59_20	13	35	2	4.78	5.1	2	0.75
50_59_10	11	39	0	3.56	3.86	2	1
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40_49_400	12	28	10	6.22	6.5	5	0.6
40_49_300	22	25	3	4.9	5.64	4	0.636364
40_49_200	14	29	7	6.62	7	3	0.777778
40_49_100	13	32	5	4.96	5.36	5	0.75
40_49_50	21	27	2	5.22	5.9	2.5	0.666667
40_49_40	20	27	3	4.02	4.8	5	0.857143
40_49_30	20	27	3	4.2	4.88	5	0.75
40_49_20	18	31	1	3.78	4.38	4	0.8
40_49_10	16	34	0	2.74	3.12	3	1
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30_39_200	10	32	8	5.72	5.88	3.5	0.625
30_39_100	18	30	2	3.22	3.8	5	0.8
30_39_50	17	33	0	4.58	5.02	2	1
30_39_40	18	31	1	2.5	3.14	4	0.833333
30_39_30	21	28	1	4.28	5.02	3	0.875
30_39_20	12	36	2	4.04	4.4	2	0.75
30_39_10	16	34	0	2.58	3	3	1
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20_29_40	17	31	2	3.9	4.24	2	0.8
20_29_30	9	38	3	3.22	3.42	3	0.666667
20_29_20	13	35	2	3.48	3.76	2	0.75
20_29_10	13	37	0	2.58	2.92	3	1
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10_19_20	14	36	0	2.7	3.02	3	1
10_19_10	12	38	0	2.06	2.32	2	1
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