

1 Benchark SCA

n	UB min	CPU avg	UB avg	CPU tot
50	25200	2.223	25200.5	44.450
60	35447	4.159	35456.7	83.170
70	48125	8.927	48181.9	178.530
80	63004	17.020	63054.2	340.400
90	78912	28.987	79030.2	579.730
100	96757	39.469	96882.5	789.380

2 Benchark CP

Instance				QMST-TS					QMST-BB				
<i>n</i>	<i>d</i>	<i>c</i> _{max}	<i>q</i> _{max}	BK	UB	Gap	CPU	<i>i</i> *	LB	UB	Gap	BN	CPU
10	33	10	10	350	350	0.00%	0.130	3	350	350	0.00%	19	0.000
10	33	10	100	3122	3122	0.00%	0.130	6	3122	3122	0.00%	17	0.000
10	33	100	10	646	646	0.00%	0.130	2	646	646	0.00%	9	0.000
10	33	100	100	3486	3486	0.00%	0.140	3	3486	3486	0.00%	19	0.016
10	67	10	10	255	255	0.00%	0.280	8	255	255	0.00%	967	0.000
10	67	10	100	2042	2042	0.00%	0.290	21	2042	2042	0.00%	1351	0.016
10	67	100	10	488	488	0.00%	0.260	5	488	488	0.00%	183	0.000
10	67	100	100	2404	2404	0.00%	0.260	9	2404	2404	0.00%	1101	0.015
10	100	10	10	239	239	0.00%	0.380	99	239	239	0.00%	8205	0.078
10	100	10	100	1815	1815	0.00%	0.380	7	1815	1815	0.00%	8157	0.062
10	100	100	10	426	426	0.00%	0.340	9	426	426	0.00%	1011	0.000
10	100	100	100	2197	2197	0.00%	0.380	6	2197	2197	0.00%	7931	0.094
15	33	10	10	745	745	0.00%	0.370	62	745	745	0.00%	22743	0.203
15	33	10	100	6539	6539	0.00%	0.360	200	6539	6539	0.00%	25289	0.234
15	33	100	10	1236	1236	0.00%	0.380	9	1236	1236	0.00%	2871	0.015
15	33	100	100	7245	7245	0.00%	0.380	33	7245	7245	0.00%	25913	0.250
15	67	10	10	659	659	0.00%	0.650	926	659	659	0.00%	4252005	63.520
15	67	10	100	5573	5573	0.00%	0.660	356	5573	5573	0.00%	3538983	53.660
15	67	100	10	966	966	0.00%	0.640	29	966	966	0.00%	55881	1.080
15	67	100	100	6188	6188	0.00%	0.630	435	6188	6188	0.00%	3706107	55.940
15	100	10	10	620	620	0.00%	1.000	147	620	620	0.00%	24242281	520.550
15	100	10	100	5184	5184	0.00%	0.980	1140	5184	5184	0.00%	27631419	613.410
15	100	100	10	975	975	0.00%	0.980	25	975	975	0.00%	802457	16.840
15	100	100	100	5879	5879	0.00%	0.980	52	5879	5879	0.00%	33476125	736.890
20	33	10	10	1379	1379	0.00%	0.700	25	1379	1379	0.00%	51880837	886.860
20	33	10	100	12425	12425	0.00%	0.700	242	12425	12425	0.00%	49240971	879.500
20	33	100	10	1972	1972	0.00%	0.720	65	1972	1972	0.00%	2230621	38.590
20	33	100	100	13288	13288	0.00%	0.710	77	13288	13288	0.00%	46873773	823.720
20	67	10	10	1252	1252	0.00%	1.330	226	972	1252	28.81%	112815457	3600.000
20	67	10	100	10893	10893	0.00%	1.340	155	7886	10893	38.13%	108560983	3600.000
20	67	100	10	1792	1792	0.00%	1.340	16	1641	1792	9.20%	113696723	3600.000
20	67	100	100	11893	11893	0.00%	1.340	223	8753	11893	35.87%	115307563	3600.000
20	100	10	10	1174	1174	0.00%	1.940	205	795	1174	47.67%	81526247	3600.000
20	100	10	100	10215	10215	0.00%	1.990	928	5972	10215	71.05%	80356477	3600.000
20	100	100	10	1544	1544	0.00%	1.910	33	1335	1544	15.66%	79853455	3600.000
20	100	100	100	11101	11101	0.00%	1.950	621	6784	11101	63.64%	81950881	3600.000
25	33	10	10	2185	2185	0.00%	1.230	36	1725	2185	26.67%	119920833	3600.000
25	33	10	100	19976	19976	0.00%	1.210	152	14846	19976	34.55%	118964993	3600.000
25	33	100	10	2976	2976	0.00%	1.220	235	2618	2976	13.67%	122546753	3600.000
25	33	100	100	21176	21176	0.00%	1.210	278	15966	21176	32.63%	119549679	3600.000
25	67	10	10	2023	2023	0.00%	2.290	765	1195	2023	69.29%	69325297	3600.000
25	67	10	100	18251	18251	0.00%	2.330	1237	9031	18251	102.09%	66800361	3600.000
25	67	100	10	2546	2546	0.00%	2.280	33	1846	2546	37.92%	65184621	3600.000
25	67	100	100	19207	19207	0.00%	2.300	1015	10033	19207	91.44%	68795417	3600.000
25	100	10	10	1943	1943	0.00%	3.260	5248	1019	1943	90.68%	48848533	3600.000
25	100	10	100	17411	17411	0.00%	3.280	104	6878	17411	153.14%	45834999	3600.000
25	100	100	10	2471	2471	0.00%	3.270	1012	1647	2471	50.03%	44928153	3600.000
25	100	100	100	18370	18370	0.00%	3.320	4693	7902	18370	132.47%	45940815	3600.000
30	33	10	10	3205	3205	0.00%	1.930	45	2065	3205	55.21%	76797793	3600.000
30	33	10	100	29731	29731	0.00%	1.940	402	16975	29731	75.15%	77782993	3600.000
30	33	100	10	4070	4070	0.00%	1.940	29	3066	4070	32.75%	74152527	3600.000
30	33	100	100	31077	31077	0.00%	1.960	473	18267	31077	70.13%	75582621	3600.000
30	67	10	10	2998	2998	0.00%	3.500	4037	1457	2998	105.77%	46091373	3600.000
30	67	10	100	27581	27581	0.00%	3.490	6427	10261	27581	168.79%	44705231	3600.000
30	67	100	10	3649	3649	0.00%	3.480	40	2209	3649	65.19%	38625931	3600.000
30	67	100	100	28777	28777	0.00%	3.480	9831	11443	28777	151.48%	45468253	3600.000
30	100	10	10	2874	2874	0.00%	4.960	3425	1286	2874	123.48%	33196681	3600.000
30	100	10	100	26146	26146	0.00%	4.980	2252	7714	26146	238.94%	32176181	3600.000
30	100	100	10	3483	3483	0.00%	4.920	420	1973	3483	76.53%	25786097	3600.000
30	100	100	100	27314	27314	0.00%	4.980	945	8899	27314	206.93%	32340691	3600.000

n	Instance			<i>QMST-TS</i>				
	d	$c_{\max}$	$q_{\max}$	BK	UB	Gap	CPU	i^*
35	33	10	10	4474	4474	0.00%	2.790	2006
35	33	10	100	42305	42305	0.00%	2.760	571
35	33	100	10	5423	5423	0.00%	2.740	211
35	33	100	100	43629	43629	0.00%	2.770	2800
35	67	10	10	4147	4147	0.00%	5.120	311
35	67	10	100	38490	38490	0.00%	5.050	5851
35	67	100	10	4981	4981	0.00%	5.130	1635
35	67	100	100	39660	39660	0.00%	5.080	1184
35	100	10	10	4000	4000	0.00%	7.350	8781
35	100	10	100	36723	36723	0.00%	7.250	220
35	100	100	10	4770	4770	0.00%	7.400	563
35	100	100	100	38049	38049	0.00%	7.260	3545
40	33	10	10	5945	5945	0.00%	3.840	2606
40	33	10	100	56237	56237	0.00%	3.750	906
40	33	100	10	6925	6925	0.00%	3.790	42
40	33	100	100	57874	57874	0.00%	3.800	1391
40	67	10	10	5567	5567	0.00%	6.910	7664
40	67	10	100	51851	51851	0.00%	6.900	9236
40	67	100	10	6456	6456	0.00%	6.940	7383
40	67	100	100	53592	53592	0.00%	6.920	2706
40	100	10	10	5368	5368	0.00%	10.240	5282
40	100	10	100	49817	49817	0.00%	10.180	829
40	100	100	10	6208	6208	0.00%	9.960	8644
40	100	100	100	51229	51229	0.00%	10.050	5322
45	33	10	10	7521	7521	0.00%	4.940	2005
45	33	10	100	70603	70603	0.00%	4.970	801
45	33	100	10	8720	8720	0.00%	4.960	304
45	33	100	100	72676	72676	0.00%	4.990	2044
45	67	10	10	7161	7188	0.38%	9.350	2388
45	67	10	100	66889	66889	0.00%	9.320	7085
45	67	100	10	8225	8225	0.00%	9.190	5042
45	67	100	100	68737	68737	0.00%	9.330	9143
45	100	10	10	6944	6945	0.01%	14.990	3924
45	100	10	100	64840	64840	0.00%	14.760	6666
45	100	100	10	7827	7827	0.00%	14.160	3199
45	100	100	100	66508	66509	0.00%	14.980	1557
50	33	10	10	9393	9393	0.00%	6.330	8346
50	33	10	100	88942	88942	0.00%	6.360	1887
50	33	100	10	10717	10717	0.00%	6.470	1137
50	33	100	100	91009	91009	0.00%	6.380	4696
50	67	10	10	8958	8958	0.00%	12.340	8681
50	67	10	100	84020	84064	0.05%	12.170	4976
50	67	100	10	10100	10100	0.00%	12.080	8504
50	67	100	100	86231	86231	0.00%	12.210	298
50	100	10	10	8713	8713	0.00%	22.170	9912
50	100	10	100	81858	81890	0.04%	22.110	1479
50	100	100	10	9836	9836	0.00%	22.470	7525
50	100	100	100	83838	83905	0.08%	22.310	2959

3 Benchark OP sym

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
6	15	1	289	29	0.030	289	0.00%	0.110	3
6	15	2	362	29	0.030	362	0.00%	0.110	2
6	15	3	257	39	0.030	257	0.00%	0.100	3
6	15	4	260	43	0.030	260	0.00%	0.100	6
6	15	5	260	21	0.020	260	0.00%	0.100	5
6	15	6	196	17	0.030	196	0.00%	0.100	4
6	15	7	260	23	0.020	260	0.00%	0.100	5
6	15	8	275	35	0.020	275	0.00%	0.110	5
6	15	9	183	23	0.020	183	0.00%	0.120	2
6	15	10	242	15	0.020	242	0.00%	0.110	4
7	21	1	428	75	0.030	428	0.00%	0.160	3
7	21	2	258	77	0.030	258	0.00%	0.170	5
7	21	3	202	51	0.030	202	0.00%	0.160	6
7	21	4	301	75	0.020	301	0.00%	0.160	8
7	21	5	297	57	0.030	297	0.00%	0.160	5
7	21	6	346	51	0.030	346	0.00%	0.160	5
7	21	7	379	105	0.020	379	0.00%	0.160	5
7	21	8	313	65	0.020	313	0.00%	0.180	5
7	21	9	385	113	0.020	385	0.00%	0.180	7
7	21	10	359	57	0.030	359	0.00%	0.160	4
8	28	1	439	217	0.020	439	0.00%	0.210	6
8	28	2	497	237	0.030	497	0.00%	0.230	14
8	28	3	501	385	0.020	501	0.00%	0.230	11
8	28	4	404	95	0.030	404	0.00%	0.210	8
8	28	5	397	275	0.020	397	0.00%	0.240	23
8	28	6	416	135	0.030	416	0.00%	0.220	6
8	28	7	397	209	0.020	397	0.00%	0.230	4
8	28	8	407	283	0.020	407	0.00%	0.220	7
8	28	9	444	139	0.030	444	0.00%	0.200	9
8	28	10	483	421	0.030	483	0.00%	0.230	7
9	36	1	465	429	0.030	465	0.00%	0.300	13
9	36	2	473	825	0.030	473	0.00%	0.300	7
9	36	3	590	587	0.030	590	0.00%	0.310	6
9	36	4	628	467	0.030	628	0.00%	0.290	34
9	36	5	502	609	0.030	502	0.00%	0.300	5
9	36	6	590	421	0.030	590	0.00%	0.290	8
9	36	7	463	493	0.030	463	0.00%	0.300	5
9	36	8	548	547	0.020	548	0.00%	0.310	8
9	36	9	523	237	0.030	523	0.00%	0.300	9
9	36	10	567	303	0.030	567	0.00%	0.300	12

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
10	45	1	613	4497	0.050	613	0.00%	0.370	16
10	45	2	596	1115	0.040	596	0.00%	0.380	19
10	45	3	757	3807	0.060	757	0.00%	0.370	9
10	45	4	588	863	0.030	588	0.00%	0.370	9
10	45	5	710	2753	0.040	710	0.00%	0.390	8
10	45	6	647	2141	0.040	647	0.00%	0.360	32
10	45	7	599	1295	0.030	599	0.00%	0.360	12
10	45	8	653	2113	0.040	653	0.00%	0.380	12
10	45	9	753	2577	0.050	753	0.00%	0.380	22
10	45	10	623	2187	0.050	623	0.00%	0.380	27
11	55	1	755	9799	0.130	755	0.00%	0.470	10
11	55	2	750	3203	0.060	750	0.00%	0.470	9
11	55	3	807	10327	0.140	807	0.00%	0.470	30
11	55	4	816	8833	0.120	816	0.00%	0.460	16
11	55	5	759	12111	0.150	759	0.00%	0.460	190
11	55	6	877	12933	0.160	877	0.00%	0.460	16
11	55	7	734	8063	0.100	734	0.00%	0.480	186
11	55	8	843	13063	0.160	843	0.00%	0.460	13
11	55	9	797	14593	0.170	797	0.00%	0.460	39
11	55	10	721	3849	0.060	721	0.00%	0.460	29
12	66	1	975	90541	1.140	975	0.00%	0.540	38
12	66	2	903	28745	0.410	903	0.00%	0.570	13
12	66	3	977	78679	1.010	977	0.00%	0.560	18
12	66	4	936	11781	0.180	936	0.00%	0.550	19
12	66	5	863	25075	0.360	863	0.00%	0.550	17
12	66	6	991	49673	0.650	991	0.00%	0.560	43
12	66	7	848	13657	0.200	848	0.00%	0.570	9
12	66	8	842	52331	0.690	842	0.00%	0.540	28
12	66	9	965	31605	0.450	965	0.00%	0.540	29
12	66	10	885	26523	0.390	885	0.00%	0.570	10
13	78	1	990	174049	2.890	990	0.00%	0.690	40
13	78	2	1022	83093	1.320	1022	0.00%	0.650	15
13	78	3	1089	199691	3.140	1089	0.00%	0.660	28
13	78	4	1163	183977	2.900	1163	0.00%	0.680	29
13	78	5	1129	193607	3.010	1129	0.00%	0.680	91
13	78	6	1023	80917	1.290	1023	0.00%	0.700	31
13	78	7	982	174309	2.710	982	0.00%	0.670	45
13	78	8	1048	100115	1.590	1048	0.00%	0.670	24
13	78	9	1065	56937	0.910	1065	0.00%	0.650	53
13	78	10	1160	480411	7.340	1160	0.00%	0.670	10157

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
14	91	1	1246	982445	18.530	1246	0.00%	0.800	45
14	91	2	1197	338485	6.570	1197	0.00%	0.840	17
14	91	3	1398	2025109	37.410	1398	0.00%	0.860	197
14	91	4	1276	1021699	19.240	1276	0.00%	0.800	33
14	91	5	1266	603819	11.660	1266	0.00%	0.840	53
14	91	6	1188	517429	10.040	1188	0.00%	0.880	17
14	91	7	1312	1127341	21.170	1312	0.00%	0.830	123
14	91	8	1171	170639	3.510	1171	0.00%	0.820	9
14	91	9	1301	816627	16.210	1301	0.00%	0.860	14
14	91	10	1143	223427	4.320	1143	0.00%	0.820	27
15	105	1	1401	3735849	87.030	1401	0.00%	1.030	90
15	105	2	1404	2141949	49.720	1404	0.00%	0.980	61
15	105	3	1384	3593455	84.210	1384	0.00%	1.000	56
15	105	4	1376	7922195	184.370	1376	0.00%	1.000	81
15	105	5	1295	1810267	44.070	1295	0.00%	1.000	27
15	105	6	1473	2807121	64.700	1473	0.00%	1.010	21
15	105	7	1389	4091815	95.260	1389	0.00%	1.040	31
15	105	8	1407	2879425	66.880	1407	0.00%	1.020	41
15	105	9	1333	2191531	51.690	1333	0.00%	1.060	28
15	105	10	1440	3039535	71.290	1440	0.00%	1.020	57
16	120	1	1365	1000000	27.020	1624	18.97%	1.200	138
16	120	2	1407	1000000	27.060	1667	18.48%	1.180	323
16	120	3	1402	1000000	27.570	1629	16.19%	1.180	90
16	120	4	1397	1000000	27.210	1659	18.75%	1.130	684
16	120	5	1434	1000000	27.510	1695	18.20%	1.180	28
16	120	6	1351	1000000	27.060	1518	12.36%	1.240	20
16	120	7	1382	1000000	27.040	1652	19.54%	1.180	200
16	120	8	1470	1000000	27.730	1687	14.76%	1.200	13
16	120	9	1280	1000000	27.310	1543	20.55%	1.170	40
16	120	10	1391	1000000	27.010	1619	16.39%	1.160	32
17	136	1	1474	1000000	33.370	1843	25.03%	1.400	322
17	136	2	1495	1000000	31.970	1828	22.27%	1.360	250
17	136	3	1513	1000000	33.000	1859	22.87%	1.370	70
17	136	4	1428	1000000	32.290	1839	28.78%	1.360	330
17	136	5	1382	1000000	32.000	1795	29.88%	1.350	259
17	136	6	1446	1000000	32.230	1817	25.66%	1.390	1293
17	136	7	1476	1000000	31.910	1893	28.25%	1.370	74
17	136	8	1480	1000000	32.720	1818	22.84%	1.330	22
17	136	9	1417	1000000	33.270	1734	22.37%	1.360	68
17	136	10	1417	1000000	31.870	1812	27.88%	1.380	76

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
18	153	1	1575	1000000	37.820	2153	36.70%	1.540	140
18	153	2	1542	1000000	36.730	2125	37.81%	1.560	613
18	153	3	1608	1000000	37.780	2108	31.09%	1.560	37
18	153	4	1513	1000000	37.480	2026	33.91%	1.540	418
18	153	5	1465	1000000	37.140	2028	38.43%	1.530	356
18	153	6	1479	1000000	37.420	2023	36.78%	1.520	17
18	153	7	1453	1000000	38.100	1951	34.27%	1.540	35
18	153	8	1476	1000000	37.230	2089	41.53%	1.540	932
18	153	9	1479	1000000	37.290	2138	44.56%	1.560	229
18	153	10	1612	1000000	37.000	2169	34.55%	1.540	347
20	190	1	1586	1000000	51.450	2513	58.45%	2.040	294
20	190	2	1654	1000000	51.330	2589	56.53%	2.050	29
20	190	3	1580	1000000	50.130	2592	64.05%	2.010	49
20	190	4	1614	1000000	50.060	2623	62.52%	2.040	489
20	190	5	1686	1000000	49.980	2691	59.61%	1.950	1479
20	190	6	1676	1000000	49.380	2543	51.73%	2.000	44
20	190	7	1622	1000000	50.020	2603	60.48%	2.020	1400
20	190	8	1557	1000000	49.850	2509	61.14%	1.910	161
20	190	9	1565	1000000	49.640	2593	65.69%	2.040	634
20	190	10	1572	1000000	49.800	2471	57.19%	1.970	347
30	435	1	2069	1000000	146.54	6208	200.05%	5.14	10268
30	435	2	1886	1000000	148.31	5893	212.46%	5.12	1008
30	435	3	2008	1000000	147.2	6066	202.09%	5.13	6904
30	435	4	1950	1000000	149.12	5961	205.69%	5.2	3821
30	435	5	1938	1000000	147.33	5952	207.12%	5.17	901
30	435	6	1973	1000000	150.66	5990	203.60%	5.21	1804
30	435	7	1986	1000000	146.91	5990	201.61%	5.01	6501
30	435	8	1950	1000000	147.33	6095	212.56%	5.19	3089
30	435	9	1925	1000000	148.23	5950	209.09%	5.13	10430
30	435	10	2013	1000000	147.34	6054	200.75%	5.11	227
50	1225	1	2100	1000000	1348.55	17591	737.67%	25.39	69263
50	1225	2	2142	1000000	1333.51	17600	721.66%	25.38	2051
50	1225	3	2124	1000000	1337.28	17528	725.24%	25.42	4381
50	1225	4	2156	1000000	1329.07	17685	720.27%	25.68	68273
50	1225	5	2118	1000000	1323.85	17586	730.31%	25.89	3326
50	1225	6	2192	1000000	1318.92	17605	703.15%	25.61	1899
50	1225	7	2210	1000000	1333.09	17643	698.33%	25.29	62552
50	1225	8	2252	1000000	1333.36	17685	685.30%	25.11	11284
50	1225	9	2161	1000000	1356.9	17608	714.81%	25.52	39726
50	1225	10	2129	1000000	1320.22	17639	728.51%	25.35	1904

4 Benchark OP vsym

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
6	15	1	22428	17	0.03	22428	0.00%	0.1	4
6	15	2	15253	21	0.02	15253	0.00%	0.1	2
6	15	3	21570	23	0.02	21570	0.00%	0.11	4
6	15	4	19535	9	0.02	19535	0.00%	0.11	3
6	15	5	24964	15	0.02	24964	0.00%	0.1	6
6	15	6	9821	21	0.02	9821	0.00%	0.11	4
6	15	7	11810	11	0.02	11810	0.00%	0.1	3
6	15	8	13869	11	0.02	13869	0.00%	0.1	4
6	15	9	7742	13	0.02	7742	0.00%	0.11	4
6	15	10	15747	7	0.02	15747	0.00%	0.1	3
7	21	1	18738	21	0.03	18738	0.00%	0.15	5
7	21	2	20932	17	0.03	20932	0.00%	0.14	6
7	21	3	18041	11	0.02	18041	0.00%	0.15	5
7	21	4	23973	21	0.03	23973	0.00%	0.15	5
7	21	5	13620	11	0.02	13620	0.00%	0.15	5
7	21	6	20666	31	0.03	20666	0.00%	0.14	3
7	21	7	18326	21	0.03	18326	0.00%	0.15	4
7	21	8	14980	19	0.03	14980	0.00%	0.14	6
7	21	9	26300	17	0.03	26300	0.00%	0.15	4
7	21	10	20681	13	0.02	20681	0.00%	0.14	5
8	28	1	21189	37	0.02	21189	0.00%	0.2	5
8	28	2	33354	55	0.02	33354	0.00%	0.22	4
8	28	3	36077	55	0.03	36077	0.00%	0.19	5
8	28	4	24588	57	0.03	24588	0.00%	0.2	6
8	28	5	16417	25	0.03	16417	0.00%	0.2	5
8	28	6	18805	33	0.02	18805	0.00%	0.21	5
8	28	7	32689	33	0.02	32689	0.00%	0.2	6
8	28	8	29489	27	0.02	29489	0.00%	0.2	6
8	28	9	31035	85	0.03	31035	0.00%	0.19	5
8	28	10	26751	29	0.03	26751	0.00%	0.2	6
9	36	1	20091	25	0.03	20091	0.00%	0.26	4
9	36	2	28871	37	0.03	28871	0.00%	0.25	6
9	36	3	18666	71	0.03	18666	0.00%	0.25	7
9	36	4	19650	61	0.02	19650	0.00%	0.27	5
9	36	5	21496	35	0.02	21496	0.00%	0.28	5
9	36	6	25020	27	0.02	25020	0.00%	0.25	5
9	36	7	23079	47	0.03	23079	0.00%	0.26	6
9	36	8	25700	93	0.03	25700	0.00%	0.27	7
9	36	9	17516	53	0.02	17516	0.00%	0.27	6
9	36	10	27610	147	0.02	27610	0.00%	0.26	7

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
10	45	1	32105	59	0.03	32105	0.00%	0.33	7
10	45	2	23863	65	0.02	23863	0.00%	0.32	9
10	45	3	18338	55	0.03	18338	0.00%	0.32	6
10	45	4	24613	105	0.02	24613	0.00%	0.34	9
10	45	5	35699	173	0.02	35699	0.00%	0.34	8
10	45	6	21401	99	0.04	21401	0.00%	0.32	9
10	45	7	26997	95	0.02	26997	0.00%	0.34	8
10	45	8	22992	123	0.03	22992	0.00%	0.34	6
10	45	9	28833	109	0.03	28833	0.00%	0.34	8
10	45	10	22597	63	0.02	22597	0.00%	0.32	5
11	55	1	40359	893	0.03	40359	0.00%	0.4	9
11	55	2	22735	175	0.02	22735	0.00%	0.41	9
11	55	3	27723	333	0.02	27723	0.00%	0.42	10
11	55	4	35474	105	0.03	35474	0.00%	0.41	9
11	55	5	29778	281	0.03	29778	0.00%	0.4	8
11	55	6	23877	219	0.03	23877	0.00%	0.4	10
11	55	7	37495	339	0.03	37495	0.00%	0.42	11
11	55	8	22705	49	0.02	22705	0.00%	0.39	9
11	55	9	19020	111	0.03	19020	0.00%	0.43	8
11	55	10	33910	311	0.03	33910	0.00%	0.39	10
12	66	1	35542	89	0.03	35542	0.00%	0.49	9
12	66	2	20585	129	0.03	20585	0.00%	0.5	8
12	66	3	38153	1103	0.04	38153	0.00%	0.49	11
12	66	4	32015	361	0.03	32015	0.00%	0.53	9
12	66	5	34136	227	0.03	34136	0.00%	0.45	11
12	66	6	42814	83	0.03	42814	0.00%	0.47	9
12	66	7	30153	353	0.03	30153	0.00%	0.48	10
12	66	8	25646	227	0.03	25646	0.00%	0.46	12
12	66	9	34183	145	0.02	34183	0.00%	0.51	12
12	66	10	32551	155	0.02	32551	0.00%	0.47	10
13	78	1	45586	347	0.03	45586	0.00%	0.55	11
13	78	2	49313	2185	0.06	49313	0.00%	0.6	10
13	78	3	44513	509	0.02	44513	0.00%	0.58	8
13	78	4	37250	91	0.03	37250	0.00%	0.54	10
13	78	5	50990	601	0.04	50990	0.00%	0.62	9
13	78	6	43261	481	0.04	43261	0.00%	0.56	10
13	78	7	36085	281	0.03	36085	0.00%	0.58	9
13	78	8	34474	63	0.03	34474	0.00%	0.58	9
13	78	9	28566	235	0.03	28566	0.00%	0.56	12
13	78	10	34847	357	0.03	34847	0.00%	0.56	11

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
14	91	1	41065	179	0.04	41065	0.00%	0.74	14
14	91	2	41656	747	0.03	41656	0.00%	0.68	12
14	91	3	48541	273	0.03	48541	0.00%	0.74	13
14	91	4	40335	269	0.03	40335	0.00%	0.7	13
14	91	5	39599	297	0.03	39599	0.00%	0.68	10
14	91	6	45279	813	0.04	45279	0.00%	0.74	12
14	91	7	55026	613	0.04	55026	0.00%	0.69	15
14	91	8	47163	981	0.05	47163	0.00%	0.7	12
14	91	9	43475	183	0.04	43475	0.00%	0.73	12
14	91	10	40265	237	0.02	40265	0.00%	0.73	11
15	105	1	62365	1101	0.04	62365	0.00%	0.9	14
15	105	2	50019	1477	0.06	50019	0.00%	0.85	9
15	105	3	56720	1007	0.05	56720	0.00%	0.81	13
15	105	4	58992	625	0.03	58992	0.00%	0.86	14
15	105	5	31530	421	0.04	31530	0.00%	0.84	14
15	105	6	54726	1723	0.05	54726	0.00%	0.82	13
15	105	7	49804	1435	0.06	49804	0.00%	0.85	14
15	105	8	49286	1223	0.05	49286	0.00%	0.85	13
15	105	9	41852	829	0.05	41852	0.00%	0.83	15
15	105	10	52922	1857	0.06	52922	0.00%	0.86	12
16	120	1	42342	699	0.05	42342	0.00%	0.96	17
16	120	2	45092	1819	0.08	45092	0.00%	1.06	14
16	120	3	41701	2053	0.08	41701	0.00%	0.95	14
16	120	4	46319	4351	0.13	46319	0.00%	1	16
16	120	5	41371	645	0.05	41371	0.00%	0.99	14
16	120	6	45108	1707	0.07	45108	0.00%	1.06	14
16	120	7	42021	1471	0.07	42021	0.00%	1.01	15
16	120	8	30880	445	0.03	30880	0.00%	1	12
16	120	9	37409	459	0.05	37409	0.00%	1.01	13
16	120	10	47159	16111	0.42	47159	0.00%	0.99	18
17	136	1	36696	797	0.06	36696	0.00%	1.14	18
17	136	2	48774	7163	0.22	48774	0.00%	1.12	16
17	136	3	45025	22963	0.67	45025	0.00%	1.18	16
17	136	4	33751	6503	0.2	33751	0.00%	1.14	15
17	136	5	44692	3463	0.15	44692	0.00%	1.1	18
17	136	6	45465	11419	0.38	45465	0.00%	1.14	20
17	136	7	38428	4139	0.15	38428	0.00%	1.01	18
17	136	8	40172	4933	0.19	40172	0.00%	1.12	18
17	136	9	44717	10113	0.33	44717	0.00%	1.18	15
17	136	10	40470	1987	0.08	40470	0.00%	1.09	17

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
18	153	1	36845	6101	0.23	36845	0.00%	1.28	16
18	153	2	51694	49937	1.65	51694	0.00%	1.28	17
18	153	3	42143	14247	0.46	42143	0.00%	1.32	17
18	153	4	40601	5411	0.21	40601	0.00%	1.34	16
18	153	5	41237	1653	0.09	41237	0.00%	1.24	13
18	153	6	50000	21035	0.72	50000	0.00%	1.32	17
18	153	7	52766	29727	1.12	52766	0.00%	1.32	13
18	153	8	54200	29233	1.05	54200	0.00%	1.3	18
18	153	9	46867	3177	0.14	46867	0.00%	1.26	18
18	153	10	44949	10359	0.39	44949	0.00%	1.31	17
20	190	1	50610	29637	1.41	50610	0.00%	1.75	18
20	190	2	53427	72855	3.44	53427	0.00%	1.75	18
20	190	3	51497	87843	3.69	51497	0.00%	1.67	20
20	190	4	57638	27955	1.25	57638	0.00%	1.74	17
20	190	5	56344	330715	15.2	56344	0.00%	1.64	20
20	190	6	54615	93887	4.27	54615	0.00%	1.71	19
20	190	7	61214	85795	4.07	61214	0.00%	1.68	18
20	190	8	52650	63967	3.17	52650	0.00%	1.7	19
20	190	9	64980	583379	29.07	64980	0.00%	1.76	20
20	190	10	50287	461769	21.21	50287	0.00%	1.78	19
30	435	1	73175	1000000	146.71	82953	13.36%	3.98	28
30	435	2	71590	1000000	143.43	76977	7.52%	4.38	25
30	435	3	75223	1000000	150.17	88098	17.12%	4.3	30
30	435	4	77694	1000000	150.83	90361	16.30%	4.25	28
30	435	5	64349	1000000	132.01	69976	8.74%	4.66	27
30	435	6	71844	1000000	143.11	78864	9.77%	4.16	28
30	435	7	67411	1000000	127.57	73015	8.31%	4.05	29
30	435	8	62242	1000000	133.11	73619	18.28%	4.15	28
30	435	9	74624	1000000	138.03	81534	9.26%	3.89	26
30	435	10	67193	1000000	144.55	74602	11.03%	3.79	27
50	1225	1	127388	1000000	799.39	172157	35.14%	15.39	50
50	1225	2	120540	1000000	791.11	170915	41.79%	14.22	49
50	1225	3	107370	1000000	857.12	160256	49.26%	14.83	51
50	1225	4	114862	1000000	890.94	152830	33.06%	13.97	51
50	1225	5	125692	1000000	798.92	174926	39.17%	13.87	51
50	1225	6	113717	1000000	737.96	154341	35.72%	14.48	53
50	1225	7	124335	1000000	824.6	180023	44.79%	14.35	47
50	1225	8	110836	1000000	746.67	153578	38.56%	14.24	50
50	1225	9	122592	1000000	864.42	179932	46.77%	14.28	51
50	1225	10	110122	1000000	776.92	155241	40.97%	14.14	52

5 Benchark OP esym

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
6	15	1	399	23	0.03	399	0.00%	0.1	3
6	15	2	654	69	0.02	654	0.00%	0.1	4
6	15	3	351	29	0.02	351	0.00%	0.12	3
6	15	4	755	31	0.02	755	0.00%	0.12	2
6	15	5	509	21	0.03	509	0.00%	0.1	2
6	15	6	769	21	0.02	769	0.00%	0.11	10008
6	15	7	574	49	0.03	574	0.00%	0.1	4
6	15	8	497	23	0.02	497	0.00%	0.1	3
6	15	9	476	25	0.03	476	0.00%	0.1	6
6	15	10	428	33	0.02	428	0.00%	0.11	4
7	21	1	488	53	0.03	488	0.00%	0.16	7
7	21	2	797	43	0.03	797	0.00%	0.15	4
7	21	3	835	59	0.03	835	0.00%	0.15	5
7	21	4	711	79	0.03	711	0.00%	0.15	7
7	21	5	904	87	0.03	904	0.00%	0.16	5
7	21	6	657	15	0.02	657	0.00%	0.16	9
7	21	7	716	59	0.03	716	0.00%	0.16	5
7	21	8	757	247	0.03	757	0.00%	0.15	7
7	21	9	973	195	0.03	973	0.00%	0.15	3
7	21	10	999	123	0.02	999	0.00%	0.16	9
8	28	1	725	185	0.02	725	0.00%	0.22	5
8	28	2	922	711	0.03	922	0.00%	0.19	7
8	28	3	1172	245	0.03	1172	0.00%	0.21	4
8	28	4	1113	107	0.03	1113	0.00%	0.22	7
8	28	5	1239	253	0.03	1239	0.00%	0.22	7
8	28	6	1252	259	0.03	1252	0.00%	0.22	4
8	28	7	1136	207	0.03	1136	0.00%	0.2	5
8	28	8	892	155	0.02	892	0.00%	0.21	7
8	28	9	777	281	0.03	777	0.00%	0.2	12
8	28	10	973	145	0.03	973	0.00%	0.23	6
9	36	1	965	919	0.03	965	0.00%	0.29	8
9	36	2	1410	175	0.03	1410	0.00%	0.27	7
9	36	3	1415	57	0.02	1415	0.00%	0.28	9
9	36	4	1098	49	0.03	1098	0.00%	0.27	5
9	36	5	1498	1237	0.03	1498	0.00%	0.28	10
9	36	6	1584	231	0.03	1584	0.00%	0.29	17
9	36	7	1420	261	0.02	1420	0.00%	0.3	6
9	36	8	1420	619	0.03	1420	0.00%	0.28	5
9	36	9	1459	69	0.02	1459	0.00%	0.29	8
9	36	10	1291	413	0.02	1291	0.00%	0.26	304

6 Benchark OP esym

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
10	45	1	1047	801	0.03	1047	0.00%	0.36	4
10	45	2	1454	3383	0.05	1454	0.00%	0.36	4
10	45	3	1508	269	0.03	1508	0.00%	0.36	10008
10	45	4	1490	1351	0.04	1490	0.00%	0.33	6
10	45	5	1880	549	0.03	1880	0.00%	0.37	18
10	45	6	1430	1273	0.04	1430	0.00%	0.36	19
10	45	7	1275	1257	0.03	1275	0.00%	0.35	9
10	45	8	1412	239	0.03	1412	0.00%	0.36	15
10	45	9	1522	649	0.03	1522	0.00%	0.37	10
10	45	10	1253	219	0.03	1253	0.00%	0.34	9
11	55	1	1175	1037	0.03	1175	0.00%	0.44	13
11	55	2	1614	207	0.02	1614	0.00%	0.44	11
11	55	3	2065	519	0.03	2065	0.00%	0.42	39
11	55	4	1854	1841	0.05	1854	0.00%	0.41	9
11	55	5	1424	159	0.04	1424	0.00%	0.39	12
11	55	6	1442	1123	0.04	1442	0.00%	0.44	16
11	55	7	1208	17495	0.24	1208	0.00%	0.4	12
11	55	8	1444	18889	0.23	1444	0.00%	0.43	7
11	55	9	1716	841	0.04	1716	0.00%	0.43	184
11	55	10	1509	755	0.03	1509	0.00%	0.43	9
12	66	1	1586	5449	0.11	1586	0.00%	0.52	10
12	66	2	2132	5079	0.1	2132	0.00%	0.52	22
12	66	3	1798	997	0.04	1798	0.00%	0.52	19
12	66	4	2227	2039	0.06	2227	0.00%	0.56	25
12	66	5	1768	1795	0.05	1768	0.00%	0.54	18
12	66	6	1488	40719	0.56	1488	0.00%	0.52	9
12	66	7	1813	319	0.04	1813	0.00%	0.54	11
12	66	8	2057	13491	0.2	2057	0.00%	0.51	40008
12	66	9	2071	787	0.04	2071	0.00%	0.55	14
12	66	10	2076	1035	0.04	2076	0.00%	0.56	10009
13	78	1	1731	15789	0.28	1731	0.00%	0.63	11
13	78	2	2484	917	0.05	2484	0.00%	0.65	14
13	78	3	2440	5533	0.12	2440	0.00%	0.64	12
13	78	4	2489	1881	0.06	2489	0.00%	0.64	14
13	78	5	2044	2549	0.07	2044	0.00%	0.66	14
13	78	6	1806	6509	0.14	1806	0.00%	0.64	13
13	78	7	2185	2363	0.07	2185	0.00%	0.66	12
13	78	8	2275	21009	0.35	2275	0.00%	0.62	18
13	78	9	1968	125889	2.25	1968	0.00%	0.62	42
13	78	10	2331	937	0.04	2331	0.00%	0.65	11

7 Benchark OP esym

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
14	91	1	1955	35983	0.79	1955	0.00%	0.81	12
14	91	2	2555	1297	0.05	2555	0.00%	0.84	15
14	91	3	3182	10799	0.25	3182	0.00%	0.82	11
14	91	4	2516	72339	1.5	2516	0.00%	0.82	57
14	91	5	2551	9005	0.21	2551	0.00%	0.77	14
14	91	6	2818	119579	2.39	2818	0.00%	0.77	30046
14	91	7	2457	23607	0.47	2457	0.00%	0.79	10
14	91	8	2491	14763	0.33	2491	0.00%	0.82	11
14	91	9	2293	237	0.03	2293	0.00%	0.83	23
14	91	10	2461	5509	0.14	2461	0.00%	0.84	12
15	105	1	2181	97099	2.47	2181	0.00%	1	9
15	105	2	2840	3911	0.11	2840	0.00%	1.01	21
15	105	3	2921	4111	0.11	2921	0.00%	1.01	17
15	105	4	2780	3641	0.11	2780	0.00%	1	23
15	105	5	2340	84369	1.93	2340	0.00%	1.01	11
15	105	6	2917	11983	0.31	2917	0.00%	1.02	14
15	105	7	2291	27405	0.7	2291	0.00%	1.03	23
15	105	8	2537	781	0.04	2537	0.00%	0.98	12
15	105	9	2504	6853	0.2	2504	0.00%	1.01	78
15	105	10	2577	4879	0.13	2577	0.00%	1.02	16
16	120	1	2418	211997	5.84	2418	0.00%	1.14	28
16	120	2	2507	26651	0.65	2507	0.00%	1.2	21
16	120	3	3241	33041	0.95	3241	0.00%	1.12	15
16	120	4	3600	662209	16	3600	0.00%	1.08	19
16	120	5	3097	24013	0.69	3097	0.00%	1.15	32
16	120	6	2741	8043	0.25	2741	0.00%	1.23	22
16	120	7	3264	60473	1.5	3264	0.00%	1.22	22
16	120	8	2958	88063	2.45	2958	0.00%	1.15	30016
16	120	9	3079	38665	0.98	3079	0.00%	1.25	21
16	120	10	2896	605	0.04	2896	0.00%	1.19	10
17	136	1	2842	987395	31.69	2842	0.00%	1.28	15
17	136	2	3733	1000000	36.07	3734	0.03%	1.25	40020
17	136	3	3543	687011	21.6	3543	0.00%	1.37	16
17	136	4	3165	382535	12.01	3165	0.00%	1.27	18
17	136	5	2920	4437	0.16	2920	0.00%	1.3	19
17	136	6	3445	17131	0.63	3445	0.00%	1.29	26
17	136	7	3483	380767	12.21	3483	0.00%	1.4	40
17	136	8	3321	352711	10.93	3321	0.00%	1.38	21
17	136	9	3460	52593	1.8	3460	0.00%	1.44	23
17	136	10	3809	71073	2.06	3809	0.00%	1.34	30

8 Benchark OP esym

n	m	Instance	LB	BN	CPU (BB)	UB	Gap	CPU (TS)	i^*
18	153	1	2970	979125	35.48	2970	0.00%	1.58	67
18	153	2	3733	154609	5.81	3733	0.00%	1.48	17
18	153	3	3563	327861	10.1	3563	0.00%	1.54	25
18	153	4	4042	1000000	33.41	4060	0.45%	1.49	20027
18	153	5	3300	127447	4.95	3300	0.00%	1.6	25
18	153	6	3191	61887	2.35	3191	0.00%	1.6	26
18	153	7	3700	376161	16.53	3700	0.00%	1.39	46
18	153	8	3560	4955	0.18	3560	0.00%	1.64	16
18	153	9	3990	73855	2.55	3990	0.00%	1.54	30
18	153	10	3623	778303	29.36	3623	0.00%	1.5	40018
20	190	1	22428	17	0.04	22428	0.00%	0.1	4
20	190	2	15253	21	0.03	15253	0.00%	0.1	2
20	190	3	21570	23	0.03	21570	0.00%	0.11	4
20	190	4	19535	9	0.02	19535	0.00%	0.11	3
20	190	5	24964	15	0.03	24964	0.00%	0.11	6
20	190	6	9821	21	0.02	9821	0.00%	0.11	4
20	190	7	11810	11	0.03	11810	0.00%	0.1	3
20	190	8	13869	11	0.03	13869	0.00%	0.11	4
20	190	9	7742	13	0.02	7742	0.00%	0.11	4
20	190	10	15747	7	0.03	15747	0.00%	0.1	3
30	435	1	6330	1000000	141.13	6992	10.46%	5.37	308
30	435	2	7957	1000000	140.01	9057	13.82%	5.38	84
30	435	3	6969	1000000	165.27	7823	12.25%	4.96	53
30	435	4	7392	1000000	139.98	7936	7.36%	5.35	31
30	435	5	7453	1000000	134.1	8092	8.57%	5.47	38
30	435	6	6800	1000000	172.99	8566	25.97%	4.93	52
30	435	7	7105	1000000	122.65	7525	5.91%	5.74	25
30	435	8	7579	1000000	150.76	8645	14.07%	5.18	34
30	435	9	7854	1000000	135.94	8692	10.67%	5.13	191
30	435	10	6647	1000000	148.68	7239	8.91%	5.14	62
50	1225	1	13161	1000000	1150.31	17524	33.15%	23.01	4589
50	1225	2	13905	1000000	1157.55	16780	20.68%	25.47	68
50	1225	3	10782	1000000	1158.03	13198	22.41%	25.8	419
50	1225	4	12750	1000000	1050.26	15137	18.72%	25.57	285
50	1225	5	13653	1000000	1129.11	16358	19.81%	25.88	885
50	1225	6	12877	1000000	1100.85	14996	16.46%	24.34	61
50	1225	7	15067	1000000	1086.9	17282	14.70%	26.96	99
50	1225	8	13311	1000000	1149.45	14975	12.50%	25.55	58
50	1225	9	11753	1000000	1135.12	13594	15.66%	24.95	54
50	1225	10	13890	1000000	1192.58	18062	30.04%	24.73	62

9 Benchark OP2

Instance	Opt.	<i>RLS-TT</i>			<i>QMST-TS</i>			<i>QMST-TS</i> retuned		
		UB	Gap	CPU	UB	Gap	CPU	UB	Gap	CPU
nug12	578	605	4.67%	639	582	0.69%	293.8	578	-	287.4
nug14	1014	1084	6.90%	724	1022	0.79%	420.3	1014	-	414.3
nug15	1150	1265	10.00%	1348	1188	3.30%	498.8	1150	-	492.8
nug16a	1610	1742	8.20%	2311	1670	3.73%	584.7	1622	0.75%	582.6
nug16b	1240	1350	8.87%	2936	1288	3.87%	589.8	1240	-	578.9
nug17	1732	1874	8.20%	3422	1806	4.27%	694.9	1750	1.04%	685.3
nug18	1930	2056	6.53%	3482	2016	4.46%	798.8	1942	0.62%	793.2
nug20	2570	2860	11.28%	5151	2692	4.75%	1072.5	2580	0.39%	1047.2
nug21	2438	2698	10.66%	5184	2570	5.41%	1219.1	2488	2.05%	1200.8
nug22	3596	3868	7.56%	5482	3820	6.23%	1444.9	3672	2.11%	1370.7
nug24	3488	3874	11.07%	5914	3758	7.74%	1978.2	3590	2.92%	1838.1
nug25	3744	4083	9.05%	5983	3958	5.72%	2304.9	3874	3.47%	2097.9
nug27	5234	5966	13.99%	6025	5574	6.50%	3062.8	5352	2.25%	2787.8
nug28	5166	5819	12.64%	6087	5544	7.32%	3504.5	5262	1.86%	3227.6
nug30	6124	6923	13.05%	6227	6702	9.44%	4597.0	6364	3.92%	4282.7
Avg.			9.51%	4061.0		4.95%	1537.7		1.43%	1445.8

Instance	Opt.	<i>RLS-TT</i>			<i>QMST-TS</i>			<i>QMST-TS</i> retuned		
		UB	Gap	CPU	UB	Gap	CPU	UB	Gap	CPU
chr12a	9552	11170	16.94%	783	9552	-	289.4	9552	-	287.7
chr12b	9742	10753	10.38%	790	9742	-	293.5	9742	-	286.9
chr12c	11156	12712	13.95%	783	11156	-	293.2	11156	-	285.7
chr15a	9896	11638	17.60%	1239	10304	4.12%	498.5	9936	0.40%	497.3
chr15b	7990	10145	26.97%	1136	9470	18.52%	501.2	7990	-	491.9
chr15c	9504	12769	34.35%	1254	11224	18.10%	499.5	9504	-	492.0
chr18a	11098	12757	14.95%	3325	13104	18.08%	805.3	11098	-	792.9
chr18b	1534	1676	9.26%	3354	1646	7.30%	807.4	1534	-	789.2
chr20a	2192	2445	11.54%	4968	2780	26.82%	1052.2	2192	-	1043.1
chr20b	2298	2730	18.80%	4652	2694	17.23%	1055.1	2352	2.35%	1043.5
chr20c	14142	30124	113.01%	4763	18330	29.61%	1047.3	14202	0.42%	1045.5
chr22a	6156	8760	42.30%	5089	6738	9.45%	1394.7	6228	1.17%	1394.8
chr22b	6194	8402	35.65%	4741	6748	8.94%	1408.7	6314	1.94%	1421.5
chr25a	3796	9658	154.43%	5223	5856	54.27%	2306.5	3866	1.84%	2135.0
Avg.			37.15%	3007.1		15.18%	875.2		0.58%	857.6

10 Benchark SS

n	Instance	UB min	UB avg	CPU tot
25	1	5085	5085.00	6.683
25	2	5081	5081.00	6.603
25	3	4962	4962.00	6.905
50	1	21126	21130.95	50.362
50	2	21106	21134.30	50.402
50	3	21059	21079.05	50.583
100	1	88871	89144.75	965.769
100	2	89049	89218.80	957.699
100	3	88720	89029.25	961.186
150	1	205615	205950.80	2928.724
150	2	205509	205991.15	2923.025
150	3	205094	205959.75	2928.603
200	1	371492	372441.30	6320.302
200	2	371698	372544.20	6332.131
200	3	371584	372499.15	6324.342
250	1	586861	588855.60	9572.332
250	2	587607	588846.60	9592.874
250	3	587281	588525.30	9601.206